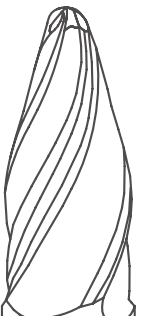
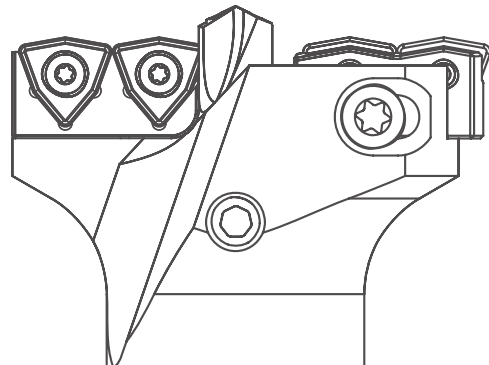
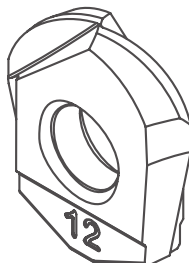
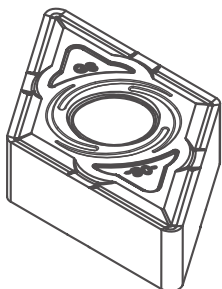
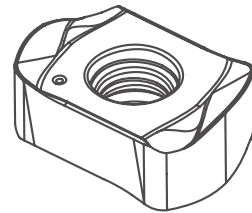
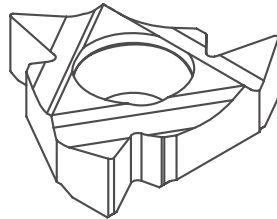
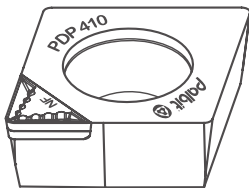
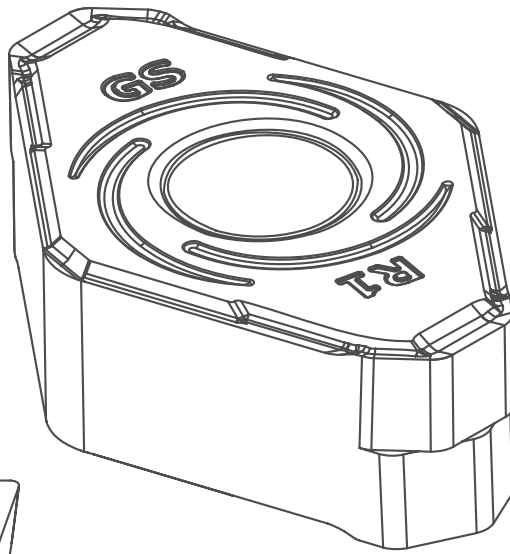
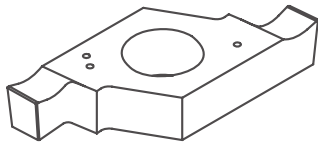
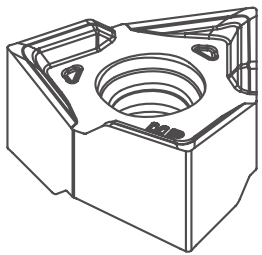


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GENERAL CATALOGUE - METRIC





AEROSPACE &
DEFENSE



GENERAL
ENGINEERING



AUTOMOTIVE



MOULD & DIE



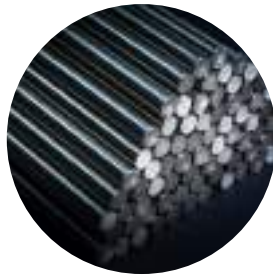
RAILWAY



SHIPBUILDING



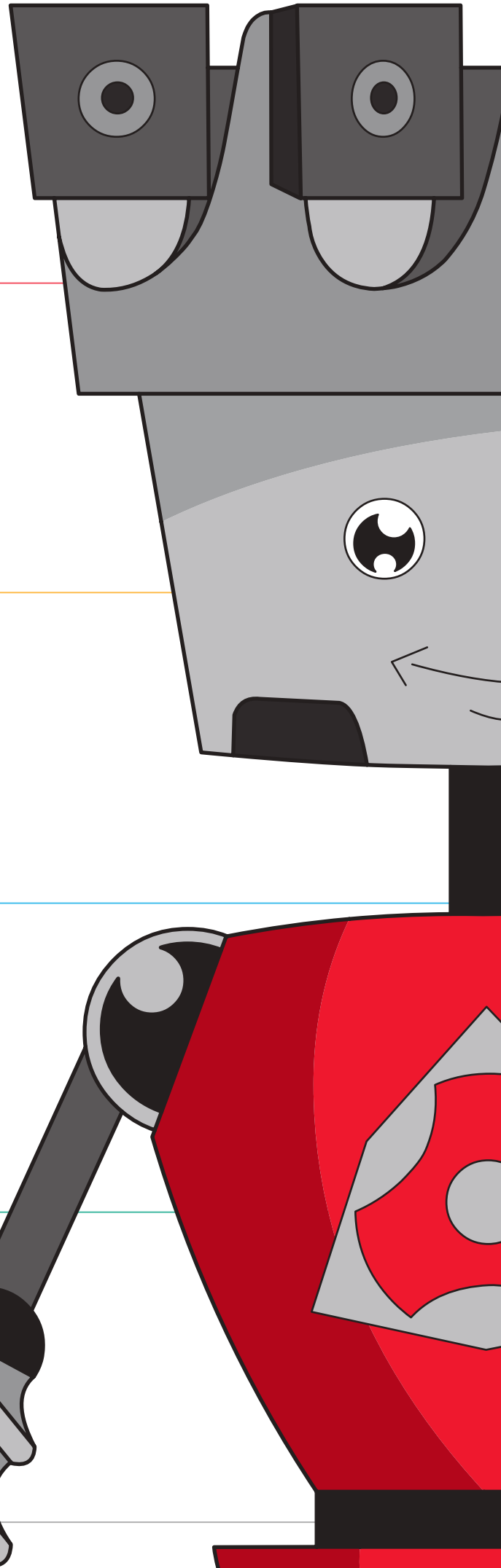
WIND ENERGY

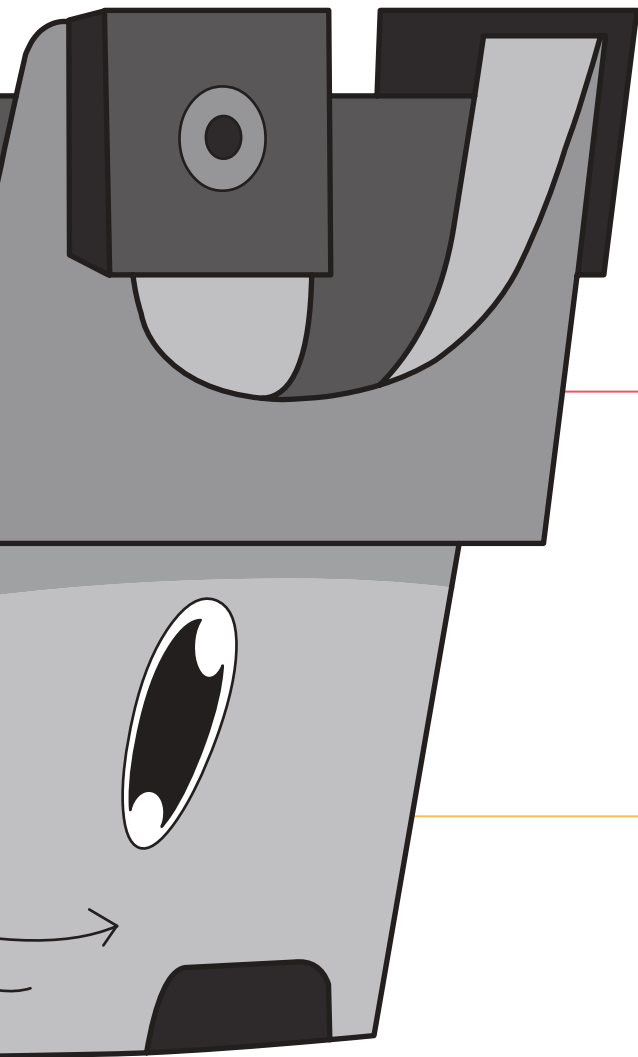


BAR PEELING



POWER
GENERATION





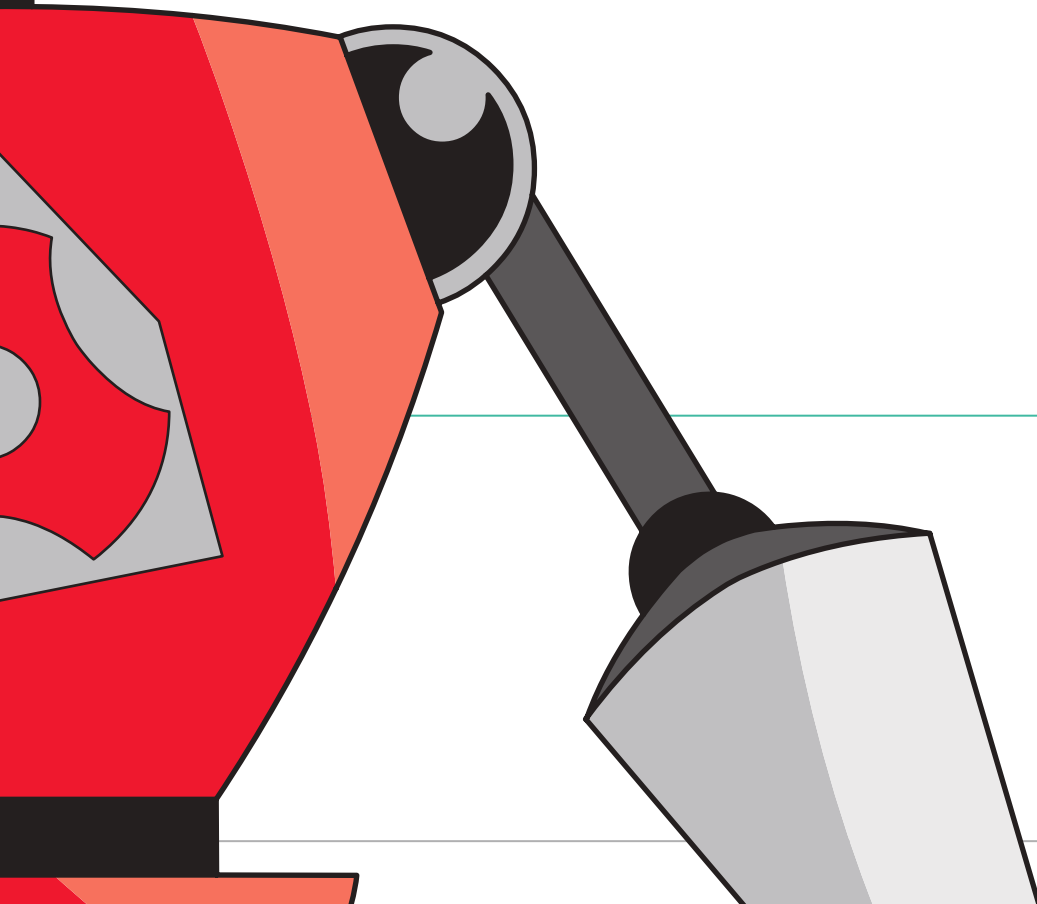
MILLING



DRILLING



TURNING



GROOVING &
PARTING OFF



THREADING

NEW MILLING GRADE = PHP | Novo revestimento - PHP | Nuevo recubrimiento - PHP

The pioneering coating technology!



- PHP603
- PHP910
- PHP920
- PHP930
- PHP530



TETRAFEED 16320 | HEXAPLUS 49590

TETRAFEED 16320



HEXAPLUS 49590



XNKU 06T3...

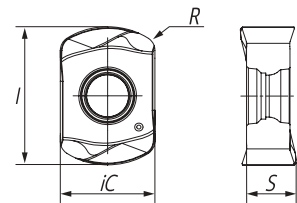
XNKU-MP
PHP



XNKU-MP
PHH



XNKU-MP
PHS



WCR 08... | WCL 08...



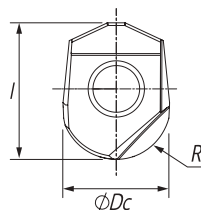
WCR



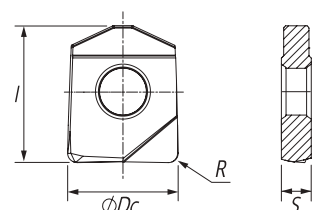
WCL



WCR



WCL



NEW MILLING GRADE = PHH || Novo revestimento - PHH | Nuevo recubrimiento - PHH

The revolution on coating technology!



- PHH603
- PHH910
- PHH920
- PHH930
- PHH530



TURBOMILL 34190 - 34290

TURBOMILL 34190



TURBOMILL 34290



W-PRO 62090

W-PRO 62090



BALLPRO 63090

BALLPRO 63090

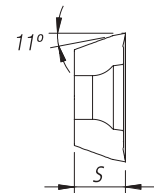
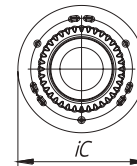


RPHT 1605...

RPHT-LS
PHH



RPHT-LS
PHP

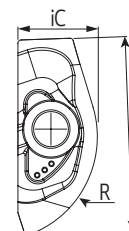


XPGT 3206...

XPGT



XPGT



NEW TURNING GRADE = PHH || Novo revestimento - PHH | Nuevo recubrimiento - PHH

A new turn for Stainless Steel and HRSA Turning!



PHH910

PHH920



Higher performance achieved by grinding machining technology

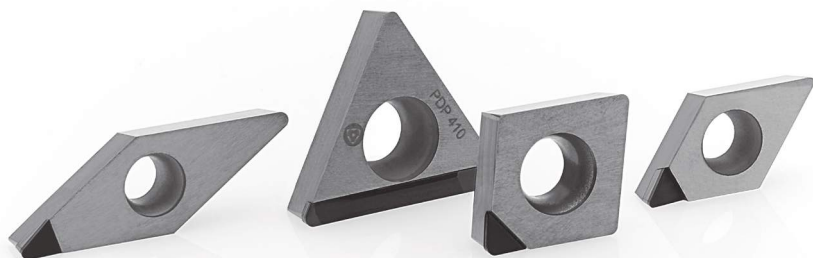


PBY603

PBY620



Laser machining technology



PDP410

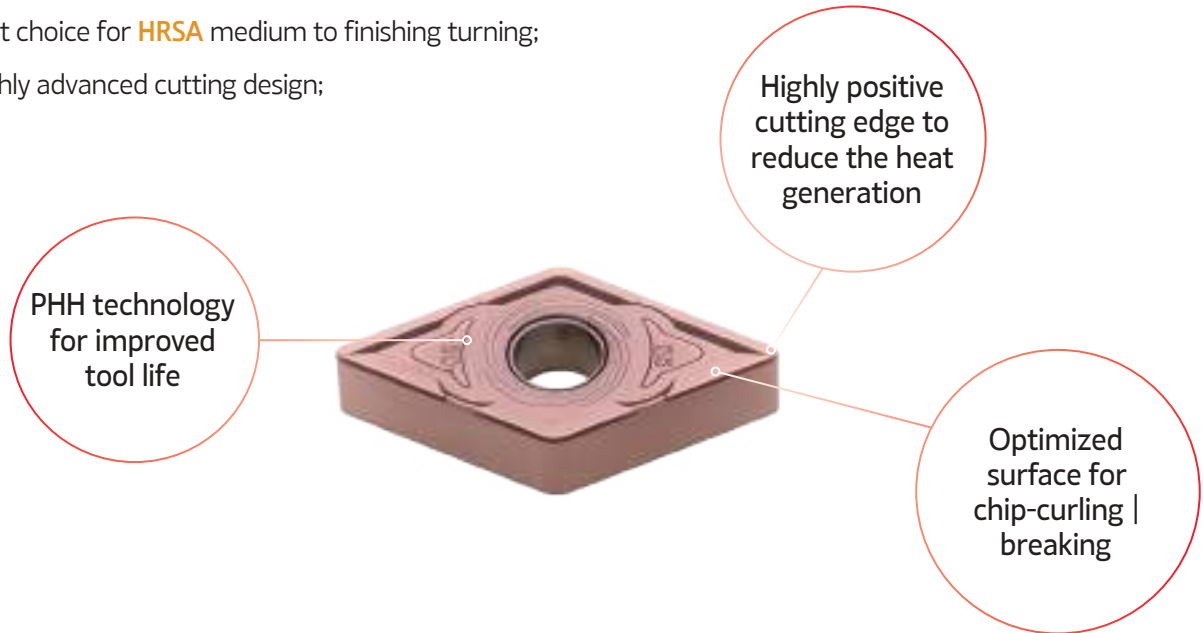
PDP410



NEW GS CHIP-BREAKER | Quebra- aparas GS | Rompevirutas GS

Designed especially for HRSA, the new chip-breaker **GS** combined with the latest PHH technology, offers exceptional performance in the exotic materials machining.

- 🔗 First choice for **HRSA** medium to finishing turning;
- 🔗 Highly advanced cutting design;



Another way of machining-rough to medium cut with **DOMX**[®]



GROOVING & PARTING OFF NEWS

NEW LIGHT GROOVING PROGRAM

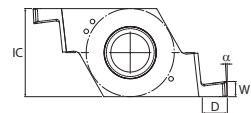
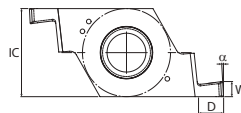
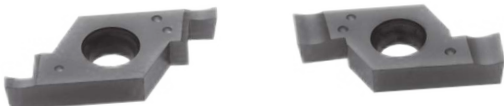
LGX 06... | LG 06...

LGX-R

LG-L

LGX-R

LG-L





A - MILLING

A - 08 | Milling tool selection

A - 10 | Coupling types

A - 11 | Milling tools codification

A - 12 | Milling Tools Overview

A - 36 | New Grades



MILLING



A - 38 | Inserts Overview
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A - 88 | HIFEED MILLING
A - 124 | SHOULDER MILLING
A - 196 | PROFILE MILLING
A - 228 | HARDMILL

A - 230 | CENTER & CHAMFER
A - 232 | SPOT FACE
A - 234 | Spare Parts
A - 240 | Technical Data
A - 256 | PCD TIPPED END MILLS
A - 262 | SOLID CARBIDE END MILLS

1 - Define your operation type:

- Face milling
- Highfeed milling
- Shoulder milling
- Profile milling
- Hardmill

Select your tool:

See page A - 18

| HSA-MILLING COATINGS | | | | | HSA-MILLING COATINGS | | | | | |
|----------------------|---|---|---|---|----------------------|---|---|---|---|---|
| Series | PLUS 2008H | PLUS 9020H | PLUS 9045H | PLUS 9045H | Series | PLUS 9245H | LINPRO 0064H | LINPRO 0064H | LINPRO 0055H | |
| Image | | | | | Image | | | | | |
| Material | Al, Ti, In | Al, Ti, In | Al, Ti, In | Al, Ti, In | Material | Al, Ti, In | Al, Ti, In | Al, Ti, In | Al, Ti, In | |
| Coating | AlN, TiN | AlN, TiN | AlN, TiN | AlN, TiN | Coating | AlN, TiN | AlN, TiN | AlN, TiN | AlN, TiN | |
| Application | Face milling | Face milling | Face milling | Face milling | Application | Face milling | Face milling | Face milling | Face milling | |
| Notes | For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. | For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. | For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. | For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. | Notes | For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. | For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. | For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. | For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. | For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. |

2 - Define your material according to ISO:

- P** Steel
- M** Stainless Steel
- K** Cast Iron
- N** Aluminium & Non Ferrous Materials
- S** Heat Resistant and Titanium Alloy
- H** Hardened Material

See the chapter General Technical Data on the last pages for Palbit Selection Materials - PSM

| ISO Code | Material | Application | Coating | Notes |
|--|--------------|--|----------|------------|
| Steel Ferritic and Martensitic Stainless Steel | | | | |
| 1 | 045 | High speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. | AlN, TiN | 1000, 0.25 |
| 2 | 003Mn16-04 | High speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. | AlN, TiN | 800, 0.25 |
| 3 | 003Mn16-04 | High speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. | AlN, TiN | 2000, 0.25 |
| Easy-cutting, Austenitic and Duplex Stainless Steel | | | | |
| 4 | 003Mn16-04 | High speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. | AlN, TiN | 1700, 0.25 |
| 5 | 003Mn16-04 | High speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. | AlN, TiN | 2000, 0.25 |
| 6 | 003Mn16-04 | High speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. | AlN, TiN | 2000, 0.25 |
| Cast Iron | | | | |
| 7 | CA-150 | Medium / High speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. | AlN, TiN | 1500, 0.25 |
| 8 | CA-200 | High speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. | AlN, TiN | 1200, 0.25 |
| 9 | CA-300 | High speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. | AlN, TiN | 1400, 0.25 |
| Aluminium and Non-Ferrous | | | | |
| N | Al, Ti, In | High speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. | AlN, TiN | 1000, 0.25 |
| Heat Resistant Super Alloys | | | | |
| S | Various TiAl | High speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. | AlN, TiN | 1000, 0.25 |

3 - Select your milling cutter.

Choose the cutter pitch and mounting:

- Use a close pitch cutter as first choice
- Use a coarse pitch cutter for long overhang and unstable conditions
- Choose a mounting type
- The cutter marked as “stock available under request” has a minimum order quantity according to the following table:

| Qty | * ØDc Size |
|-----|------------|
| 10 | ≤ 100 mm |
| 5 | > 100 mm |

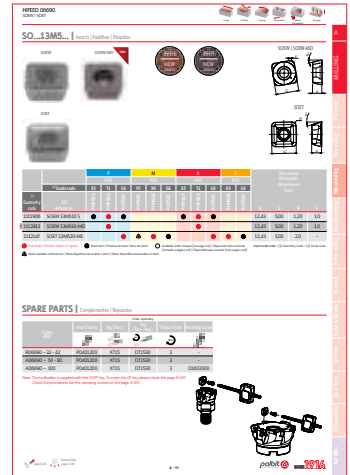
| Series | Material | Application | Coating | Notes |
|-----------------|------------|---|----------|------------|
| TETRAFEED 16320 | Al, Ti, In | High speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. | AlN, TiN | 1000, 0.25 |
| TETRAFEED 16320 | Al, Ti, In | High speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. | AlN, TiN | 1000, 0.25 |
| TETRAFEED 16320 | Al, Ti, In | High speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. | AlN, TiN | 1000, 0.25 |
| TETRAFEED 16320 | Al, Ti, In | High speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. | AlN, TiN | 1000, 0.25 |
| TETRAFEED 16320 | Al, Ti, In | High speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. | AlN, TiN | 1000, 0.25 |
| TETRAFEED 16320 | Al, Ti, In | High speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. | AlN, TiN | 1000, 0.25 |
| TETRAFEED 16320 | Al, Ti, In | High speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. | AlN, TiN | 1000, 0.25 |
| TETRAFEED 16320 | Al, Ti, In | High speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. | AlN, TiN | 1000, 0.25 |
| TETRAFEED 16320 | Al, Ti, In | High speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. | AlN, TiN | 1000, 0.25 |
| TETRAFEED 16320 | Al, Ti, In | High speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. For high speed cutting with high feed rates. | AlN, TiN | 1000, 0.25 |

4 - Select your insert.

Choose the chip-breaker for your operation:

- Chip-breaker L= Light (for light cuts when low forces/power are required)
- Chip-breaker M = Medium (first choice for mixed production)
- Chip-breaker H = Heavy (for rough operations, forging, cast skin and vibration)
- Select insert grade for optimum productivity
- The insert marked as "stock available under request" has a minimum order quantity according to the following table:

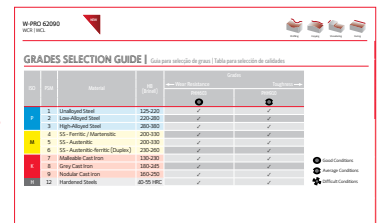
| Qty | *IC Size |
|-----|------------|
| 300 | ≤ IC 25 mm |
| 150 | > IC 25 mm |



5 - Define your starting cutting parameters.

Cutting speeds and feeds for different materials are given on the insert boxes and in the tables for each solution.

The values should be optimized according to the machine and conditions.



INSERTS CODIFICATION FOR MILLING HOLDERS

Codificação de pastilhas para fresas | Codificación de insertos para herramientas de fresado

| Code | Inserts Description | Page | Code | Inserts Description | Page | Code | Inserts description | Page |
|------|---------------------|------|------|---------------------|------|------|---------------------------|-----------|
| 000 | PD...W 1204 | 82 | 202 | XPET 1706 | 153 | 450 | WNHU 060410 | 196 |
| 060 | SE...T/W 1204 | 76 | 245 | RDHW 0702 | 217 | 490 | WNHU 04T3... | 125 196 |
| 062 | SP...X 1204 | 178 | 250 | RD...T/W 1003 MO | 217 | 495 | WNXT 0806... | 121 |
| 063 | POKT 0403 | 89 | 251 | RD...T/W 12T3MO | 217 | 500 | WNMW 1207 | 113 |
| 064 | SOEW SOET 0803... | 93 | 252 | RD...T/W 1604MO | 217 | 505 | WDET WDMW 1204... | 109 |
| 065 | SPKT/W 08T308 | 117 | 253 | RD...T/W 2006MO | 217 | 620 | WCL(R)... | 191 192 |
| 066 | SOEW SOET 13M... | 99 | 280 | SN...U 1206 | 57 | 630 | XPGT 3206... | 194 |
| 068 | SOEW SOET 1605... | 104 | 335 | RD...0802 | 203 | 720 | XNHW 1205... | 229 |
| 083 | VCGX 220530 | 176 | 336 | RP...10T3 | 203 | 760 | XDGX 15M5 | 169 |
| 099 | SE...T/W 13T3 | 79 | 337 | RP...1204 | 203 | 770 | XDGX 22M7 | 173 |
| 163 | XNKU 06T3 | 85 | 338 | RP...1605 | 203 | 900 | LNXT 0904 | 158 |
| 170 | AP...T 1003 | 181 | 339 | RP...2006 | 203 | 901 | LNXT 1306 | 161 |
| 171 | ANHX 1004 | 126 | 341 | RPHT 10T3-LS(4) | 205 | 902 | PN...X 1105 | 61 |
| 175 | ANHX 1204 | 132 | 342 | RPHT 1204-LS(4) | 205 | 903 | LNXT 1506 | 165 |
| 180 | AP... 1604 | 187 | 351 | RN...1204 | 211 | 908 | SN...X 1206 & ON...X 0505 | 65 |
| 181 | ANHX 1607 | 135 | 400 | XDHW 060210 | 223 | 909 | SN...X 1206 | 69 |
| 200 | XP... 0602 | 139 | 405 | XDHW 10T310 | 223 | 912 | SN...X 1606 & ON...X 0606 | 73 |
| 201 | XP... 1003 | 147 | 410 | XDHW 040110 | 223 | | | |

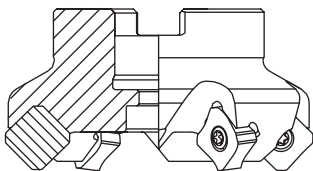
COUPLING TYPES

A Tipo de acoplamento | Tipo de acoplamiento

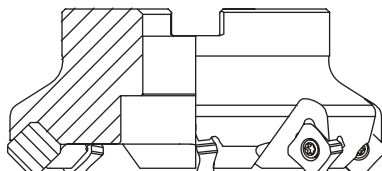
| Symbol Símbolo Símblo | Coupling type Tipo de acoplamento Tipo de acoplamiento | Inserts fixation type Fixação de pastilhas Fijación de plaquitas | Standard Norma Norma |
|-----------------------------|--|---|--|
| A | Arbor mounting Montagem tipo árvore Montaje tipo husillo | Insert screw Parafuso pastilha Tornillo de la plaquita | ISO 6462 |
| B | | Wedge Cunha Cuña | ISO 6462 |
| C | | Insert screw and washer, Screw clamp or clamp Parafuso para pastilha e anilha, parafuso e grampo ou grampo Tornillo de la plaquita y arandela, tornillo y brida o brida | ISO 6462 |
| D | | Washer Anilha Arandela | ISO 6462 |
| E | Cylindrical shank Haste cilíndrica Mango recto | Any type Qualquer tipo Cualquier tipo | DIN 1835 - A |
| R | Threaded coupling Acoplamento roscado Acoplamiento tipo tornillo | Any type Qualquer tipo Cualquier tipo | Palbit internal standard Norma interna Palbit |
| W | Weldon shank Haste weldon tipo mango | Any type Qualquer tipo Cualquier tipo | DIN 1835 - B |

ISO ARBOR MOUNTING TYPES | Estilos de montagem ISO tipo árvore | Estilos de montaje ISO tipo husillo

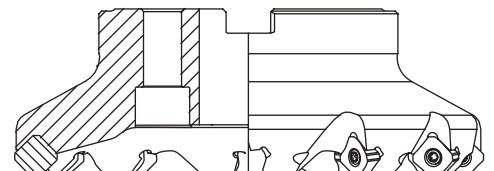
Arbor type A



Arbor type B



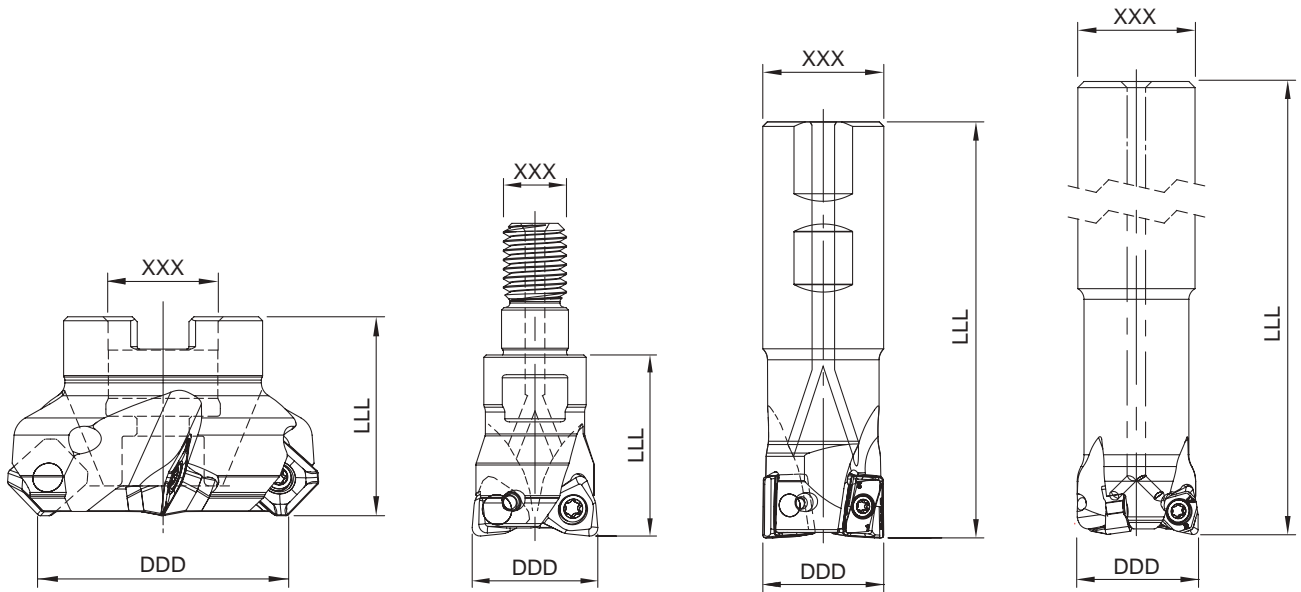
Arbor type C



NOTE: For each type of arbor mounting (see previous table of coupling type on symbols A, B, C, D), we can have a different arbor types (see images above).

MILLING TOOLS CODIFICATION

Codificação das ferramentas de fresagem | Codificación de heramientas de fresado



D D D Y Z Z Z T T - N N - L L U X X X L L L - L

Diameter
Diâmetro
Diámetro

Coupling Type (A-8)
Tipo de acoplamento (A-8)
Tipo de acoplamiento (A-8)

Insert Type (A-9)
Pastilha aplicável (A-9)
Inserto aplicable (A-9)

Lead angle
Ângulo de posicionamento da pastilha
Ángulo de posicion del inserto

Number of teeth
Número de dentes
Numero de dientes

Axial angle (angle of the tool construction)
Ângulo Axial (ângulo de construção da ferramenta)
Ángulo Axial (ángulo de la construcción de herramienta)

Cooling system
Refrigeração
Refrigeración
U - Without cooling system
U - Sem refrigeração
U - Sin refrigeración

Coupling diameter
Diâmetro de acoplamento
Diámetro de acoplamiento

Total length
Comprimento total
Longitud total

Rotation (R/L)
Rotação (R/L)
Rotación (R/L)
*In case of right rotation
the "R" is suppressed.

A

MILLING

Overview

Face milling

Hi-feed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer























































Spot face

Spare Parts

Technical Data

End Mills

MILLING TOOLS OVERVIEW

| A | MILLING | LINEPRO | LINEPRO | LINEPRO ^{NEW} | P. HIFEED | HIFEED | HIFEED | HIFEED | HIFEED | ALUPRO | LINEPRO | TETRAFEED ^{NEW} | LINEPRO |
|------------------|--|---|---|--|---|---|---|---|--|---|---|---|---|
| | | 00036 | 06045 | 06290 | 06320 | 06410 | 06590 | 06690 | 06815 | 08390 | 09945 | 16320 | 17090 |
| Overview | Page | 82 | 76 | 178 | 88 | 92 | 116 | 98 | 104 | 176 | 78 | 84 | 180 |
| Face milling | Insert | PD... 1204... | SE... 1204... | SP... 1204... | POKT 0403... | SO... 0803... | SP... 08T3... | SO... 13M5... | SO... 1605... | VCGX 2205... | SE... 13T3... | XNKU... 06... | AP... 1003... |
| Hifeed milling | Arbor mouting | Ø 66-160 | Ø 50-160 | Ø 40-160 | Ø 40-66 | - | - | Ø 50-100 | Ø 63-160 | - | Ø 50-250 | Ø 40-63 | Ø 40-63 |
| Shoulder milling | Weldon Shank | - | - | - | - | Ø 20-32 | Ø 20-32 | - | - | - | - | Ø 16-32 | Ø 16-25 |
| Profile milling | Cylindrical Shank | - | - | - | Ø 20-40 | - | - | - | - | - | - | - | - |
| Hardmill | Threaded Coupling | - | - | - | Ø 16-42 | Ø 20-42 | Ø 20-42 | Ø 32-42 | - | Ø 32 | - | Ø 16-42 | Ø 16-25 |
| Center & Chamfer |  Facing |  |  |  |  |  |  |  |  |  |  |  |  |
| Spot face |  Shouldering | | |  | | | | | |  | | |  |
| End Mills |  Slanted Shoulder & Chamfer |  |  | | | | | | | |  | | |
| |  Ramp down |  | | |  |  |  |  |  |  | |  |  |
| |  Helical Interpolation |  | | |  |  |  |  |  |  | |  |  |
| |  Plunging | | | |  |  |  |  |  | | |  | |
| |  Side milling | | | | | | | | | | | | |
| |  Slotting | | | | | | | | |  | | |  |
| |  Profiling | | | |  |  |  |  |  |  | |  | |
| |  Copying | | | |  |  |  |  |  |  | |  | |
| |  Plunging & Recessing | | | | | | | | |  | | | |

 Main Operation

 Other Operations

| | PLUS 17190 | PLUS 17590 | LINEPRO 18090 | PLUS 18190 | LINEPRO 20090 | LINEPRO 20190 | LINEPRO 20290 | TOROMILL 24590 | TOROMILL 25090 | TOROMILL 25190 | TOROMILL 25290 | TOROMILL 25390 | PLUS 28088 |
|--|-----------------|-----------------|------------------|-----------------|----------------------------|----------------------------|------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | 126 | 130 | 186 | 134 | 138 | 144 | 152 | 214 | 214 | 214 | 216 | 216 | 56 |
| | ANHX 1004... | ANHX 1206... | AP... 1604... | ANHX 1607... | XPET 0602... | XPET 1003... | XPET 1706... | RD... 0702... | RD... 1003... | RD... 12T3... | RD... 1604... | RD... 2006.. | SN...U 1206... |
| | Ø 40-100 | Ø 40-125 | Ø 40-125 | Ø 50-160 | - | Ø 40-63 | Ø 40-125 | - | Ø 42-52 | Ø 50-80 | Ø 52-160 | Ø 80-160 | Ø 50-200 |
| | Ø 14-40 | Ø 25-40 | Ø 25-40 | Ø 32-40 | - | Ø 16-27 | Ø 32-40 | Ø 15 | Ø 20 | Ø 25 | - | - | - |
| | - | Ø 26-33 | - | - | Ø 10-21 | - | - | - | - | - | - | - | - |
| | - | Ø 25-42 | - | Ø 32-40 | Ø 10-32 | Ø 16-40 | - | Ø 15-20 | Ø 20-42 | Ø 24-42 | Ø 32-35 | - | - |
| | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | |
| | | | | | (only with XPET-HF) | (only with XPET-HF) | | | | | | | |
| | | | | | | | | | | | | | |
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A

MILLING

Overview

Face milling

Hifed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

Spot face

Spare Parts

Technical Data

End Mills

MILLING TOOLS OVERVIEW

| | | TOROMILL 33590 | TOROMILL 33690 | TOROMILL 33890 | TOROMILL 33990 | TURBOMILL ^{NEW} 34190 | TURBOMILL ^{NEW} 34290 | TOROMILL X2 35190 | LINEPRO 40095 | LINEPRO 40595 | LINEPRO 41095 | PLUS 45095 |
|------------------|--|---|---|---|---|---|---|---|---|---|---|---|
| MILLING | Page | 200 | 200 | 202 | 202 | 204 | 204 | 210 | 222 | 222 | 222 | 198 |
| | Insert | RDHT 0802... | RPHT 10T3... | RPHT 1605... | RPHT 2006... | RPHT 10T3...LS(4) | RPHT 1204...LS(4) | RNHX 1204... | XD... 0602... | XD... 10T3... | XD... 0401... | WNHU 0604... |
| Overview | Arbor mouting | - | - | Ø 50-125 | Ø 80-125 | Ø 42-52 | Ø 40-80 | Ø 40-80 | - | Ø 52-80 | - | - |
| | Weldon Shank | - | - | - | - | - | - | Ø 32 | - | - | - | - |
| Face milling | Cylindrical Shank | Ø 16-25 | Ø 20-32 | - | - | - | - | - | - | - | - | - |
| | Threaded Coupling | Ø 16-32 | Ø 20-35 | - | - | - | - | Ø 32-42 | Ø 16-25 | Ø 25-42 | Ø 10-12 | Ø 25-42 |
| Hifeed milling |  Facing |  |  |  |  |  |  |  |  |  |  |  |
| Shoulder milling |  Shouldering | | | | | | | | | | | |
| Profile milling |  Slanted Shoulder & Chamfer | | | | | | | | | | | |
| |  Ramp down |  |  |  |  |  |  |  |  |  |  |  |
| Hardmill |  Helical Interpolation |  |  |  |  |  |  |  |  |  |  |  |
| Center & Chamfer |  Plunging | | | | | | | | | | | |
| |  Side milling | | | | | | | | | | | |
| Spotface |  Slotting |  |  |  |  |  |  |  |  |  |  |  |
| Spare Parts |  Profiling |  |  |  |  |  |  |  |  |  |  |  |
| Technical Data |  Copying |  |  |  |  |  |  |  |  |  |  |  |
| |  Plunging & Recessing | | | | | | | | | | | |

 Main Operation

 Other Operations

| | PLUS 49090 | PLUS 49095 | NEW HEXAPLUS 49590 | HIFEED 50060 | HIFEED 50560 | NEW W-PRO 62090 | NEW BALLPRO 63090 | HARDMILL 72090 | ALUPRO 76090 | ALUPRO 77090 | TGPLUS 90090 | TGPLUS 90190 |
|--|-------------------|-----------------|--------------------------|------------------|------------------|-----------------------|-------------------------|-------------------|-----------------|-----------------|-----------------|-----------------|
| | 124 | 196 | 120 | 112 | 108 | 190 | 194 | 226 | 168 | 172 | 156 | 160 |
| | WNHU 04T308-LP | WNHU 04T3... | WNXT 0806... | WN... 1207... | WD... 1204... | WC... 08... | XPXT 3206... | XNHW 1205... | XDGX 15M5... | XDGX 22M7... | LNXT 0904... | LNXT 1306... |
| | - | - | Ø 40-125 | Ø 52-80 | Ø 52-80 | - | - | Ø 40-160 | Ø 40-100 | Ø 50-125 | Ø 40-63 | Ø 40-125 |
| | - | - | Ø 32-50 | - | - | - | - | - | - | - | Ø 16-32 | Ø 25-40 |
| | Ø 16-25 | - | - | - | - | Ø 8-20 | - | - | Ø 20-40 | Ø 32-40 | Ø 25-32 | Ø 25-40 |
| | Ø 16-32 | Ø 16-35 | - | Ø 35 | - | - | Ø 32 | - | - | - | Ø 25-32 | - |
| | | | | | | | | | | | | |
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A

MILLING

Overview

Face milling

Hifeed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer


Spot face

Spare Parts


Technical Data

End Mills

MILLING TOOLS OVERVIEW

| | PLUS 90260 | TGPLUS 90390 | PLUS 90845 | PLUS 90945 | PLUS 91245 |
|--|---|---|---|---|---|
| Page | 60 | 164 | 64 | 68 | 72 |
| Insert | PN... 1105... | LNXT 1506... | SN... 1206... ON... 0505... | SN...1206... | SN... 1606... ON... 0606... |
| Arbor mouting | Ø 50-160 | Ø 50-160 | Ø 50-250 | Ø 50-250 | Ø 63-250 |
| Weldon Shank | - | - | Ø 32-40 | - | - |
| Cylindrical Shank | - | - | - | - | - |
| Threaded Coupling | - | - | - | - | - |
|  Facing |  |  |  |  |  |
|  Shouldering | |  | | | |
|  Slanted Shoulder & Chamfer | | |  |  |  |
|  Ramp down | | | | | |
|  Helical Interpolation | | | | | |
|  Plunging | | | | | |
|  Side milling | | | | | |
|  Slotting | |  | | | |
|  Profiling | | | | | |
|  Copying | | | | | |
|  Plunging & Recessing | | | | | |

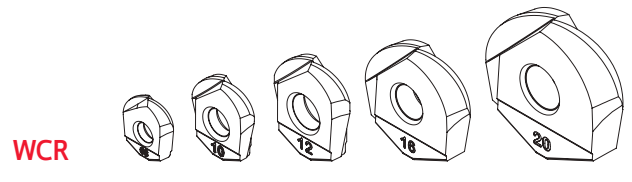
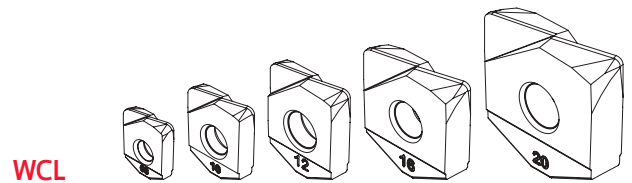
 Main Operation

 Other Operations

NEW W-PRO 62090 = NEW GRADE PHH

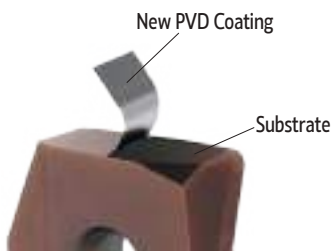
Nova linha W-PRO 62090 - Novo grau PHH | Nueva línea W-PRO 62090 - Nueva calidad PHH

The new W-PRO is the combination of the most refined inserts and the most stable shanks. When looking for a finishing solution for Steels, Stainless Steels, Cast Irons, HRSA or Hardened Steels that can work for a long time while delivering a flawless machined surface, this is the best solution.



One toolholder for two types of inserts

PHH GRADE = PVD grade



This new coating has a very high thermal stability and provides long tool life. For applications in machining of hardened steels, stainless steels and titanium alloys. This new coating achieves an unmatched balance between high hardness and thermal stability. It is the perfect coating for machining hardened material.

PHH603 NEW
H05-H15
P01-P05

Recommended for finishing operations in steels and hardened steels. First choice in mold and die finishing applications.

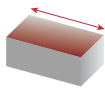
PHH910 NEW
P05-P10
H15-H30





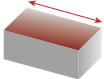
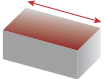
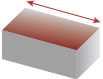
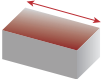







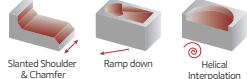
Recommended for finishing operations in steels and hardened steels in unstable conditions.

MILLING TOOLS OVERVIEW

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 MILLING
 Overview
 Face milling
 Hifeed milling
 Shoulder milling
 Profile milling
 Hardmill
 Center & Chamfer
 Spot face
 Spare Parts
 Technical Data
 End Mills





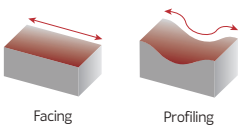
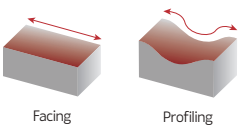
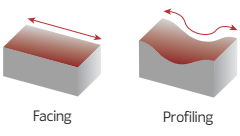
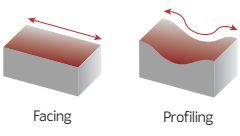




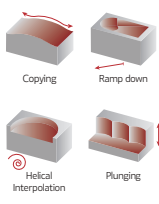
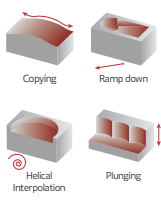
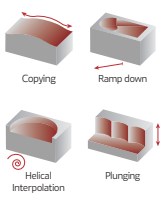
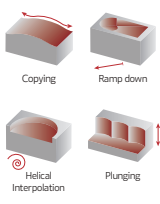
FACE MILLING CUTTERS

| FACE MILLING CUTTERS | | | | |
|----------------------|---|--|--|--|
| Program | PLUS 28088 | PLUS 90260 | PLUS 90845 | PLUS 90945 |
| | Proprietary milling line | Proprietary milling line | Proprietary milling line | Proprietary milling line |
| |  |  |  |  |
| Material | P M K | P K | P M K N S | P M K N S |
| Main Operation |  Facing |  Facing |  Facing |  Facing |
| Kr° | 88° | 60° | 45° | 45° |
| Range (ØDc - mm) | 50 - 200 | 50 - 160 | 32 - 250 | 50 - 250 |
| Insert | SN...1206...  | PN...1105...  | SN...1206... & ON...0505...  | SN...1206...  |
| Couplings | Arbor mounting | Arbor mounting | Arbor mounting Weldon shank | Arbor mounting |
| Other Operations |  Shouldering | |  Slanted Shoulder & Chamfer |  Slanted Shoulder & Chamfer |
| Page | 56 | 60 | 64 | 68 |
| Features | Indexable face mills with 8 helical cutting edges For rough to semi-finish with high-efficiency face milling Cutting edge angle enables performing face milling very close to the sidewall | Economical because double sided inserts applied 10 coners available improved insert design for distribution of cutting forces Excellent solution for cast iron | New line for Heavy and Soft face milling Two different geometries for same pocket Insert geometries available for all applications materials Excellent surface finishing | Economical because double sided inserts applied Variety of insert geometries is available for all applications materials Excellent surface finishing Available in regular and fine pitch cutters |

| FACE MILLING CUTTERS | | | | |
|----------------------|--|---|---|---|
| Program | PLUS 91245 | LINEPRO 06045 | LINEPRO 09945 | LINEPRO 00036 |
| | Proprietary milling line  |  |  |  |
| Material | P M K S | P M K N | P M K N | P K |
| Main Operation |  Facing |  Facing |  Facing |  Facing |
| Kr° | 45° | 45° | 45° | 36° |
| Range (ØDc - mm) | 63 - 250 | 50 - 160 | 50 - 250 | 66 - 160 |
| Insert | SN...1606... & ON...0606...  | SE...1204...  | SE...13T3...  | PD...1204...  |
| Couplings | Arbor mounting | Arbor mounting | Arbor mounting | Arbor mounting |
| Other Operations |  Slanted Shoulder & Chamfer |  Slanted Shoulder & Chamfer |  Slanted Shoulder & Chamfer |  Slanted Shoulder & Chamfer Ramp down Helical Interpolation |
| Page | 72 | 76 | 78 | 82 |
| Features | Two different geometries for same pocket Excellent surface finishing Available in regular and fine pitch cutters | Low cutting forces Good chip flow | Low cutting forces Suitable for high-speed machining Excellent chip flow High rigidity due to carbide shim | High rake angle and low cutting forces |

MILLING TOOLS OVERVIEW

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- MILLING
- Overview
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- Hifeed milling
- Shoulder milling
- Profile milling
- Hardmill
- Center & Chamfer
- Spot face
- Spare Parts
- Technical Data
- End Mills





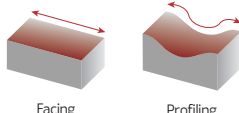
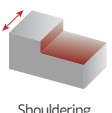
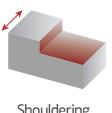
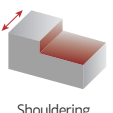




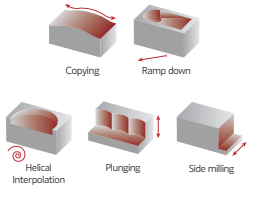
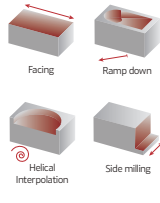


| HIFEED MILLING CUTTERS | | | | |
|------------------------|---|---|---|---|
| Program | TETRAFEED 16320 NEW | PENTA HIFEED 06320 | HIFEED 06410 | HIFEED 06690 |
| | Proprietary milling line  | Proprietary milling line  | Proprietary milling line  | Proprietary milling line  |
| Material | P M K S | P K | P M K S | P M K S |
| Main Operation |  Facing Profiling |  Facing Profiling |  Facing Profiling |  Facing Profiling |
| Kr° | 20° | 20° | 10° | 10° |
| Range (ØDc - mm) | 16 - 63 | 20 - 66 | 20 - 42 | 32 - 100 |
| | XNKU 06T3... | POKT 0403... | SO...0803... | SO...13M5... |
| Insert |  |  |  |  |
| Couplings | Arbor mounting Weldon shank Threaded coupling | Arbor mounting Cylindrical shank Threaded coupling | Weldon shank Threaded coupling | Arbor mounting Threaded coupling |
| Other Operations |  Copying Ramp down Helical Interpolation Plunging |  Copying Ramp down Helical Interpolation Plunging |  Copying Ramp down Helical Interpolation Plunging |  Copying Ramp down Helical Interpolation Plunging |
| Page | 84 | 88 | 92 | 98 |
| Features | Double-sided insert with 4 cutting edges Optimized design for better chip evacuation High productivity | High feed cutting with low cutting load High productivity | High feed cutting with low cutting load High productivity | |

HIFEED MILLING CUTTERS

| Program | HIFEED 06815 | HIFEED 50560 | HIFEED 50060 | HIFEED 06590 |
|------------------|---|---|--|---|
| | Proprietary milling line  |  |  |  |
| Material | P M K S | P M K S | P K | P M K |
| Main Operation |  Facing Profiling |  Facing Profiling |  Facing Profiling |  Facing Profiling |
| Kr° | 15° | - | - | 10° |
| Range | 63 - 160 | 52 - 80 | 35 - 80 | 20 - 42 |
| Insert | SO...1605... | WD...1204... | WN...1207... | SP...08T3... |
| |  |  |  |  |
| Couplings | Arbor mounting | Arbor mounting | Arbor mounting Threaded coupling | Weldon shank Threaded coupling |
| Other Operations |  |  |  |  |
| Page | 104 | 108 | 112 | 116 |
| Features | High feed cutting with low cutting load High productivity | High feed cutting with low cutting load | High feed cutting with low cutting load Excellent in high overhang | High feed cutting with low cutting load |

MILLING TOOLS OVERVIEW

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- Hifeed milling
- Shoulder milling
- Profile milling
- Hardmill
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| | HIFFED MILLING CUTTERS | SHOULDER MILLING CUTTERS | | |
|------------------|---|---|---|---|
| Program | PRO 20090 20190 | HEXAPLUS 96590 <small>NEW</small> | PLUS 49090 | PLUS 17190 |
| | Proprietary milling line  | Proprietary milling line  | Proprietary milling line  | Proprietary milling line  |
| Material | P M K S | P K | P K | P M K N S |
| Main Operation |  Facing Profiling |  Shouldering |  Shouldering |  Shouldering |
| Kr° | 90° | 90° | 90° | 90° |
| Range (ØDc - mm) | 10 - 63 | 32 - 125 | 16 - 32 | 14 - 100 |
| | XPET 0602... - HF XPET 1003... - HF | WNXT 0806... | WNHU 04T308-LP | ANHX 1004... |
| Insert |  |  |  |  |
| Couplings | Arbor mounting Cylindrical shank Threaded coupling | Arbor mounting Weldon shank | Cylindrical shank Threaded coupling | Arbor mounting Weldon shank |
| Other Operations |  Copying Ramp down Helical Interpolation Plunging Side milling |  Facing Ramp down Helical Interpolation Side milling |  Facing |  Facing Slotting Plunging |
| Page | 138 144 | 120 | 124 | 126 |
| Features | Chipbreaker HF for Hifeed machining | 6 High rake cutting edges Excellent surface finish Strong insert seat | Economical because double sided inserts applied | 4 corners insert with positive cutting edge Variety of insert geometries is available for all applications Helical cutting edge Available in regular and fine pitch cutters |

| SHOULDER MILLING CUTTERS | | | | |
|--------------------------|--|--|---|---|
| Program | PLUS 17590 | PLUS 18190 | LINEPRO 20090 | LINEPRO 20190 |
| | Proprietary milling line | Proprietary milling line | Proprietary milling line | Proprietary milling line |
| |  |  |  |  |
| Material | P M K S | P K N | P M K N S H | P M K N S H |
| Main Operation |  Shouldering |  Shouldering |  Shouldering |  Shouldering |
| Kr° | 90° | 90° | 90° | 90° |
| Range (ØDc - mm) | 25 - 125 | 32 - 160 | 10 - 32 | 16 - 63 |
| | ANHX 1206... | ANHX 1607... | XP..0602... | XP...1003... |
| Insert |  |  |  |  |
| Couplings | Arbor mounting Weldon shank Cylindrical shank Threaded coupling | Arbor mounting Weldon shank Threaded coupling | Cylindrical shank Threaded coupling | Arbor mounting Weldon shank Threaded coupling |
| Other Operations |  Facing Slotting Plunging |  Facing Slotting Plunging |  Facing Slotting Ramp down Helical Interpolation Plunging |  Facing Slotting Ramp down Helical Interpolation Plunging |
| Page | 130 | 134 | 138 | 144 |
| Features | 4 corners insert with positive cutting edge Variety of insert geometries is available for all applications Helical cutting edge Available in regular and fine pitch cutters | 4 corners insert with positive cutting edge Variety of insert geometries is available for all applications Helical cutting edge Available in regular and fine pitch cutters | Excellent solution for square shoulder milling Offers longer tool life, better tolerances and better productivity parameters Low power requirement & smooth cutting possible due to positive helical angle Very flexible and suitable for most milling operations High positive cutting rake geometry | |

A

MILLING

Overview

Face milling

Hi-feed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

Spot face

Spare Parts


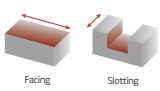
Technical Data



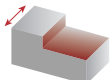
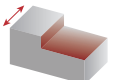

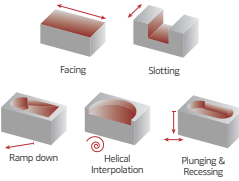
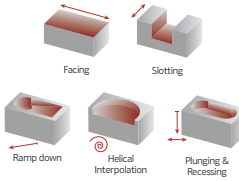
End Mills

MILLING TOOLS OVERVIEW

A
 MILLING
 Overview
 Face milling
 Hi-feed milling
 Shoulder milling
 Profile milling
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 End Mills


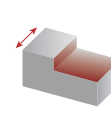


SHOULDER MILLING CUTTERS



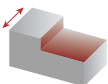
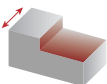


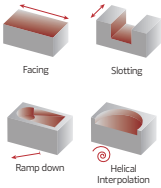
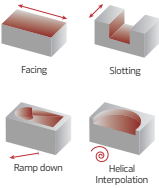
| Program | LINEPRO 20290 | TGPLUS 90090 | TGPLUS 90190 | TGPLUS 90390 |
|------------------|---|---|---|---|
| | Proprietary milling line | Proprietary milling line | Proprietary milling line | Proprietary milling line |
| |  |  |  |  |
| Material | P M K N S | P M K | P M K | P K |
| Main Operation |  Shouldering |  Shouldering |  Shouldering |  Shouldering |
| Kr° | 90° | 90° | 90° | 90° |
| Range (ØDc - mm) | 32 - 125 | 16 - 63 | 25 - 125 | 50 - 160 |
| | XP...1706... | LNXT 0904... | LNXT 1306... | LNXT 1506... |
| Insert |  |  |  |  |
| Couplings | Arbor mounting Weldon shank | Arbor mounting Weldon shank Cylindrical shank Threaded coupling | Arbor mounting Cylindrical shank Weldon shank | Arbor mounting |
| Other Operations |  |  |  |  |
| Page | 152 | 156 | 160 | 164 |
| Features | <p>Excellent solution for square shoulder milling</p> <p>Offers longer tool life, better tolerances and better productivity parameters</p> <p>Low power requirement & smooth cutting possible due to positive helical angle</p> | <p>Tangential inserts with 4 corners available</p> <p>High rake angle insert reduces cutting force</p> <p>Excellent insert rigidity and excellent machining stability</p> <p>Improved pocket configuration</p> <p>Available in regular and fine pitch cutters</p> | | |

| SHOULDER MILLING CUTTERS | | | |
|--------------------------|---|--|--|
| Program | ALUPRO 76090 | ALUPRO 77090 | ALUPRO 08390 |
| | Proprietary milling line | Proprietary milling line | |
| |  |  |  |
| Material | N | N | N |
| Main Operation |  Shouldering |  Shouldering |  Shouldering |
| Kr° | 90° | 90° | 90° |
| Range (ØDc - mm) | 20 - 100 | 32 - 125 | 32 |
| Insert | XDGX 15M5... | XDGX 22M7... | VCGX 2205... |
| |  |  |  |
| Couplings | Arbor mounting Cylindrical shank | Arbor mounting Cylindrical shank | Threaded coupling |
| Other Operations |  |  |  |
| Page | 168 | 172 | 176 |
| Features | Solution for multi functional milling operations on aluminium alloys High speed conditions with high metal remove rate Stable clamping conditions (Anti-fly) High rake angle geometry that provides a good surface finish and low cutting forces | | Excellent chip flow |

MILLING TOOLS OVERVIEW





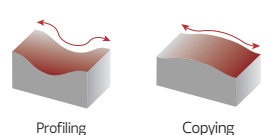
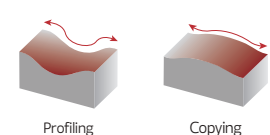
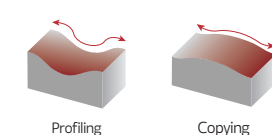
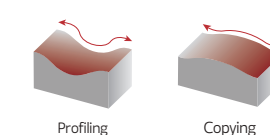




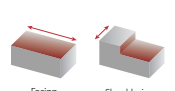


- A
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- Face milling
- Hi-feed milling
- Shoulder milling
- Profile milling
- Hardmill
- Center & Chamfer
- Spot face
- Spare Parts
- Technical Data
- End Mills





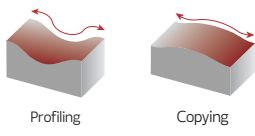
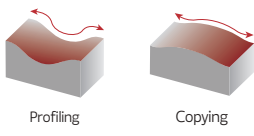
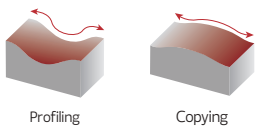
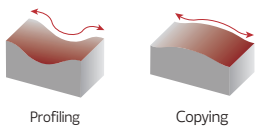




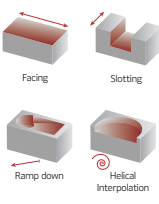
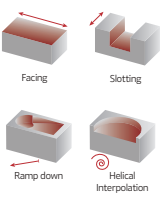
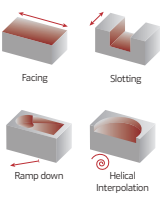
| SHOULDER MILLING CUTTERS | |
|--------------------------|---|
| Program | LINEPRO 06290 NEW |
| |  |
| Material | P M K S |
| Main Operation |  Shouldering |
| Kr° | 90° |
| Range (ØDc - mm) | 40 - 160 |
| | SP...1204... |
| Insert |  |
| Couplings | Arbor mounting |
| Other Operations |  Facing |
| Page | 178 |
| Features | Positive inserts with 4 cutting edges Recommended for conventional milling machines and machining centers |

| SHOULDER MILLING CUTTERS | | |
|--------------------------|--|--|
| Program | LINEPRO 17090 | LINEPRO 18090 |
| |  |  |
| Material | P M K N | P M K N |
| Main Operation |  Shouldering |  Shouldering |
| Kr° | 90° | 90° |
| Range (ØDc - mm) | 16 - 63 | 25 - 125 |
| Insert | AP...1003... | AP...1604... |
| |  |  |
| Couplings | Arbor mounting Weldon shank Threaded coupling | Arbor mounting Weldon shank |
| Other Operations |  |  |
| Page | 180 | 186 |
| Features | <p>Strong insert and low cutting force</p> <p>Helical cutting edge</p> <p>Good chip evacuation</p> | |

MILLING TOOLS OVERVIEW

A
 MILLING
 Overview
 Face milling
 Hi-feed milling
 Shoulder milling
 Profile milling
 Hardmill
 Center & Chamfer
 Spot face
 Spare Parts
 Technical Data
 End Mills





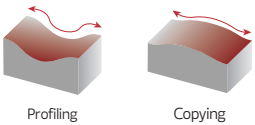
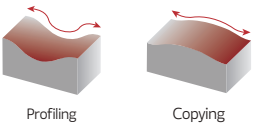
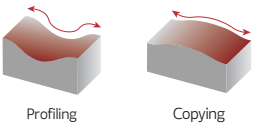
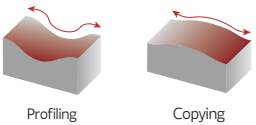




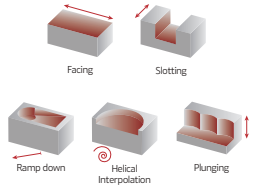
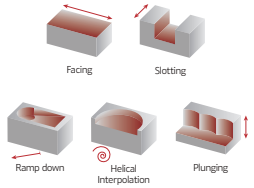
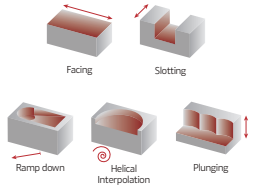
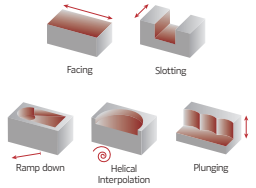
| PROFILE MILLING CUTTERS | | | | |
|-------------------------|---|--|--|---|
| Program | W-PRO 62090 <small>NEW</small> | BALLPRO 63090 <small>NEW</small> | PLUS 49095 | PLUS 45095 |
| | Proprietary milling line  | Proprietary milling line  | Proprietary milling line  | Proprietary milling line  |
| Material | P M K S H | P K | P K H | P K H |
| Main Operation |  Profiling Copying |  Profiling Copying |  Profiling Copying |  Profiling Copying |
| Kr° | 90° | - | 95° | 95° |
| Range (ØDc - mm) | 8 - 20 | 32 | 16 - 35 | 25 - 42 |
| Insert | WCL... WCR...  | XPGT 3206... DCMW 11T3...  | WNHU 04T3...  | WNHU 0604...  |
| Couplings | Cylindrical shank Threaded coupling | Threaded coupling | Threaded coupling | Threaded coupling |
| Other Operations |  Facing Shouldering | - |  Facing |  Facing |
| Page | 190 | 194 | 124 | 198 |
| Features | Helical profile for smooth cutting Tight Insert tolerances Carbide shank to reduce vibrations | Designed for finishing and semi-finishing Strong insert design Stable cutting performance | Economical because double sided inserts applied Designed for finishing and profile milling Robust geometry | |

| PROFILE MILLING CUTTERS | | | | |
|-------------------------|--|---|--|---|
| Program | TOROMILL 33590 | TOROMILL 33690 | TOROMILL 33790 | TOROMILL 33890 |
| | Proprietary milling line  | Proprietary milling line  | Proprietary milling line  | Proprietary milling line  |
| Material | P M S | P M S | P M S | P M S |
| Main Operation |  Profiling Copying |  Profiling Copying |  Profiling Copying |  Profiling Copying |
| Kr° | - | - | - | - |
| Range (ØDc - mm) | 16 - 32 | 20 - 52 | 40 - 80 | 50 - 125 |
| Insert | RDHT 0802...  | RPHT 10T3...  | RPHT 1204...  | RPHT 1605...  |
| | | | | |
| Couplings | Cylindrical shank Threaded coupling | Arbor mounting Cylindrical shank Threaded coupling | Arbor mounting | Arbor mounting |
| Other Operations |  Facing Slotting Ramp down Helical Interpolation |  Facing Slotting Ramp down Helical Interpolation |  Facing Slotting Ramp down Helical Interpolation |  Facing Slotting Ramp down Helical Interpolation |
| Page | 200 | 200 | 200 | 202 |
| Features | <p>Excellent solution for Profile milling</p> <p>Low power requirement & smooth cutting possible due to positive helical angle</p> <p>First choice for problematic materials (M and S material classes)</p> <p>High positive cutting rake geometry</p> | | | |

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- Shoulder milling
- Profile milling
- Hardmill
- Center & Chamfer
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- Technical Data
- End Mills




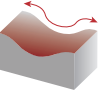
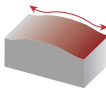
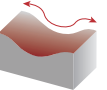
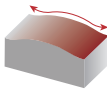
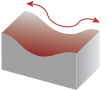
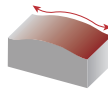
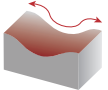
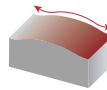





















| PROFILE MILLING CUTTERS | | | | |
|-------------------------|--|--|--|--|
| Program | TOROMILL 33990 | TURBOMILL 34190 <small>NEW</small> | TURBOMILL 34290 <small>NEW</small> | TOROMILL X2 35190 |
| | Proprietary milling line  | Proprietary milling line  | Proprietary milling line  | Proprietary milling line  |
| Material | P M S | P M S | P M S | P M K S |
| Main Operation |   Profiling Copying |   Profiling Copying |   Profiling Copying |   Profiling Copying |
| Kr° | - | - | - | - |
| Range (ØDc - mm) | 80 - 125 | 42 - 52 | 40 - 80 | 32 - 80 |
| Insert | RPHT 2066...  | RPHT 10T3...-LS(4)  | RPHT 1204...-LS(4)  | RNHX 1204...  |
| Couplings | Arbor mounting | Arbor mounting | Arbor mounting | Arbor mounting Weldon shank Threaded coupling |
| Other Operations |     Facing Slotting Ramp down Helical Interpolation |     Facing Slotting Ramp down Helical Interpolation |     Facing Slotting Ramp down Helical Interpolation |     Facing Slotting Ramp down Helical Interpolation |
| Page | 202 | 204 | 204 | 210 |
| Features | <p>Excellent solution for Profile milling</p> <p>Low power requirement & smooth cutting possible due to positive helical angle</p> <p>First choice for problematic materials (M and S material classes)</p> <p>High positive cutting rake geometry</p> | <p>Excellent solution for Profile milling</p> <p>First choice for problematic materials (M and S material classes)</p> <p>Improved insert seat</p> | <p>Excellent solution for Profile milling</p> <p>First choice for problematic materials (M and S material classes)</p> <p>High positive cutting rake geometry</p> | <p>Excellent solution for Profile milling</p> <p>First choice for problematic materials (M and S material classes)</p> <p>High positive cutting rake geometry</p> |




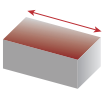
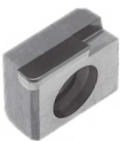


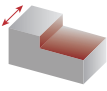
| PROFILE MILLING CUTTERS | | | | |
|-------------------------|--|--|---|--|
| Program | TOROMILL 24590 | TOROMILL 25090 | TOROMILL 25190 | TOROMILL 25290 |
| |  |  |  |  |
| Material | P K H | P K H | P K H | P K H |
| Main Operation |  Profiling Copying |  Profiling Copying |  Profiling Copying |  Profiling Copying |
| Kr° | - | - | - | - |
| Range (ØDc - mm) | 15 - 20 | 20 - 52 | 24 - 80 | 32 - 160 |
| Insert | RD...0702... | RD...1003... | RD...12T3... | RD...1604... |
| |  |  |  |  |
| Couplings | Weldon shank Threaded coupling | Arbor mounting Weldon shank Threaded coupling | Arbor mounting Weldon shank Threaded coupling | Arbor mounting Threaded coupling |
| Other Operations |  Facing Slotting Ramp down Helical Interpolation Plunging |  Facing Slotting Ramp down Helical Interpolation Plunging |  Facing Slotting Ramp down Helical Interpolation Plunging |  Facing Slotting Ramp down Helical Interpolation Plunging |
| Page | 214 | 214 | 214 | 216 |
| Features | <p>Offers longer tool life, better tolerances and better productivity parameters</p> <p>Low power requirement & smooth cutting possible due to positive helical angle</p> <p>Very flexible and suitable for most milling operations</p> <p>High positive cutting rake geometry</p> | | | |

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PROFILE MILLING CUTTERS

| Program | TOROMILL 25390 | LINEPRO 40095 | LINEPRO 40595 | LINEPRO 41095 |
|------------------|---|--|--|--|
| |  |  |  |  |
| Material | P K H | P K N H | P K N H | P K N H |
| Main Operation |  Profiling  Copying |  Profiling  Copying |  Profiling  Copying |  Profiling  Copying |
| Kr° | - | 95° | 95° | 95° |
| Range (ØDc - mm) | 80 - 160 | 16 - 25 | 25 - 80 | 10 - 12 |
| | RD...2006... | XD...0602... | XD...10T3... | XD...0401... |
| Insert |  |  |  |  |
| Couplings | Arbor mounting | Threaded coupling | Arbor mounting Threaded coupling | Threaded coupling |
| Other Operations |  Facing  Slotting  Ramp down  Helical Interpolation  Plunging |  Facing  Slotting  Ramp down  Helical Interpolation |  Facing  Slotting  Ramp down  Helical Interpolation |  Facing  Slotting  Ramp down  Helical Interpolation |
| Page | 216 | 222 | 222 | 222 |
| Features | <p>Offers longer tool life, better tolerances and better productivity parameters</p> <p>Low power requirement & smooth cutting possible due to positive helical angle</p> <p>Very flexible and suitable for most milling operations</p> <p>High positive cutting rake geometry</p> | <p>Designed for finishing and profile milling</p> <p>Low power consumption</p> | | |

| | HARDMILL | CENTER & CHAMFER | SPOT FACE |
|------------------|--|---|---|
| Program | HARDMILL 72090 | CENTER & CHAMFER | SPOT FACE |
| |  |  |  |
| Material | K N | P M K | P M K |
| |  Facing | | |
| | 90° | | |
| Range (ØDc - mm) | 40 - 160 | 13 | 10 - 21 |
| Insert | XNHW 1205... | SOMT SOGT 11T3... | SPKX 05... 06... 07... 09... |
| |  |  |  |
| Couplings | Arbor mounting | Weldon Shank | Weldon Shank Cylindrical shank |
| |  Shouldering | Spotting Chamfering Engraving Grooving Spot Drilling | Spot face |
| Page | 226 | 230 | 232 |
| Features | Excellent solution for aluminium PCD tip | Milling tool for a wide range of center & chamfer operations | Economical solution Smooth cutting |

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|---|--|---|---------|
| H | | M | |
| O | | V | |
| P | | W | |
| S | | L | |
| T | | A | |
| C | | B | |
| D | | K | |
| E | | R | |
| F | | X | Special |

1 - Insert shape symbol

| Symbol | m (mm) | d (mm) | s (mm) |
|--------|-------------|-------------|--------|
| A | ±0.005 | ±0.025 | ±0.025 |
| F | ±0.005 | ±0.013 | ±0.025 |
| C | ±0.013 | ±0.025 | ±0.025 |
| H | ±0.013 | ±0.013 | ±0.025 |
| E | ±0.025 | ±0.025 | ±0.025 |
| G | ±0.025 | ±0.025 | ±0.13 |
| J | ±0.005 | ±0.05~±0.13 | ±0.025 |
| K* | ±0.013 | ±0.05~±0.13 | ±0.025 |
| L* | ±0.025 | ±0.05~±0.13 | ±0.025 |
| M* | ±0.08~±0.20 | ±0.05~±0.13 | ±0.13 |
| N* | ±0.08~±0.20 | ±0.05~±0.13 | ±0.025 |
| U* | ±0.13~±0.38 | ±0.08~±0.25 | ±0.13 |

*As a rule, the sides of these inserts are as sintered. Tolerance differs with insert size, for the accuracy of class M, refer to the table on the right.

Triangular inserts with a facet (secondary cutting edge)

| Detailed dimension of M class insert Insert height Tolerances (mm) | | | | | |
|---|-------|-------|-------|-------|-------|
| Inscribed circle | T | S | C | D | V |
| 6.35 | ±0.08 | - | - | - | - |
| 9.525 | ±0.08 | ±0.08 | ±0.11 | ±0.10 | ±0.13 |
| 12.70 | ±0.13 | ±0.13 | ±0.13 | ±0.15 | - |
| 15.875 | ±0.15 | ±0.15 | ±0.15 | ±0.18 | - |
| 19.05 | ±0.15 | ±0.15 | ±0.15 | ±0.18 | - |
| 25.40 | - | ±0.18 | - | - | - |
| 31.75 | - | ±0.25 | - | - | - |

| Inscribed circle Tolerances (mm) | | | | | |
|----------------------------------|-------|-------|-------|-------|-------|
| Inscribed circle | T | S | C | D | V |
| 6.35 | ±0.05 | - | - | - | - |
| 9.525 | ±0.05 | ±0.05 | ±0.05 | ±0.05 | ±0.05 |
| 12.70 | ±0.08 | ±0.08 | ±0.08 | ±0.08 | ±0.08 |
| 15.875 | ±0.10 | ±0.10 | ±0.10 | ±0.10 | ±0.10 |
| 19.05 | - | - | - | - | ±0.10 |
| 25.40 | - | ±0.13 | - | - | ±0.10 |
| 31.75 | - | ±0.20 | - | - | ±0.12 |

3 - Tolerances symbol

| A | B | C | D | E |
|---|---|---|---|-----------------------|
| | | | | |
| F | G | N | P | O |
| | | | | Other clearance angle |

2 - Normal clearance symbol



| 4 - Insert symbol | | | | | | | | | | | | | | | |
|-------------------|--------------|---|---------------------------|-------|--------|--------------|---|---------------------------|-------|--------|--------------|------------|---------------------------|---------------------------|--|
| symbol | Type | Hole type | Chipbreaker | Shape | symbol | Type | Hole type | Chipbreaker | Shape | symbol | Type | Hole type | Chipbreaker | Shape | |
| W | with hole | Round hole / one countersink (40°~60°) | Without chipbreaker | | H | with hole | Round hole / one countersink (70°~90°) | Chipbreaker on one side | | G | without hole | Round hole | Chipbreaker on both sides | | |
| T | | | Chipbreaker on one side | | C | | | Without chipbreaker | | N | | | - | Without chipbreaker | |
| Q | with hole | Round hole / double countersink (40°~60°) | Without chipbreaker | | J | with hole | Round hole / double countersink (70°~90°) | Chipbreaker on both sides | | R | without hole | - | Chipbreaker on one side | | |
| U | | | Chipbreaker on both sides | | A | | | Without chipbreaker | | F | | | - | Chipbreaker on both sides | |
| B | without hole | Round hole / one countersink (70°~90°) | Without chipbreaker | | M | without hole | Round hole | Chipbreaker on one side | | X | - | - | - | On request | |

| R's | 35° V's | 55° D's | 80° C's | 90° S's | 60° T's | 80° W's | Ø CI | | ANSI |
|------|------------|------------|------------|------------|------------|------------|--------|-------|--------|
| | | | | | | | mm | inch | Symbol |
| - | 06 | 04 | - | 03 | 06 | 02 | 3,97 | 5/32 | 1,20 |
| - | 08 | 05 | 04 | 04 | 08 | L3 | 4,76 | 3/16 | 1,50 |
| - | 09 | 06 | 05 | 05 | 09 | 03 | 5,56 | 7/32 | 1,80 |
| 06** | - | - | - | - | - | - | 6,00 | 0,236 | |
| 06* | 11 | 07 | 06 | 06 | 11 | 04 | 6,35 | 1/4 | 2,00 |
| 07* | 13 | 09 | 08 | 07 | 13 | 05 | 7,94 | 5/16 | 2,50 |
| 08* | - | - | - | - | - | - | 8,00 | 0,315 | |
| 09* | 16 | 11 | 09 | 09 | 16 | 06 | 9,525 | 3/8 | 3,00 |
| 10** | - | - | - | - | - | - | 10,00 | 0,394 | |
| 12** | - | - | - | - | - | - | 12,00 | 0,472 | |
| 12* | 22 | 15 | 12 | 12 | 22 | 08 | 12,70 | 1/2 | 4,00 |
| 15* | 27 | 19 | 16 | 15 | 27 | 10 | 15,875 | 5/8 | 5,00 |
| 16** | - | - | - | - | - | - | 16,00 | 0,63 | |
| 19* | 33 | 23 | 19 | 19 | 33 | 13 | 19,05 | 3/4 | 6,00 |
| 20** | - | - | - | - | - | - | 20,00 | 0,787 | |
| 25** | - | - | - | - | - | - | 25,00 | 0,984 | |
| 25* | 44 | 31 | 25 | 25 | 44 | 17 | 25,40 | 1,00 | 8,00 |
| 31* | 54 | 38 | 32 | 31 | 54 | 21 | 31,75 | 1 1/4 | 10,00 |
| 32** | - | - | - | - | - | - | 32,00 | 1,26 | |

* ANSI designation only (Radius Designation is 00)

** Metric designation only (Radius Designation is M0)

According to International Standard ISO 1832 - 2012(E)

"Indexable inserts for cutting tools - Designation"

| ISO | mm | ANSI | inch |
|-----|-------|------|-------|
| 01 | 1.59 | 1 | 0.062 |
| T1 | 1.98 | 1.2 | 0.078 |
| 02 | 2.38 | 1.5 | 0.094 |
| 03 | 3.18 | 2 | 0.125 |
| T3 | 3.97 | 2.5 | 0.156 |
| 04 | 4.76 | 3 | 0.188 |
| 05 | 5.56 | 3.5 | 0.219 |
| 06 | 6.35 | 4 | 0.250 |
| 07 | 7.94 | 5 | 0.312 |
| 09 | 9.52 | 6 | 0.375 |
| 12 | 12.70 | 8 | 0.500 |

5 - Insert size symbol

6 - Insert thickness symbol



| 10 - Chipbreaker geometries | |
|-----------------------------|--------------------------|
| Cutting Condition | Main Application |
| 1st letter | 2nd letter |
| L - Light | P - Steel |
| M - Medium | M - Stainless Steel |
| H - Heavy | K - Cast Iron |
| W - Wiper | N - Aluminium |
| *only when required. | S - HRSA Titanium Alloys |
| | H - Hardened Materials |

Ex.: ANHX160708PNER - MP

| 7 - Insert corner symbol | | | |
|--------------------------|--------------|------|------|
| ISO | mm | inch | ANSI |
| 00 | Sharp nose | | 0 |
| 01 | 0.10 | .004 | 0.2 |
| 02 | 0.20 | .008 | 0.5 |
| 04 | 0.40 | .015 | 1 |
| 08 | 0.80 | .032 | 2 |
| 12 | 1.2 | .047 | 3 |
| 16 | 1.6 | .062 | 4 |
| 20 | 2.0 | .078 | 5 |
| 24 | 2.4 | .094 | 6 |
| 28 | 2.8 | .109 | 7 |
| 32 | 3.2 | .125 | 8 |
| 00 (inch or M0/metric) | Round insert | | 0 |

| 7.1* - Insert edges symbol | | | |
|---|---------|---|---------|
| For inserts having secondary edges two digits are used: | | | |
| 1st digit is secondary edge | | 2nd digit is secondary edges relief angle | |
| A | 45° | A | 3° |
| D | 60° | B | 5° |
| E | 75° | C | 7° |
| F | 85° | D | 15° |
| P | 90° | E | 20° |
| Z | special | F | 25° |
| | | G | 30° |
| | | N | 0° |
| | | P | 11° |
| | | Z | special |

| 8* - Cutting edge information | | |
|-------------------------------|-----------------------|--------|
| Shape | Honing | Symbol |
| | No honing | F |
| | With honing | E |
| | Chamfered No honing | T |
| | Chamfered with honing | S |

| 9 - Cutting direction | | |
|-----------------------|-------|--------|
| Shape | Hand | Symbol |
| | Right | R |
| | Left | L |
| | None | N |

A new step on coating innovation!

NEW



PHH603 NEW
H05-H15
P01-P05

Recommended for finishing operations in steels and hardened steels. First choice in mold and die finishing applications.

PHH910 NEW
P05-P10
H15-H30

Recommended for finishing operations in steels and hardened steels in unstable conditions.

PHH930 NEW
M20-M40
S20-S30

Recommended for general purpose milling of stainless steels and HRSA.

PHH530 NEW
M25-M40
S25-S35

Extremely heat resistant grade. First choice in hot-section turbine blade milling.

PHH808 NEW
M30-M40
S30-S40

High heat resistance grade. Economic choice in hot-section turbine blade milling.

A new step on coating innovation!

NEW



PHP910 NEW
P05-P10
K05-K10

Recommended for light operations in steels.

PHP920 NEW
P10-P35
K10-K30

Recommended for General Steel & Cast Iron Milling.

PHP930 NEW
P20-P40
K20-K40

Recommended for medium to roughing operations in steels and cast irons.

PHP530 NEW
P25-P40
M25-M40

Extremely heat resistant grade. First choice in cold-section turbine blade milling.

PHP808 NEW
P30-P40

High heat resistance grade. Economic choice for cold-section turbine blade milling.

| PH | X | X | XX |
|--|-----------------------------|--|---|
| PH - Palbit Hardmetal PD - Palbit diamond PB - Palbit PCBN | Coating PCD PCBN Grade | 1 - Steel 2 - Stainless steel 3 - Cast Iron 4 - Non Ferrous 5 - Super Alloys 6 - Hardened Materials 7 - Wearparts 9 - Universal Range | 01 - ISO Field (...) 50 - ISO Field |

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FACE MILLING INSERTS

| Reference | SNHU | SNKU | PNHX | PNKX | SNHX | SNKX |
|-----------|---|---|---|--|---|---|
| | Proprietary milling insert | Proprietary milling insert | Proprietary milling insert | Proprietary milling insert | Proprietary milling insert | Proprietary milling insert |
| |  |  |  |  |  |  |
| Size | 12 | 12 | 11 | 11 | 12 16 | 12 16 |
| Material | P M K | P M K | P K | P K | P M K N S | P K |
| Page | 56 | 56 | 61 | 61 | 65 69 73 | 65 69 73 |



HIFEED MILLING INSERTS







| Reference | XNKU ^{NEW} | POKT | SOEW | SOET | WDET |
|-----------|---|---|--|---|---|
| | Proprietary milling insert | Proprietary milling insert | Proprietary milling insert | | |
| |  |  |  |  |  |
| Size | 06 | 04 | 08 13 16 | 08 13 16 | 12 |
| Material | P M K S | P K | P K | P M S | P M S |
| Page | 85 | 89 | 93 99 104 | 93 99 104 | 109 |






SHOULDER MILLING INSERTS







| Reference | WNXT ^{NEW} | WNHU | ANHX | XPET | XPHW |
|-----------|---|---|--|---|---|
| | Proprietary milling insert | Proprietary milling insert | Proprietary milling insert | Proprietary milling insert | Proprietary milling insert |
| |  |  |  |  |  |
| Size | 08 | 04 | 10 12 16 | 06 10 17 | 06 10 |
| Material | P K | P K | P M K N S | P M K N S | P H |
| Page | 121 | 196 | 126 132 135 | 139 147 153 | 139 147 |

SHOULDER MILLING INSERTS

| Reference | APKT | APHT |
|-----------|---|---|
| |  |  |
| Size | 10 16 | 16 |
| Material | P M K N | N |
| Page | 181 187 | 187 |

| FACE MILLING INSERTS | | | | | | |
|----------------------|---|---|---|--|---|---|
| Reference | ONHX | ONKX | SEHW | SEHT | PDMW | PDHW |
| | Proprietary milling insert  | Proprietary milling insert  |  |  |  |  |
| Size | 05 06 | 05 06 | 12 13 | 12 13 | 12 | 12 |
| Material | P M K S | P M K S | P M K | P M K N | P | P K |
| Page | 65 73 | 45 73 | 73 79 | 73 79 | 82 | 82 |

| HIFED MILLING INSERTS | | | | | |
|-----------------------|---|---|---|--|---|
| Reference | WDMW | WNMW | SPKW | SPKT | XPET...HF |
| |  |  |  |  | Proprietary milling insert  |
| Size | 12 | 12 | 08 | 08 | 06 10 |
| Material | P K | P K | P K | P M K | P M K S |
| Page | 109 | 113 | 117 | 117 | 139 147 |

| SHOULDER MILLING INSERTS | | | | | | |
|--------------------------|---|---|---|--|---|---|
| Reference | LNXT | XDGX | VCGX | SPGX ^{NEW} | SPMX ^{NEW} | APET |
| | Proprietary milling insert  |  |  |  |  |  |
| Size | 09 13 15 | 15 22 | 22 | 12 | 12 | 10 |
| Material | P M K | N | N | P M K S | P M K S | N |
| Page | 158 161 165 | 169 173 | 176 | 178 | 178 | 181 |

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| Reference | WCR ^{NEW} Proprietary milling insert | WCL ^{NEW} Proprietary milling insert | WNHU Proprietary milling insert | RDHT Proprietary milling insert | RPHT Proprietary milling insert | RNHX Proprietary milling insert |
|-----------|---|---|---|--|---|---|
| |  |  |  |  |  |  |
| Size | 08 10 12 16 20 | 08 10 12 16 20 | 04 06 | 08 | 10 12 16 20 | 12 |
| Material | P M K N S H | P M K N S H | P K H | P M S | P M S | P M K S |
| Page | 191 192 | 191 192 | 125 196 | 203 | 203 | 211 |


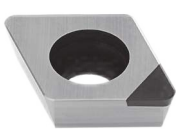



PROFILE MILLING INSERTS

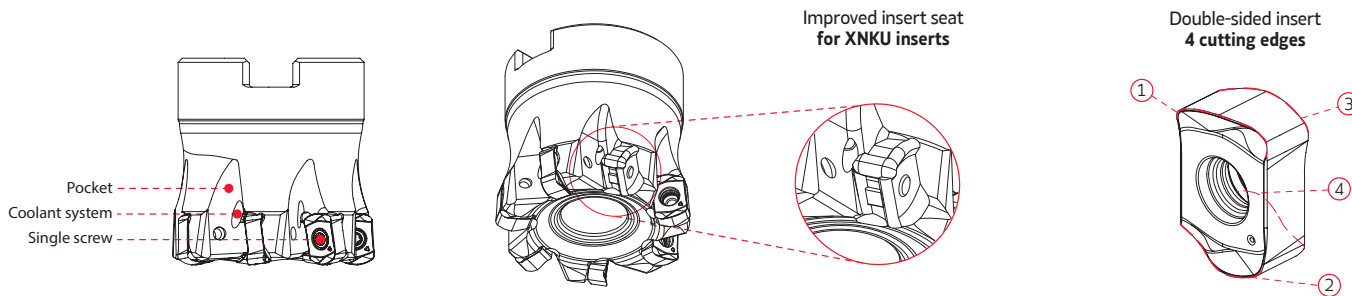
| Reference | RDHT | RDHW | RDMT | RDMW | XDHW | XPGT ^{NEW} Proprietary milling insert |
|-----------|---|---|---|--|---|---|
| |  |  |  |  |  |  |
| Size | 10 12 16 20 | 07 10 12 16 20 | 10 12 20 | 10 12 16 20 | 04 06 10 | 32 |
| Material | P K | P K H | P | P K | P K N H | P K |
| Page | 217 | 217 | 217 | 217 | 223 | 194 |

HARDMILL MILLING INSERTS

CENTER & CHAMFER INSERTS

SPOT FACE

| Reference | XNHW | XDHW | SOMT | SOGT ^{NEW} | SPKX |
|-----------|---|---|---|--|---|
| |  |  |  |  |  |
| Size | 12 | 04 06 10 | 11 | 11 | 05 06 07 09 11 |
| Material | K N | N H | P M K | P M K | P M K S |
| Page | 229 | 223 | 230 | 230 | 232 |



MILLING CUTTER

Design

- Optimized design for better chip evacuation;

Pocket

- Strong pocket design for better cutter body durability;
- Improved insert seat;

INSERT

Insert Width

- Large cross section;

Cutting edge

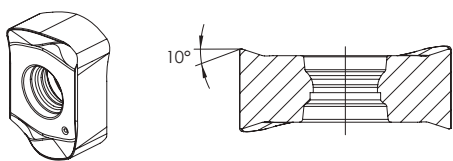
- Improved cutting edge;
- Improved wear resistance;

Double-sided insert

- Double-sided insert with 4 cutting edges;

XNKU 06T3

XNKU-MP










GEOMETRY FEATURES | Características geométricas | Características geométricas

| Geometry | Features Características Características |
|---|--|
| Geometry MP General machining | Geometry with a reinforced cutting edge for general applications on different materials. |

All information: Page - 84

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| Inserts Pastilhas Plaquetas | (1) Geometry code | (2) Grade code ISO Reference | P | | | | | | | M | | | K | | | | | | | N | | |
|---|-------------------------|---------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----|-----|-----|--|
| | | | PVD | | | | | | | PVD | | | CVD | | PVD | | | | | UNC | UNC | |
| | | | M6 | 54 | 68 | 66 | 78 | 86 | I5 | 68 | 66 | I5 | L5 | L9 | D2 | 54 | 68 | 67 | I5 | 17 | 10 | |
| PH6103 | PH6910 | PH6920 | PH6930 | PH6125 | PH6135 | PH6740 | PH6920 | PH6930 | PH6740 | PH5705 | PH5740 | PH6705 | PH6910 | PH6920 | PH6325 | PH6740 | PH0325 | PH0910 | | | | |
|  | 1111423 | ACET 150612 TR | | | ⊗ | | | | | ⊗ | | | | | | | | | | | | |
|  | 1110014 | APFT 1604 PDFR | | | ○ | | | | | | | | | | | | | | | | | |
| | 1110015 | APFT 1604 PDSR | | | ⊗ | | | | | | | | | | | | | | | | | |
| | 1110557 | APFT 1604 PDTR | | | ○ | | | | | | | | | | | | | | | | | |
|  | 1110006 | ADKT 1505 PDR | | | ⊗ | ○ | | | | ⊗ | ○ | | | | | | | ○ | ○ | | | |
| | 1111218 | ADKT 1505 PDSR | | | ⊗ | ⊗ | | | | ⊗ | ⊗ | | | | | | | ⊗ | ⊗ | | | |
| | 1111209 | ADKT 1505 PDTR | | | ⊗ | ○ | | | | | ○ | | | | | | | ⊗ | ○ | | | |
|  | 1112192 | BOMT 130408R | | | ○ | | | | | | | | | | | | | ○ | | | | |
|  | 1110038 | BCKT 1304 PDR | | | | | | | | ⊗ | | | | | | | | | | | | |
|  | 1110922 | HNGF 090520 - V | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | |
|  | 1110957 | HNGF 090520 - W | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | |

⊗ First choice | Primeira opção | 1ª opção
 ⊗ Stock item | Produto de stock | Itens de stock
 ○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)
 Insert order code = (1) Geometry Code + (2) Grade Code

| Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | | | Drawing |
|---|------|-------|------|---|------|---------|
| ic | S | I | R | a | F | |
| 12,7 | 6,35 | 15,00 | 1,20 | - | 1,70 | |
| | | | | | | |
| 9,53 | 4,76 | 16,00 | 0,80 | - | 2,00 | |
| 9,53 | 4,76 | 16,00 | 0,80 | - | 2,00 | |
| 9,53 | 4,76 | 16,00 | 0,80 | - | 2,00 | |
| 9,54 | 5,63 | 15,70 | - | - | 1,60 | |
| 9,54 | 5,63 | 15,70 | - | - | 1,60 | |
| 9,54 | 5,63 | 15,70 | - | - | 1,60 | |
| 8,13 | 4,85 | 11,50 | 1,20 | - | 1,40 | |
| | | | | | | |
| 8,41 | 4,90 | 12,80 | 0,61 | - | 1,40 | |
| | | | | | | |
| 16,20 | 5,56 | 9,16 | 2,00 | - | - | |
| | | | | | | |
| 16,20 | 5,56 | 9,16 | 2,00 | - | - | |
| | | | | | | |









MILLING INSERTS OVERVIEW




| | A | MILLING | Inserts Pastilhas Plaquitás | (1) Geometry code | (2) Grade code | P | | | | | | | | M | | | K | | | | | | N | | |
|------------------|---|---------------|-----------------------------------|-------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----|-----|-----|--|
| | | | | | | PVD | | | | | | | | PVD | | | CVD | | PVD | | | | UNC | UNC | |
| | | | | | | M6 | 54 | 68 | 66 | 78 | 86 | 15 | 68 | 66 | 15 | L5 | L9 | D2 | 54 | 68 | 67 | 15 | 17 | 10 | |
| | | ISO Reference | PH6103 | PH6910 | PH6920 | PH6930 | PH6125 | PH6135 | PH6740 | PH6920 | PH6930 | PH6740 | PH5705 | PH5740 | PH6705 | PH6910 | PH6920 | PH6325 | PH6740 | PH0325 | PH0910 | | | | |
| Overview |  | 1111876 | LNE 323-02 | | | | | | | | | | | | | | | | | | | | | | |
| | | 1111877 | LNE 323-10 | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| Face milling |  | 1110952 | LNE 323-02 SP | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hi-feed milling |  | 1111420 | LNE 434-02 | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| Shoulder milling |  | 1111416 | LNJN 2205 DDSR-A1 | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| Profile milling |  | 1111518 | OFEN 070405 TN | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hardmill |  | 1111569 | OFKR 070408 FN-LN | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| Center & Chamfer |  | 1111568 | OFKR 070408 SN-MP | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| Spot face |  | 1112133 | RPEW 1204 M0 | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| Spare Parts |  | 1121742 | RPMT 1003 M0T | | | | | | | | | | | | | | | | | | | | | | |
| | | 1120448 | RPMT 1204 M0T | | | | | | | | | | | | | | | | | | | | | | |

⊗ First choice | Primeira opção | 1ª opción
 ⊗ Stock item | Produto de stock | Itens de stock
 ○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9)
 Insert order code = (1) Geometry Code + (2) Grade Code

| Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | | | Drawing |
|---|------|-------|------|------|------|---------|
| ic | S | L | R | a | F | |
| 9,53 | 4,76 | 15,88 | - | - | 0,40 | |
| 9,53 | 4,76 | 15,88 | 1,27 | - | - | |
| 9,53 | 4,76 | 15,88 | 0,80 | - | 1,20 | |
| | | | | | | |
| 14,28 | 6,35 | 19,05 | - | - | 0,80 | |
| | | | | | | |
| 14,00 | 5,00 | 22,00 | - | 2,00 | - | |
| | | | | | | |
| 18,00 | 4,76 | 7,40 | 0,60 | - | 2,20 | |
| | | | | | | |
| 18,00 | 4,76 | 7,40 | 0,60 | - | 2,20 | |
| | | | | | | |
| 18,00 | 4,76 | 7,40 | 0,60 | - | 1,60 | |
| | | | | | | |
| 12,00 | 4,76 | - | - | - | - | |
| | | | | | | |
| 10,00 | 3,18 | - | - | - | - | |
| 12,00 | 4,76 | - | - | - | - | |

MILLING INSERTS OVERVIEW

| A | MILLING | Inserts Pastilhas Plaquetas | (1) Geometry code | (2) Grade code | P | | | | | | | | M | | | K | | | | | N | |
|---|---------|-----------------------------------|-------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----|----|----|----|-----|
| | | | | | PVD | | | | | | | | PVD | | | CVD | PVD | | | | | UNC |
| | | | | | M6 | 54 | 68 | 66 | 78 | 86 | 15 | 68 | 66 | 15 | L9 | D2 | 54 | 68 | 67 | 15 | 17 | 10 |
| PH6103 | PH6910 | PH6920 | PH6930 | PH6125 | PH6135 | PH6740 | PH6920 | PH6930 | PH6740 | PH5740 | PH6705 | PH6910 | PH6920 | PH6325 | PH6740 | PH0325 | PH0910 | | | | | |
|  | 1110200 | SDHT 1204 AEEN | | | | | | | | | | | | | | | | | | | | |
| | 1110693 | SDHT 1204 AFFN | | | | | | | | | | | | | | | | | | | | |
|  | 1110201 | SDHT 1204 AESN-PL | | | | | | | | | | | | | | | | | | | | |
|  | 1110818 | SDHW 09T3 AEEN | | | | | | | | | | | | | | | | | | | | |
| | 1110743 | SDHW 09T3 AEFN | | | | | | | | | | | | | | | | | | | | |
| | 1110781 | SDHW 1204 AEEN | | | | | | | | | | | | | | | | | | | | |
| | 1110782 | SDHW 1204 AETN | | | | | | | | | | | | | | | | | | | | |
| | 1112339 | SDHW 150412 | | | | | | | | | | | | | | | | | | | | |
|  | 1110206 | SEAN 1203 AFEN | | | | | | | | | | | | | | | | | | | | |
| | 1110207 | SEAN 1203 AFFN | | | | | | | | | | | | | | | | | | | | |
| | 1110208 | SEAN 1203 AFSN | | | | | | | | | | | | | | | | | | | | |
| | 1110209 | SEAN 1203 AFTN | | | | | | | | | | | | | | | | | | | | |
| | 1110211 | SEAN 1504 AFFN | | | | | | | | | | | | | | | | | | | | |
| | 1110212 | SEAN 1504 AFTN | | | | | | | | | | | | | | | | | | | | |
|  | 1110224 | SEHW 1504 AFSN | | | | | | | | | | | | | | | | | | | | |
| | 1110225 | SEHW 1504 AFTN | | | | | | | | | | | | | | | | | | | | |
|  | 1110226 | SEKN 1203 AFEN | | | | | | | | | | | | | | | | | | | | |
| | 1110227 | SEKN 1203 AFFN | | | | | | | | | | | | | | | | | | | | |
| | 1110228 | SEKN 1203 AFSN | | | | | | | | | | | | | | | | | | | | |
| | 1110230 | SEKN 1203 AFTN | | | | | | | | | | | | | | | | | | | | |
| | 1110794 | SEKN 1204 AFFN | | | | | | | | | | | | | | | | | | | | |
| | 1110232 | SEKN 1204 AFSN | | | | | | | | | | | | | | | | | | | | |
| | 1110233 | SEKN 1204 AFTN | | | | | | | | | | | | | | | | | | | | |
| | 1110235 | SEKN 1504 AFEN | | | | | | | | | | | | | | | | | | | | |
| | 1110238 | SEKN 1504 AFTN | | | | | | | | | | | | | | | | | | | | |
|  | 1110239 | SEKR 1203 AFEN | | | | | | | | | | | | | | | | | | | | |
| | 1110240 | SEKR 1203 AFSN | | | | | | | | | | | | | | | | | | | | |
| | 1110241 | SEKR 1204 AFSN | | | | | | | | | | | | | | | | | | | | |
| | 1110759 | SEKR 1504 AFSN | | | | | | | | | | | | | | | | | | | | |
|  | 1111921 | SEXT 14M4 AGSN-M | | | | | | | | | | | | | | | | | | | | |

 First choice | Primeira opção | 1ª opción
  Stock item | Produto de stock | Itens de stock
  Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9)
 Insert order code = (1) Geometry Code + (2) Grade Code

| Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | | | Drawing |
|---|------|-------|------|---|------|---------|
| ic | S | I | R | a | F | |
| 12,70 | 4,76 | 10,00 | - | - | 1,80 | |
| 12,70 | 4,76 | 10,00 | - | - | 1,80 | |
| | | | | | | |
| 12,70 | 4,76 | 10,00 | - | - | 1,80 | |
| | | | | | | |
| | | | | | | |
| 9,53 | 3,97 | 7,30 | 0,30 | - | 1,50 | |
| 9,53 | 3,97 | 7,30 | 0,30 | - | 1,50 | |
| 12,70 | 4,76 | 9,00 | - | - | 2,50 | |
| 12,70 | 4,76 | 9,00 | - | - | 2,50 | |
| 15,88 | 4,76 | - | 1,20 | - | - | |
| 12,70 | 3,18 | 9,20 | 0,80 | - | 2,40 | |
| 12,70 | 3,18 | 9,20 | 0,80 | - | 2,40 | |
| 12,70 | 3,18 | 9,20 | 1,20 | - | 2,40 | |
| 12,70 | 3,18 | 9,20 | 1,20 | - | 2,40 | |
| 15,88 | 4,76 | 11,60 | 1,00 | - | 2,40 | |
| 15,88 | 4,76 | 11,60 | 1,00 | - | 2,40 | |
| | | | | | | |
| 15,88 | 4,76 | 11,60 | 0,20 | - | 2,80 | |
| 15,88 | 4,76 | 11,60 | 0,20 | - | 2,80 | |
| 12,70 | 3,18 | 9,20 | 1,20 | - | 2,40 | |
| 12,70 | 3,18 | 9,20 | 1,20 | - | 2,40 | |
| 12,70 | 3,18 | 9,20 | 1,20 | - | 2,40 | |
| 12,70 | 3,18 | 9,20 | 1,20 | - | 2,40 | |
| 12,70 | 4,76 | 9,20 | 1,20 | - | 2,40 | |
| 12,70 | 4,76 | 9,20 | 1,20 | - | 2,40 | |
| 12,70 | 4,76 | 9,20 | 1,20 | - | 2,40 | |
| 15,88 | 4,76 | 12,30 | 1,00 | - | 2,40 | |
| 15,88 | 4,76 | 12,30 | 1,00 | - | 2,40 | |
| | | | | | | |
| 12,70 | 3,18 | 9,20 | 1,20 | - | 2,40 | |
| 12,70 | 3,18 | 9,20 | 1,20 | - | 2,40 | |
| 12,70 | 4,76 | 9,20 | 1,20 | - | 2,40 | |
| 15,88 | 4,76 | 12,30 | 1,00 | - | 2,40 | |
| 14,00 | 4,00 | 9,20 | 1,00 | - | 2,80 | |
| | | | | | | |

A

MILLING

Overview

Face milling

Hi-feed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

Spot face

Spare Parts

Technical Data

End Mills

MILLING INSERTS OVERVIEW

| A | MILLING | Inserts Pastilhas Plaquetas | (1) Geometry code | (2) Grade code | P | | | | | | | | M | | | K | | | | | N | | |
|------------------|---------|-----------------------------------|-------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----|----|----|----|-----|-----|
| | | | | | PVD | | | | | | | | PVD | | | CVD | PVD | | | | | UNC | UNC |
| | | | | | M6 | 54 | 68 | 66 | 78 | 86 | 15 | 68 | 66 | 15 | L9 | D2 | 54 | 68 | 67 | 15 | 17 | 10 | |
| PH6103 | PH6910 | PH6920 | PH6930 | PH6125 | PH6135 | PH6740 | PH6920 | PH6930 | PH6740 | PH5740 | PH6705 | PH6910 | PH6920 | PH6325 | PH6740 | PH0325 | PH0910 | | | | | | |
| Overview | | 1110266 | SNGN 120408 | | | | | | | | | | | | | | | | | | | | |
| | | 1110267 | SNGN 120412 | | | | | | | | | | | | | | | | | | | | |
| | | 1110597 | SNGN 190412 | | | | | | | | | | | | | | | | | | | | |
| | | 1110598 | SNGN 190416 | | | | | | | | | | | | | | | | | | | | |
| Face milling | | 1110271 | SNKN 1204 ENEN | | | | | | | | | | | | | | | | | | | | |
| | | 1110273 | SNKN 1204 ENSN | | | | | | | | | | | | | | | | | | | | |
| Hi-feed milling | | 1120541 | SNUN 120404 | | | | | | | | | | | | | | | | | | | | |
| | | 1120542 | SNUN 120408 | | | | | | | | | | | | | | | | | | | | |
| | | 1120544 | SNUN 120412 | | | | | | | | | | | | | | | | | | | | |
| Shoulder milling | | 1121880 | SNUN 190612T | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| Profile milling | | 1110765 | SPGN 090312 | | | | | | | | | | | | | | | | | | | | |
| | | 1111173 | SPGN 090316 | | | | | | | | | | | | | | | | | | | | |
| | | 1110300 | SPGN 120308 | | | | | | | | | | | | | | | | | | | | |
| | | 1110301 | SPGN 120312 | | | | | | | | | | | | | | | | | | | | |
| | | 1110303 | SPGN 120408 | | | | | | | | | | | | | | | | | | | | |
| | | 1110588 | SPGN 120412 | | | | | | | | | | | | | | | | | | | | |
| | | 1110590 | SPGN 150408 | | | | | | | | | | | | | | | | | | | | |
| | | 1110304 | SPGN 150412 | | | | | | | | | | | | | | | | | | | | |
| Center & Chamfer | | 1110326 | SPKN 1203 EDR | | | | | | | | | | | | | | | | | | | | |
| | | 1110328 | SPKN 1203 EDSR | | | | | | | | | | | | | | | | | | | | |
| | | 1110330 | SPKN 1203 EDTR | | | | | | | | | | | | | | | | | | | | |
| | | 1110331 | SPKN 1204 EDER | | | | | | | | | | | | | | | | | | | | |
| | | 1110332 | SPKN 1204 EDSR | | | | | | | | | | | | | | | | | | | | |
| | | 1110333 | SPKN 1204 EDTR | | | | | | | | | | | | | | | | | | | | |
| Spot face | | 1110336 | SPKN 1504 EDER | | | | | | | | | | | | | | | | | | | | |
| | | 1110337 | SPKN 1504 EDR | | | | | | | | | | | | | | | | | | | | |
| | | 1110339 | SPKN 1504 EDSR | | | | | | | | | | | | | | | | | | | | |
| | | 1110340 | SPKN 1504 EDTR | | | | | | | | | | | | | | | | | | | | |
| | | 1110335 | SPKN 1504 EDEL | | | | | | | | | | | | | | | | | | | | |
| | | 1110338 | SPKN 1504 EDSL | | | | | | | | | | | | | | | | | | | | |

Continue next page | Continúa na próxima página | Sigue en la página siguiente

⊗ First choice | Primeira opção | 1ª opción
⊗ Stock item | Produto de stock | Itens de stock
○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9)
Insert order code = (1) Geometry Code + (2) Grade Code

| Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | | | Drawing |
|---|------|-------|------|------|------|---------|
| ic | S | l | R | a | F | |
| 12,70 | 4,76 | - | 0,80 | - | - | |
| 12,70 | 4,76 | - | 1,20 | - | - | |
| 19,05 | 4,76 | - | 1,20 | - | - | |
| 19,05 | 4,76 | - | 1,60 | - | - | |
| 12,70 | 4,76 | - | - | 1,50 | 0,80 | |
| 12,70 | 4,76 | - | - | 1,50 | 0,80 | |
| 12,70 | 4,76 | 11,10 | 0,40 | - | - | |
| 12,70 | 4,76 | 11,10 | 0,80 | - | - | |
| 12,70 | 4,76 | 11,10 | 1,20 | - | - | |
| 19,05 | 6,35 | - | 1,20 | - | - | |
| | | | | | | |
| 9,53 | 3,18 | - | 1,20 | - | - | |
| 9,53 | 3,18 | - | 1,60 | - | - | |
| 12,70 | 3,18 | - | 0,80 | - | - | |
| 12,70 | 3,18 | - | 1,20 | - | - | |
| 12,70 | 4,76 | - | 0,80 | - | - | |
| 12,70 | 4,76 | - | 1,20 | - | - | |
| 15,88 | 4,76 | - | 0,80 | - | - | |
| 15,88 | 4,76 | - | 1,20 | - | - | |
| 12,70 | 3,18 | 12,70 | - | 1,00 | 1,50 | |
| 12,70 | 3,18 | 12,70 | - | 1,00 | 1,50 | |
| 12,70 | 3,18 | 12,70 | - | 1,00 | 1,50 | |
| 12,70 | 4,76 | 12,70 | - | 1,00 | 1,50 | |
| 12,70 | 4,76 | 12,70 | - | 1,00 | 1,50 | |
| 12,70 | 4,76 | 12,70 | - | 1,00 | 1,50 | |
| 15,88 | 4,76 | 15,88 | - | 1,00 | 1,50 | |
| 15,88 | 4,76 | 15,88 | - | 1,00 | 1,50 | |
| 15,88 | 4,76 | 15,88 | - | 1,00 | 1,50 | |
| 15,88 | 4,76 | 15,88 | - | 1,00 | 1,50 | |

A

MILLING

Overview

Face milling

Hifeed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer










Spot face




Spare Parts

Technical Data

End Mills

MILLING INSERTS OVERVIEW

| A | MILLING | Inserts Pastilhas Plaquetas | (1) Geometry code | (2) Grade code | P | | | | | | | M | | | K | | | | | | | S | | |
|------------------|---|-----------------------------------|-------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|--|
| | | | | | PVD | | | | | | | PVD | | | CVD | | PVD | | | | | UNC | PVD | |
| | | | | | M6 | 54 | 68 | 66 | 86 | 15 | 68 | 66 | 15 | L5 | L9 | D2 | 54 | 68 | 67 | 15 | 17 | 15 | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | (1) Geometry code | ISO Reference | PH6103 | PH6910 | PH6920 | PH6930 | PH6135 | PH6740 | PH6920 | PH6930 | PH6740 | PH5705 | PH5740 | PH6705 | PH6910 | PH6920 | PH6325 | PH6740 | PH0325 | PH6740 | | |
| Overview |  | 1111976 | SPKR 1203 EDTR | | | | ○ | | | | | | | | | | | | | | | | | |
| | | 1110564 | SPKR 1504 EDFR | | | | ○ | | | | | | | | | | | | | | | | | |
| | | 1111449 | SPKR 1504 EDSR | | | | ○ | | | | | | | | | | | | | | | | | |
| Face milling |  | 1111107 | SPKR 1906 | | | | ○ | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| Hifeed milling |  | 1111195 | SPKT 130510-E | | | | ⊗ | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| Shoulder milling |  | 1111153 | SPKW 130510 F | | | ○ | ○ | | | | | | | | | | | | | | | | | |
| | | 1111355 | SPKW 130510-E | | | | ⊗ | | | | | | | | | | | | | | | | | |
| | | 1110888 | SPKW 130510-S | | | | ⊗ | | | | | | | | | | | | | | | | | |
| Profile milling |  | 1111609 | SPMT 120408-MP | | | | ⊗ | | | | | ⊗ | | | | | | | | | ⊗ | | ⊗ | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| Hardmill |  | 1120572 | SPMW 120408 | | | | ○ | | | | | | ⊗ | | | | | | | | ○ | | ⊗ | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| Center & Chamfer |  | 1191186 | SPXN 1906 | | | | ○ | | | ○ | ○ | | | | ○ | | | | | | | ○ | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| Spotface |  | 1112384 | SPXN 1906-W | | | | ○ | | | | | | | | | | | | | | | ○ | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| Spare Parts |  | 1112134 | SPXR 1203 EDSR-MP | | | | ⊗ | | | | | | | | | | | | | | | ⊗ | ⊗ | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| Technical Data |  | 1110393 | TNHF 1204 AN-CA | | | | | | | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ○ | | |
| | | 1111333 | TNHF 1204 AN-K | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | ⊗ | |

 First choice | Primeira opção | 1ª opção
  Stock item | Produto de stock | Itens de stock
  Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9)
 Insert order code = (1) Geometry Code + (2) Grade Code

| Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | | | Drawing |
|---|------|-------|------|------|-------|---------|
| ic | S | I | R | a | F | |
| 12,70 | 3,18 | 12,70 | - | 1,00 | 1,40 | |
| 15,88 | 4,76 | 15,88 | - | 1,00 | 1,40 | |
| 15,88 | 4,76 | 15,88 | - | 1,00 | 1,40 | |
| 19,05 | 6,35 | 19,05 | - | 1,00 | 1,40 | |
| | | | | | | |
| 13,00 | 5,56 | - | 1,00 | - | - | |
| | | | | | | |
| 13,00 | 5,56 | - | 1,00 | - | - | |
| 13,00 | 5,56 | - | 1,00 | - | - | |
| 13,00 | 5,56 | - | 1,00 | - | - | |
| 12,70 | 4,76 | - | 0,8 | - | - | |
| | | | | | | |
| 12,70 | 4,76 | - | 0,8 | - | - | |
| | | | | | | |
| 19,05 | 6,35 | 19,05 | - | 1,00 | 1,40 | |
| | | | | | | |
| 19,05 | 6,35 | - | - | - | 12,00 | |
| | | | | | | |
| 12,70 | 3,18 | 12,70 | 1,00 | 1,00 | 1,37 | |
| | | | | | | |
| 12,70 | 4,76 | 12,00 | 2,00 | - | 1,70 | |
| 12,70 | 4,76 | 12,00 | 3,00 | - | 1,30 | |

A

MILLING

Overview

Face milling

Hifeed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

Spot face







Spare Parts

Technical Data

End Mills

MILLING INSERTS OVERVIEW

A
 MILLING
 Overview
 Face milling
 Hifeed milling
 Shoulder milling
 Profile milling
 Hardmill
 Center & Chamfer
 Spotface
 Spare Parts
 Technical Data
 End Mills

| Inserts Pastilhas Plaquetas | (1) Geometry code | (2) Grade code ISO Reference | P | | | | | | | | M | | | K | | | | | |
|---|-------------------------|---------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----|-----|
| | | | PVD | | | | | | CVD | | PVD | | | CVD | | PVD | | | UNC |
| | | | 54 | 68 | G4 | 66 | I5 | G6 | L8 | L9 | 68 | 66 | I5 | L5 | L9 | 54 | 68 | 67 | I5 |
| PH6910 | PH6920 | PH7920 | PH6930 | PH6740 | PH7740 | PH5125 | PH5740 | PH6920 | PH6930 | PH6740 | PH5705 | PH5740 | PH6910 | PH6920 | PH6325 | PH6740 | PH0325 | | |
|  | 1111911 | TNUN 1204 ANEN | | ○ | | | | | | | | | | | | | | | |
|  | 1110422 | TPGN 110304 | | ○ | | | | | | | | | | | | | | | |
| | 1110423 | TPGN 110308 | | ○ | | | | | | | | | | | | | | | |
| | 1110425 | TPGN 160304 | | ⊗ | | | | | | | | | | | | | | | |
| | 1110426 | TPGN 160308 | | ⊗ | | | | | | | | | | | | | | | |
| | 1110450 | TPKN 1603 PDEL | | ○ | | | | | | | | | | | | | | | |
|  | 1110451 | TPKN 1603 PDER | | ⊗ | | | ⊗ | | | | | | | | | | | | ⊗ |
| | 1110671 | TPKN 1603 PDSR | | ○ | | | | | | | | | | | | | | | |
| | 1110455 | TPKN 1603 PDTR | | ⊗ | | | ⊗ | | | | | | | | | | | | ⊗ |
| | 1110459 | TPKN 1603 PPFN | | ○ | | | | | | | | | | | | | | | |
| | 1110463 | TPKN 1603 PPTR | | ○ | | | | | | | | | | | | | | | |
| | 1110465 | TPKN 2204 PDER | | ⊗ | | | ⊗ | | | | | | | | | | | | ⊗ |
| | 1110466 | TPKN 2204 PDFR | | ○ | | | | | | | | | | | | | | | ⊗ |
| | 1110609 | TPKN 2204 PDSR | | ⊗ | | | ⊗ | | | | | | | | | | | | ⊗ |
| | 1110471 | TPKN 2204 PPSR | | ○ | | | | | | | | | | | | | | | |
| | 1110468 | TPKN 2204 PDTR | | ○ | | | | | | | | | | | | | | | |
|  | 1110476 | TPKR 1603 PDSR | | ⊗ | | | ⊗ | | | | | | | | | | | | ⊗ |
| | 1110477 | TPKR 2204 PDSR | | ⊗ | | | ⊗ | | | | | | | | | | | | ⊗ |
|  | 1120761 | TPUN 110304 | | | ○ | | | | | | | | | | | | | | |
| | 1120762 | TPUN 110308 | | | ○ | | | | | | | | | | | | | | |
| | 1120765 | TPUN 160304 | | | ⊗ | | | ○ | ⊗ | ⊗ | | | | | | | | | |
| | 1120766 | TPUN 160308 | | | ⊗ | | | ⊗ | ⊗ | ⊗ | | | | | | | | | |
| | 1120770 | TPUN 160312 | | | ○ | | | ○ | ⊗ | ⊗ | | | | | | | | | |
| | 1120777 | TPUN 220404 | | | ○ | | | ○ | ⊗ | ⊗ | | | | | | | | | |
| | 1120779 | TPUN 220408 | | | ○ | | | ⊗ | ⊗ | ⊗ | | | | | | | | | |
| | 1120783 | TPUN 220412 | | | ○ | | | ⊗ | ⊗ | ⊗ | | | | | | | | | |
| 1120791 | TPUN 270616 | | | | | | | ○ | | | | | | | | | | | |
|  | 1112135 | TPXR 2204 PDSR-MP | | ⊗ | | | ⊗ | | | | | | | | | | | | ⊗ |

⊗ First choice | Primeira opção | 1ª opción
 ⊗ Stock item | Produto de stock | Itens de stock
 ○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9)
 Insert order code = (1) Geometry Code + (2) Grade Code

| Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | | | Drawing |
|---|------|-------|------|---|------|---------|
| ic | S | I | R | a | F | |
| 12,70 | 4,76 | 12,00 | - | - | 2,50 | |
| | | | | | | |
| 6,35 | 3,18 | - | 0,40 | - | - | |
| 6,35 | 3,18 | - | 0,40 | - | - | |
| 9,53 | 3,18 | - | 0,40 | - | - | |
| 9,53 | 3,18 | - | 0,80 | - | - | |
| 9,53 | 3,18 | 16,50 | 0,70 | - | 1,20 | |
| 9,53 | 3,18 | 16,50 | 0,70 | - | 1,40 | |
| 9,53 | 3,18 | 16,50 | 0,70 | - | 1,20 | |
| 9,53 | 3,18 | 16,50 | 0,70 | - | 1,40 | |
| 9,53 | 3,18 | 16,50 | - | - | 1,10 | |
| 9,53 | 3,18 | 16,50 | - | - | 1,10 | |
| 12,70 | 4,76 | 22,00 | 0,50 | - | 1,70 | |
| 12,70 | 4,76 | 22,00 | 0,50 | - | 1,70 | |
| 12,70 | 4,76 | 22,00 | 0,50 | - | 1,70 | |
| 12,70 | 4,76 | 22,00 | - | - | 1,40 | |
| 12,70 | 4,76 | 22,00 | - | - | 1,40 | |
| | | | | | | |
| 9,53 | 3,18 | 16,50 | 0,60 | - | 1,20 | |
| 12,70 | 4,76 | 22,00 | 0,50 | - | 1,70 | |
| 6,35 | 3,18 | 11,00 | 0,40 | - | - | |
| 6,35 | 3,18 | 11,00 | 0,80 | - | - | |
| 9,53 | 3,18 | 16,50 | 0,40 | - | - | |
| 9,53 | 3,18 | 16,50 | 0,80 | - | - | |
| 9,53 | 3,18 | 16,50 | 1,20 | - | - | |
| 12,70 | 4,76 | 22,00 | 0,40 | - | - | |
| 12,70 | 4,76 | 22,00 | 0,80 | - | - | |
| 12,70 | 4,76 | 22,00 | 1,20 | - | - | |
| 15,88 | 6,35 | 27,00 | 1,60 | - | - | |
| 12,70 | 4,76 | 22,00 | 1,00 | - | 1,70 | |
| | | | | | | |

A

MILLING

Overview

Face milling

Hifeed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

Spot face

Spare Parts

Technical Data

End Mills

MILLING INSERTS OVERVIEW

| A | MILLING | Inserts Pastilhas Plaquetas | (1) Geometry code | (2) Grade code | P | | | | | | | | M | | | K | | | | | | | |
|------------------|---------|-----------------------------------|-------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|----|----|----|----|-----|
| | | | | | PVD | | | | | | | | PVD | | | CVD | | PVD | | | | | UNC |
| | | | | | M6 | 54 | 68 | 66 | 78 | 86 | 15 | 68 | 66 | 15 | L5 | L9 | D2 | 54 | 68 | 67 | 15 | 17 | |
| PH6103 | PH6910 | PH6920 | PH6930 | PH6125 | PH6135 | PH6740 | PH6920 | PH6930 | PH6740 | PH5705 | PH5740 | PH6705 | PH6910 | PH6920 | PH6325 | PH6740 | PH0325 | | | | | | |
| Overview | | 1110851 | WPB 08 | | ○ | ○ | ○ | | | | | | | | | | | | | | | | |
| | | 1110852 | WPB 10 | | ○ | ○ | ○ | | | | | | | | | | | | | | | | |
| | | 1110853 | WPB 12 | | ○ | ○ | ○ | | | | | | | | | | | | | | | | |
| | | 1110923 | WPB 16 | | ○ | ○ | ○ | | | | | | | | | | | | | | | | |
| | | 1111019 | WPB 20 | | ○ | ○ | ○ | | | | | | | | | | | | | | | | |
| Face milling | | 1111554 | WPRX-2 08 | | | ○ | ○ | | | | | | | | | | | | | | | | |
| | | 1111331 | WPRX-2 10 | | ⊗ | ⊗ | | | | | | | | | | | | | | | | | |
| | | 1111555 | WPRX-2 12 | | ⊗ | ⊗ | | | | | | | | | | | | | | | | | |
| | | 1111329 | WPRX-2 16 | | ⊗ | ⊗ | | | | | | | | | | | | | | | | | |
| | | 1111330 | WPRX-2 20 | | ⊗ | ⊗ | | | | | | | | | | | | | | | | | |
| | | 1111556 | WPRX-2 25 | | ⊗ | ⊗ | | | | | | | | | | | | | | | | | |
| | | 1111557 | WPRX-2 32 | | ⊗ | ⊗ | | | | | | | | | | | | | | | | | |
| Shoulder milling | | 1110820 | WPV 08 | | ○ | ○ | ○ | | | | | | | | | | | | | | | | |
| | | 1110821 | WPV 10 | | ○ | ○ | ○ | | | | | | | | | | | | | | | | |
| | | 1110822 | WPV 12 | | ○ | ○ | ○ | | | | | | | | | | | | | | | | |
| | | 1110948 | WPV 16 | | ○ | ○ | ○ | | | | | | | | | | | | | | | | |
| | | 1111020 | WPV 20 | | ○ | ○ | ○ | | | | | | | | | | | | | | | | |
| Profile milling | | 1110543 | WPZ 08 | | ⊗ | ○ | ○ | | | | | | | | | | | | | | | | |
| | | 1110551 | WPZ 10 | | ⊗ | ○ | ○ | | | | | | | | | | | | | | | | |
| | | 1110552 | WPZ 12 | | ⊗ | ○ | ○ | | | | | | | | | | | | | | | | |
| | | 1110544 | WPZ 16 | | ⊗ | ⊗ | ○ | | | | | | | | | | | | | | | | |
| | | 1110553 | WPZ 20 | | ⊗ | ⊗ | ○ | | | | | | | | | | | | | | | | |
| | | 1110661 | WPZ 25 | | ⊗ | ⊗ | ○ | | | | | | | | | | | | | | | | |
| | | 1110662 | WPZ 32 | | ⊗ | ⊗ | ○ | | | | | | | | | | | | | | | | |
| Center & Chamfer | | 1110910 | XPHT 1604 PDTR | | | | ○ | | | | | | | | | | | | | | | | |
| | | 1111206 | XPHT 160420 PPTR | | | | ○ | | | | | | | | | | | | | | | | |
| | | 1110926 | XPHT 160432 PDSR | | | | ○ | | | | | | | | | | | | | | | | |
| Spotface | | 1110958 | XPHT 160412-MR | | | | ○ | | | | | | | | | | | | | | | | |

⊗ First choice | Primeira opção | 1ª opción
 ⊗ Stock item | Produto de stock | Itens de stock
 ○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9)
 Insert order code = (1) Geometry Code + (2) Grade Code

| Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | | | Drawing |
|---|------|-------|------|-------|------|---------|
| ic | S | I | R | a | F | |
| 8,00 | 2,00 | 9,50 | 0,60 | 4,00 | - | |
| 10,00 | 2,50 | 11,50 | 0,80 | 5,00 | - | |
| 12,00 | 2,50 | 14,00 | 1,00 | 6,00 | - | |
| 16,00 | 3,00 | 16,00 | 1,30 | 6,00 | - | |
| 20,00 | 3,00 | 20,00 | 1,60 | 6,00 | - | |
| 8,00 | 2,00 | 9,50 | - | 2,50 | - | |
| 10,00 | 2,50 | 11,50 | - | 5,00 | - | |
| 12,00 | 2,50 | 11,90 | - | 6,00 | - | |
| 16,00 | 3,00 | 13,90 | - | 6,00 | - | |
| 20,00 | 3,00 | 15,90 | - | 6,00 | - | |
| 25,00 | 4,00 | 21,30 | - | 9,00 | - | |
| 32,00 | 5,00 | 25,80 | - | 10,00 | - | |
| 8,00 | 2,00 | 9,50 | 0,60 | 4,00 | - | |
| 10,00 | 2,50 | 11,50 | 0,80 | 5,00 | - | |
| 12,00 | 2,50 | 14,00 | 1,00 | 6,00 | - | |
| 16,00 | 3,00 | 16,00 | 1,30 | 6,00 | - | |
| 20,00 | 3,00 | 20,00 | 1,60 | 6,00 | - | |
| 8,00 | 2,40 | 7,00 | - | 3,00 | - | |
| 10,00 | 2,60 | 8,50 | - | 3,50 | - | |
| 12,00 | 3,00 | 10,00 | - | 4,00 | - | |
| 16,00 | 4,00 | 12,00 | - | 4,00 | - | |
| 20,00 | 5,00 | 15,00 | - | 5,00 | - | |
| 25,00 | 6,00 | 18,50 | - | 6,00 | - | |
| 32,00 | 7,00 | 23,50 | - | 7,50 | - | |
| 9,53 | 4,75 | 16,00 | 1,20 | - | 1,70 | |
| 9,53 | 4,75 | 16,00 | 2,00 | - | 0,70 | |
| 9,53 | 4,75 | 16,00 | 3,20 | - | - | |
| 9,53 | 4,75 | 16,00 | 1,20 | - | 1,70 | |
| | | | | | | |

A

MILLING

Overview

Face milling

Highfeed milling

Shoulder milling

Profile milling

Hardmill

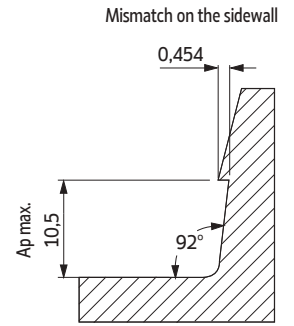
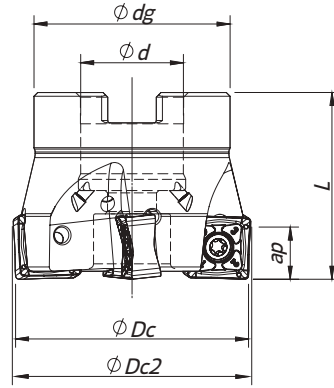
Center & Chamfer

Spot face

Spare Parts

Technical Data

End Mills



Arbor Mounting
 $K_r=88^\circ$ | $\gamma_p=-6^\circ$

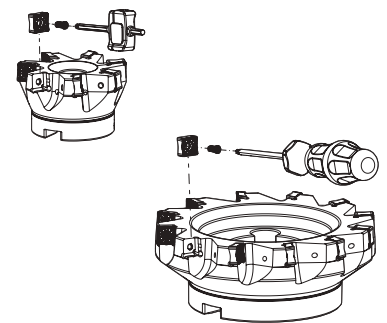
| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|----|---|------------|----------|-----------|----|-----|----------------|-------------|-------------------------------|-------|
| | | | ϕDc | $\phi Dc2$ | ϕd | ϕdg | L | | Arbor Type | Ap max (mm) | | |
| 181084300 | 050A28088-05-06-022040 | 5 | 50 | 50,9 | 22 | 42 | 40 | 0,4 | A | 10,5 | SN... 1206... | |
| 181091600 | 063A28088-06-06-022040 | 6 | 63 | 63,9 | 22 | 48 | 40 | 0,5 | A | 10,5 | SN... 1206... | |
| 181091700 | 080A28088-07-06-027050 | 7 | 80 | 80,9 | 27 | 60 | 50 | 1,0 | A | 10,5 | SN... 1206... | |
| 181091800 | 080A28088-09-06-027050 | 9 | 80 | 80,9 | 27 | 60 | 50 | 0,9 | A | 10,5 | SN... 1206... | |
| 181091900 | 100A28088-08-06-032050 | 8 | 100 | 100,9 | 32 | 73 | 50 | 1,6 | B | 10,5 | SN... 1206... | |
| 181092000 | 100A28088-11-06-032050 | 11 | 100 | 100,9 | 32 | 73 | 50 | 1,5 | B | 10,5 | SN... 1206... | |
| 181092100 | 125A28088-10-06-040063 | 10 | 125 | 125,9 | 40 | 90 | 63 | 3,1 | B | 10,5 | SN... 1206... | |
| 181092200 | 125A28088-14-06-040063 | 14 | 125 | 125,9 | 40 | 90 | 63 | 3,0 | B | 10,5 | SN... 1206... | |
| 181092300 | 160A28088-12-06-U040063 | 12 | 160 | 160,9 | 40 | 110 | 63 | 3,7 | C | 10,5 | SN... 1206... | |
| 181092700 | 160A28088-18-06-U040063 | 18 | 160 | 160,9 | 40 | 110 | 63 | 3,5 | C | 10,5 | SN... 1206... | |
| 181092800 | 200A28088-14-06-U060063 | 14 | 200 | 200,9 | 60 | 172 | 63 | 6,3 | C | 10,5 | SN... 1206... | |
| 181092900 | 200A28088-22-06-U060063 | 22 | 200 | 200,9 | 60 | 172 | 63 | 6,1 | C | 10,5 | SN... 1206... | |

Stock item | Produto de stock | Itens de stock

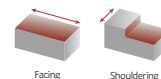
Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9)

SPARE PARTS | Complementos | Repuestos

| Cutter ϕDc | Insert Screw | Key (Torx) | Order separately | | Order separately | |
|---------------------|--------------|------------|------------------|--------------|------------------|-----------------|
| | | | Key (Torx - Nm) | Torque Value | Screw | DIN 6368 Wrench |
| A28088 - 50 - 80 | P0401200 | XT15 | DT1530 | 3,0 | - | - |
| A28088 - 100 | P0401200 | PT15 | DT1530 | 3,0 | J0164110 | SD6368-16 |
| A28088 - 125 | P0401200 | PT15 | DT1530 | 3,0 | J0204610 | SD6368-20 |
| A28088 - 160 - 200 | P0401200 | PT15 | DT1530 | 3,0 | - | - |



Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
 Check the procedures for the clamping screws on the page A-241.



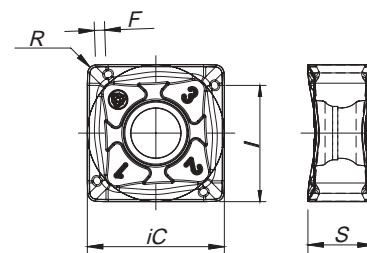
SNH(K)U 1206 | Inserts | Pastilhas | Plaquetas

SNHU-LP
(PHP grade)

SNKU-LP
(PHP grade)



SNH(K)U-LP



| Geometry code | ISO Reference | P | | M | | K | | | | | | | | | | Dimensions Dimensões Dimensiones (mm) | | | | | | | | | | |
|---------------|---------------------|-----|----|-----|----|----|----|-----|----|-----|----|----|----|----|----|--|---|---|---|---|----|-------|------|-------|------|------|
| | | CVD | | PVD | | | | CVD | | PVD | | | | | | iC | S | I | R | F | | | | | | |
| | | T9 | G4 | T1 | P3 | G6 | G3 | G6 | L5 | L6 | L9 | T9 | G4 | T1 | P3 | | | | | | G6 | | | | | |
| 1112020 | SNHU 120608 ZNER-LP | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 13,30 | 6,35 | 11,60 | 0,80 | 1,00 |
| 1112278 | SNKU 120608 ZNER-LP | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 13,30 | 6,35 | 11,60 | 0,80 | 1,00 |

⊗ First choice | Primeira opção | 1ª opción
 ⊗ Stock item | Produto de stock | Itens de stock
 ○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9)
 Insert order code = (1) Geometry Code + (2) Grade Code

GRADES SELECTION GUIDE | Guia para selecção de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | | | | | | | | | |
|-----|-----|-----------------------------------|-----------------|-------------------|--------|--------|--------|-------------|--------|--------|--------|---|---|
| | | | | ← Wear Resistance | | | | Toughness → | | | | | |
| | | | | PH5705 | PH5320 | PHP920 | PH7920 | PH7930 | PH5740 | PHS740 | PH7740 | | |
| P | 1 | Unalloyed Steel | 125-220 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ |
| | 2 | Low-Alloyed Steel | 220-280 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ |
| | 3 | High-Alloyed Steel | 280-380 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ |
| | 5 | SS - Austenitic | 200-330 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ |
| K | 7 | Malleable Cast Iron | 130-230 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ |
| | 8 | Grey Cast Iron | 180-245 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ |
| | 9 | Nodular Cast iron | 160-250 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ |

⊗ Good Conditions
⊗ Average Conditions
⊗ Difficult Conditions

A
 MILLING
 Overview
 Face milling
 Hifeed milling
 Shoulder milling
 Profile milling
 Hardmill
 Center & Chamfer
 Spot face
 Spare Parts
 Technical Data
 End Mills

RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | V _c (m/min) | | | |
|-----|-----|-----------------------------------|--------------|------------------------|---------|-------------|---------|
| | | | | ← Wear Resistance | | Toughness → | |
| | | | | PH5705 | PH5320 | PHP920 | PH7920 |
| P | 1 | Unalloyed Steel | 125-220 | - | - | 180-250 | 180-240 |
| | 2 | Low-Alloyed Steel | 220-280 | - | - | 160-230 | 160-220 |
| | 3 | High-Alloyed Steel | 280-380 | - | - | 140-220 | 140-210 |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | - | - | - | - |
| | 5 | SS - Austenitic | 200-330 | - | - | - | - |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | - | - | - | - |
| K | 7 | Malleable Cast Iron | 130-230 | 160-290 | 150-280 | 160-270 | 160-260 |
| | 8 | Grey Cast Iron | 180-245 | 170-320 | 160-320 | 140-250 | 140-240 |
| | 9 | Nodular Cast iron | 160-250 | 140-200 | 100-190 | 120-210 | 120-200 |

(Note 1) The above table indicates the cutting conditions of 70% of the tool engagement.

(Note 2) With low workspace clamping rigidity or long overhang of the tool, adjust cutting speed and feed to 70 or 80% of the recommended conditions above.

(Note 3) Surface finishing is determined by speed/feed used.

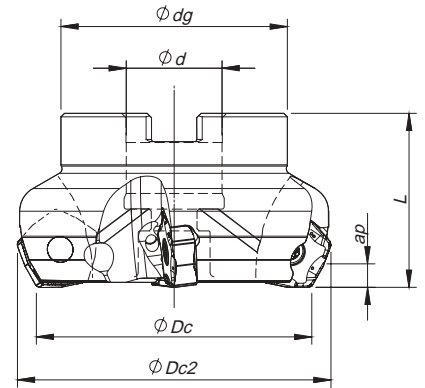
(Note 4) PH5... and PHS... can be used wet or dry. PH7... use only air.

Selection Example:

| ISO | PSM | Material | HB (brinell) | V _c (m/min) | | Feed f _z (mm/t) |
|-----|-----|---------------------|--------------|------------------------|-----------------------|------------------------------|
| | | | | ← Wear Resistance | Toughness → | |
| | | | | PH5705 | PH5740 | SNHU 1206... SNKU 1206... |
| K | 7 | Malleable cast iron | 130-230 | 160 (180) 290 | 160 (1900) 260 | 0,10 (0,25) 0,35 |
| | 8 | Grey cast iron | 180-245 | 170 (270) 320 | 140 (180) 240 | 0,10 (0,25) 0,35 |
| | 9 | Nodular cast iron | 160-250 | 140 (150) 200 | 120 (150) 200 | 0,10 (0,25) 0,35 |

This example shows the recommended starting cutting conditions, indicated in **Bold type**.

| Vc (m/min) | | | | Feed fz (mm/t) |
|------------|---------|---------|-----------------------|-------------------------|
| PH7930 | PH5740 | PHS740 | Toughness → PH7740 | SNH(K)U 1206 |
| 160-220 | - | 140-220 | 140-200 | 0,10 (0,25) 0,35 |
| 140-200 | - | 120-200 | 130-180 | 0,10 (0,25) 0,35 |
| 120-190 | - | 100-190 | 100-170 | 0,10 (0,25) 0,35 |
| 140-200 | - | - | 130-180 | 0,10 (0,25) 0,35 |
| 120-160 | - | - | 110-160 | 0,10 (0,25) 0,35 |
| 100-140 | - | - | 90-150 | 0,10 (0,25) 0,35 |
| 150-240 | 160-260 | - | 140-220 | 0,10 (0,25) 0,35 |
| 140-230 | 140-240 | - | 120-210 | 0,10 (0,25) 0,35 |
| 100-190 | 120-200 | - | 100-190 | 0,10 (0,25) 0,35 |



Arbor Mounting
 $K_r=60^\circ$ | $\gamma_p=7^\circ$

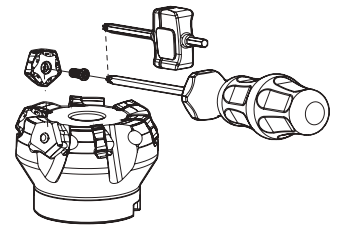
| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|----|---|------------|----------|-----------|----|-------|----------------|----------------|-------------------------------|-------|
| | | | ϕDc | $\phi Dc2$ | ϕd | ϕdg | L | | Arbor Type | Ap max (mm) | | |
| 181050200 | 050A90260-05-07-022040 | 5 | 50 | 59,05 | 22 | 48 | 40 | 0,388 | A | 5,0 | PN... 1105... | |
| 181050300 | 063A90260-06-07-022040 | 6 | 63 | 72,05 | 22 | 52 | 40 | 0,597 | A | 5,0 | PN... 1105... | |
| 181050400 | 080A90260-08-07-027050 | 8 | 80 | 89,05 | 27 | 60 | 50 | 1,072 | B | 5,0 | PN... 1105... | |
| 181045900 | 100A90260-10-07-032050 | 10 | 100 | 109,05 | 32 | 80 | 50 | 1,745 | B | 5,0 | PN... 1105... | |
| 181050500 | 125A90260-12-07-040063 | 12 | 125 | 134,05 | 40 | 90 | 63 | 3,047 | B | 5,0 | PN... 1105... | |
| 181050600 | 160A90260-14-07-U040063 | 14 | 160 | 169,05 | 40 | 110 | 63 | 4,397 | C | 5,0 | PN... 1105... | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

SPARE PARTS | Complementos | Repuestos

| Cutter ϕDc | Order separately | | | | Order separately | |
|---------------------|------------------|------------|-----------------|--------------|------------------|-----------------|
| | Insert Screw | Key (Torx) | Key (Torx - Nm) | Torque Value | Screw | DIN 6368 Wrench |
| A90260 - 50 - 63 | P0401200 | XT15 | DT1530 | 3,0 | - | - |
| A90260 - 80 | P0401200 | XT15 | DT1530 | 3,0 | J0123510 | SD6368-12 |
| A90260 - 100 | P0401200 | PT15 | DT1530 | 3,0 | J0164110 | SD6368-16 |
| A90260 - 125 | P0401200 | PT15 | DT1530 | 3,0 | J0204610 | SD6368-20 |
| A90260 - 160 | P0401200 | PT15 | DT1530 | 3,0 | - | - |



Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
 Check the procedures for the clamping screws on the page A-241.



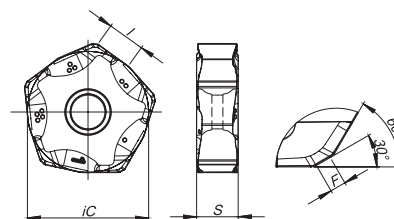
PNH(K)X 1105 | Inserts | Pastilhas | Plaquetas

PNHX-MK

PNHX-HK

PNKX-MK

PNH(K)X-MK | HK



| | ⁽²⁾ Grade code | P | | K | | | | Dimensions Dimensões Dimensiones (mm) | | | | |
|------------------------------|---------------------------|--------|--------|--------|--------|--------|--------|--|------|------|---|------|
| | | PVD | | CVD | | PVD | | | | | | |
| | | G1 | G4 | L5 | L9 | G1 | G4 | iC | S | I | R | F |
| ⁽¹⁾ Geometry code | ISO Reference | PH7910 | PH7920 | PH5705 | PH5740 | PH7910 | PH7920 | | | | | |
| 1111374 | PNHX 1105 ZNER-MK | ☉ | ☉ | ☹ | ☉ | ☉ | ☉ | 16,50 | 5,66 | 5,70 | - | 1,30 |
| 1111998 | PNHX 1105 ZNER-HK | | | ☹ | ○ | | | 16,50 | 5,66 | 5,70 | - | 1,30 |
| 1112294 | PNKX 1105 ZNER-MK | ☉ | ☉ | ☹ | ○ | ☉ | ☉ | 16,50 | 5,66 | 5,70 | - | 1,30 |

☉ First choice | Primeira opção | 1ª opción ☉ Stock item | Produto de stock | Itens de stock ○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9) Insert order code = (1) Geometry Code + (2) Grade Code

GRADES SELECTION GUIDE | Guia para selecção de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (brinell) | Grades | | | | |
|-----|-----|---------------------|-----------------|-------------------|--------|--------|-------------|--------|
| | | | | ← Wear Resistance | | | Toughness → | |
| | | | | PH5705 | PH7910 | PH7920 | PH5740 | PH7740 |
| P | 1 | Unalloyed Steel | 125-220 | | ☉ | ☉ | | ☉ |
| | 2 | Low-Alloyed Steel | 220-280 | | ☉ | ☉ | | ☉ |
| | 3 | High-Alloyed Steel | 280-380 | | ☉ | ☉ | | ☉ |
| K | 7 | Malleable Cast Iron | 130-230 | ☉ | ☉ | ☉ | ☉ | |
| | 8 | Grey Cast Iron | 180-245 | ☉ | ☉ | ☉ | ☉ | |
| | 9 | Nodular Cast iron | 160-250 | ☉ | ☉ | ☉ | ☉ | |

☉ Good Conditions
☉ Average Conditions
☉ Difficult Conditions

PLUS 90260

RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | |
|-----|-----|---------------------|-----------------|-------------------|---------|---------|
| | | | | ← Wear Resistance | | |
| | | | | PH5705 | PH7910 | PH7920 |
| P | 1 | Unalloyed Steel | 125-220 | - | 180-250 | 180-240 |
| | 2 | Low-Alloyed Steel | 220-280 | - | 160-230 | 160-220 |
| | 3 | High-Alloyed Steel | 280-380 | - | 140-220 | 140-210 |
| K | 7 | Malleable Cast Iron | 130-230 | 160-290 | 180-300 | 160-260 |
| | 8 | Grey Cast Iron | 180-245 | 170-320 | 160-250 | 140-240 |
| | 9 | Nodular Cast iron | 160-250 | 140-200 | 150-200 | 120-200 |

(Note 1) Cutting conditions $a_e/DC=70\%$.

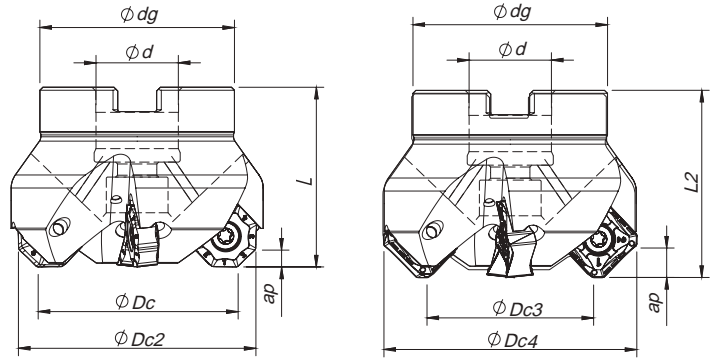
(Note 2) Cutting conditions should be adjusted according to the machine and work rigidity.

(Note 3) If chattering occurs, reduce a_p and V_c by 30% and keep the same f_z per tooth.

CHIP-BREAKER SELECTION GUIDE | Guia para aplicações do quebra-apanas | Guía para aplicación del rompevirutas

| ISO | PSM | Material | HB (Brinell) | Chip-Breaker Application | |
|-----|--------------------|---------------------|------------------|--------------------------|----------------------|
| | | | | 1st choice | Difficult Operations |
| | | | | P | 1 |
| 2 | Low-Alloyed Steel | 220-280 | PNH(K)X 11... MK | | - |
| 3 | High-Alloyed Steel | 280-380 | PNH(K)X 11... MK | | - |
| K | 7 | Malleable Cast Iron | 130-230 | PNH(K)X 11... MK | PNH(K)X 11... HK |
| | 8 | Grey Cast Iron | 180-245 | PNH(K)X 11... MK | PNH(K)X 11... HK |
| | 9 | Nodular Cast iron | 160-250 | PNH(K)X 11... MK | PNH(K)X 11... HK |

| Vc (m/min) | Toughness → | Feed fz (mm/t) |
|------------|-------------|-----------------|
| PH5740 | | PNH(K)X 1105... |
| - | | 0,15-0,30 |
| - | | 0,15-0,30 |
| - | | 0,15-0,25 |
| 160-260 | | 0,12-0,35 |
| 140-240 | | 0,12-0,35 |
| 120-200 | | 0,12-0,30 |



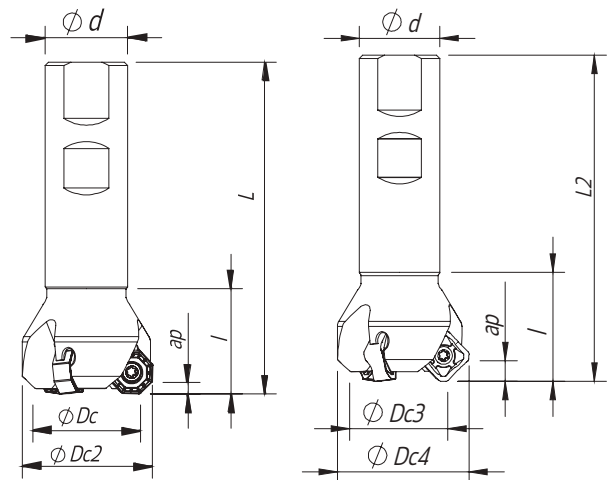
Arbor Mounting

$K_r=45^\circ$ | $\gamma_p=-6^\circ$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock | |
|----------------------|---------------------------------------|----|---|------------|------------|------------|----------|-----------|----|------|----------------|------------|-------------------------------|-------------------|---------|
| | | | ϕDc | $\phi Dc2$ | $\phi Dc3$ | $\phi Dc4$ | ϕd | ϕdg | L | | L2 | Arbor Type | | | Ap (mm) |
| 181111400 | 050A90845-04-06-022040 | 4 | 50 | 57,6 | 47,1 | 62 | 22 | 48 | 40 | 41,5 | 0,383 | A | 3,5 6,0 | ON...05 SN...12 | |
| 181117400 | 050A90845-06-06-022040 | 6 | 50 | 57,6 | 47,1 | 62 | 22 | 48 | 40 | 41,5 | 0,374 | A | 3,5 6,0 | ON...05 SN...12 | |
| 181117500 | 063A90845-06-06-022040 | 6 | 63 | 70,6 | 60,1 | 75 | 22 | 52 | 40 | 41,5 | 0,525 | A | 3,5 6,0 | ON...05 SN...12 | |
| 181117600 | 063A90845-08-06-022040 | 8 | 63 | 13,6 | 60,1 | 75 | 22 | 52 | 40 | 41,5 | 0,517 | A | 3,5 6,0 | ON...05 SN...12 | |
| 181117700 | 080A90845-07-06-027050 | 7 | 80 | 87,6 | 77,1 | 92 | 27 | 60 | 50 | 51,5 | 0,846 | B | 3,5 6,0 | ON...05 SN...12 | |
| 181117800 | 080A90845-10-06-027050 | 10 | 80 | 87,6 | 77,1 | 92 | 27 | 60 | 50 | 51,5 | 0,842 | B | 3,5 6,0 | ON...05 SN...12 | |
| 181117900 | 100A90845-08-06-032050 | 8 | 100 | 107,6 | 97,1 | 112 | 32 | 80 | 50 | 51,5 | 1,559 | B | 3,5 6,0 | ON...05 SN...12 | |
| 181120900 | 100A90845-12-06-032050 | 12 | 100 | 107,6 | 97,1 | 112 | 32 | 80 | 50 | 51,5 | 1,540 | B | 3,5 6,0 | ON...05 SN...12 | |
| 181121000 | 125A90845-10-06-040063 | 10 | 125 | 132,6 | 122,1 | 137 | 40 | 90 | 63 | 64,5 | 2,890 | B | 3,5 6,0 | ON...05 SN...12 | |
| 181121100 | 160A90845-12-06-U040063 | 12 | 160 | 167,6 | 157,1 | 172 | 40 | 110 | 63 | 64,5 | 4,360 | C | 3,5 6,0 | ON...05 SN...12 | |
| 181121200 | 200A90845-14-06-U060063 | 14 | 200 | 207,6 | 197,1 | 212 | 60 | 172 | 63 | 64,5 | 8,890 | C | 3,5 6,0 | ON...05 SN...12 | |
| 181121300 | 250A90845-16-06-U060063 | 16 | 250 | 257,6 | 247,1 | 262 | 60 | 172 | 63 | 64,5 | 11,490 | C | 3,5 6,0 | ON...05 SN...12 | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9)



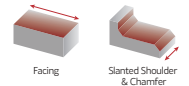
Weldon Shank

$K_r=45^\circ$ | $\gamma_p=-6^\circ$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|------------|------------|------------|----------|-----|-------|-------|----------------|-------------------|-------------------------------|-------|
| | | | ϕDc | $\phi Dc2$ | $\phi Dc3$ | $\phi Dc4$ | ϕd | L | L2 | | Ap (mm) | | | |
| 181118000 | 032W90845-03-06-025100 | 3 | 32 | 39,6 | 29,1 | 44 | 25 | 100 | 101,5 | 0,375 | 3,5 6,0 | ON...05 SN...12 | | |
| 181118100 | 040W90845-04-06-032110 | 4 | 40 | 47,6 | 37,1 | 52 | 32 | 110 | 111,5 | 0,653 | 3,5 6,0 | ON...05 SN...12 | | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9)



ONH(K)X 05 | SNH(K)X 12 | Inserts | Pastilhas | Plaquetas

A

MILLING

Overview

Face milling

Hifeed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

Spot face

Spare Parts

Technical Data

End Mills

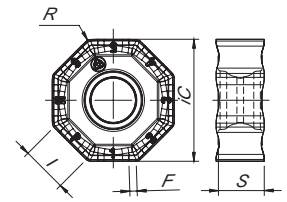
ONH(K)X-MP
(PHP grade)



ONH(K)X-MK



ONH(K)X-LP | MP | MK



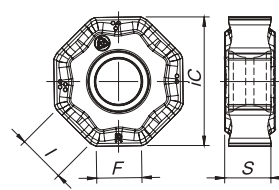
ONHX-W
8 Cutting Edges (8R)



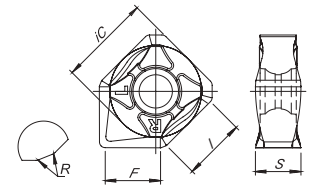
SNHX-W
4 Cutting edges (2R + 2L)



ONHX-W



SNHX-W



SNH(K)X-LP



SNH(K)X-MP
(PHP grade)



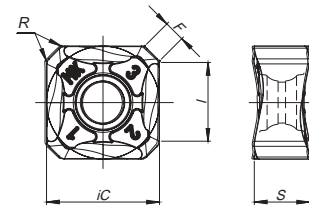
SNH(K)X-MK



SNHX-LN



SNH(K)X-LP | MP | MK | LN



| (1) Geometry code | (2) Grade code ISO Reference | P | | | | | | | | | | | | | | | | | | M | | K | | | | | | N | | S | | Dimensions Dimensões Dimensiones (mm) | | | | |
|-------------------------|------------------------------------|-----|----|----|----|----|----|-----|----|----|----|----|----|-----|----|----|----|----|----|-----|----|----|--|-------|------|------|------|------|--|---|--|--|--|--|--|--|
| | | CVD | | | | | | PVD | | | | | | CVD | | | | | | PVD | | | | | | UNC | | PVD | | | | | | | | |
| | | T9 | X5 | G4 | T1 | P3 | P4 | G6 | X9 | G6 | L5 | L6 | L9 | X5 | G4 | T1 | P3 | P4 | G6 | 10 | X9 | G6 | | | | | | | | | | | | | | |
| 1112302 | ONHX 050505 ANEN-LP | | | | ⊗ | ⊗ | ⊗ | | ⊗ | | | | | | ⊗ | ⊗ | ⊗ | | | | ⊗ | | | 12,70 | 5,20 | 5,30 | 0,50 | - | | | | | | | | |
| 1112304 | ONHX 050505 ANSN-MP | | | | ⊗ | ⊗ | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | | 12,70 | 5,20 | 5,30 | 0,50 | - | | | | | | | | |
| 1112301 | ONKX 050505 ANEN-LP | | ⊗ | ⊗ | ⊗ | ⊗ | | ⊗ | | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | ⊗ | | | 12,70 | 5,20 | 5,30 | 0,50 | - | | | | | | | | |
| 1112303 | ONKX 050505 ANSN-MP | ⊗ | | ⊗ | ⊗ | ⊗ | | | | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | | 12,70 | 5,20 | 5,30 | 0,50 | - | | | | | | | | |
| 1112305 | ONKX 050500 ANEN-MK | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | | | | 12,70 | 5,20 | 5,30 | - | - | | | | | | | | |
| 1112307 | ONHX 050500 ANER-W | | ⊗ | | | | | | | | | ⊗ | | | ⊗ | | | | | | | | | 12,70 | 5,20 | 5,30 | - | 4,30 | | | | | | | | |
| 1111452 | SNHX 1206 ANEN-LP | | | | ⊗ | ⊗ | | ⊗ | | | | | | | ⊗ | ⊗ | ⊗ | | | | ⊗ | | | 12,70 | 6,35 | 9,30 | 0,80 | 2,00 | | | | | | | | |
| 1111502 | SNHX 1206 ANSN-MP | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | | 12,70 | 6,35 | 9,30 | 0,80 | 2,00 | | | | | | | | |
| 1111503 | SNHX 1206 ANEN-MK | | | | | | | | | | | ⊗ | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | | 12,70 | 6,35 | 9,30 | 0,80 | 2,00 | | | | | | | | |
| 1111504 | SNHX 1206 ANFN-LN | | | | | | | | | | | | | | | | | | | | ⊗ | | | 12,70 | 6,35 | 9,30 | 0,80 | 2,00 | | | | | | | | |
| 1111899 | SNHX 1206 ANFN-W* | | ⊗ | | ⊗ | | | | | | | | | ⊗ | ⊗ | | | | | | | | | 12,70 | 6,30 | 9,30 | 0,40 | 7,60 | | | | | | | | |
| 1112293 | SNKX 1206 ANSN-MP | ⊗ | | ⊗ | ⊗ | | ⊗ | | | | | | | ⊗ | ⊗ | | | | | ⊗ | | | | 12,70 | 6,35 | 9,30 | 0,80 | 2,00 | | | | | | | | |
| 1112249 | SNKX 1206 ANEN-MK | | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | | | | 12,70 | 6,35 | 9,30 | 0,80 | 2,00 | | | | | | | | |

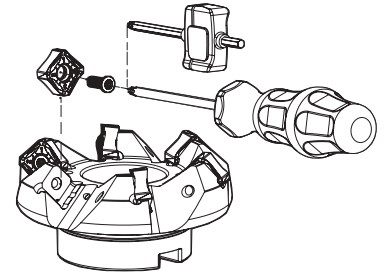
⊗ First choice | Primeira opção | 1ª opción ⊗ Stock item | Produto de stock | Itens de stock ○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9) Insert order code = (1) Geometry Code + (2) Grade Code

* Wiper insert with 2 rights and 2 left-hand cutting edges.

PLUS 90845

SPARE PARTS | Complementos | Repuestos

| Cutter ØDc | Order separately | | | | Order separately | |
|--------------------|------------------|------------|-----------------|--------------|------------------|-----------------|
| | Insert Screw | Key (Torx) | Key (Torx - Nm) | Torque Value | Screw | DIN 6368 Wrench |
| A90845 - 50 - 63 | P0401200 | XT15 | DT1530 | 3,0 | - | - |
| A90845 - 80 | P0401200 | XT15 | DT1530 | 3,0 | J0123510 | SD6368-12 |
| A90845 - 100 | P0401200 | PT15 | DT1530 | 3,0 | J0164110 | SD6368-16 |
| A90845 - 125 | P0401200 | PT15 | DT1530 | 3,0 | J0204610 | SD6368-20 |
| A90845 - 160 - 250 | P0401200 | PT15 | DT1530 | 3,0 | - | - |
| W90845 - 32 - 40 | P0401200 | XT15 | DT1530 | 3,0 | - | - |



Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
Check the procedures for the clamping screws on the page A-241.

GRADES SELECTION GUIDE | Guia para selecção de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | | | | | | | | | | | |
|-----|-----|-----------------------------------|-----------------|-------------------|--------|--------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|
| | | | | ← Wear Resistance | | | | | | | | Toughness → | | | |
| | | | | PH0910 | PH5705 | PH5320 | PHP910 | PHP920 | PH7920 | PHP930 | PHH930 | PH7930 | PH5740 | PHS740 | PH7740 |
| P | 1 | Unalloyed Steel | 125-220 | | | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ |
| | 2 | Low-Alloyed Steel | 220-280 | | | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ |
| | 3 | High-Alloyed Steel | 280-380 | | | | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | | | | | | | | ✓ | ✓ | | | ✓ |
| | 5 | SS - Austenitic | 200-330 | | | | | | | | ✓ | ✓ | | | ✓ |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | | | | | | | | ✓ | ✓ | | | ✓ |
| K | 7 | Malleable Cast Iron | 130-230 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | ✓ |
| | 8 | Grey Cast Iron | 180-245 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | ✓ |
| | 9 | Nodular Cast iron | 160-250 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | ✓ |
| N | 10 | Aluminium and Non Ferrous | 30-130 | ✓ | | | | | | | | | | | |
| S | 11 | Heat Resistant Super Alloys | 200-320 | | | | | | | | | ✓ | ✓ | | ✓ |

● Good Conditions

● Average Conditions

● Difficult Conditions

RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | | | | | |
|-----|-----|-----------------------------------|--------------|-------------------|---------|---------|---------|-------------|---------|---------|
| | | | | ← Wear Resistance | | | | Toughness → | | |
| | | | | PH0910 | PH5705 | PH5320 | PHP910 | PHP920 | PH7920 | PHP930 |
| P | 1 | Unalloyed Steel | 125-220 | - | - | - | 180-250 | 180-250 | 180-240 | 160-220 |
| | 2 | Low-Alloyed Steel | 220-280 | - | - | - | 160-240 | 160-230 | 160-220 | 140-200 |
| | 3 | High-Alloyed Steel | 280-380 | - | - | - | 140-230 | 140-220 | 140-210 | 120-190 |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | - | - | - | - | - | 140-220 | 140-200 |
| | 5 | SS - Austenitic | 200-330 | - | - | - | - | - | 130-180 | 120-160 |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | - | - | - | - | - | 120-160 | 100-140 |
| K | 7 | Malleable Cast Iron | 130-230 | - | 160-290 | 150-280 | 180-300 | 160-270 | 160-260 | 150-240 |
| | 8 | Grey Cast Iron | 180-245 | - | 170-320 | 160-320 | 160-250 | 140-250 | 140-240 | 140-230 |
| | 9 | Nodular Cast iron | 160-250 | - | 140-200 | 100-190 | 150-210 | 120-210 | 120-200 | 100-190 |
| N | 10 | Aluminium and Non Ferrous | 30-130 | 100-2000 | - | - | - | - | - | - |
| S | 11 | Heat Resistant Super Alloys | 200-320 | - | - | - | - | - | - | 30-100 |

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | | | | Feed fz (mm/t) | |
|-----|-----|-----------------------------------|--------------|-------------------|---------|---------|-------------|-----------|----------------|---------------|
| | | | | ← Wear Resistance | | | Toughness → | | SNH(K)X 12... | ONH(K)X 05... |
| | | | | PHH930 | PH7930 | PH5740 | PH5740 | PH7740 | | |
| P | 1 | Unalloyed Steel | 125-220 | - | 160-220 | - | 140-220 | 140-200 | 0,10-0,35 | 0,10-0,35 |
| | 2 | Low-Alloyed Steel | 220-280 | - | 140-200 | - | 120-200 | 130-180 | 0,10-0,35 | 0,10-0,35 |
| | 3 | High-Alloyed Steel | 280-380 | - | 120-190 | - | 100-190 | 100-170 | 0,10-0,30 | 0,10-0,30 |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | 140-210 | 140-200 | - | - | 130-180 | 0,10-0,30 | 0,10-0,30 |
| | 5 | SS - Austenitic | 200-330 | 120-170 | 120-160 | - | - | 110-160 | 0,10-0,30 | 0,10-0,30 |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | 100-150 | 100-140 | - | - | 90-150 | 0,10-0,25 | 0,10-0,25 |
| K | 7 | Malleable Cast Iron | 130-230 | - | 150-240 | 160-260 | - | 140-220 | 0,10-0,35 | 0,10-0,35 |
| | 8 | Grey Cast Iron | 180-245 | - | 140-230 | 140-240 | - | 120-210 | 0,10-0,35 | 0,10-0,35 |
| | 9 | Nodular Cast iron | 160-250 | - | 100-190 | 120-200 | - | 100-190 | 0,10-0,30 | 0,10-0,30 |
| N | 10 | Aluminium and Non Ferrous | 30-130 | - | - | - | - | 0,10-0,35 | - | |
| S | 11 | Heat Resistant Super Alloys | 200-320 | 30-110 | 30-100 | - | - | 30-100 | 0,07-0,20 | 0,07-0,18 |

(Note 1) Cutting conditions $a_e/D_c=70\%$.

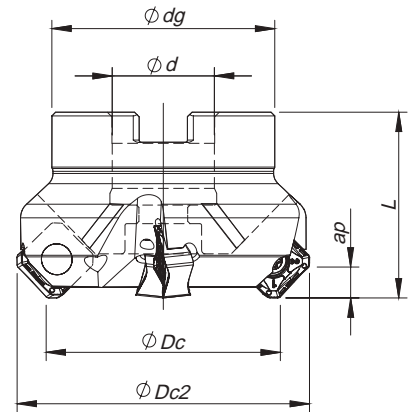
(Note 2) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

(Note 3) PH5... and PHS... can be used wet or dry. PH7... use only air.

CHIP-BREAKER SELECTION GUIDE | Guia para aplicações do quebra- aparas | Guía para aplicación del rompevirutas

| ISO | PSM | Material | HB (Brinell) | Chip-Breaker Application | |
|-----|-----|-----------------------------------|--------------|--------------------------|----------------------|
| | | | | 1st choice | Difficult Operations |
| P | 1 | Unalloyed Steel | 125-220 | LP | MP |
| | 2 | Low-Alloyed Steel | 220-280 | LP | MP |
| | 3 | High-Alloyed Steel | 280-380 | MP | - |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | LP | MP |
| | 5 | SS - Austenitic | 200-330 | LP | - |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | LP | - |
| K | 7 | Malleable Cast Iron | 130-230 | MK | - |
| | 8 | Grey Cast Iron | 180-245 | MK | - |
| | 9 | Nodular Cast iron | 160-250 | MK | - |
| N | 10 | Aluminium and Non Ferrous | 30-130 | LN | - |
| S | 11 | Heat Resistant Super Alloys | 200-320 | LP | - |



Arbor Mounting

$K_r=45^\circ$ | $\gamma_p=-6^\circ$

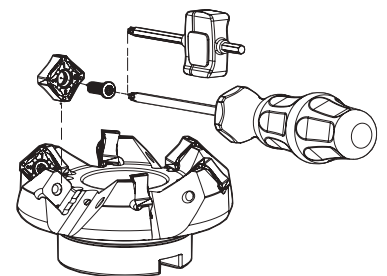
| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|----|---|------------|----------|-----------|----|--------|----------------|----------------|-------------------------------|-------|
| | | | ϕDc | $\phi Dc2$ | ϕd | ϕdg | L | | Arbor Type | A_p max (mm) | | |
| 181048200 | 050A90945-04-06-022040 | 4 | 50 | 63 | 22 | 48 | 40 | 0,424 | A | 6,0 | SN... 1206 | |
| 181067000 | 050A90945-06-06-022040 | 6 | 50 | 63 | 22 | 48 | 40 | 0,415 | A | 6,0 | SN... 1206 | |
| 181048300 | 063A90945-06-06-022040 | 6 | 63 | 76 | 22 | 52 | 40 | 0,575 | A | 6,0 | SN... 1206 | |
| 181067100 | 063A90945-08-06-022040 | 8 | 63 | 76 | 22 | 52 | 40 | 0,577 | A | 6,0 | SN... 1206 | |
| 181048400 | 080A90945-07-06-027050 | 7 | 80 | 93 | 27 | 60 | 50 | 0,966 | B | 6,0 | SN... 1206 | |
| 181067200 | 080A90945-10-06-027050 | 10 | 80 | 93 | 27 | 60 | 50 | 0,950 | B | 6,0 | SN... 1206 | |
| 181048500 | 100A90945-08-06-032050 | 8 | 100 | 113 | 32 | 80 | 50 | 1,667 | B | 6,0 | SN... 1206 | |
| 181067300 | 100A90945-12-06-032050 | 12 | 100 | 113 | 32 | 80 | 50 | 1,650 | B | 6,0 | SN... 1206 | |
| 181048600 | 125A90945-10-06-040063 | 10 | 125 | 138 | 40 | 90 | 63 | 2,890 | B | 6,0 | SN... 1206 | |
| 181048700 | 160A90945-12-06-U040063 | 12 | 160 | 173 | 40 | 110 | 63 | 4,360 | C | 6,0 | SN... 1206 | |
| 181052800 | 200A90945-14-06-U060063 | 14 | 200 | 213 | 60 | 172 | 63 | 8,890 | C | 6,0 | SN... 1206 | |
| 181064700 | 250A90945-16-06-U060063 | 16 | 250 | 263 | 60 | 172 | 63 | 11,490 | C | 6,0 | SN... 1206 | |

Stock item | Produto de stock | Itens de stock

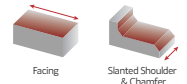
Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9)

SPARE PARTS | Complementos | Repuestos

| Cutter ϕDc | Insert Screw | Key (Torx) | Order separately | | Order separately | |
|---------------------|--------------|------------|------------------|--------------|------------------|-----------------|
| | | | Key (Torx - Nm) | Torque Value | Screw | DIN 6368 Wrench |
| A90945 - 50 - 63 | P0401200 | XT15 | DT1530 | 3,0 | - | - |
| A90945 - 80 | P0401200 | XT15 | DT1530 | 3,0 | J0123510 | SD6368-12 |
| A90945 - 100 | P0401200 | PT15 | DT1530 | 3,0 | J0164110 | SD6368-16 |
| A90945 - 125 | P0401200 | PT15 | DT1530 | 3,0 | J0204610 | SD6368-20 |
| A90945 - 160 - 250 | P0401200 | PT15 | DT1530 | 3,0 | - | - |



Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
Check the procedures for the clamping screws on the page A-241.



SNH(K)X 1206 | Inserts | Pastilhas | Plaquetas

A

MILLING

Overview

Face milling

Hifeed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

Spot face

Spare Parts

Technical Data

End Mills

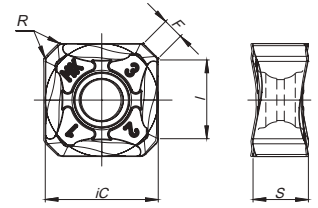
SNH(K)X-LP



SNH(K)X-MP



SNH(K)X-LP | MP | MK | LN



SNH(K)X-MK



SNHX-LN

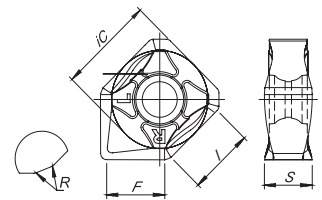


SNHX-W

4 Cutting edges (2R + 2L)



SNHX-W



| (1) Geometry code | (2) Grade code ISO Reference | P | | | | | | M | K | | | | | | N | S | Dimensions Dimensões Dimensiones (mm) | | | | | |
|-------------------------|------------------------------------|-----|----|-----|----|----|----|-----|-----|----|----|-----|----|----|-----|-----|--|-------|------|------|------|------|
| | | CVD | | PVD | | | | PVD | CVD | | | PVD | | | UNC | PVD | | | | | | |
| | | T9 | X5 | G4 | T1 | P4 | G6 | X9 | L5 | L6 | L9 | X5 | G4 | T1 | P4 | G6 | 10 | X9 | iC | S | I | R |
| 1112293 | SNKX 1206 ANSN-MP | ⊗ | | ⊗ | ⊗ | | ⊗ | | | | | ⊗ | ⊗ | | ⊗ | | | 12,70 | 6,35 | 9,30 | 0,80 | 2,00 |
| 1112249 | SNKX 1206 ANEN-MK | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | | | 12,70 | 6,35 | 9,30 | 0,80 | 2,00 |
| 1111452 | SNHX 1206 ANEN-LP | | | | ⊗ | ⊗ | | ⊗ | | | | | | ⊗ | ⊗ | | ⊗ | 12,70 | 6,35 | 9,30 | 0,80 | 2,00 |
| 1111502 | SNHX 1206 ANSN-MP | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | 12,70 | 6,35 | 9,30 | 0,80 | 2,00 |
| 1111503 | SNHX 1206 ANEN-MK | | ⊗ | ⊗ | ⊗ | | | ⊗ | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | 12,70 | 6,35 | 9,30 | 0,80 | 2,00 |
| 1111504 | SNHX 1206 ANFN-LN | | | | | | | | | | | | | | | ⊗ | | 12,70 | 6,35 | 9,30 | 0,80 | 2,00 |
| 1111899 | SNHX 1206 ANFN-W* | | ⊗ | | ⊗ | | | | | | | ⊗ | | ⊗ | | | | 12,70 | 6,30 | 9,30 | 0,40 | 7,60 |

⊗ First choice | Primeira opção | 1ª opción ⊗ Stock item | Produto de stock | Itens de stock ○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9) Insert order code = (1) Geometry Code + (2) Grade Code

* Wiper insert with 2 rights and 2 left-hand cutting edges.

PLUS 90945

RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | | | | | |
|-----|-----|-----------------------------------|--------------|-------------------|---------|---------|---------|---------|---------|---------|
| | | | | ← Wear Resistance | | | | | | |
| | | | | PH0910 | PH5705 | PH5320 | PHP910 | PHP920 | PH7920 | PHP930 |
| P | 1 | Unalloyed Steel | 125-220 | - | - | - | 180-250 | 180-250 | 180-240 | 160-220 |
| | 2 | Low-Alloyed Steel | 220-280 | - | - | - | 160-240 | 160-230 | 160-220 | 140-200 |
| | 3 | High-Alloyed Steel | 280-380 | - | - | - | 140-230 | 140-220 | 140-210 | 120-190 |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | - | - | - | - | - | 140-220 | 140-200 |
| | 5 | SS - Austenitic | 200-330 | - | - | - | - | - | 130-180 | 120-160 |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | - | - | - | - | - | 120-160 | 100-140 |
| K | 7 | Malleable Cast Iron | 130-230 | - | 160-290 | 150-280 | 180-300 | 160-270 | 160-260 | 150-240 |
| | 8 | Grey Cast Iron | 180-245 | - | 170-320 | 160-320 | 160-250 | 140-250 | 140-240 | 140-230 |
| | 9 | Nodular Cast iron | 160-250 | - | 140-200 | 100-190 | 150-210 | 120-210 | 120-200 | 100-190 |
| N | 10 | Aluminium and Non Ferrous | 30-130 | 100-2000 | - | - | - | - | - | - |
| S | 11 | Heat Resistant Super Alloys | 200-320 | - | - | - | - | - | - | 30-100 |

(Note 1) Cutting conditions $a_e/D_c=70\%$.

(Note 2) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

(Note 3) PH5... and PH5... can be used wet or dry. PH7... use only air.

GRADES SELECTION GUIDE | Guia para selecção de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | | | | | | | | | | | |
|-----|-----|-----------------------------------|--------------|-------------------|--------|--------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|
| | | | | ← Wear Resistance | | | | | | | Toughness → | | | | |
| | | | | PH0910 | PH5705 | PH5320 | PHP910 | PHP920 | PH7920 | PHP930 | PHH930 | PH7930 | PH5740 | PHS740 | PH7740 |
| P | 1 | Unalloyed Steel | 125-220 | | | | ✓ | ✓ | ✓ | ✓ | | ✓ | | ✓ | ✓ |
| | 2 | Low-Alloyed Steel | 220-280 | | | | ✓ | ✓ | ✓ | ✓ | | ✓ | | ✓ | ✓ |
| | 3 | High-Alloyed Steel | 280-380 | | | | ✓ | ✓ | ✓ | ✓ | | ✓ | | ✓ | ✓ |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | | | | | | | | ✓ | ✓ | | | ✓ |
| | 5 | SS - Austenitic | 200-330 | | | | | | | | ✓ | ✓ | | | ✓ |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | | | | | | | | ✓ | ✓ | | | ✓ |
| K | 7 | Malleable Cast Iron | 130-230 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | ✓ |
| | 8 | Grey Cast Iron | 180-245 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | ✓ |
| | 9 | Nodular Cast iron | 160-250 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | | ✓ |
| N | 10 | Aluminium and Non Ferrous | 30-130 | ✓ | | | | | | | | | | | |
| S | 11 | Heat Resistant Super Alloys | 200-320 | | | | | | | | ✓ | ✓ | | | ✓ |

● Good Conditions

● Average Conditions

● Difficult Conditions

CHIP-BREAKER SELECTION GUIDE | Guia para aplicações do quebra- aparas | Guía para aplicación del rompevirutas

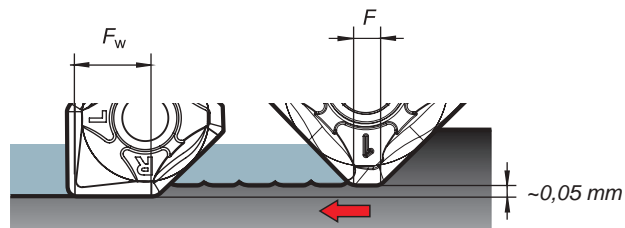
| ISO | PSM | Material | HB (Brinell) | Chip-Breaker Application | |
|-----|-----|-----------------------------------|--------------|--------------------------|----------------------|
| | | | | 1st choice | Difficult Operations |
| P | 1 | Unalloyed Steel | 125-220 | SNHX 12... LP | SNH(K)X 12... MP |
| | 2 | Low-Alloyed Steel | 220-280 | SNHX 12... LP | SNH(K)X 12... MP |
| | 3 | High-Alloyed Steel | 280-380 | SNH(K)X 12... MP | - |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | SNHX 12... LP | - |
| | 5 | SS - Austenitic | 200-330 | SNHX 12... LP | - |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | SNHX 12... LP | - |
| K | 7 | Malleable Cast Iron | 130-230 | SNH(K)X 12... MK | - |
| | 8 | Grey Cast Iron | 180-245 | SNH(K)X 12... MK | - |
| | 9 | Nodular Cast iron | 160-250 | SNH(K)X 12... MK | - |
| N | 10 | Aluminium and Non Ferrous | 30-130 | SNHX 12... LN | - |
| S | 11 | Heat Resistant Super Alloys | 200-320 | SNHX 12... LP | - |

| Vc (m/min) | | | | | Feed fz (mm/t) | | | | |
|-------------|---------|---------|---------|---------|----------------|------------------|------------------|---------------|--------------|
| Toughness → | | | | | | | | | |
| PHH930 | PH7930 | PH5740 | PHS740 | PH7740 | SNHX 12... LP | SNH(K)X 12... MP | SNH(K)X 12... MK | SNHX 12... LN | SNHX 12... W |
| - | 160-220 | - | 140-220 | 140-200 | 0,10-0,35 | 0,10-0,35 | - | - | 0,10-0,35 |
| - | 140-200 | - | 120-200 | 130-180 | 0,10-0,35 | 0,10-0,35 | - | - | 0,10-0,35 |
| - | 120-190 | - | 100-190 | 100-170 | 0,10-0,30 | 0,10-0,30 | - | - | 0,10-0,30 |
| 140-210 | 140-200 | - | - | 130-180 | 0,10-0,30 | - | - | - | - |
| 120-170 | 120-160 | - | - | 110-160 | 0,10-0,30 | - | - | - | - |
| 100-150 | 100-140 | - | - | 90-150 | 0,10-0,25 | - | - | - | - |
| - | 150-240 | 160-260 | - | 140-220 | 0,10-0,35 | - | 0,10-0,35 | - | 0,10-0,40 |
| - | 140-230 | 140-240 | - | 120-210 | 0,10-0,35 | - | 0,10-0,35 | - | 0,10-0,40 |
| - | 100-190 | 120-200 | - | 100-190 | 0,10-0,30 | - | 0,10-0,30 | - | 0,10-0,40 |
| - | - | - | - | - | - | - | - | 0,10-0,35 | - |
| 30-110 | 30-100 | - | - | 30-100 | 0,07-0,20 | - | - | - | - |

WIPER INSERTS

Recommended Cutting Conditions:

- f_z should be equal to $0,8 \times F_w / Z$
- Axial depth of cut is 0,5 to 0,8mm.



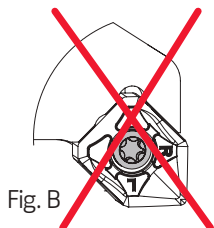
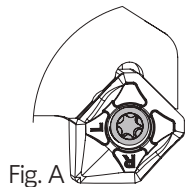
Example:

- The width of the parallel land (F) of the insert is 2mm.
- To obtain a good surface finishing, the feed per revolution should be a maximum of 80% of 2mm = 1,6mm.
- The wiper insert will have a parallel land (F_w) with a width of 7,6mm.
- Result: Feed per revolution (f_r) could be increased from 1,6mm to 6,1mm (80% of 7,6mm).

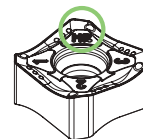
Note: Other limitations, such as machine power, must be taken into consideration.

How to use a wiper insert:

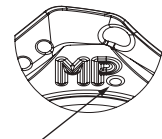
- Since wiper is one corner use to standard cutters, please attach the insert with the parallel land down to the workspace cutting surface.



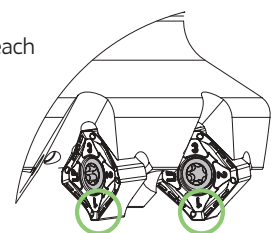
When using wiper insert, install the insert as shown on Fig. A if the insert is installed as shown on Fig. B breakage of the insert is inevitable and normal surface finish can not be obtained.

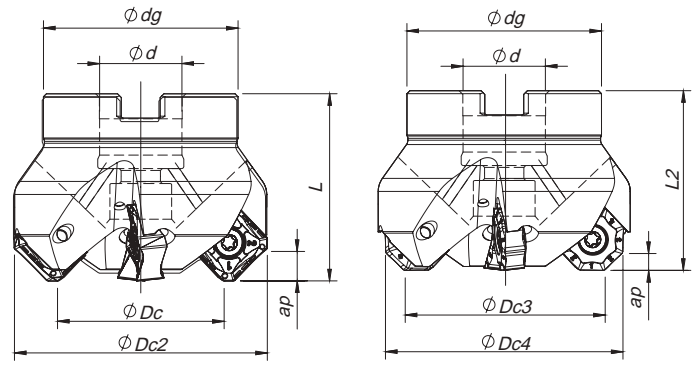


This point shows the SNKX insert difference to SNHX



Put the same side of insert in each pocket for best radial and axial runout when using SNKX.





Arbor Mounting
 $K_r=45^\circ$ | $\gamma_p=-6^\circ$

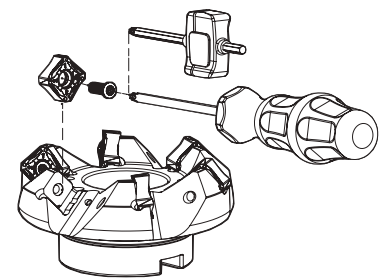
| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|----|---|------------|------------|------------|----------|-----------|----|----|-------|----------------|-----------|-------------------------------|-------|
| | | | ϕDc | $\phi Dc2$ | $\phi Dc3$ | $\phi Dc4$ | ϕd | ϕdg | L | L2 | | Arbor Type | Ap (mm) | | |
| 181088900 | 063A91245-05-06-022050 | 5 | 63 | 80,1 | 66,6 | 76,0 | 22 | 52 | 50 | 48 | 0,81 | A | 3,8 8,5 | ON...06 SN...16 | |
| 181089000 | 080A91245-06-06-027050 | 6 | 80 | 97,1 | 83,6 | 93,0 | 27 | 60 | 50 | 48 | 1,06 | B | 3,8 8,5 | ON...06 SN...16 | |
| 181089100 | 080A91245-08-06-027050 | 8 | 80 | 97,1 | 83,6 | 93,0 | 27 | 60 | 50 | 48 | 1,09 | B | 3,8 8,5 | ON...06 SN...16 | |
| 181089200 | 100A91245-07-06-032063 | 7 | 100 | 117,1 | 103,6 | 113,0 | 32 | 80 | 63 | 61 | 2,24 | B | 3,8 8,5 | ON...06 SN...16 | |
| 181089300 | 100A91245-10-06-032063 | 10 | 100 | 117,1 | 103,6 | 113,0 | 32 | 80 | 63 | 61 | 2,28 | B | 3,8 8,5 | ON...06 SN...16 | |
| 181089400 | 125A91245-08-06-040063 | 8 | 125 | 142,1 | 128,6 | 138,0 | 40 | 90 | 63 | 61 | 3,04 | B | 3,8 8,5 | ON...06 SN...16 | |
| 181089500 | 160A91245-10-06-U040063 | 10 | 160 | 177,1 | 163,6 | 173,0 | 40 | 110 | 63 | 61 | 4,40 | C | 3,8 8,5 | ON...06 SN...16 | |
| 181089600 | 200A91245-12-06-U060063 | 12 | 200 | 217,1 | 203,6 | 213,0 | 60 | 172 | 63 | 61 | 9,12 | C | 3,8 8,5 | ON...06 SN...16 | |
| 181089700 | 250A91245-14-06-U060063 | 14 | 250 | 267,1 | 253,6 | 263,0 | 60 | 172 | 63 | 61 | 11,93 | C | 3,8 8,5 | ON...06 SN...16 | |

Stock item | Produto de stock | Itens de stock

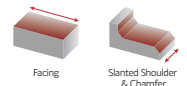
Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

SPARE PARTS | Complementos | Repuestos

| Cutter ϕDc | Insert Screw | Key (Torx) | Order separately | | Order separately | |
|---------------------|--------------|------------|------------------|--------------|------------------|-----------------|
| | | | Key (Torx - Nm) | Torque Value | Screw | DIN 6368 Wrench |
| A91245 - 63 | P0451400 | XT20 | DT2050 | 5,0 | - | - |
| A91245 - 80 | P0451400 | XT20 | DT2050 | 5,0 | J0123510 | SD6368-12 |
| A91245 -100 | P0451400 | PT20 | DT2050 | 5,0 | J0164110 | SD6368-16 |
| A91245 -125 | P0451400 | PT20 | DT2050 | 5,0 | J0204610 | SD6368-20 |
| A91245 - 160-250 | P0451400 | PT20 | DT2050 | 5,0 | - | - |



Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
 Check the procedures for the clamping screws on the page A-241.



ONH(K)X 0606 | SNH(K)X 1606 | Inserts | Pastilhas | Plaquetas

A
MILLING
Overview
Face milling
Hifed milling
Shoulder milling
Profile milling
Hardmill
Center & Chamfer
Spotface
Spare Parts
Technical Data
End Mills

ONH(K)X-LP



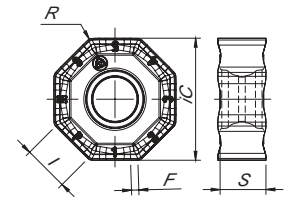
ONH(K)X-MP
(PHP grade)



ONH(K)X-MK



ONH(K)X-LP | MP | MK



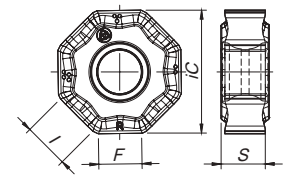
ONHX-W
(8 Cutting edges (4R + 4L))



ONHX-LS
(PHH grade) **NEW**



ONHX-W



SNH(K)X-LP



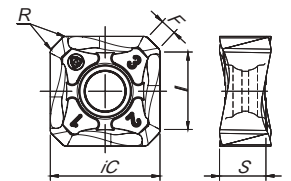
SNH(K)X-MP
(PHS grade)



SNH(K)X-MK



SNH(K)X-LP | MP | MK



| (1) Geometry code | (2) Grade code ISO Reference | P | | | | | | M | | | K | | | | | | S | | | Dimensions Dimensões Dimensiones (mm) | | | | | | |
|----------------------|---------------------------------|-----|----|-----|----|----|----|-----|----|----|-----|----|-----|----|----|----|-----|----|----|---|----|-------|------|-------|------|------|
| | | CVD | | PVD | | | | PVD | | | CVD | | PVD | | | | PVD | | | | | | | | | |
| | | T9 | G4 | T1 | P3 | P4 | G6 | P3 | X9 | G6 | L5 | L6 | L9 | G4 | T1 | P3 | P4 | G6 | P3 | X9 | G6 | iC | S | I | R | F |
| 1111954 | ONHX 0606 ANEN-LP | | | ⊗ | | ⊗ | ⊗ | | | | | | | | | | | | | | ⊗ | 16,50 | 6,35 | 6,20 | 0,80 | 1,00 |
| 1112696 | ONHX 0606 ANEN-LS | | | | | | | | | | | | | | | | | | | | ⊗ | 16,50 | 6,35 | 6,20 | 0,80 | 1,00 |
| 1111955 | ONHX 0606 ANEN-MP | | | ⊗ | | | ⊗ | | | | | | | | | | | | | | | 16,50 | 6,35 | 6,20 | 0,80 | 1,00 |
| 1111956 | ONHX 0606 ANEN-MK | | | | | | | | | | | | | | | | | | | | | 16,50 | 6,35 | 6,20 | 0,80 | 1,00 |
| 1112053 | ONHX 0606 ANEN-W* | | ⊗ | | | | | | | | | | | | | | | | | | | 16,50 | 6,35 | 6,20 | - | 6,00 |
| 1112284 | ONKX 0606 ANEN-LP | | ⊗ | ⊗ | ⊗ | | ⊗ | ⊗ | | | | | | | | | | | | | | 16,50 | 6,35 | 6,20 | 0,80 | 1,00 |
| 1112287 | ONKX 0606 ANEN-MP | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | 16,50 | 6,35 | 6,20 | 0,80 | 1,00 |
| 1112291 | ONKX 0606 ANEN-MK | | | | | | | | | | | | | | | | | | | | | 16,50 | 6,35 | 6,20 | 0,80 | 1,00 |
| 1111951 | SNHX 1606 ANER-LP | | ⊗ | ⊗ | | ⊗ | ⊗ | | | | | | | | | | | | | | | 16,50 | 6,35 | 12,50 | 0,80 | 2,20 |
| 1111952 | SNHX 1606 ANER-MP | ⊗ | | ⊗ | | | ⊗ | | | | | | | | | | | | | | | 16,50 | 6,35 | 12,50 | 0,80 | 2,20 |
| 1111953 | SNHX 1606 ANER-MK | | | | | | | | | | | | | | | | | | | | | 16,50 | 6,35 | 12,50 | 0,80 | 2,20 |
| 1112281 | SNKX 1606 ANER-MP | ⊗ | ⊗ | ⊗ | | | ⊗ | | | | | | | | | | | | | | | 16,50 | 6,35 | 12,50 | 0,80 | 2,20 |
| 1112282 | SNKX 1606 ANER-MK | | | | | | | | | | | | | | | | | | | | | 16,50 | 6,35 | 12,50 | 0,80 | 2,20 |

⊗ First choice | Primeira opção | 1ª opción ⊗ Stock item | Produto de stock | Itens de stock ○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9) Insert order code = (1) Geometry Code + (2) Grade Code

* Wiper insert with 4 rights and 4 left-hand cutting edges.

GRADES SELECTION GUIDE | Guia para selecção de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | | | | | | | | | |
|-----|-----|-----------------------------------|--------------|-------------------|--------|--------|--------|--------|-------------|--------|--------|--------|--------|
| | | | | ← Wear Resistance | | | | | Toughness → | | | | |
| | | | | PH5705 | PH5320 | PHP920 | PH7920 | PHP930 | PHH930 | PH7930 | PH5740 | PHS740 | PH7740 |
| P | 1 | Unalloyed Steel | 125-220 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | 2 | Low-Alloyed Steel | 220-280 | | | ● | ● | ● | | ● | | ● | ● |
| | 3 | High-Alloyed Steel | 280-380 | | | ● | ● | ● | | ● | | ● | ● |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | | | | | | | ● | ● | | ● |
| | 5 | SS - Austenitic | 200-330 | | | | | | | ● | ● | | ● |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | | | | | | | ● | ● | | ● |
| K | 7 | Malleable Cast Iron | 130-230 | ● | ● | ● | ● | ● | | ● | ● | | ● |
| | 8 | Grey Cast Iron | 180-245 | ● | ● | ● | ● | ● | | ● | ● | | ● |
| | 9 | Nodular Cast iron | 160-250 | ● | ● | ● | ● | ● | | ● | ● | | ● |
| S | 11 | Heat Resistant Super Alloys | 200-320 | | | | | | | ● | ● | | ● |



Good Conditions



Average Conditions



Difficult Conditions

RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | | | | |
|-----|-----|-----------------------------------|--------------|-------------------|---------|---------|-------------|---------|---------|
| | | | | ← Wear Resistance | | | Toughness → | | |
| | | | | PH5705 | PH5320 | PHP920 | PH7920 | PHP930 | PHH930 |
| P | 1 | Unalloyed Steel | 125-220 | - | - | 180-250 | 180-240 | 160-230 | - |
| | 2 | Low-Alloyed Steel | 220-280 | - | - | 160-230 | 160-220 | 140-210 | - |
| | 3 | High-Alloyed Steel | 280-380 | - | - | 140-220 | 140-210 | 120-200 | - |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | - | - | - | - | - | 140-210 |
| | 5 | SS - Austenitic | 200-330 | - | - | - | - | - | 120-170 |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | - | - | - | - | - | 100-150 |
| K | 7 | Malleable Cast Iron | 130-230 | 160-290 | 150-280 | 160-270 | 160-260 | 150-250 | - |
| | 8 | Grey Cast Iron | 180-245 | 170-320 | 160-320 | 140-250 | 140-240 | 140-230 | - |
| | 9 | Nodular Cast iron | 160-250 | 140-200 | 100-190 | 120-210 | 120-200 | 100-200 | - |
| S | 11 | Heat Resistant Super Alloys | 200-320 | - | - | - | - | - | 30-110 |

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | | | Feed fz (mm/t) |
|-----|-----|-----------------------------------|--------------|-------------------|---------|-------------|---------|------------------------|
| | | | | ← Wear Resistance | | Toughness → | | |
| | | | | PH7930 | PH5740 | PHS740 | PH7740 | SNH(K)X/ONH(K)X |
| P | 1 | Unalloyed Steel | 125-220 | 160-220 | - | 140-220 | 140-200 | 0,15 (0,25) 0,4 |
| | 2 | Low-Alloyed Steel | 220-280 | 140-200 | - | 120-200 | 130-180 | 0,15 (0,25) 0,4 |
| | 3 | High-Alloyed Steel | 280-380 | 120-190 | - | 100-190 | 100-170 | 0,15 (0,25) 0,4 |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | 140-200 | - | - | 130-180 | 0,1 (0,20) 0,3 |
| | 5 | SS - Austenitic | 200-330 | 120-160 | - | - | 110-160 | 0,1 (0,20) 0,3 |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | 100-140 | - | - | 90-150 | 0,1 (0,20) 0,3 |
| K | 7 | Malleable Cast Iron | 130-230 | 150-240 | 160-260 | - | 140-220 | 0,15 (0,25) 0,4 |
| | 8 | Grey Cast Iron | 180-245 | 140-230 | 140-240 | - | 120-210 | 0,14 (0,25) 0,4 |
| | 9 | Nodular Cast iron | 160-250 | 100-190 | 120-200 | - | 100-190 | 0,14 (0,25) 0,4 |
| S | 11 | Heat Resistant Super Alloys | 200-320 | 30-100 | - | - | 30-100 | 0,1 (0,15) 0,17 |

(Note 1) Cutting conditions $a_e/D_c=70\%$.

(Note 2) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

(Note 3) PH5... and PHS... can be used wet or dry. PH7... use only air.

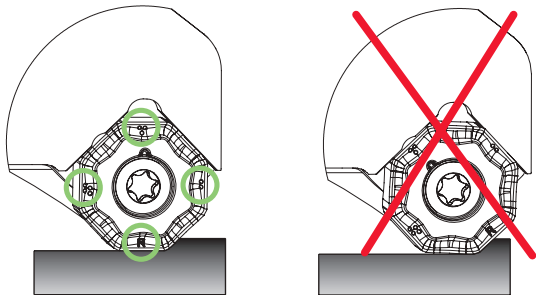
CHIP-BREAKER SELECTION GUIDE | Guia para aplicações do quebra- aparas | Guía para aplicación del rompevirutas

Selection Example:

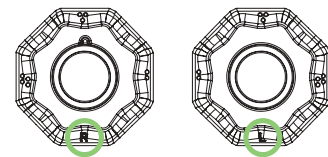
| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | Feed fz (mm/t) | | |
|-----|-----|---------------------|--------------|------------------------|------------------------|---------------------------|-------------|--|
| | | | | ← Wear Resistance | | | Toughness → | |
| | | | | PH5705 | PH5740 | | SNHX/ONHX | |
| K | 7 | Malleable cast iron | 130-230 | 170 (190) 305 | 150 (170) 260 | 0,15 (0,25) 0,40 | | |
| | 8 | Grey cast iron | 180-245 | 180 (240) 350 | 155 (190) 290 | 0,14 (0,25) 0,40 | | |
| | 9 | Nodular cast iron | 160-250 | 130 (160) 210 | 115 (140) 180 | 0,14 (0,25) 0,40 | | |

This example shows the recommended starting cutting conditions, indicated in **Bold type**.

| ISO | PSM | Material | HB (Brinell) | Chip-Breaker Application | |
|-----|-----|-----------------------------------|--------------|--------------------------|-------------|
| | | | | 1 st choice | Alternative |
| P | 1 | Unalloyed Steel | 125-220 | LP | MP |
| | 2 | Low-Alloyed Steel | 220-280 | LP | MP |
| | 3 | High-Alloyed Steel | 280-380 | MP | - |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | LS | LP |
| | 5 | SS - Austenitic | 200-330 | LS | LP |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | LS | LP |
| K | 7 | Malleable Cast Iron | 130-230 | MK | - |
| | 8 | Grey Cast Iron | 180-245 | MK | - |
| | 9 | Nodular Cast iron | 160-250 | MK | LP |
| S | 11 | Heat Resistant Super Alloys | 200-320 | LS | LP |



The points and letter (R or L) on the insert indicates the side that should be parallel to the workspace material.

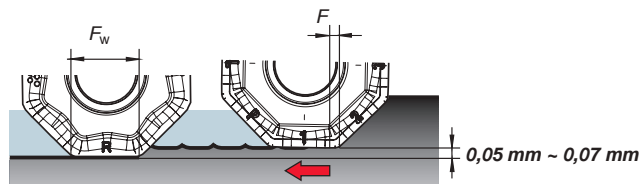


Wiper insert with 4 Right and 4 Left-hand cutting edges. The side work of the insert it's indicated by the letter R (Right) & L (Left).

WIPER INSERTS

Recommended Cutting Conditions:

- f_z should be equal to $0,8 \times F_w / Z$
- Axial depth of cut is 0,5 to 0,8mm.



Example:

- The width of the parallel land (F) of the insert is 1mm.
- To obtain a good surface finishing, the feed per revolution should be a maximum of 80% of 1mm = 0,8mm.
- The wiper insert will have a parallel land (F_w) with a width of 6,0mm.
- Result: Feed per revolution (f_n) could be increased from 0,8mm to 4,8mm (80% of 6,0mm).

Note: Other limitations, such as machine power, must be taken into consideration.

How to use a wiper insert:

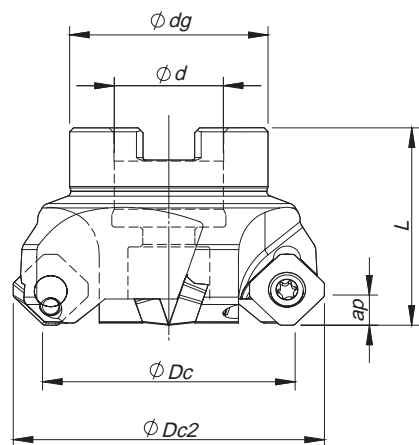
- Since wiper is one corner use to standard cutters, please attach the insert with the parallel land down to the workspace cutting surface.
- The points and the letter (R or L) on the insert indicates the side that should be parallel to the workspace material.
- The side work of the insert it's indicated by the letter (R - Right & L - Left).

LINEPRO 06045



Arbor Mounting

$K_r=45^\circ$ | $\gamma_p=+19^\circ$



| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|------------|----------|-----------|----|-------|----------------|----------------|-------------------------------|-------|
| | | | ϕDc | $\phi Dc2$ | ϕd | ϕdg | L | | Arbor Type | Ap max (mm) | | |
| 181163200 | 050A06045-04-19-022040 | 4 | 50 | 62 | 22 | 42 | 40 | 0,350 | A | 6,0 | SE...T/W 1204 | ○ |
| 181148800 | 063A06045-05-19-022050 | 5 | 63 | 75 | 22 | 42 | 50 | 0,800 | A | 6,0 | SE...T/W 1204 | ○ |
| 181148900 | 080A06045-06-19-027050 | 6 | 80 | 92 | 27 | 50 | 50 | 1,150 | A | 6,0 | SE...T/W 1204 | ○ |
| 181149000 | 100A06045-06-19-032050 | 6 | 100 | 112 | 32 | 64 | 50 | 1,700 | A | 6,0 | SE...T/W 1204 | ○ |
| 181163300 | 125A06045-07-19-040063 | 7 | 125 | 132 | 40 | 85 | 63 | 2,750 | B | 6,0 | SE...T/W 1204 | ○ |
| 181040300 | 160A06045-08-19-U040063 | 8 | 160 | 172 | 40 | 100 | 63 | 4,600 | C | 6,0 | SE...T/W 1204 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

SEH... 1204 || Inserts | Pastilhas | Plaquetas

SEHW



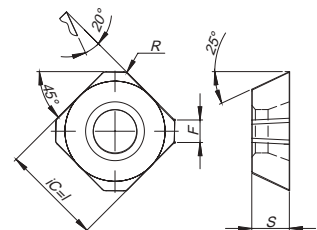
SEHT



SEHT-LN



SEHW | SEHT | SEHT-LN



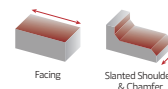
| Geometry code | ISO Reference | P | | M | K | | N | Dimensions Dimensões Dimensiones (mm) | | | |
|------------------|-------------------|-----|----|----|-----|----|-----|--|------|-------|------|
| | | PVD | | | PVD | | UNC | iC | S | I | F |
| | | 68 | I5 | I5 | 68 | I5 | 10 | | | | |
| 1110216 | SEHT 1204 AFEN | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | 12,70 | 4,76 | 12,70 | 2,80 |
| 1110218 | SEHT 1204 AFTN | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | 12,70 | 4,76 | 12,70 | 2,80 |
| 1112283 | SEHT 1204 AFFN-LN | | | | | | ⊗ | 12,70 | 4,76 | 12,70 | 2,00 |
| 1110219 | SEHW 1204 AFEN | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | 12,70 | 4,76 | 12,70 | 2,80 |
| 1110222 | SEHW 1204 AFTN | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | 12,70 | 4,76 | 12,70 | 2,80 |

⊗ First choice | Primeira opção | 1ª opción

⊗ Stock item | Produto de stock | Itens de stock

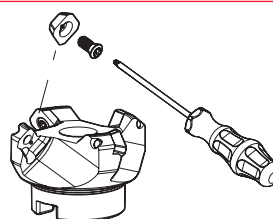
○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

Insert order code = (1) Geometry Code + (2) Grade Code



SPARE PARTS | Complementos | Repuestos

| Cutter ØDc | Insert Screw | Key (Torx) | Order separately | |
|-------------------|--------------|------------|------------------|--------------|
| | | | Key (Torx - Nm) | Torque Value |
| A06045 - 50 - 160 | P0501100 | PT20 | DT2050 | 5,0 |



Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
Check the procedures for the clamping screws on the page A-241.

GRADES SELECTION GUIDE | Guia para seleção de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | | |
|-----|-----|-----------------------------------|--------------|-------------------|--------|-------------|
| | | | | ← Wear Resistance | | Toughness → |
| | | | | PH0910 | PH6920 | PH6740 |
| P | 1 | Unalloyed steel | 125-220 | ● | ✓ | ✓ |
| | 2 | Low-alloyed steel | 220-280 | | ✓ | ✓ |
| | 3 | High-alloy steel | 280-380 | | ✓ | ✓ |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | | | ✓ |
| | 5 | SS - Austenitic | 200-330 | | | ✓ |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | | | ✓ |
| K | 7 | Malleable cast iron | 130-230 | | ✓ | ✓ |
| | 8 | Grey cast iron | 180-245 | | ✓ | ✓ |
| | 9 | Nodular cast iron | 160-250 | | ✓ | ✓ |
| N | 10 | Aluminium and Non Ferrous | 30-130 | ✓ | | |



RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | | Feed fz (mm/t) | | |
|-----|-----|-----------------------------------|--------------|-------------------|---------|-------------|----------------|--------------|--------------|
| | | | | ← Wear Resistance | | Toughness → | | | |
| | | | | PH0910 | PH6920 | PH6740 | SEHT 1204... | SEHT 1204 LN | SEHW 1204... |
| P | 1 | Unalloyed Steel | 125-220 | - | 150-230 | 130-160 | 0,10-0,20 | - | 0,10-0,20 |
| | 2 | Low-Alloyed Steel | 220-280 | - | 140-220 | 120-150 | 0,10-0,20 | - | 0,10-0,20 |
| | 3 | High-Alloyed Steel | 280-380 | - | 130-180 | 100-130 | 0,10-0,20 | - | 0,10-0,20 |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | - | - | 100-120 | 0,10-0,15 | - | 0,10-0,20 |
| | 5 | SS - Austenitic | 200-330 | - | - | 80-110 | 0,10-0,15 | - | 0,10-0,20 |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | - | - | 70-100 | 0,10-0,15 | - | 0,10-0,20 |
| K | 7 | Malleable Cast Iron | 130-230 | - | - | 130-250 | 0,10-0,25 | - | 0,10-0,25 |
| | 8 | Grey Cast Iron | 180-245 | - | - | 110-220 | 0,10-0,25 | - | 0,10-0,25 |
| | 9 | Nodular Cast iron | 160-250 | - | - | 80-170 | 0,10-0,25 | - | 0,10-0,25 |
| N | 10 | Aluminium and Non Ferrous | 30-130 | 350-1400 | - | - | 0,10-0,25 | - | - |

(Note 1) Cutting conditions ae/DC=70%

(Note 2) Cutting conditions should be adjusted according to the machine and work rigidity.

(Note 3) If chattering occurs, reduce ap and Vc by 30% and keep the same fz per tooth.

CHIP-BREAKER SELECTION GUIDE | Guia para aplicações do quebra- aparas | Guía para aplicación del rompevirutas

| ISO | PSM | Material | HB (Brinell) | Chip-Breaker Application | |
|-----|-----|-----------------------------------|--------------|--------------------------|----------------------|
| | | | | 1st choice | Difficult Operations |
| P | 1 | Unalloyed Steel | 125-220 | SEHT 12... AFEN | SEHW 12... AFEN |
| | 2 | Low-Alloyed Steel | 220-280 | SEHT 12... AFTN | SEHW 12... AFTN |
| | 3 | High-Alloyed Steel | 280-380 | SEHT 12... AFTN | SEHW 12... AFTN |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | SEHT 12... AFEN | SEHW 12... AFEN |
| | 5 | SS - Austenitic | 200-330 | SEHT 12... AFEN | SEHW 12... AFEN |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | SEHW 12... AFEN | - |
| K | 7 | Malleable Cast Iron | 130-230 | SEHT 12... AFEN | SEHW 12... AFEN |
| | 8 | Grey Cast Iron | 180-245 | SEHT 12... AFEN | SEHW 12... AFEN |
| | 9 | Nodular Cast iron | 160-250 | SEHW 12... AFEN | SEHW 12... AFTN |
| N | 10 | Aluminium and Non Ferrous | 30-130 | SEHT 12... AFFN-LN | - |

LINEPRO 09945

A

MILLING

Overview

Face milling

Hi-feed milling

Shoulder milling

Profile milling

Hardmill

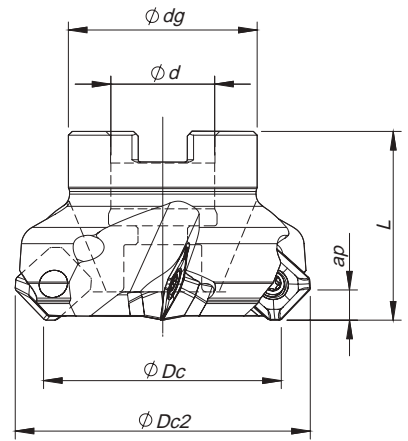
Center & Chamfer

Spotface

Spare Parts

Technical Data

End Mills



Arbor Mounting

$$K_r=45^\circ \mid \gamma_p=+20^\circ \sim +21^\circ$$

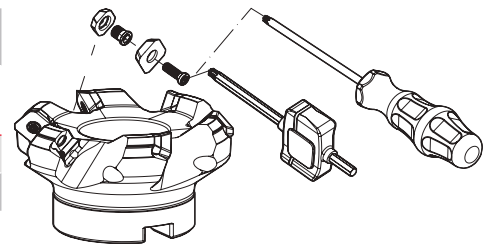
| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|----|---|------------|----------|-----------|----|-------|----------------|----------------|-------------------------------|-------|
| | | | ϕDc | $\phi Dc2$ | ϕd | ϕdg | L | | Arbor Type | A_p max (mm) | | |
| 181034700 | 050A09945-04-20-U022040 | 4 | 50 | 63 | 22 | 40 | 40 | 0,36 | A | 6,0 | SE...13T3 | |
| 181024200 | 063A09945-05-21-U022040 | 5 | 63 | 76 | 22 | 48 | 40 | 0,59 | A | 6,0 | SE...13T3 | |
| 181024300 | 080A09945-06-21-U027050 | 6 | 80 | 93 | 27 | 60 | 50 | 1,02 | B | 6,0 | SE...13T3 | |
| 181024400 | 100A09945-07-21-U032050 | 7 | 100 | 113 | 32 | 70 | 50 | 1,52 | B | 6,0 | SE...13T3 | |
| 181024500 | 125A09945-08-21-U040063 | 8 | 125 | 138 | 40 | 90 | 63 | 3,16 | B | 6,0 | SE...13T3 | |
| 181024600 | 160A09945-10-21-U040063 | 10 | 160 | 173 | 40 | 110 | 63 | 4,61 | C | 6,0 | SE...13T3 | |
| 181051400 | 250A09945-24-21-U060063L | 24 | 250 | 263 | 60 | 172 | 63 | 13,89 | C | 6,0 | SE...13T3 | |
| 181024800 | 250A09945-24-21-U060063 | 24 | 250 | 263 | 60 | 172 | 63 | 13,89 | C | 6,0 | SE...13T3 | |

Stock item | Produto de stock | Itens de stock

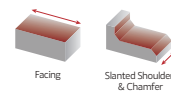
Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

SPARE PARTS | Complementos | Repuestos

| Cutter ϕDc | Insert Screw | Key (Torx) | Order separately | | Order separately | |
|---------------------|--------------|------------|------------------|--------------|------------------|------------|
| | | | Key (Torx - Nm) | Torque Value | Shim | Shim Screw |
| A09945 - 50 - 80 | P0351200 | XT15 | DT1530 | 3,0 | CS130300 | T0503509 |
| A09945 - 100-250 | P0351200 | PT15 | DT1530 | 3,0 | CS130300 | T0503509 |



Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
Check the procedures for the clamping screws on the page A-241.



SE... 13T3 | Inserts | Pastilhas | Plaquetas

SEHT



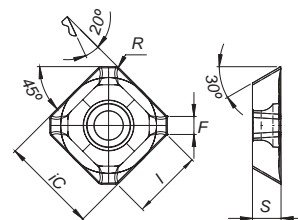
SEHW



SEHT-LN



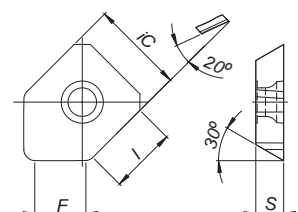
SEHT | SEHW | SEHT-LN



SEHT-W



SEHT-W



| | (2) Grade code | P | | M | K | | N | Dimensions Dimensões Dimensiones (mm) | | | |
|-------------------|-------------------|--------|--------|--------|--------|--------|--------|--|------|------|-----|
| | | PVD | | PVD | | | UNC | iC | S | I | F |
| | | 68 | I5 | I5 | 68 | I5 | 10 | | | | |
| (1) Geometry code | ISO Reference | PH6920 | PH6740 | PH6740 | PH6920 | PH6740 | PH0910 | | | | |
| 1110559 | SEHT 13T3 AGSN | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | 13,35 | 3,97 | 10,0 | 2,0 |
| 1111586 | SEHT 13T3 AGFN-LN | | | | | | ⊗ | 13,35 | 3,97 | 10,0 | 2,3 |
| 1110627 | SEHT 13T3 AGSN-W | ⊗ | | | ⊗ | | | 13,35 | 3,97 | 10,0 | 8,2 |
| 1111146 | SEHW 13T3 AGFN | ⊗ | | | ⊗ | | | 13,35 | 3,97 | 10,0 | 2,0 |

⊗ First choice | Primeira opção | 1ª opción ⊗ Stock item | Produto de stock | Itens de stock ○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9) Insert order code = (1) Geometry Code + (2) Grade Code

GRADES SELECTION GUIDE | Guia para selecção de graus | Tabla para selección de calidades

| ISO | Material | HB (Brinell) | Grades | | |
|-----|-----------------------------------|-----------------|-------------------|--------|-------------|
| | | | ← Wear Resistance | | Toughness → |
| | | | PH0910 | PH6920 | PH6740 |
| P | Unalloyed steel | 125-220 | ● | ● | ● |
| | Low-alloyed steel | 220-280 | | ● | ● |
| | High-alloy steel | 280-380 | | ● | ● |
| M | SS - Ferritic / Martensitic | 200-330 | | | ● |
| | SS - Austenitic | 200-330 | | | ● |
| | SS - Austenitic-ferritic (Duplex) | 230-260 | | | ● |
| K | Malleable cast iron | 130-230 | | ● | ● |
| | Grey cast iron | 180-245 | | ● | ● |
| | Nodular cast iron | 160-250 | | ● | ● |
| N | Aluminium and Non Ferrous | 30-130 | ● | | |

● Good Conditions
● Average Conditions
● Difficult Conditions

A
MILLING
Overview
Face milling
Hifed milling
Shoulder milling
Profile milling
Hardmill
Center & Chamfer
Spot face
Spare Parts
Technical Data
End Mills

RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | | Feed fz (mm/t) | | | |
|-----|-----|-----------------------------------|--------------|-------------------|---------|-------------|----------------|----------------|-------------------|------------------|
| | | | | ← Wear Resistance | | Toughness → | SEHT 13T3 AGSN | SEHW 13T3 AGFN | SEHT 13T3 AGFN-LN | SEHT 13T3 AGSN-W |
| | | | | PH0910 | PH6920 | PH6740 | | | | |
| P | 1 | Unalloyed Steel | 125-220 | - | 180-340 | 180-240 | 0,10-0,25 | - | - | 0,10-0,30 |
| | 2 | Low-Alloyed Steel | 220-280 | - | 180-340 | 160-220 | 0,10-0,20 | - | - | 0,10-0,30 |
| | 3 | High-Alloyed Steel | 280-380 | - | 180-330 | 140-210 | 0,10-0,20 | - | - | 0,10-0,30 |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | - | - | 140-220 | 0,10-0,20 | - | - | - |
| | 5 | SS - Austenitic | 200-330 | - | - | 130-180 | 0,10-0,20 | - | - | - |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | - | - | 120-160 | 0,10-0,20 | - | - | - |
| K | 7 | Malleable Cast Iron | 130-230 | - | - | 160-260 | 0,10-0,25 | 0,10-0,25 | - | 0,10-0,30 |
| | 8 | Grey Cast Iron | 180-245 | - | - | 140-240 | 0,10-0,25 | 0,10-0,25 | - | 0,10-0,30 |
| | 9 | Nodular Cast iron | 160-250 | - | - | 120-200 | 0,10-0,20 | 0,10-0,20 | - | 0,10-0,30 |
| N | 10 | Aluminium and Non Ferrous | 30-130 | 350-1400 | - | - | 0,10-0,20 | - | 0,10-0,20 | - |

(Note 1) Cutting conditions ae/DC=70%

(Note 2) Cutting conditions should be adjusted according to the machine and work rigidity.

(Note 3) If chattering occurs, reduce ap and Vc by 30% and keep the same fz per tooth.

CHIP-BREAKER SELECTION GUIDE | Guia para aplicações do quebra- aparas | Guía para aplicación del rompevirutas

| ISO | PSM | Material | HB (Brinell) | Chip-Breaker Application | |
|-----|-----|-----------------------------------|--------------|--------------------------|----------------------|
| | | | | 1st choice | Difficult Operations |
| P | 1 | Unalloyed Steel | 125-220 | SEHT... AGSN | - |
| | 2 | Low-Alloyed Steel | 220-280 | SEHT... AGSN | - |
| | 3 | High-Alloyed Steel | 280-380 | SEHT... AGSN | - |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | SEHT... AGSN | SEHW... AGFN |
| | 5 | SS - Austenitic | 200-330 | SEHT... AGSN | SEHW... AGFN |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | SEHT... AGSN | SEHW... AGFN |
| K | 7 | Malleable Cast Iron | 130-230 | SEHW... AGFN | - |
| | 8 | Grey Cast Iron | 180-245 | SEHW... AGFN | - |
| | 9 | Nodular Cast iron | 160-250 | SEHW... AGFN | - |
| N | 10 | Aluminium and Non Ferrous | 30-130 | SEHT... AGFN-LN | - |

WIPER INSERTS

Rec. Cutting Conditions

- F_w at least 40% larger than f_n ($f_n = f_z \times Z$);
- Axial depth of cut is 0,5 - 0,8 mm;

Example:

- The width of parallel land (F) of the SEHT insert is 2,0 mm.
 - With a cutter of 10 inserts and using a feed per tooth (f_z) of 0,3 mm, the feed per revolution (f_n) will be 3 mm, i.e. 66% bigger than the parallel land.
 - To obtain a good surface finishing, the feed per revolution should be a maximum 80% of 2,0 mm = 1,6 mm.
 - The wiper insert will have a parallel land (F_w) with a width of approximately 8,2 mm.
 - Result: Feed per revolution (f_n) could be increased from 1,6 mm to 60% of 6,0 mm = 4,9 mm.
- Note: Other limitations, such as machine power, must be taken into consideration.

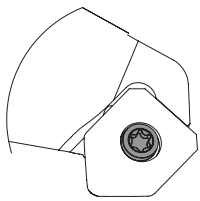


Fig. A

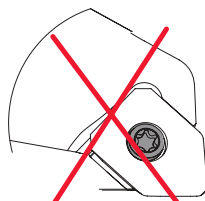


Fig. B

When using wiper insert, install the insert as shown on Fig. A.
If the insert is installed as shown on Fig. B breakage of the insert
is inevitable and normal surface finish can not be obtained.

LINEPRO 00036

A

MILLING

Overview

Face milling

Hi-feed milling

Shoulder milling

Profile milling

Hardmill

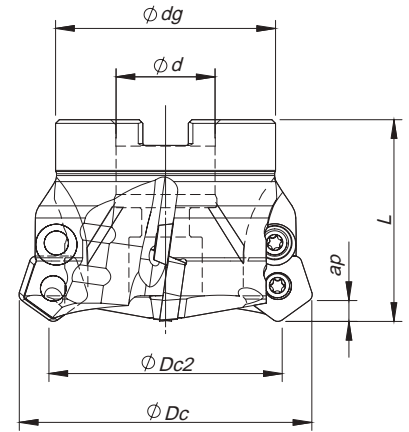
Center & Chamfer

Spot face

Spare Parts

Technical Data

End Mills



Arbor Mounting

$K_r=36^\circ$ | $\gamma_p=+9^\circ$ | $R_p=7,0$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|------------|----------|-----------|----|-------|----------------|----------------|-------------------------------|-------|
| | | | ϕDc | $\phi Dc2$ | ϕd | ϕdg | L | | Arbor Type | Ap max (mm) | | |
| 181009800 | 066C00036-05-09-027055 | 5 | 66 | 47,5 | 27 | 48 | 55 | 0,520 | A | 5,5 | PD...1204 | |
| 181010400 | 080C00036-06-09-027055 | 6 | 80 | 61,5 | 27 | 60 | 55 | 0,940 | A | 5,5 | PD...1204 | |
| 181018100 | 100C00036-07-09-U032055 | 7 | 100 | 81,5 | 32 | 70 | 55 | 1,400 | B | 5,5 | PD...1204 | |
| 181001100 | 125C00036-08-09-U040055 | 8 | 125 | 106,5 | 40 | 90 | 55 | 2,420 | B | 5,5 | PD...1204 | |
| 181002700 | 160C00036-09-09-U040055 | 9 | 160 | 141,5 | 40 | 120 | 55 | 4,590 | B | 5,5 | PD...1204 | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

PD... 1204... || Inserts | Pastilhas | Plaquetas

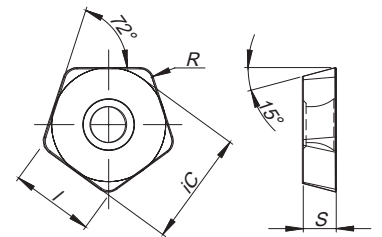
PDMW



PDHW



PDM(H)W



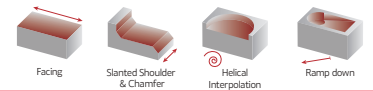
| | | P | | | K | Dimensions Dimensões Dimensiones (mm) | | | |
|------------------------------|---------------|--------|--------|--------|--------|--|------|------|-----|
| | | PVD | | | | PVD | ic | S | I |
| ⁽²⁾ Grade code | 68 | 78 | 86 | 68 | | | | | |
| ⁽¹⁾ Geometry code | ISO Reference | PH6920 | PH6125 | PH6135 | PH6920 | | | | |
| 1110555 | PDMW 120420 T | | | | | 16,52 | 4,76 | 12,0 | 2,0 |
| 1110554 | PDHW 120420 T | | | | | 16,52 | 4,76 | 12,0 | 2,0 |

First choice | Primeira opção | 1ª opción

Stock item | Produto de stock | Itens de stock

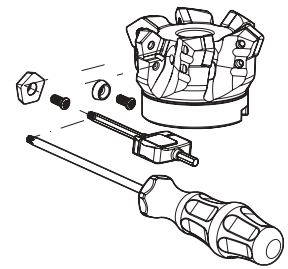
Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

Insert order code = (1) Geometry Code + (2) Grade Code



SPARE PARTS | Complementos | Repuestos

| ScrewCutter ØDc | Insert Screw | Key (Torx) | Order separately | | Order separately | |
|--------------------|--------------|------------|------------------|--------------|------------------|--------------|
| | | | Key (Torx - Nm) | Torque Value | Washer | Washer Screw |
| C00036 – 66-80 | P0451001 | XT20 | DT2050 | 5,0 | HC01200 | P0451001 |
| C00036 – 100-160 | P0451001 | PT20 | DT2050 | 5,0 | HC01200 | P0451001 |



Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
Check the procedures for the clamping screws on the page A-241.

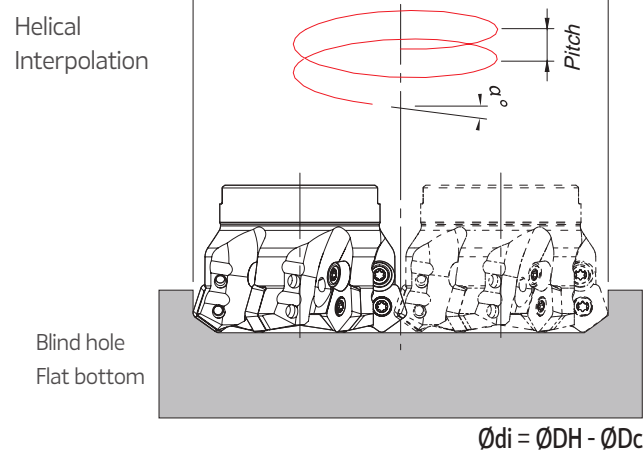
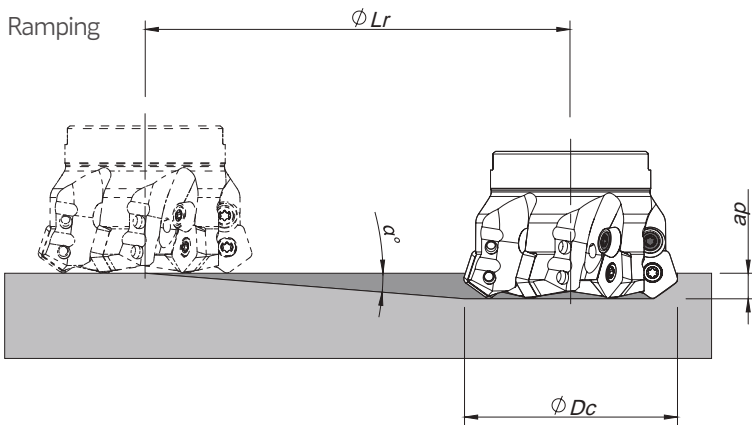
RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | | Feed fz (mm/t) |
|-----|-----|---------------------|-----------------|-------------------|-------------|---------|----------------|
| | | | | ← Wear Resistance | Toughness → | | |
| | | | | PH6920 | PH6125 | PH6135 | PDHW / PDMW |
| P | 1 | Unalloyed Steel | 125-220 | 150-230 | 160-190 | 150-180 | 0,25-0,50 |
| | 2 | Low-Alloyed Steel | 220-280 | 140-220 | 140-180 | 140-170 | 0,25-0,50 |
| | 3 | High-Alloyed Steel | 280-380 | 130-180 | 130-160 | 120-150 | 0,25-0,40 |
| K | 7 | Malleable Cast Iron | 130-230 | 150-280 | - | - | 0,25-0,60 |
| | 8 | Grey Cast Iron | 180-245 | 130-230 | - | - | 0,25-0,60 |
| | 9 | Nodular Cast iron | 160-250 | 80-190 | - | - | 0,25-0,60 |

(Note 1) Cutting conditions ae/DC=70%
(Note 2) Cutting conditions should be adjusted according to the machine and work rigidity.
(Note 3) If chattering occurs, reduce ap and Vc by 30% and keep the same fz per tooth.

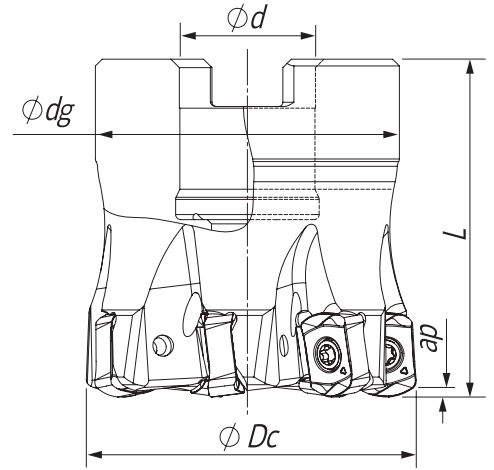
RAMPING AND HELICAL INTERPOLATION

Descida em rampa e interpolação helicoidal | Bajada en rampa e interpolación circular



| ØDc | Ramping | | | Helical Interpolation | | |
|-----|-------------|--------|--------|-----------------------|--------|----------------|
| | Max Ramp a° | Max ap | Min Lr | ØDHmin | ØDHmax | Max Pitch/Rev. |
| 66 | 8 | 5,5 | 39,1 | 113,3 | - | 20,9 |
| | | | | - | 130,4 | 28,4 |
| 80 | 6 | 5,5 | 52,3 | 141,3 | - | 20,2 |
| | | | | - | 158,4 | 25,9 |
| 100 | 4,3 | 5,5 | 73,1 | 181,3 | - | 19,2 |
| | | | | - | 198,4 | 23,2 |
| 125 | 3,2 | 5,5 | 98,4 | 231,3 | - | 18,7 |
| | | | | - | 248,4 | 21,7 |
| 160 | 2,4 | 5,5 | 131,2 | 301,3 | - | 18,6 |
| | | | | - | 318,4 | 20,8 |

Note: During helical interpolation do not exceed max Pitch.

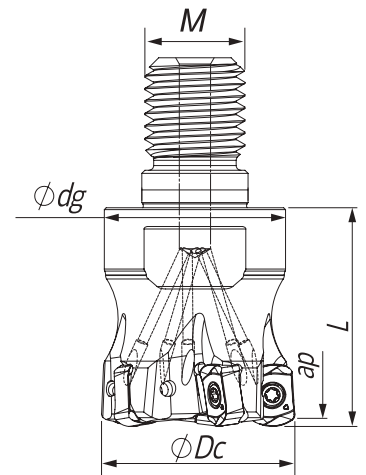


Arbor Mounting
 $K_r=20^\circ$ | $\gamma_p=-7^\circ$ | $R_p=1,8$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert | Stock |
|----------------------|---------------------------------------|---|---|----------|-----------|----|------|----------------|------------|------------|-------|
| | | | ϕDc | ϕd | ϕdg | L | | Ap max (mm) | Arbor Type | | |
| 181152300 | 040A16320-07-07-016040 | 7 | 40 | 16 | 36 | 40 | 0,20 | 1,00 | A | XNKU 06... | |
| 181157500 | 050A16320-06-07-022040 | 6 | 50 | 22 | 42 | 40 | 0,25 | 1,00 | A | XNKU 06... | |
| 181152400 | 050A16320-08-07-022040 | 8 | 50 | 22 | 42 | 40 | 0,29 | 1,00 | A | XNKU 06... | |
| 181152500 | 052A16320-08-07-022040 | 8 | 52 | 22 | 40 | 40 | 0,39 | 1,00 | A | XNKU 06... | |
| 181152600 | 063A16320-09-07-022040 | 9 | 63 | 22 | 48 | 40 | 0,50 | 1,00 | A | XNKU 06... | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

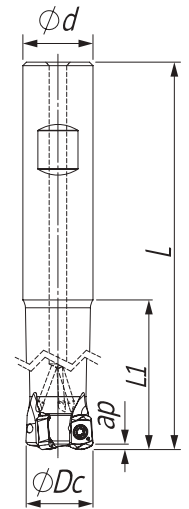
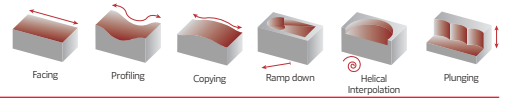


Threaded Coupling
 $K_r=20^\circ$ | $\gamma_p=-7^\circ$ | $R_p=1,8$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert | Stock |
|----------------------|---------------------------------------|---|---|----------|-----------|----|------|----------------|------------|--------|-------|
| | | | ϕDc | ϕM | ϕdg | L | | Ap max (mm) | Arbor Type | | |
| 181151300 | 016R16320-02-07-M08025 | 2 | 16 | M08 | 13 | 25 | 0,02 | 1,00 | XNKU 06... | | |
| 181151400 | 020R16320-03-07-M10028 | 3 | 20 | M10 | 18 | 28 | 0,05 | 1,00 | XNKU 06... | | |
| 181151500 | 025R16320-04-07-M12030 | 4 | 25 | M12 | 18 | 30 | 0,07 | 1,00 | XNKU 06... | | |
| 181148000 | 032R16320-05-07-M16035 | 5 | 32 | M16 | 29 | 35 | 0,16 | 1,00 | XNKU 06... | | |
| 181151600 | 035R16320-06-07-M16035 | 6 | 35 | M16 | 29 | 35 | 0,17 | 1,00 | XNKU 06... | | |
| 181151700 | 040R16320-05-07-M16045 | 5 | 40 | M16 | 29 | 45 | 0,24 | 1,00 | XNKU 06... | | |
| 181151800 | 042R16320-07-07-M16035 | 7 | 42 | M16 | 29 | 35 | 0,24 | 1,00 | XNKU 06... | | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)



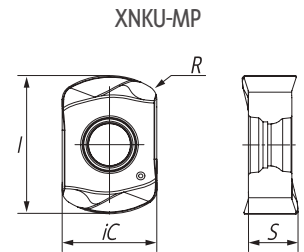
Weldon Shank
 $K_r=20^\circ$ | $\gamma_p=-7^\circ$ | $R_p=1,8$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | Insert | Stock |
|----------------------|---------------------------------------|---|---|----------|-----|-----|------|----------------|------------|-------|
| | | | ϕDc | ϕd | L | L1 | | Ap max (mm) | | |
| 181161000 | 016W16320-02-07-016150 | 2 | 16 | 16 | 150 | 50 | 0,19 | 1,00 | XNKU 06... | |
| 181151900 | 020W16320-03-07-020160 | 3 | 20 | 20 | 160 | 90 | 0,29 | 1,00 | XNKU 06... | |
| 181152000 | 025W16320-04-07-025180 | 4 | 25 | 25 | 180 | 100 | 0,40 | 1,00 | XNKU 06... | |
| 181152100 | 032W16320-05-07-032200 | 5 | 32 | 32 | 200 | 120 | 1,10 | 1,00 | XNKU 06... | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

XNKU 06T3... || Inserts | Pastilhas | Plaquetas



| | | P | | | | M | | K | | S | | Dimensions Dimensões Dimensiones (mm) | | | |
|--------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---|------|-------|------|
| | | CVD | PVD | | | CVD | PVD | CVD | PVD | CVD | PVD | iC | S | I | R |
| (2) Grade code | | T9 | G4 | T1 | X9 | T9 | X9 | T9 | T1 | T9 | X9 | | | | |
| (1) Geometry code | ISO Reference | PHS740 | PHP910 | PHP920 | PHP930 | PHS740 | PHH930 | PHS740 | PHP920 | PHS740 | PHH930 | | | | |
| NEW 1112802 | XNKU 06T310-MP | | | | | | | | | | | 6,85 | 3,60 | 10,00 | 1,00 |

First choice | Primeira opção | 1ª opção

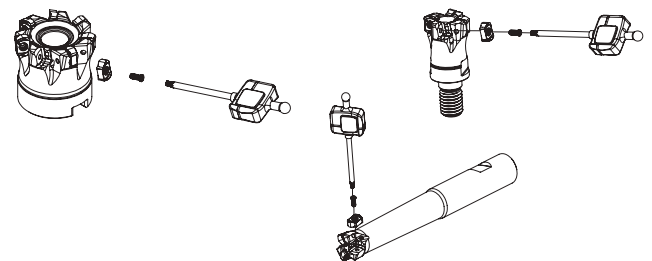
Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta
Disponível sobre consulta

Insert order code = (1) Geometry Code + (2) Grade Code

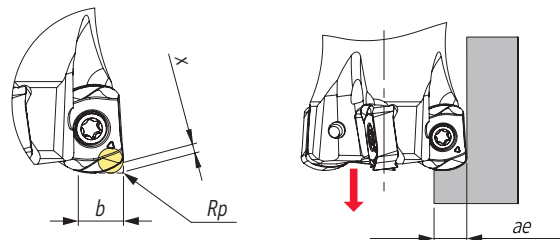
SPARE PARTS Complementos | Repuestos

| Cutter ϕDc | Order separately | | | |
|---------------------|------------------|------------|-----------------|--------------|
| | Insert Screw | Key (Torx) | Key (Torx - Nm) | Torque Value |
| A16320 - 40-63 | P0250704 | XT08 | DT0812 | 1,20 |
| R16320 - 20-42 | P0250704 | XT08 | DT0812 | 1,20 |
| W16320 - 20-32 | P0250704 | XT08 | DT0812 | 1,20 |



PROGRAMMING DATA | Dados para programação | Datos para la programación

| Insert | Programming Data | | | |
|----------------|------------------|-----|-----|-----|
| | Rp | X | b | ae |
| XNKU 06T310-MP | 1,8 | 0,4 | 3,6 | 3,4 |



GRADES SELECTION GUIDE | Guia para selecção de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | | | | |
|-----|-----|-----------------------------------|--------------|-------------------|--------|--------|--------|-------------|
| | | | | ← Wear Resistance | | | | Toughness → |
| | | | | PHP910 | PHP920 | PHP930 | PHH930 | PHS740 |
| P | 1 | Unalloyed Steel | 125-220 | ● | ● | ● | ● | ● |
| | 2 | Low-Alloyed Steel | 220-280 | ● | ● | ● | ● | ● |
| | 3 | High-Alloyed Steel | 280-380 | ● | ● | ● | ● | ● |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | ● | ● | ● | ● | ● |
| | 5 | SS - Austenitic | 200-330 | ● | ● | ● | ● | ● |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | ● | ● | ● | ● | ● |
| K | 7 | Malleable Cast Iron | 130-230 | ● | ● | ● | ● | ● |
| | 8 | Grey Cast Iron | 180-245 | ● | ● | ● | ● | ● |
| | 9 | Nodular Cast iron | 160-250 | ● | ● | ● | ● | ● |
| S | 11 | Heat Resistant Super Alloys | 200-320 | ● | ● | ● | ● | ● |

- Good Conditions
- Average Conditions
- Difficult Conditions

RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

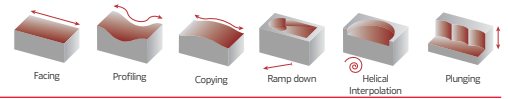
| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | | | | Feed fz (mm/t) |
|-----|-----|-----------------------------------|--------------|-------------------|---------|---------|---------|-------------|----------------|
| | | | | ← Wear Resistance | | | | Toughness → | |
| | | | | PHP910 | PHP920 | PHP930 | PHH930 | PHS740 | |
| P | 1 | Unalloyed Steel | 125-220 | 180-250 | 180-250 | 160-230 | - | 160-230 | 0,50-1,50 |
| | 2 | Low-Alloyed Steel | 220-280 | 160-240 | 170-210 | 150-190 | - | 150-190 | 0,50-1,50 |
| | 3 | High-Alloyed Steel | 280-380 | 140-230 | 160-200 | 140-180 | - | 140-180 | 0,50-1,50 |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | - | - | - | 130-170 | 120-180 | 0,50-1,40 |
| | 5 | SS - Austenitic | 200-330 | - | - | - | 100-160 | 100-150 | 0,50-1,40 |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | - | - | - | 80-140 | 70-130 | 0,50-1,40 |
| K | 7 | Malleable Cast Iron | 130-230 | 180-300 | 180-320 | - | - | 160-300 | 0,50-1,50 |
| | 8 | Grey Cast Iron | 180-245 | 160-250 | 170-280 | - | - | 150-260 | 0,50-1,50 |
| | 9 | Nodular Cast iron | 160-250 | 150-210 | 100-240 | - | - | 80-220 | 0,50-1,50 |
| S | 11 | Heat Resistant Super Alloys | 200-320 | - | - | - | 30-75 | 30-70 | 0,50-1,30 |

(Note 1) Cutting conditions $a_e/D_c=70\%$.

(Note 2) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

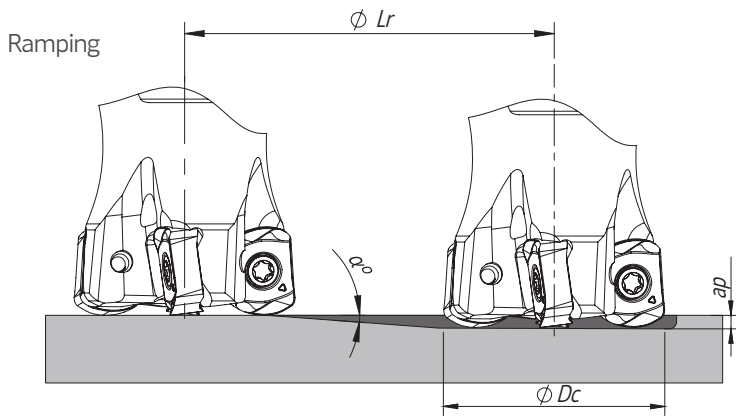
- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

(Note 3) When using $\varnothing D_c=16\text{mm}$ apply 70% or less feed (fz) from the table.

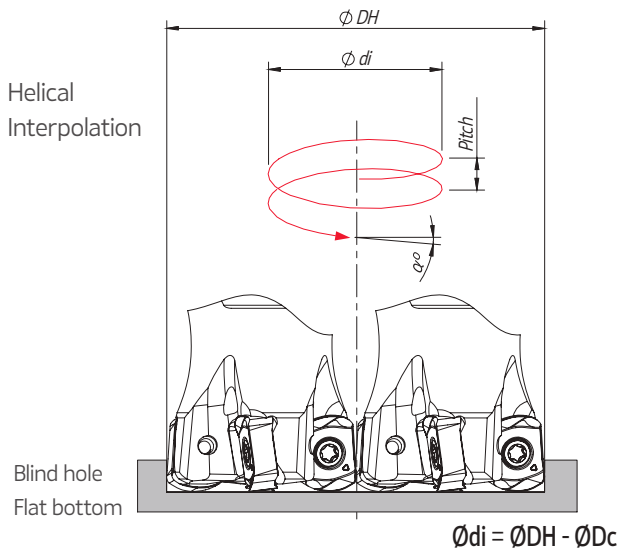


RAMPING AND HELICAL INTERPOLATION

Descida em rampa e interpolação helicoidal | Bajada en rampa e interpolación circular



Helical Interpolation

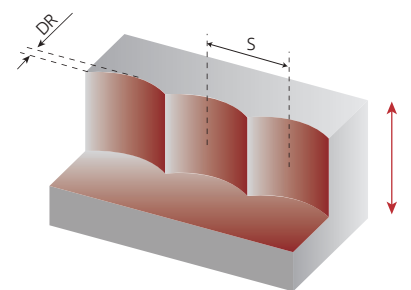


| ØDc | Ramping | | | Helical Interpolation | | |
|-----|-------------|--------|--------|-----------------------|------------|----------------|
| | Max Ramp a° | Max ap | Min Lr | ØDHmin | ØDHmax | Max Pitch/Rev. |
| 16 | 0,5 | 1 | 114,6 | 24,8 - | - 30,0 | 0,2 0,3 |
| 20 | 0,5 | 1 | 114,6 | 32,8 - | - 38,0 | 0,3 0,4 |
| 25 | 0,8 | 1 | 71,6 | 42,8 - | - 48,0 | 0,7 1,0 |
| 32 | 0,8 | 1 | 71,6 | 56,8 - | - 62,0 | 1,0 1,3 |
| 35 | 0,5 | 1 | 114,6 | 62,8 - | - 68,0 | 0,7 0,9 |
| 40 | 0,4 | 1 | 143,2 | 72,8 - | - 78,0 | 0,7 0,8 |
| 42 | 0,4 | 1 | 143,2 | 76,8 - | - 82,0 | 0,7 0,8 |
| 50 | 0,3 | 1 | 191,0 | 92,8 - | - 98,0 | 0,7 0,7 |
| 52 | 0,3 | 1 | 191,0 | 96,8 - | - 102,0 | 0,7 0,8 |
| 63 | 0,25 | 1 | 229,2 | 118,8 - | - 124,0 | 0,7 0,8 |

Note: During helical interpolation do not exceed max Pitch.
 (*) Down cutting is recommended, tool pass rotation should be counter-clockwise.
 (*) In case of ramping and helical interpolation, apply 70% or less feed (fz) from recommended cutting conditions table.

PLUNGING | Mergulho | Plunge

| L ≤ 3Dc | L > 3Dc | S max. |
|-----------|-------------|---------------------------------------|
| fz (mm/t) | | |
| 0,08-0,15 | 0,05 - 0,10 | $S_{max} = \sqrt{Dc \cdot Dr - Dr^2}$ |



| S max and DR corresponding cutting diameter Dc (mm) | | | | | | | | | | |
|---|--------------------|-----|-----|-----|-----|------|------|------|------|------|
| DR (mm) | Dc (mm) XNKU 06... | | | | | | | | | |
| | 1 | 3,9 | 4,4 | 4,9 | 5,6 | 5,8 | 6,2 | 6,4 | 7,0 | 7,1 |
| 2 | 5,3 | 6,0 | 6,8 | 7,7 | 8,1 | 8,7 | 8,9 | 9,8 | 10,0 | 11,0 |
| 3 | 6,2 | 7,1 | 8,1 | 9,3 | 9,8 | 10,5 | 10,8 | 11,9 | 12,1 | 13,4 |

Note: Recommended for L ≤ 4 Dc for extra long tool this step and side cut must be reduced.

PENTA HIFEED 06320

Proprietary milling line

A

MILLING

Overview

Face milling

Hifeed milling

Shoulder milling

Profile milling

Hardmill

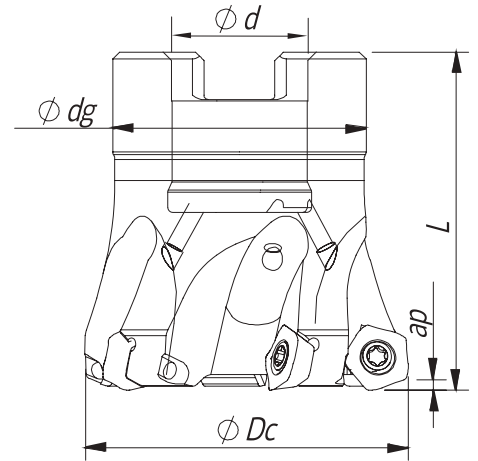
Center & Chamfer

Spotface

Spare Parts

Technical Data

End Mills

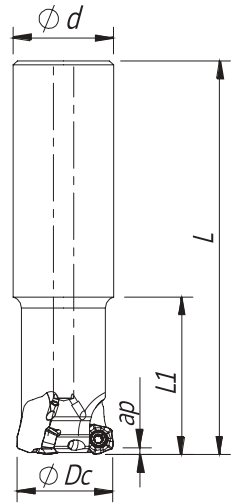


Arbor Mounting
 $K_r=20^\circ$ | $\gamma_p=14^\circ$ | $R_p=2,5$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert | Stock |
|----------------------|---------------------------------------|---|---|----------|-----------|----|------|----------------|------------|--------------|-------|
| | | | ϕDc | ϕd | ϕdg | L | | A_p max (mm) | Arbor Type | | |
| 181129300 | 040A06320-05-14-016040 | 5 | 40 | 16 | 30 | 40 | 0,15 | 1,0 | A | POKT 0403... | |
| 181129400 | 050A06320-06-14-022045 | 6 | 50 | 22 | 40 | 45 | 0,19 | 1,0 | A | POKT 0403... | |
| 181129500 | 052A06320-06-14-022045 | 6 | 52 | 22 | 40 | 45 | 0,29 | 1,0 | A | POKT 0403... | |
| 181129600 | 063A06320-07-14-027050 | 7 | 63 | 27 | 48 | 50 | 0,50 | 1,0 | A | POKT 0403... | |
| 181131300 | 066A06320-07-14-027050 | 7 | 66 | 27 | 48 | 50 | 0,55 | 1,0 | A | POKT 0403... | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

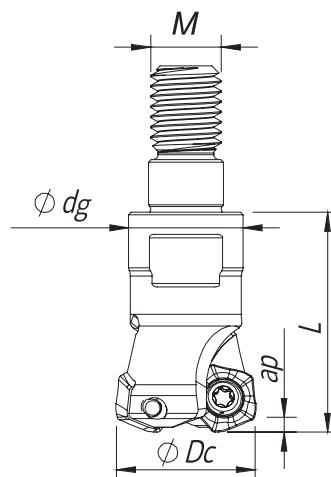
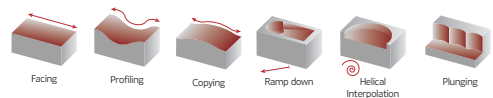


Cylindrical Shank
 $K_r=20^\circ$ | $\gamma_p=14^\circ$ | $R_p=2,5$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert | Stock |
|----------------------|---------------------------------------|---|---|----------|-----|----|------|----------------|------------|--------------|-------|
| | | | ϕDc | ϕd | L | L1 | | A_p max (mm) | Arbor Type | | |
| 181147200 | 020E06320-02-14-020130 | 2 | 20 | 20 | 130 | 40 | 0,38 | 1,0 | A | POKT 0403... | |
| 181131000 | 025E06320-03-14-025150 | 3 | 25 | 25 | 150 | 40 | 0,41 | 1,0 | A | POKT 0403... | |
| 181131100 | 032E06320-05-14-032180 | 5 | 32 | 32 | 180 | 50 | 0,56 | 1,0 | A | POKT 0403... | |
| 181131200 | 040E06320-05-14-032180 | 5 | 40 | 32 | 180 | 50 | 0,70 | 1,0 | A | POKT 0403... | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)



Threaded Coupling
 $K_r=20^\circ$ | $\gamma_p=14^\circ$ | $R_p=2,5$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert | Stock |
|----------------------|---------------------------------------|---|---|----------|-----------|----|------|----------------|--------------|--------|-------|
| | | | ϕDc | ϕM | ϕdg | L | | A_p max (mm) | | | |
| 181113500 | 016R06320-02-14-M08025 | 2 | 16 | M08 | 13 | 25 | 0,02 | 1,0 | POKT 0403... | | |
| 181113600 | 020R06320-02-14-M10025 | 2 | 20 | M10 | 18 | 25 | 0,05 | 1,0 | POKT 0403... | | |
| 181113700 | 025R06320-03-14-M12028 | 3 | 25 | M12 | 21 | 28 | 0,07 | 1,0 | POKT 0403... | | |
| 181129100 | 032R06320-05-14-M16035 | 5 | 32 | M16 | 29 | 35 | 0,17 | 1,0 | POKT 0403... | | |
| 181129200 | 035R06320-05-14-M16035 | 5 | 35 | M16 | 29 | 35 | 0,19 | 1,0 | POKT 0403... | | |
| 181130900 | 042R06320-05-14-M16035 | 5 | 42 | M16 | 29 | 35 | 0,23 | 1,0 | POKT 0403... | | |

Stock item | Produto de stock | Itens de stock

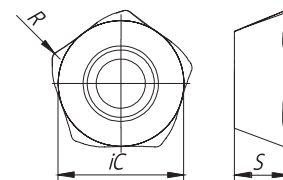
Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

POKT 0403... || Inserts | Pastilhas | Plaquetas

POKT-MP



POKT-MP



| | ⁽²⁾ Grade code | P | | | | K | | Dimensions Dimensões Dimensiones (mm) | | |
|------------------------------|---------------------------|--------|--------|--------|--------|--------|--------|---|------|------|
| | | PVD | | | | PVD | | | | |
| | | G1 | G4 | P3 | G6 | G1 | G4 | iC | S | R |
| ⁽¹⁾ Geometry code | ISO Reference | PH7910 | PH7920 | PH7930 | PH7740 | PH7910 | PH7920 | | | |
| 1112365 | POKT 040305 ZDSR-MP | | | | | | | 7,00 | 3,00 | 0,50 |

First choice | Primeira opção | 1ª opción

Stock item | Produto de stock | Itens de stock

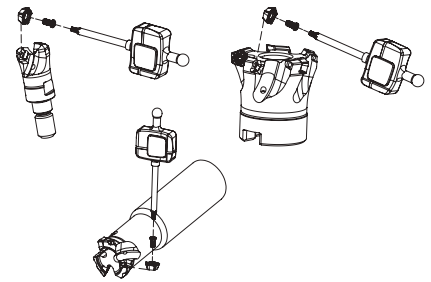
Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

Insert order code = (1) Geometry Code + (2) Grade Code

PENTA HIFEED 06320

SPARE PARTS Complementos | Repuestos

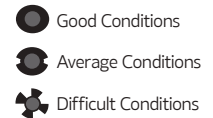
| Cutter ØDc | Order separately | | | Order separately | | |
|----------------|------------------|------------|-----------------|------------------|-------|-----------------|
| | Insert Screw | Key (Torx) | Key (Torx - Nm) | Torque Value | Screw | DIN 6368 Wrench |
| R06320 - 16-42 | P0250503 | XT08 | DT0812 | 1,20 | - | - |
| E06320 - 25-40 | P0250503 | XT08 | DT0812 | 1,20 | - | - |
| A06320 - 40-60 | P0250503 | XT08 | DT0812 | 1,20 | - | - |



Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
Check the procedures for the clamping screws on the page A-241.

GRADES SELECTION GUIDE | Guia para selecção de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | | | |
|-----|-----|---------------------|-----------------|-------------------|--------|--------|-------------|
| | | | | ← Wear Resistance | | | Toughness → |
| | | | | PH7910 | PH7920 | PH7930 | PH7740 |
| P | 1 | Unalloyed Steel | 125-220 | ● | ● | ● | ● |
| | 2 | Low-Alloyed Steel | 220-280 | ● | ● | ● | ● |
| | 3 | High-Alloyed Steel | 280-380 | ● | ● | ● | ● |
| K | 7 | Malleable Cast Iron | 130-230 | ● | ● | | |
| | 8 | Grey Cast Iron | 180-245 | ● | ● | | |
| | 9 | Nodular Cast iron | 160-250 | ● | ● | | |



RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | | | Feed fz (mm/t) |
|-----|-----|---------------------|-----------------|-------------------|---------|---------|-------------|----------------|
| | | | | ← Wear Resistance | | | Toughness → | |
| | | | | PH7910 | PH7920 | PH7930 | PH7740 | |
| P | 1 | Unalloyed Steel | 125-220 | 180-250 | 180-240 | 160-220 | 140-200 | 0,50-1,50 |
| | 2 | Low-Alloyed Steel | 220-280 | 160-230 | 160-220 | 140-200 | 130-180 | 0,50-1,51 |
| | 3 | High-Alloyed Steel | 280-380 | 140-220 | 140-210 | 120-190 | 100-170 | 0,50-1,52 |
| K | 7 | Malleable Cast Iron | 130-230 | 180-300 | 160-260 | - | - | 0,50-1,53 |
| | 8 | Grey Cast Iron | 180-245 | 160-250 | 140-240 | - | - | 0,50-1,54 |
| | 9 | Nodular Cast iron | 160-250 | 150-200 | 120-200 | - | - | 0,50-1,55 |

(Note 1) Cutting conditions $a_e/D_c=70\%$.

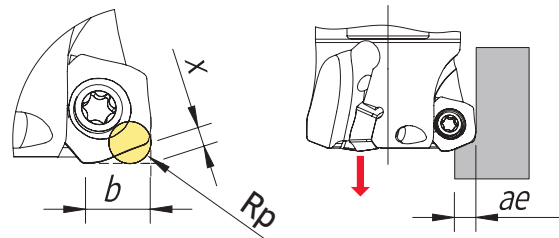
(Note 2) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

(Note 3) PH5... and PH8... can be used wet or dry. PH7... use only air.

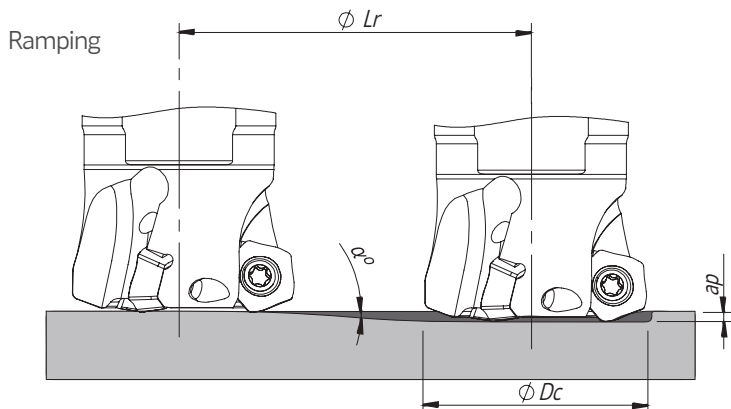
PROGRAMMING DATA | Dados para programação | Datos para la programación

| Insert | Programming Data | | | |
|--------------|------------------|-----|-----|-------|
| | Rp | X | b | a_e |
| POKT 0403... | 2,5 | 1,2 | 4,3 | 4,0 |

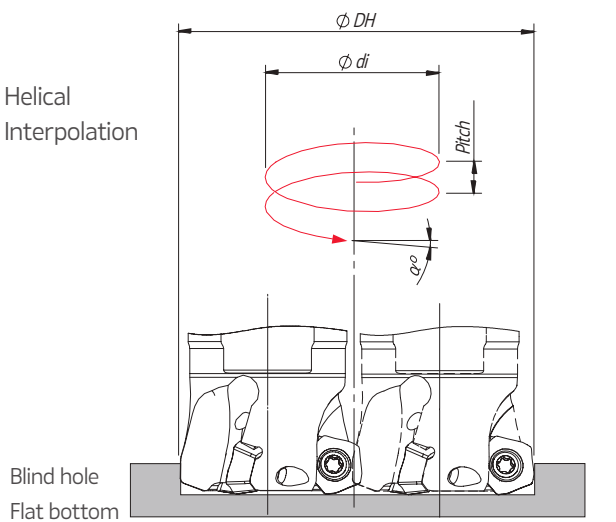


RAMPING AND HELICAL INTERPOLATION

Descida em rampa e interpolação helicoidal | Bajada en rampa e interpolación circular



Helical Interpolation



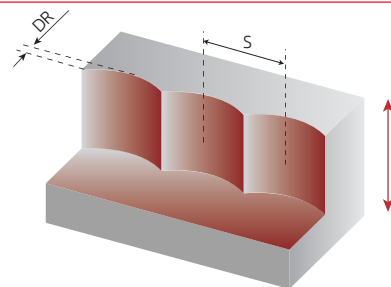
$$\phi di = \phi DH - \phi Dc$$

| ϕDc | Ramping | | | Helical Interpolation | | |
|-----------|--------------------|----------|--------|-----------------------|-----------------|----------------|
| | Max Ramp a° | Max ap | Min Lr | ϕDH_{min} | ϕDH_{max} | Max Pitch/Rev. |
| 16 | 15 | 1,0 | 3,7 | 23,4 | - | 6 |
| 20 | 9,0 | 1,0 | 6,3 | 31,4 | 30,0 | 11 |
| 25 | 5,0 | 1,0 | 11,4 | - | 38,0 | 5 |
| 32 | 3,4 | 1,0 | 16,8 | 41,4 | - | 8 |
| 35 | 3,0 | 1,0 | 19,1 | - | 48,0 | 4 |
| 40 | 2,0 | 1,0 | 28,6 | 55,4 | - | 6 |
| 42 | 2,0 | 1,0 | 28,6 | - | 62,0 | 4 |
| 50 | 2,0 | 1,0 | 28,6 | 61,4 | - | 5 |
| 52 | 2,0 | 1,0 | 28,6 | - | 68,0 | 4 |
| 63 | 2,0 | 1,0 | 28,6 | 71,4 | - | 5 |
| 66 | 1,8 | 1,0 | 31,8 | - | 78,0 | 3 |
| | | | | 84,0 | - | 4 |
| | | | | - | 82,0 | 4 |
| | | | | 91,4 | - | 4 |
| | | | | - | 98,0 | 5 |
| | | | | 95,4 | - | 4 |
| | | | | - | 102,0 | 5 |
| | | | | 117,4 | - | 5 |
| | | | | - | 124,0 | 6 |
| | | | | 123,4 | - | 5 |
| | | | | - | 130,0 | 6 |

Note: During helical interpolation do not exceed max Pitch.

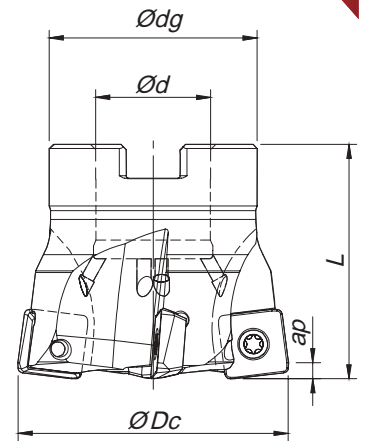
PLUNGING | Mergulho | Plunge

| $L \leq 3Dc$ | $L > 3Dc$ | S max. |
|--------------|-------------|---------------------------------------|
| f_z (mm/t) | | |
| 0,08-0,15 | 0,05 - 0,10 | $S_{max} = \sqrt{Dc \cdot Dr - Dr^2}$ |



| S max and DR corresponding cutting diameter Dc (mm) | | | | | | | | | | | |
|---|--------------------|-----|-----|------|------|------|------|------|------|------|------|
| DR (mm) | Dc (mm) POKT 04... | | | | | | | | | | |
| | 16 | 20 | 25 | 32 | 35 | 40 | 42 | 50 | 52 | 63 | 66 |
| 1,0 | 3,9 | 4,4 | 4,9 | 5,7 | 5,8 | 6,2 | 6,4 | 7,0 | 7,1 | 7,9 | 8,1 |
| 2,0 | 5,3 | 6,0 | 6,8 | 7,7 | 8,1 | 8,7 | 8,9 | 9,8 | 10,0 | 11,0 | 11,3 |
| 3,0 | 6,2 | 7,1 | 8,1 | 9,3 | 9,8 | 10,5 | 10,8 | 11,9 | 12,1 | 13,4 | 13,7 |
| 4,0 | 6,9 | 8,0 | 9,2 | 10,6 | 11,1 | 12,0 | 12,3 | 13,6 | 13,9 | 15,4 | 15,7 |

Note: Recommended for $L \leq 4 Dc$ for extra long tool this step and side cut must be reduced.



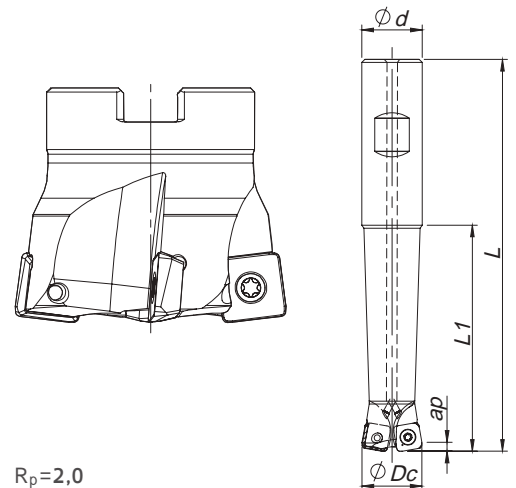
Arbor Mounting

$K_r=10^\circ$ | $\gamma_p=+2^\circ$ | $\gamma_f=+2^\circ$ | $R_p=2,0$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|--|---|-----------------|------------------|----|-------|----------------|------------|-------------------------------|-------|
| | | | $\varnothing Dc$ | $\varnothing d$ | $\varnothing dg$ | L | | Ap max (in) | Arbor Type | | |
| 181149800 | 040A06410-05-02-016040 | | 40 | 16 | 30 | 40 | 0,157 | 1,00 | A | SO...0803... | |
| 181153200 | 050A06410-06-02-022045 | | 50 | 22 | 40 | 45 | 0,312 | 1,00 | A | SO...0803... | |
| 181149900 | 052A06410-06-02-022045 | | 52 | 22 | 40 | 45 | 0,331 | 1,00 | A | SO...0803... | |

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta | Disponible bajo consulta



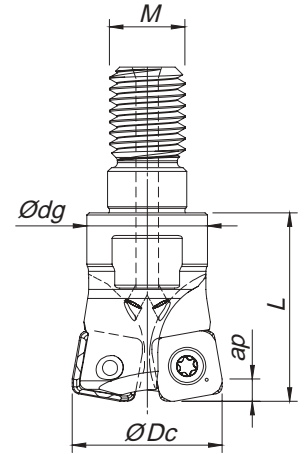
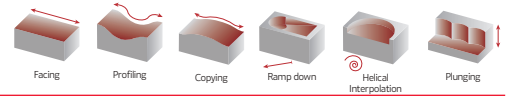
Weldon Shank

$K_r=10^\circ$ | $\gamma_p=+2^\circ$ | $\gamma_f=+2^\circ$ | $R_p=2,0$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|--|---|-----------------|-----|-----|-------|----------------|--------------|-------------------------------|-------|
| | | | $\varnothing Dc$ | $\varnothing d$ | L | L1 | | Ap max (mm) | | | |
| 181076300 | 020W06410-02-02-020130 | | 20 | 20 | 130 | 75 | 0,360 | 1,00 | SO...0803... | | |
| 181080900 | 020W06410-02-02-020190 | | 20 | 20 | 190 | 110 | 0,340 | 1,00 | SO...0803... | | |
| 181076400 | 025W06410-03-02-025140 | | 25 | 25 | 140 | 80 | 0,410 | 1,00 | SO...0803... | | |
| 181081100 | 025W06410-03-02-025200 | | 25 | 25 | 200 | 130 | 0,570 | 1,00 | SO...0803... | | |
| 181076500 | 032W06410-04-02-032150 | | 32 | 32 | 150 | 90 | 0,760 | 1,00 | SO...0803... | | |
| 181081300 | 032W06410-04-02-032200 | | 32 | 32 | 200 | 130 | 1,010 | 1,00 | SO...0803... | | |

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta | Disponible bajo consulta



Threaded Coupling

$K_r=10^\circ$ | $\gamma_p=+2^\circ$ | $\gamma_f=+2^\circ$ | $R_p=2,0$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|--|---|-----|-----|----|-------|----------------|-------------------------------|-------|
| | | | ØDc | ØM | Ødg | L | | Ap max (mm) | | |
| 181071900 | 020R06410-02-02-M10025 | | 20 | M10 | 16 | 25 | 0,040 | 1,00 | SO...0803... | |
| 181076600 | 025R06410-03-02-M12028 | | 25 | M12 | 21 | 28 | 0,070 | 1,00 | SO...0803... | |
| 181076700 | 032R06410-04-02-M16035 | | 32 | M16 | 29 | 35 | 0,160 | 1,00 | SO...0803... | |
| 181076800 | 035R06410-04-02-M16035 | | 35 | M16 | 29 | 35 | 0,180 | 1,00 | SO...0803... | |
| 181076900 | 042R06410-05-02-M16035 | | 42 | M16 | 29 | 35 | 0,220 | 1,00 | SO...0803... | |

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta | Disponible bajo consulta

SO...0803... || Inserts | Pastilhas | Plaquetas

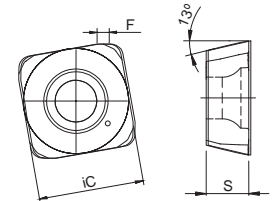
SOEW



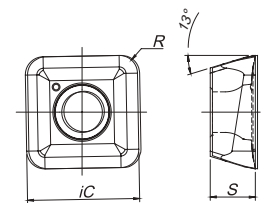
SOET



SOEW



SOET



| Geometry code | ISO Reference | P | | | M | | K | | | S | | Dimensions Dimensões Dimensiones (mm) | | | |
|---------------|----------------|-----|----|----|-----|----|-----|----|----|-----|----|---|------|-----|-----|
| | | PVD | | | PVD | | PVD | | | PVD | | iC | S | R | F |
| | | X5 | T1 | G6 | X9 | G6 | X5 | T1 | G6 | X9 | G6 | | | | |
| 1111884 | SOEW 080310 S | | | | | | | | | | | 8,60 | 3,47 | 1,0 | 1,0 |
| 1112149 | SOET 080315-MS | | | | | | | | | | | 8,60 | 3,47 | 1,5 | - |

First choice | Primeira opção | 1ª opción

Stock item | Produto de stock | Itens de stock

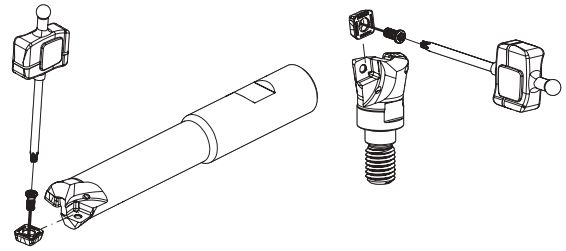
Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

HIFEED 06410

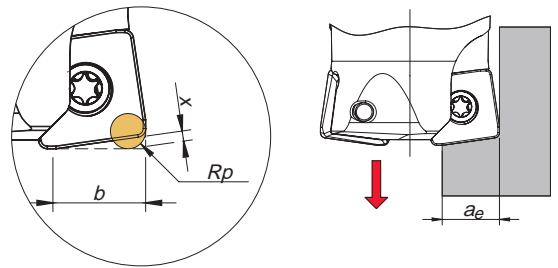
SPARE PARTS | Complementos | Repuestos

| Cutter ØDc | Insert Screw | Key (Torx) | Order separately | |
|------------------|--------------|------------|--------------------|--------------|
| | | | Key (Torx - Nm) | Torque Value |
| A06410 - 40 - 52 | P0300800 | XT09 | DT0914 | 1,4 |
| R06410 - 20 - 42 | P0300800 | XT09 | DT0914 | 1,4 |
| W06410 - 20 - 32 | P0300800 | XT09 | DT0914 | 1,4 |



PROGRAMMING DATA | Dados para programação | Datos para la programación

| Insert | Programming Data | | | |
|--------------|------------------|-----|-----|-----|
| | Rp | X | b | ae |
| SO... 0803.. | 2,0 | 0,8 | 6,8 | 6,3 |



GRADES SELECTION GUIDE | Guia para selecção de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | | | |
|-----|-----|-----------------------------------|-----------------|-------------------|--------|-------------|--------|
| | | | | ← Wear Resistance | | Toughness → | |
| | | | | PHP910 | PHP920 | PHH930 | PH7740 |
| P | 1 | Unalloyed Steel | 125-220 | ● | ● | ● | ● |
| | 2 | Low-Alloyed Steel | 220-280 | ✓ | ✓ | | ✓ |
| | 3 | High-Alloyed Steel | 280-380 | ✓ | ✓ | | ✓ |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | | | ✓ | ✓ |
| | 5 | SS - Austenitic | 200-330 | | | ✓ | ✓ |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | | | ✓ | ✓ |
| K | 7 | Malleable Cast Iron | 130-230 | ✓ | ✓ | | |
| | 8 | Grey Cast Iron | 180-245 | ✓ | ✓ | | |
| | 9 | Nodular Cast iron | 160-250 | ✓ | ✓ | | |
| S | 11 | Heat Resistant Super Alloys | 200-320 | | | ✓ | ✓ |

- Good Conditions
- Average Conditions
- Difficult Conditions

RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | | | Feed fz (mm/t) | |
|-----|-----|-----------------------------------|-----------------|-------------------|---------|-------------|---------|----------------|------------|
| | | | | ← Wear Resistance | | Toughness → | | SOEW 08... | SOET 08... |
| | | | | PHP910 | PHP920 | PHH930 | PH7740 | | |
| P | 1 | Unalloyed Steel | 125-220 | 180-250 | 180-250 | - | 140-200 | 0,40-1,80 | 0,40-1,80 |
| | 2 | Low-Alloyed Steel | 220-280 | 160-240 | 160-230 | - | 130-180 | 0,40-1,80 | - |
| | 3 | High-Alloyed Steel | 280-380 | 140-230 | 140-220 | - | 100-170 | 0,40-1,50 | - |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | - | - | 140-210 | 130-180 | - | 0,40-1,30 |
| | 5 | SS - Austenitic | 200-330 | - | - | 120-170 | 110-160 | - | 0,40-1,30 |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | - | - | 100-150 | 90-150 | - | 0,10-1,00 |
| K | 7 | Malleable Cast Iron | 130-230 | 180-300 | 160-270 | - | - | 0,40-1,80 | 0,40-1,80 |
| | 8 | Grey Cast Iron | 180-245 | 160-250 | 140-250 | - | - | 0,40-1,80 | - |
| | 9 | Nodular Cast iron | 160-250 | 150-210 | 120-210 | - | - | 0,40-1,80 | - |
| S | 11 | Heat Resistant Super Alloys | 200-320 | | | 30-110 | 30-100 | - | 0,40-1,00 |

(Note 1) Cutting conditions $a_e/D_c=70\%$.

(Note 2) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

(Note 3) PH5... and PH8... can be used wet or dry. PH7... use only air.

(Note 4) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

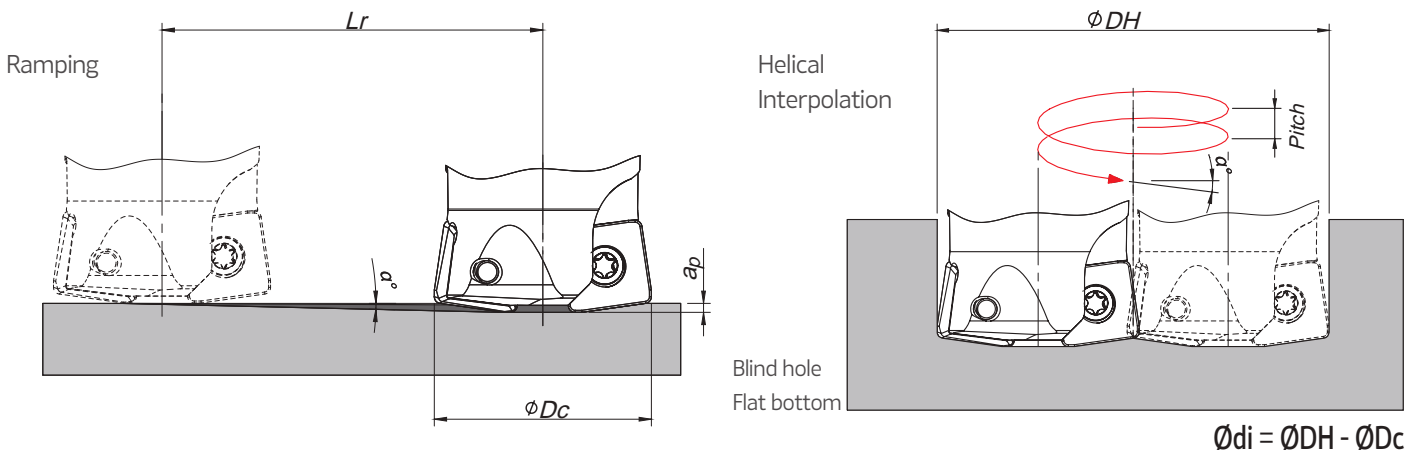
CHIP-BREAKER SELECTION GUIDE | Guia para aplicações do quebra- aparas | Guía para aplicación del rompevirutas

| ISO | PSM | Material | HB (Brinell) | Chip-Breaker Application | |
|-----|-----|-----------------------------------|-----------------|--------------------------|----------------------|
| | | | | 1st choice | Difficult Operations |
| P | 1 | Unalloyed Steel | 125-220 | SOET 08... | SOEW 08... |
| | 2 | Low-Alloyed Steel | 220-280 | SOEW 08... | - |
| | 3 | High-Alloyed Steel | 280-380 | SOEW 08... | - |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | SOET 08... | - |
| | 5 | SS - Austenitic | 200-330 | SOET 08... | - |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | SOET 08... | - |
| K | 7 | Malleable Cast Iron | 130-230 | SOET 08... | SOEW 08... |
| | 8 | Grey Cast Iron | 180-245 | SOEW 08... | - |
| | 9 | Nodular Cast iron | 160-250 | SOEW 08... | - |
| S | 11 | Heat Resistant Super Alloys | 200-320 | SOET 08... | - |

HIFEED 06410

RAMPING AND HELICAL INTERPOLATION

Descida em rampa e interpolação helicoidal | Bajada en rampa e interpolación circular



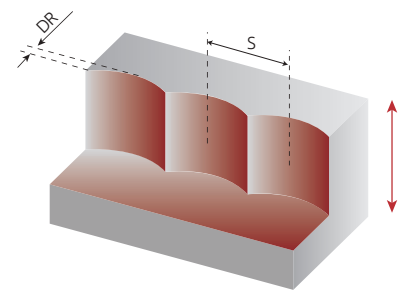
$$\phi di = \phi DH - \phi Dc$$

| ϕDc | Ramping | | | Helical Interpolation | | |
|-----------|--------------------|-----------|-----------|-----------------------|-----------------|----------------|
| | Max Ramp a° | Max a_p | Min L_r | ϕDH_{min} | ϕDH_{max} | Max Pitch/Rev. |
| 20 | 15 | 1,0 | 3,2 | 26,4 - | - 38,0 | 6 17 |
| 25 | 9,5 | 1,0 | 6,0 | 36,4 - | - 48,0 | 5 12 |
| 32 | 5,5 | 1,0 | 10,4 | 50,4 - | - 62,0 | 5 9 |
| 35 | 4,5 | 1,0 | 12,7 | 56,4 - | - 68,0 | 5 8 |
| 40 | 3,5 | 1,0 | 16,3 | 66,4 - | 80 | 5 7 |
| 42 | 3,5 | 1,0 | 16,3 | 70,4 - | - 82,0 | 5 7 |
| 50 | 3,5 | 1,0 | 16,3 | 86,4 - | - 100,0 | 6 9 |
| 52 | 3,5 | 1,0 | 16,3 | 90,4 - | - 104,0 | 7 9 |

Note: During helical interpolation do not exceed max Pitch.

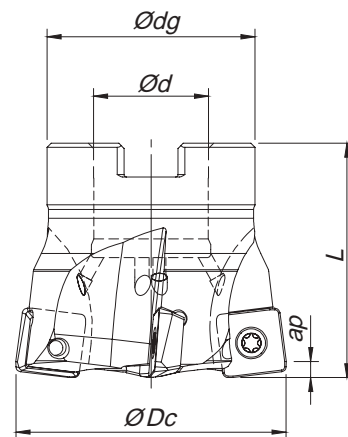
PLUNGING | Mergulho | Plunge

| | | |
|---------------|------------|--|
| $L \leq 3D_c$ | $L > 3D_c$ | S max. |
| f_z (mm/t) | | |
| 0,08-0,15 | 0,05-0,10 | $S_{max} = \sqrt{D_c \cdot DR \cdot DR^2}$ |



| S max and DR corresponding cutting diameter Dc (mm) | | | | | | | | |
|---|---------|------|------|------|------|------|------|------|
| DR (mm) | Dc (mm) | | | | | | | |
| | 20 | 25 | 32 | 35 | 40 | 42 | 50 | 52 |
| 1,0 | 4,4 | 4,9 | 5,6 | 5,8 | 6,2 | 6,4 | 7,0 | 7,1 |
| 2,0 | 6,0 | 6,8 | 7,7 | 8,1 | 8,7 | 8,9 | 9,8 | 10,0 |
| 3,0 | 7,1 | 8,1 | 9,3 | 9,8 | 10,5 | 10,8 | 11,9 | 12,1 |
| 4,0 | 8,0 | 9,2 | 10,6 | 11,1 | 12,0 | 12,3 | 13,6 | 13,9 |
| 5,0 | 8,7 | 10,0 | 11,6 | 12,2 | 13,2 | 13,6 | 15,0 | 15,3 |
| 6,0 | 9,2 | 10,7 | 12,5 | 13,2 | 14,3 | 14,7 | 16,2 | 16,6 |

Note: Recommended for $L \leq 4 D_c$ for extra long tool this step and side cut must be reduced.



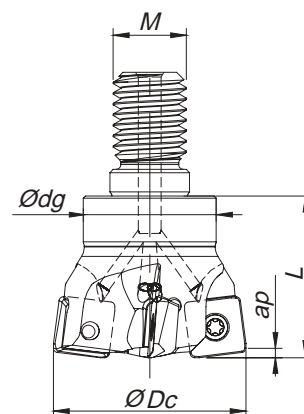
Arbor Mounting

$K_r=10^\circ$ | $\gamma_p=+5^\circ$ | $R_p=2,5$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|-----------------|------------------|----|-------|----------------|------------|-------------------------------|-------|
| | | | $\varnothing Dc$ | $\varnothing d$ | $\varnothing dg$ | L | | Ap max (mm) | Arbor Type | | |
| 181069100 | 050A06690-04-05-022045 | 4 | 50 | 22 | 40 | 45 | 0,274 | 1,50 | A | SO...13M5... | |
| 181111100 | 050A06690-05-05-022045 | 5 | 50 | 22 | 40 | 45 | 0,272 | 1,50 | A | SO...13M5... | |
| 181029800 | 052A06690-04-05-022045 | 4 | 52 | 22 | 40 | 45 | 0,290 | 1,50 | A | SO...13M5... | |
| 181033500 | 063A06690-05-05-027050 | 5 | 63 | 27 | 48 | 50 | 0,500 | 1,50 | A | SO...13M5... | |
| 181029900 | 066A06690-05-05-027050 | 5 | 66 | 27 | 48 | 50 | 0,550 | 1,50 | A | SO...13M5... | |
| 181030000 | 080A06690-06-05-027050 | 6 | 80 | 27 | 60 | 50 | 0,955 | 1,50 | A | SO...13M5... | |
| 181113100 | 100A06690-08-05-032050 | 8 | 100 | 32 | 70 | 50 | 1,500 | 1,50 | A | SO...13M5... | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)



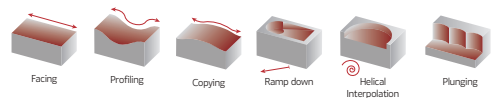
Threaded Coupling

$K_r=10^\circ$ | $\gamma_p=+5^\circ$ | $R_p=2,5$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|-----------------|------------------|----|-------|----------------|------------|-------------------------------|-------|
| | | | $\varnothing Dc$ | $\varnothing M$ | $\varnothing dg$ | L | | Ap max (mm) | Arbor Type | | |
| 181038700 | 032R06690-03-05-M16035 | 3 | 32 | M16 | 29 | 35 | 0,145 | 1,50 | SO...13M5 | | |
| 181064600 | 035R06690-03-05-M16035 | 3 | 35 | M16 | 29 | 35 | 0,163 | 1,50 | SO...13M5 | | |
| 181038800 | 042R06690-04-05-M16035 | 4 | 42 | M16 | 29 | 35 | 0,194 | 1,50 | SO...13M5 | | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)



SO...13M5... || Inserts | Pastilhas | Plaquetas

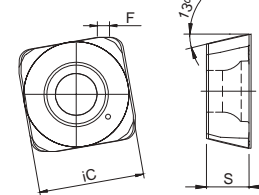
SOEW



SOEW-MD **NEW**



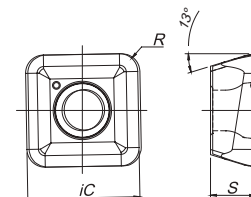
SOEW | SOEW-MD



SOET



SOET



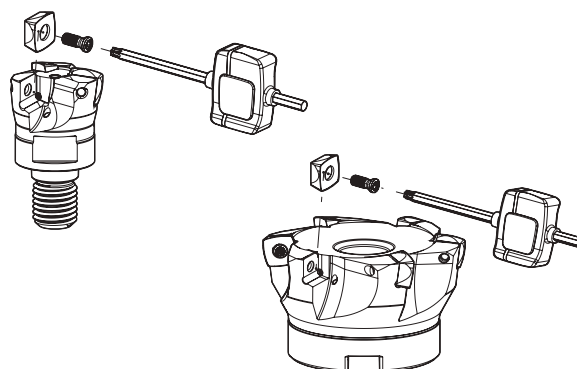
| (1) Geometry code | (2) Grade code | P | | | M | | | K | | | S | | Dimensions Dimensões Dimensiones (mm) | | | |
|-------------------|----------------|-----|----|----|-----|----|----|-----|----|----|-----|----|--|------|------|-----|
| | | PVD | | | PVD | | | PVD | | | PVD | | iC | S | R | F |
| | | X5 | T1 | G6 | P3 | X9 | G6 | X5 | T1 | G6 | X9 | G6 | | | | |
| 1111906 | SOEW 13M510 S | ⊗ | ⊗ | ⊗ | | | | ⊗ | ⊗ | ⊗ | | | 12,43 | 5,00 | 1,20 | 1,0 |
| 1112813 | SOEW 13M510-MD | | ⊗ | | | | | | ⊗ | | | | 12,43 | 5,00 | 1,20 | 1,0 |
| 1112147 | SOET 13M520-MS | | | ⊗ | ⊗ | ⊗ | ⊗ | | | ⊗ | ⊗ | ⊗ | 12,43 | 5,00 | 2,0 | - |

⊗ First choice | Primeira opção | 1ª opción ⊗ Stock item | Produto de stock | Itens de stock ○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9) Insert order code = (1) Geometry Code + (2) Grade Code
 ⊕ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock

SPARE PARTS || Complementos | Repuestos

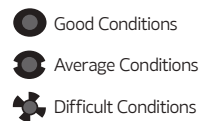
| Cutter ØDc | Order separately | | | | |
|------------------|------------------|------------|-----------------|--------------|-----------------|
| | Insert Screw | Key (Torx) | Key (Torx - Nm) | Torque Value | Retaining Screw |
| R06690 - 32 - 42 | P0401200 | XT15 | DT1530 | 3 | - |
| A06690 - 50 - 80 | P0401200 | XT15 | DT1530 | 3 | - |
| A06690 - 100 | P0401200 | XT15 | DT1530 | 3 | D1603500 |

Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
Check the procedures for the clamping screws on the page A-241.



GRADES SELECTION GUIDE | Guia para selecção de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | | | |
|-----|-----|-----------------------------------|--------------|-------------------|--------|--------|-------------|
| | | | | ← Wear Resistance | | | Toughness → |
| | | | | PHP910 | PHP920 | PHH930 | PH7740 |
| P | 1 | Unalloyed Steel | 125-220 | ✓ | ✓ | | ✓ |
| | 2 | Low-Alloyed Steel | 220-280 | ✓ | ✓ | | ✓ |
| | 3 | High-Alloyed Steel | 280-380 | ✓ | ✓ | | ✓ |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | | | ✓ | ✓ |
| | 5 | SS - Austenitic | 200-330 | | | ✓ | ✓ |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | | | ✓ | ✓ |
| K | 7 | Malleable Cast Iron | 130-230 | ✓ | ✓ | | ✓ |
| | 8 | Grey Cast Iron | 180-245 | ✓ | ✓ | | ✓ |
| | 9 | Nodular Cast iron | 160-250 | ✓ | ✓ | | ✓ |
| S | 11 | Heat Resistant Super Alloys | 200-320 | | | ✓ | ✓ |



RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | | | Feed fz (mm/t) | | |
|-----|-----|-----------------------------------|--------------|-------------------|---------|---------|-------------|----------------|-----------|-----------|
| | | | | ← Wear Resistance | | | Toughness → | SOEW S | SOEW MD | SOET MS |
| | | | | PHP910 | PHP920 | PHH930 | PH7740 | | | |
| P | 1 | Unalloyed Steel | 125-220 | 180-250 | 180-250 | - | 140-200 | 0,50-2,10 | 0,50-2,20 | 0,50-2,10 |
| | 2 | Low-Alloyed Steel | 220-280 | 160-240 | 160-230 | - | 130-180 | 0,50-2,10 | 0,50-2,20 | - |
| | 3 | High-Alloyed Steel | 280-380 | 140-230 | 140-220 | - | 100-170 | 0,50-2,00 | 0,50-2,10 | - |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | - | - | 140-210 | 130-180 | - | - | 0,50-1,80 |
| | 5 | SS - Austenitic | 200-330 | - | - | 120-170 | 110-160 | - | - | 0,50-1,80 |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | - | - | 100-150 | 90-150 | - | - | 0,50-1,50 |
| K | 7 | Malleable Cast Iron | 130-230 | 180-300 | 160-270 | - | 140-220 | 0,50-2,10 | 0,50-2,20 | 0,50-2,10 |
| | 8 | Grey Cast Iron | 180-245 | 160-250 | 140-250 | - | 120-210 | 0,50-2,10 | 0,50-2,20 | - |
| | 9 | Nodular Cast iron | 160-250 | 150-210 | 120-210 | - | 100-190 | 0,50-2,10 | 0,50-2,20 | - |
| S | 11 | Heat Resistant Super Alloys | 200-320 | - | - | 30-110 | 30-100 | - | - | 0,40-1,30 |

(Note 1) Cutting conditions $a_e/D_c=70\%$.

(Note 2) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

(Note 3) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

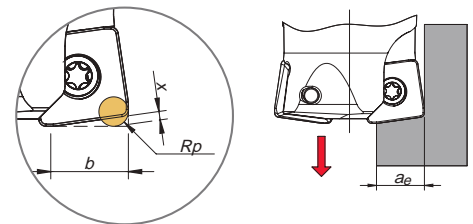
- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

CHIP-BREAKER SELECTION GUIDE | Guia para aplicações do quebra- aparas | Guía para aplicación del rompevirutas

| ISO | PSM | Material | HB (Brinell) | Chip-Breaker Application | |
|-----|-----|-----------------------------------|--------------|--------------------------|----------------------|
| | | | | 1st choice | Difficult Operations |
| P | 1 | Unalloyed Steel | 125-220 | SOEW-MD | SOEW-S |
| | 2 | Low-Alloyed Steel | 220-280 | SOEW-MD | SOEW-S |
| | 3 | High-Alloyed Steel | 280-380 | SOEW-MD | SOEW-S |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | SOET-MS | - |
| | 5 | SS - Austenitic | 200-330 | SOET-MS | - |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | SOET-MS | - |
| K | 7 | Malleable Cast Iron | 130-230 | SOET-MS | SOEW-S |
| | 8 | Grey Cast Iron | 180-245 | SOEW-MD | SOEW-S |
| | 9 | Nodular Cast iron | 160-250 | SOEW-MD | SOEW-S |
| S | 11 | Heat Resistant Super Alloys | 200-320 | SOET-MS | - |

PROGRAMMING DATA | Dados para programação | Datos para la programación

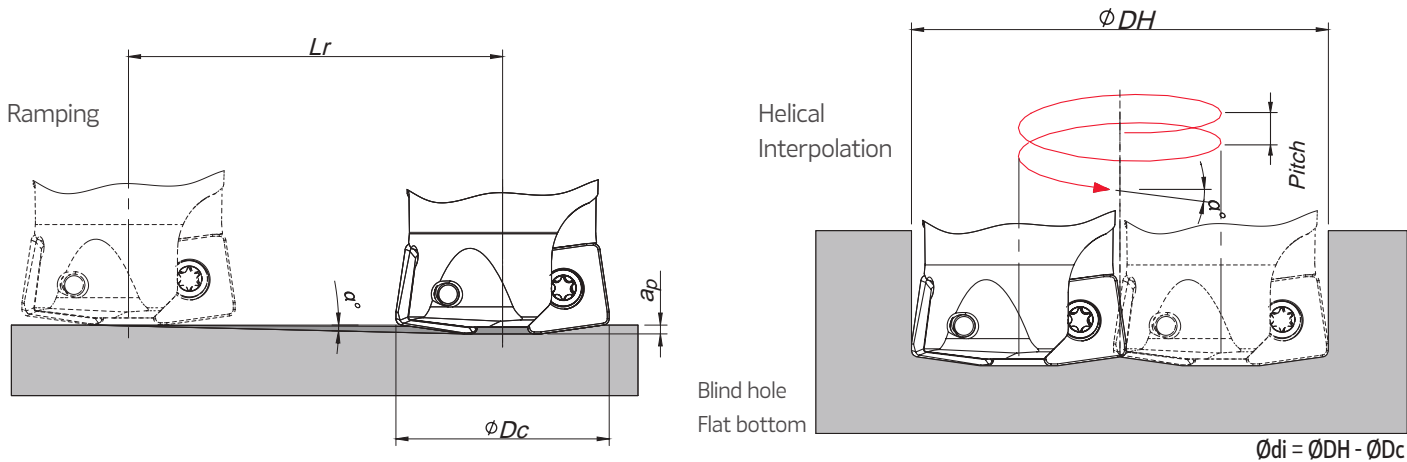
| Insert | Programming Data | | | |
|--------------|------------------|-----|------|------|
| | Rp | X | b | ae |
| SO... 13M5.. | 2,5 | 1,1 | 10,5 | 10,0 |



HIFEED 06690

RAMPING AND HELICAL INTERPOLATION

Descida em rampa e interpolação helicoidal | Bajada en rampa e interpolación circular

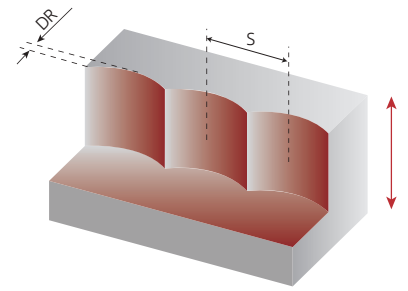


| ϕDc | Ramping | | | Helical Interpolation | | |
|-----------|--------------------|-----------|----------|-----------------------|-----------------|----------------|
| | Max Ramp a° | Max a_p | Min Lr | ϕDH_{min} | ϕDH_{max} | Max Pitch/Rev. |
| 32 | 10,0 | 1,5 | 6,0 | 43 - | - 62,0 | 6 16 |
| 35 | 9,0 | 1,5 | 9,5 | 49 - | - 68,0 | 6 16 |
| 42 | 6,4 | 1,5 | 13,4 | 63 - | - 82,0 | 7 14 |
| 50 | 4,3 | 1,5 | 19,9 | 79 - | - 98,0 | 6 11 |
| 52 | 4,0 | 1,5 | 21,5 | 83 - | - 102,0 | 6 10 |
| 63 | 3,0 | 1,5 | 28,6 | 105 - | - 124,0 | 6 10 |
| 66 | 2,6 | 1,5 | 33,0 | 111 - | - 130,0 | 6 9 |
| 80 | 2,0 | 1,5 | 43,0 | 139 - | - 158,0 | 6 8 |
| 100 | 1,0 | 1,5 | 85,9 | 179 - | - 198,0 | 4 5 |

Note: During helical interpolation do not exceed max Pitch.

PLUNGING | Mergulho | Plunge

| L ≤ 3Dc | L > 3Dc | S max. |
|-----------------------|-----------|--|
| f _z (mm/t) | | |
| 0,10-0,20 | 0,07-0,14 | $S_{max} = \sqrt{D_c \cdot DR - DR^2}$ |



| S max and DR corresponding cutting diameter Dc (mm) | | | | | | | | | |
|---|---------|------|------|------|------|------|------|------|--|
| DR (mm) | Dc (mm) | | | | | | | | |
| | 32 | 35 | 42 | 50 | 52 | 63 | 66 | 80 | |
| 1,0 | 5,6 | 5,8 | 6,4 | 7,0 | 7,1 | 7,9 | 8,1 | 8,9 | |
| 2,0 | 7,7 | 8,1 | 8,9 | 9,8 | 10,0 | 11,0 | 11,3 | 12,5 | |
| 3,0 | 9,3 | 9,8 | 10,8 | 11,9 | 12,1 | 13,4 | 13,7 | 15,2 | |
| 4,0 | 10,6 | 11,1 | 12,3 | 13,6 | 13,9 | 15,4 | 15,7 | 17,4 | |
| 5,0 | 11,6 | 12,2 | 13,6 | 15,0 | 15,3 | 17,0 | 17,5 | 19,4 | |
| 6,0 | 12,5 | 13,2 | 14,7 | 16,2 | 16,6 | 18,5 | 19,0 | 21,1 | |
| 7,0 | 13,2 | 14,0 | 15,7 | 17,3 | 17,7 | 19,8 | 20,3 | 22,6 | |
| 8,0 | 13,9 | 14,7 | 16,5 | 18,3 | 18,8 | 21,0 | 21,5 | 24,0 | |
| 9,0 | 14,4 | 15,3 | 17,2 | 19,2 | 19,7 | 22,0 | 22,6 | 25,3 | |
| 10,0 | 14,8 | 15,8 | 17,9 | 20,2 | 20,5 | 23,0 | 23,7 | 26,5 | |

Note: Recommended for L ≤ 4 Dc for extra long tool this step and side cut must be reduced.

A

MILLING

Overview

Face milling

Hifeed milling

Shoulder milling

Profile milling

Hardmill

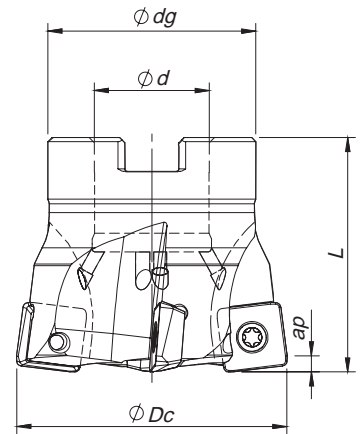
Center & Chamfer

Spot face

Spare Parts

Technical Data

End Mills



Arbor Mounting

$$\kappa_r = 15^\circ \mid \gamma_p = +2^\circ \mid R_p = 4,5$$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|--|---|----------|-----------|----|-------|----------------|------------|-------------------------------|-------|
| | | | ϕDc | ϕd | ϕdg | L | | Ap max (mm) | Arbor Type | | |
| 181100400 | 063A06815-05-02-027050 | | 63 | 27 | 48 | 50 | 0,460 | 3,50 | A | SO...1605... | |
| 181081900 | 066A06815-05-02-027050 | | 66 | 27 | 48 | 50 | 0,500 | 3,50 | A | SO...1605... | |
| 181082000 | 080A06815-06-02-027050 | | 80 | 27 | 60 | 50 | 0,900 | 3,50 | A | SO...1605... | |
| 181082100 | 100A06815-08-02-032050 | | 100 | 32 | 80 | 50 | 1,600 | 3,50 | B | SO...1605... | |
| 181082200 | 125A06815-10-02-040063 | | 125 | 40 | 90 | 63 | 2,900 | 3,50 | B | SO...1605... | |
| 181082300 | 160A06815-12-02-U040063 | | 160 | 40 | 110 | 63 | 4,400 | 3,50 | C | SO...1605... | |

Stock item | Produto de stock | Itens de stock

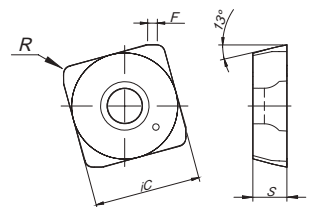
Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

SO...1605... || Inserts | Pastilhas | Plaquetas

SOEW



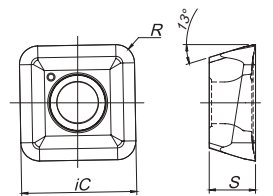
SOEW



SOET



SOET



| (1) Geometry code | ISO Reference | P | | | | | M | | | K | | | | | S | Dimensions Dimensões Dimensiones (mm) | | | |
|-------------------|----------------|-----|----|----|----|----|-----|----|----|-----|----|----|----|----|-----|---|------|------|------|
| | | PVD | | | | | PVD | | | PVD | | | | | PVD | iC | S | R | F |
| | | X5 | G1 | T1 | G4 | G6 | X9 | P3 | G6 | X5 | G1 | T1 | G4 | G6 | X9 | | | | |
| 1111907 | SOEW 160512 S | | | | | | | | | | | | | | | 16,40 | 5,26 | 1,20 | 1,50 |
| 1112221 | SOET 160520-MS | | | | | | | | | | | | | | | 16,40 | 5,26 | 2,00 | - |

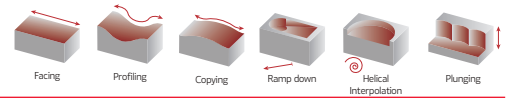
First choice | Primeira opção | 1ª opción

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

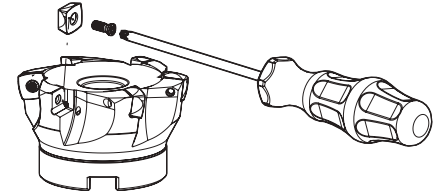
Insert order code = (1) Geometry Code + (2) Grade Code

Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock



SPARE PARTS | Complementos | Repuestos

| Cutter ØDc | Insert Screw | Key (Torx) | Order separately | | Order separately | |
|----------------|--------------|------------|------------------|--------------|------------------|-----------------|
| | | | Key (Torx - Nm) | Torque Value | Screw | DIN 6368 Wrench |
| A06815 - 63-80 | P0501302 | PT20 | DT2050 | 5,0 | - | - |
| A06815 - 100 | P0501302 | PT20 | DT2050 | 5,0 | J0123510 | SD6368-12 |
| A06815 - 125 | P0501302 | PT20 | DT2050 | 5,0 | J0164110 | SD6368-16 |
| A06815 - 160 | P0501302 | PT20 | DT2050 | 5,0 | - | - |



Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
Check the procedures for the clamping screws on the page A-241.

GRADES SELECTION GUIDE | Guia para selecção de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | | | |
|-----|-----|-----------------------------------|-----------------|-------------------|--------|-------------|--------|
| | | | | ← Wear Resistance | | Toughness → | |
| | | | | PHP910 | PHP920 | PHH930 | PH7740 |
| P | 1 | Unalloyed Steel | 125-220 | ● | ● | | ● |
| | 2 | Low-Alloyed Steel | 220-280 | ● | ● | | ● |
| | 3 | High-Alloyed Steel | 280-380 | ● | ● | | ● |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | | | ● | ● |
| | 5 | SS - Austenitic | 200-330 | | | ● | ● |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | | | ● | ● |
| K | 7 | Malleable Cast Iron | 130-230 | ● | ● | | ● |
| | 8 | Grey Cast Iron | 180-245 | ● | ● | | ● |
| | 9 | Nodular Cast iron | 160-250 | ● | ● | | ● |
| S | 11 | Heat Resistant Super Alloys | 200-320 | | | ● | ● |

● Good Conditions
● Average Conditions
● Difficult Conditions

RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | | | Feed fz (mm/t) | |
|-----|-----|-----------------------------------|-----------------|-------------------|---------|-------------|---------|----------------|------------|
| | | | | ← Wear Resistance | | Toughness → | | SOEW S... | SOET MS... |
| | | | | PHP910 | PHP920 | PHH930 | PH7740 | | |
| P | 1 | Unalloyed Steel | 125-220 | 180-250 | 180-250 | - | 140-200 | 0,50-2,10 | 0,50-2,20 |
| | 2 | Low-Alloyed Steel | 220-280 | 160-240 | 160-230 | - | 130-180 | 0,50-2,10 | 0,50-2,20 |
| | 3 | High-Alloyed Steel | 280-380 | 140-230 | 140-220 | - | 100-170 | 0,50-2,00 | 0,50-1,80 |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | - | - | 140-210 | 130-180 | - | 0,50-1,80 |
| | 5 | SS - Austenitic | 200-330 | - | - | 120-170 | 110-160 | - | 0,50-1,80 |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | - | - | 100-150 | 90-150 | - | 0,50-1,50 |
| K | 7 | Malleable Cast Iron | 130-230 | 180-300 | 160-270 | - | 140-220 | 0,50-2,10 | 0,50-2,00 |
| | 8 | Grey Cast Iron | 180-245 | 160-250 | 140-250 | - | 120-210 | 0,50-2,10 | 0,50-2,00 |
| | 9 | Nodular Cast iron | 160-250 | 150-210 | 120-210 | - | 100-190 | 0,50-2,10 | 0,50-1,80 |
| S | 11 | Heat Resistant Super Alloys | 200-320 | - | - | 30-110 | 30-100 | - | 0,40-1,30 |

(Note 1) Cutting conditions $a_e/D_c=70\%$.

(Note 2) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:
- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

(Note 3) PH5... and PHS... can be used wet or dry. PH7... use only air.

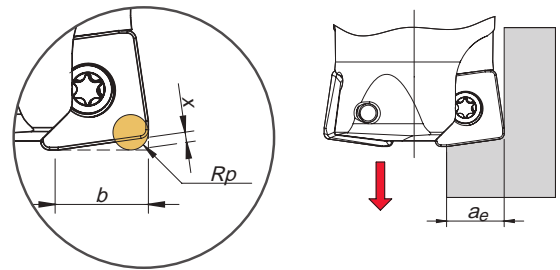
(Note 4) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:
- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

CHIP-BREAKER SELECTION GUIDE | Guia para aplicações do quebra- aparas | Guía para aplicación del rompevirutas

| ISO | PSM | Material | HB (Brinell) | Chip-Breaker Application | |
|-----|-----|-----------------------------------|--------------|--------------------------|----------------------|
| | | | | 1st choice | Difficult Operations |
| P | 1 | Unalloyed Steel | 125-220 | SOET 16... | SOEW 16... |
| | 2 | Low-Alloyed Steel | 220-280 | SOEW 16... | - |
| | 3 | High-Alloyed Steel | 280-380 | SOEW 16... | - |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | SOET 16... | - |
| | 5 | SS - Austenitic | 200-330 | SOET 16... | - |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | SOET 16... | - |
| K | 7 | Malleable Cast Iron | 130-230 | SOET 16... | SOEW 16... |
| | 8 | Grey Cast Iron | 180-245 | SOEW 16... | - |
| | 9 | Nodular Cast iron | 160-250 | SOEW 16... | - |
| S | 11 | Heat Resistant Super Alloys | 200-320 | SOET 16... | - |

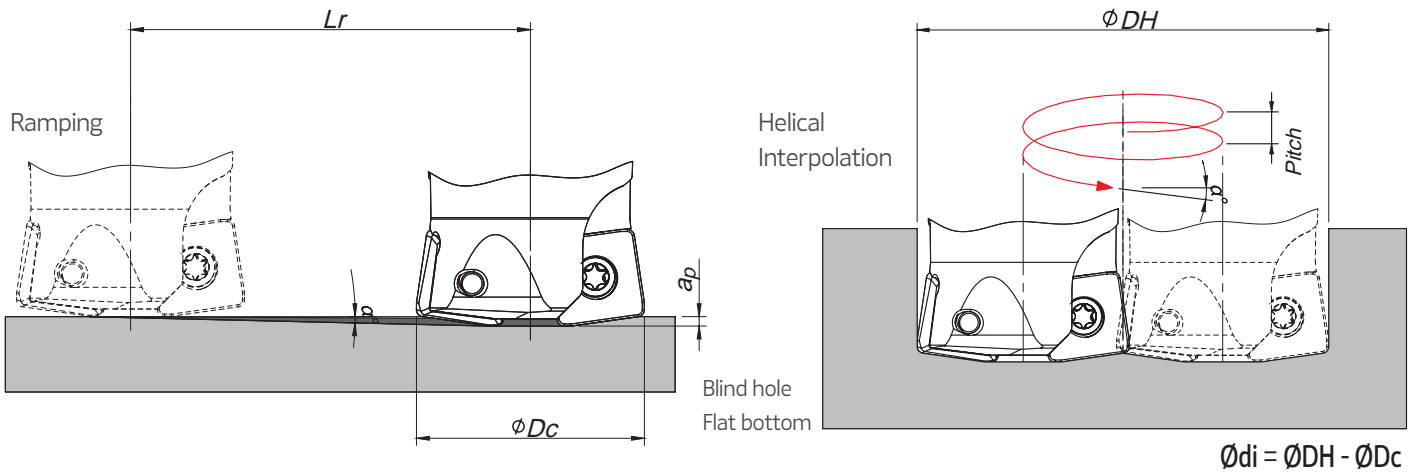
PROGRAMMING DATA | Dados para programação | Datos para la programación

| Insert | Programming Data | | | |
|--------------|------------------|-----|------|------|
| | Rp | X | b | ae |
| SO... 1605.. | 4,5 | 2,3 | 13,5 | 12,8 |



RAMPING AND HELICAL INTERPOLATION

Descida em rampa e interpolação helicoidal | Bajada en rampa e interpolación circular

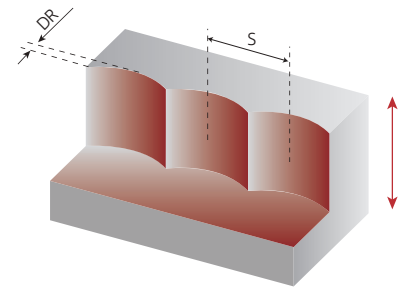


| ØDc | Ramping | | | Helical Interpolation | | |
|-----|-------------|--------|--------|-----------------------|--------|----------------|
| | Max Ramp a° | Max ap | Min Lr | ØDHmin | ØDHmax | Max Pitch/Rev. |
| 63 | 3,5 | 3,5 | 80,2 | 99,0 | - | 6 |
| 66 | 3,0 | 3,5 | 66,8 | 105 | - | 11 |
| | | | | - | 123,6 | 6 |
| 80 | 2,0 | 3,5 | 100,2 | 133 | - | 10 |
| | | | | - | 129,6 | 5 |
| 100 | 1,5 | 3,5 | 133,7 | 173 | - | 8 |
| | | | | - | 157,5 | 6 |
| 125 | 1,0 | 3,5 | 200,5 | 223 | - | 8 |
| | | | | - | 197,5 | 5 |
| 160 | 0,5 | 3,5 | 401,1 | 293 | - | 6 |
| | | | | - | 247,5 | 3 |
| | | | | | | 4 |

Note: During helical interpolation do not exceed max Pitch.

PLUNGING | Mergulho | Plunge

| | | |
|---------------|------------|--|
| $L \leq 3D_c$ | $L > 3D_c$ | S max. |
| f_z (mm/t) | | |
| 0,10-0,20 | 0,07-0,14 | $S_{max} = \sqrt{D_c \cdot DR - DR^2}$ |



| S max and DR corresponding cutting diameter Dc (mm) | | |
|---|---------|------|
| DR (mm) | Dc (mm) | |
| | 66 | 80 |
| 1,0 | 8,1 | 8,9 |
| 2,0 | 11,3 | 12,5 |
| 3,0 | 13,7 | 15,2 |
| 4,0 | 15,7 | 17,4 |
| 5,0 | 17,5 | 19,4 |
| 6,0 | 19,0 | 21,1 |
| 7,0 | 20,3 | 22,6 |
| 8,0 | 21,5 | 24,0 |
| 9,0 | 22,6 | 25,3 |
| 10,0 | 23,7 | 26,5 |
| 11,0 | 24,6 | 27,5 |
| 12,0 | 25,5 | 28,6 |

Note: Recommended for $L \leq 4 D_c$ for extra long tool this step and side cut must be reduced.

A

MILLING

Overview

Face milling

Hifeed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

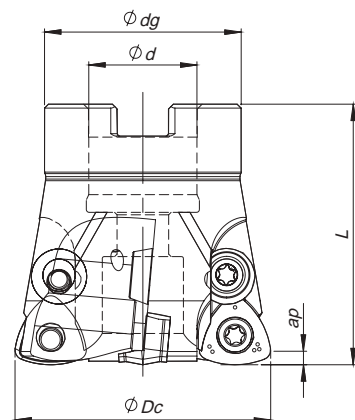
Spot face

Spare Parts

Technical Data

End Mills

HIFEED 50560



Arbor Mounting

$\gamma_p = +5^\circ$ | $R_p = 3,2$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|----------|-----------|----|-------|----------------|------------|-------------------------------|-------|
| | | | ϕDc | ϕd | ϕdg | L | | Ap max (mm) | Arbor Type | | |
| 181020800 | 052C50560-04-05-022053 | 4 | 52 | 22 | 40 | 53 | 0,390 | 1,5 | A | WD... 1204... | |
| 181020200 | 066C50560-05-05-027053 | 5 | 66 | 27 | 48 | 53 | 0,640 | 1,5 | A | WD... 1204... | |
| 181020300 | 080C50560-06-05-027053 | 6 | 80 | 27 | 60 | 53 | 1,060 | 1,5 | A | WD... 1204... | |
| 181172400 | 063C50560-05-05-027053 | 5 | 63 | 27 | 48 | 53 | 0,59 | 1,5 | A | WD... 1204... | |

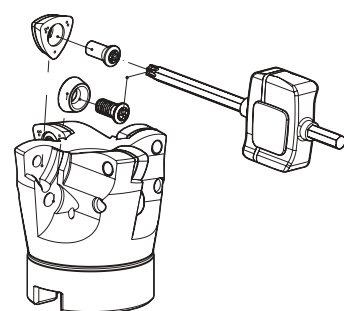
Stock item | Produto de stock | Itens de stock

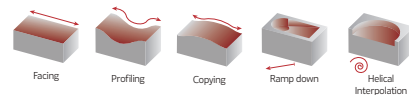
Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

SPARE PARTS | Complementos | Repuestos

| ScrewCutter ϕDc | Insert Screw | Key (Torx) | Order separately | | Order separately | |
|--------------------------|--------------|------------|------------------|--------------|------------------|--------------|
| | | | Key (Torx - Nm) | Torque Value | Washer | Washer Screw |
| A50560 - 52 - 80 | | | | | | |
| | P0451001 | XT20 | DT2050 | 5,0 | HC01200 | P0451001 |

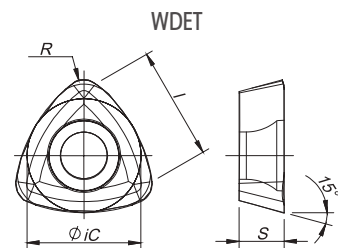
Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
Check the procedures for the clamping screws on the page A-241.



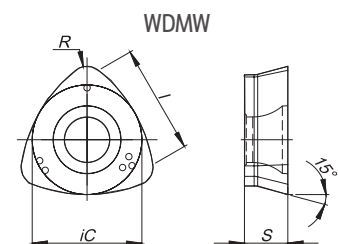


WD... 1204... | Inserts | Pastilhas | Plaquetas

WDET



WDMW



| | ⁽²⁾ Grade code | P | | | M | | K | | S | | Dimensions Dimensões Dimensiones (mm) | | | |
|------------------------------|---------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|------|------|------|
| | | PVD | | | PVD | | PVD | | PVD | | | | | |
| | | G4 | P3 | G6 | P3 | G6 | G4 | G6 | P3 | G6 | | | | |
| ⁽¹⁾ Geometry code | ISO Reference | PH7920 | PH7930 | PH7740 | PH7930 | PH7740 | PH7920 | PH7740 | PH7930 | PH7740 | iC | S | I | R |
| 1112148 | WDET 120420-MS | | ⊗ | ⊗ | ⊗ | ⊗ | | | ⊗ | ⊗ | 12,00 | 4,76 | 11,9 | 2,00 |
| 1111123 | WDMW 120420-T | ⊗ | | ⊗ | | | ⊗ | ⊗ | | | 12,00 | 4,76 | 11,9 | 2,00 |

⊗ First choice | Primeira opção | 1ª opción ⊗ Stock item | Produto de stock | Itens de stock ○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9) Insert order code = (1) Geometry Code + (2) Grade Code

GRADES SELECTION GUIDE | Guia para selecção de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | | | |
|-----|-----|-----------------------------------|-----------------|-------------------|--------|-------------|--------|
| | | | | ← Wear Resistance | | Toughness → | |
| | | | | PH7910 | PH7920 | PH7930 | PH7740 |
| P | 1 | Unalloyed Steel | 125-220 | ● | ● | ● | ● |
| | 2 | Low-Alloyed Steel | 220-280 | ✓ | ✓ | ✓ | ✓ |
| | 3 | High-Alloyed Steel | 280-380 | ✓ | ✓ | ✓ | ✓ |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | | | ✓ | ✓ |
| | 5 | SS - Austenitic | 200-330 | | | ✓ | ✓ |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | | | ✓ | ✓ |
| K | 7 | Malleable Cast Iron | 130-230 | ✓ | ✓ | ✓ | ✓ |
| | 8 | Grey Cast Iron | 180-245 | ✓ | ✓ | ✓ | ✓ |
| | 9 | Nodular Cast iron | 160-250 | ✓ | ✓ | ✓ | ✓ |
| S | 11 | Heat Resistant Super Alloys | 200-320 | | | ✓ | ✓ |

● Good Conditions
● Average Conditions
● Difficult Conditions

A
MILLING
Overview
Face milling
Hifeed milling
Shoulder milling
Profile milling
Hardmill
Center & Chamfer
Spot face
Spare Parts
Technical Data
End Mills

HIFEED 50560

RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | | | Feed fz (mm/t) | |
|-----|-----|-----------------------------------|--------------|-------------------|---------|-------------|---------|----------------|------------|
| | | | | ← Wear Resistance | | Toughness → | | WDMW 12... | WDET 12... |
| | | | | PH7910 | PH7920 | PH7930 | PH7740 | | |
| P | 1 | Unalloyed Steel | 125-220 | 180-250 | 180-240 | 160-220 | 140-200 | 0,30-1,50 | 0,30-1,30 |
| | 2 | Low-Alloyed Steel | 220-280 | 160-230 | 160-220 | 140-200 | 130-180 | 0,30-1,50 | 0,30-1,30 |
| | 3 | High-Alloyed Steel | 280-380 | 140-220 | 140-210 | 120-190 | 100-170 | 0,30-1,30 | 0,30-1,00 |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | | | 140-200 | 130-180 | - | 0,30-1,30 |
| | 5 | SS - Austenitic | 200-330 | | | 120-160 | 110-160 | - | 0,30-1,30 |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | | | 100-140 | 90-150 | - | 0,30-1,00 |
| K | 7 | Malleable Cast Iron | 130-230 | 180-300 | 160-260 | | 140-220 | 0,30-1,50 | - |
| | 8 | Grey Cast Iron | 180-245 | 160-250 | 140-240 | | 120-210 | 0,30-1,50 | - |
| | 9 | Nodular Cast iron | 160-250 | 150-200 | 120-200 | | 100-190 | 0,30-1,40 | - |
| S | 11 | Heat Resistant Super Alloys | 200-320 | - | - | 30-100 | 30-100 | - | 0,30-1,00 |

(Note 1) Cutting conditions $a_e/D_c=70\%$.

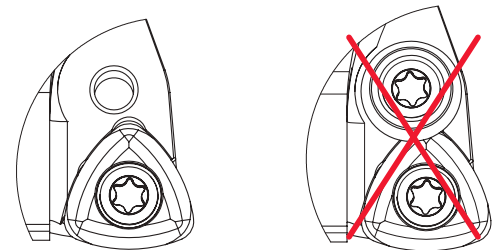
(Note 2) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

(Note 3) PH5... and PHS... can be used wet or dry. PH7... use only air.

(Note 4) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.



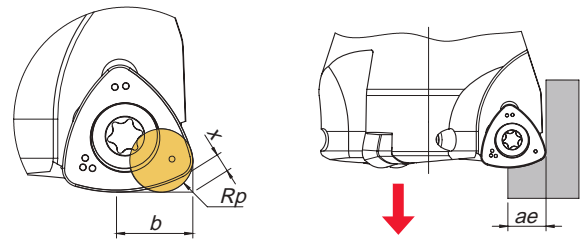
When using WDET insert, please remove the washer and the washer screw, otherwise it will break the insert.

CHIP-BREAKER SELECTION GUIDE | Guia para aplicações do quebra- aparas | Guía para aplicación del rompevirutas

| ISO | PSM | Material | HB (Brinell) | Chip-Breaker Application | |
|-----|-----|-----------------------------------|--------------|--------------------------|----------------------|
| | | | | 1st choice | Difficult Operations |
| P | 1 | Unalloyed Steel | 125-220 | WDET 12... | WDMW 12... |
| | 2 | Low-Alloyed Steel | 220-280 | WDMW 12... | - |
| | 3 | High-Alloyed Steel | 280-380 | WDMW 12... | - |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | WDET 12... | - |
| | 5 | SS - Austenitic | 200-330 | WDET 12... | - |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | WDET 12... | - |
| K | 7 | Malleable Cast Iron | 130-230 | WDMW 12... | - |
| | 8 | Grey Cast Iron | 180-245 | WDMW 12... | - |
| | 9 | Nodular Cast iron | 160-250 | WDMW 12... | - |
| S | 11 | Heat Resistant Super Alloys | 200-320 | WDET 12... | - |

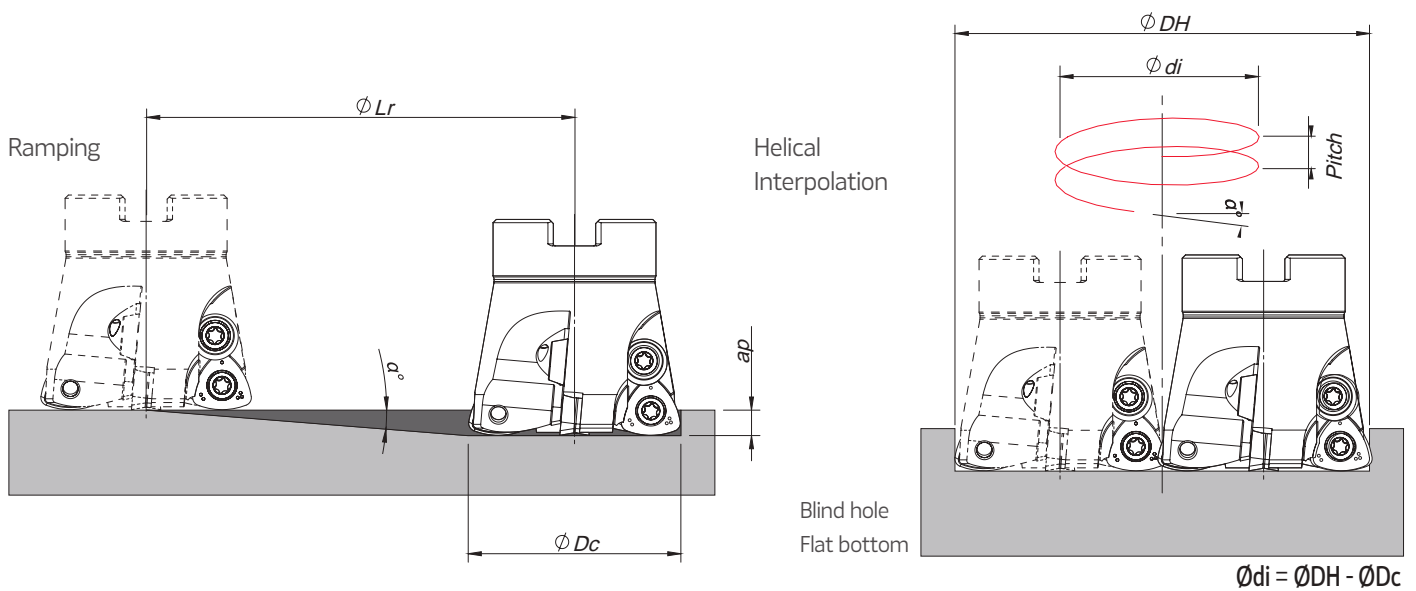
PROGRAMMING DATA | Dados para programação | Datos para la programación

| Insert | Programming Data | | | |
|-----------|------------------|-----|-----|----------------|
| | Rp | x | b | a _e |
| WD...1204 | 3,2 | 0,7 | 7,2 | 7,0 |



RAMPING AND HELICAL INTERPOLATION

Descida em rampa e interpolação helicoidal | Bajada en rampa e interpolación circular



| ϕDc | Ramping | | | Helical Interpolation | | |
|-----------|-------------|--------------------|--------------------|-----------------------|-----------------|----------------|
| | Max Ramp a° | Max a _p | Min L _r | ϕDH_{min} | ϕDH_{max} | Max Pitch/Rev. |
| 52 | 0,8 | 1,5 | 107,4 | 89,6 | - | 1 |
| 66 | 0,4 | 1,5 | 214,9 | 117,6 | - | 2 |
| | | | | - | 102,0 | 1 |
| 80 | 0,3 | 1,5 | 286,5 | 145,6 | - | 1 |
| | | | | - | 130,0 | 1 |
| | | | | | 158,0 | 1 |

Note: During helical interpolation do not exceed max Pitch.

HIFEED 50060

A

MILLING

Overview

Face milling

Hifeed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

Spot face

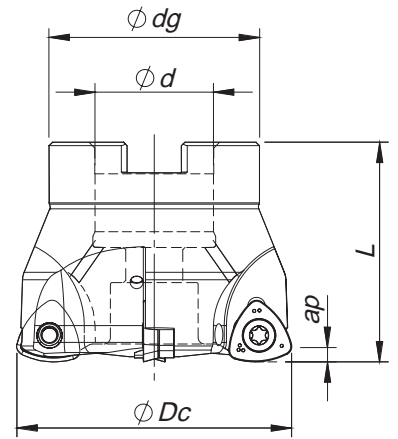
Spare Parts

Technical Data

End Mills



Arbor Mounting

 $\gamma_p=0^\circ$ | $R_p=3,5$


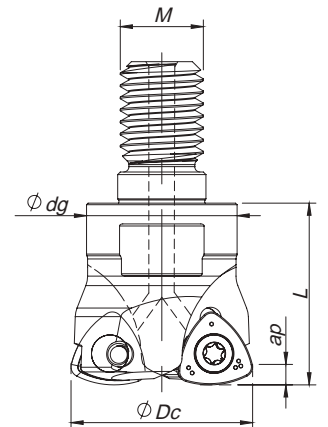
| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|----------|-----------|----|-------|----------------|------------|-------------------------------|-------|
| | | | ϕDc | ϕd | ϕdg | L | | A_p max (mm) | Arbor Type | | |
| 181020400 | 052A50060-03-022045 | 3 | 52 | 22 | 40 | 45 | 0,320 | 1,8 | A | WN... 1207 | |
| 181033900 | 063A50060-04-027050 | 4 | 63 | 27 | 48 | 50 | 0,547 | 1,8 | A | WN... 1207 | |
| 181028700 | 066A50060-04-027050 | 4 | 66 | 27 | 48 | 50 | 0,597 | 1,8 | A | WN... 1207 | |
| 181035900 | 066A50060-05-027050 | 5 | 66 | 27 | 48 | 50 | 0,610 | 1,8 | A | WN... 1207 | |
| 181020100 | 080A50060-05-027050 | 5 | 80 | 27 | 60 | 50 | 1,000 | 1,8 | A | WN... 1207 | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)



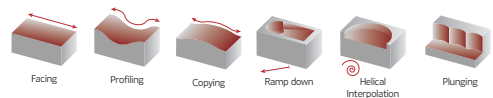
Threaded Coupling

 $\gamma_p=0^\circ$ | $R_p=3,5$


| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|----------|-----------|----|-------|----------------|------------|-------------------------------|-------|
| | | | ϕDc | ϕM | ϕdg | L | | A_p max (mm) | Arbor Type | | |
| 181039000 | 035R50060-02-M16035 | 2 | 35 | M16 | 29 | 35 | 0,166 | 1,8 | WN... 1207 | | |

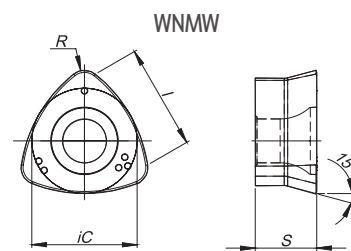
Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)



WNMW 1207 | Inserts | Pastilhas | Plaquetas

WNMW

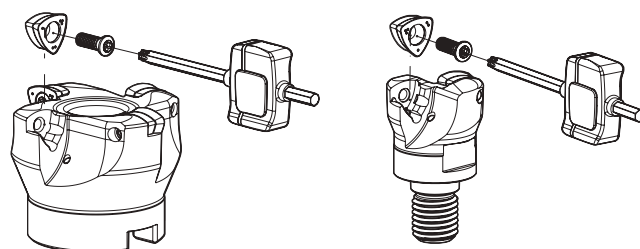


| | ⁽²⁾ Grade code | P | | | | K | | Dimensions Dimensões Dimensiones (mm) | | | |
|------------------------------|---------------------------|-----|----|----|----|-----|----|--|------|-------|------|
| | | PVD | | | | CVD | | | | | |
| ⁽¹⁾ Geometry code | ISO Reference | G1 | G4 | 78 | 86 | G1 | G4 | iC | S | I | R |
| 1121148 | WNMW 1207-SP | | | | | | | 12,00 | 7,00 | 11,90 | 2,00 |

First choice | Primeira opção | 1ª opción Stock item | Produto de stock | Itens de stock Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9) Insert order code = (1) Geometry Code + (2) Grade Code

SPARE PARTS | Complementos | Repuestos

| Cutter ØDc | Insert Screw | Key (Torx) | Order separately | |
|------------------|--------------|------------|------------------|--------------|
| | | | Key (Torx - Nm) | Torque Value |
| R50060 – 35 | P0451400 | XT20 | DT2050 | 5,0 |
| A50060 – 52 - 80 | P0451400 | XT20 | DT2050 | 5,0 |



Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241. Check the procedures for the clamping screws on the page A-241.

GRADES SELECTION GUIDE | Guia para selecção de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | | | |
|-----|-----|---------------------|-----------------|-------------------|--------|-------------|--------|
| | | | | ← Wear Resistance | | Toughness → | |
| | | | | PH7910 | PH7920 | PH6125 | PH6135 |
| P | 1 | Unalloyed Steel | 125-220 | | | | |
| | 2 | Low-Alloyed Steel | 220-280 | | | | |
| | 3 | High-Alloyed Steel | 280-380 | | | | |
| K | 7 | Malleable Cast Iron | 130-230 | | | | |
| | 8 | Grey Cast Iron | 180-245 | | | | |
| | 9 | Nodular Cast iron | 160-250 | | | | |

Good Conditions
 Average Conditions
 Difficult Conditions

HIFEED 50060

RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | | | Feed fz (mm/t) |
|-----|-----|---------------------|--------------|-------------------|---------|---------|-------------|----------------|
| | | | | ← Wear Resistance | | | Toughness → | |
| | | | | PH7910 | PH7920 | PH6125 | PH6135 | |
| P | 1 | Unalloyed Steel | 125-220 | 180-250 | 180-240 | 160-190 | 150-180 | 0,30-1,50 |
| | 2 | Low-Alloyed Steel | 220-280 | 160-230 | 160-220 | 140-180 | 140-170 | 0,30-1,50 |
| | 3 | High-Alloyed Steel | 280-380 | 140-220 | 140-210 | 130-160 | 120-150 | 0,30-1,30 |
| K | 7 | Malleable Cast Iron | 130-230 | 180-300 | 160-260 | - | - | 0,30-1,50 |
| | 8 | Grey Cast Iron | 180-245 | 160-250 | 140-240 | - | - | 0,30-1,50 |
| | 9 | Nodular Cast iron | 160-250 | 150-200 | 120-200 | - | - | 0,30-1,40 |

(Note 1) Cutting conditions $a_e/D_c=70\%$.

(Note 2) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

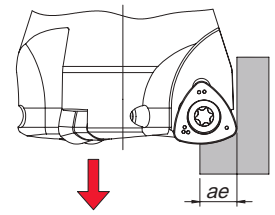
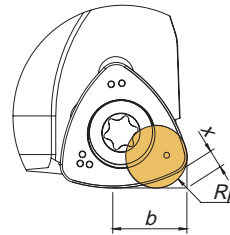
(Note 3) PH5... and PHS... can be used wet or dry. PH7... use only air.

(Note 4) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

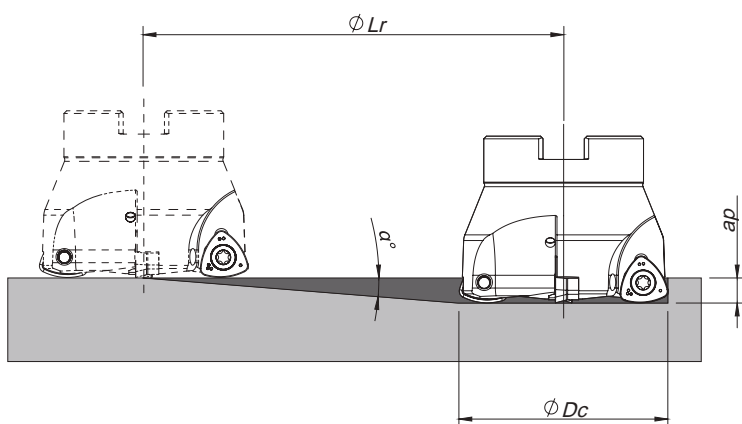
PROGRAMMING DATA | Dados para programação | Datos para la programación

| Insert | Programming Data | | | |
|---------|------------------|-----|-----|-------|
| | Rp | X | b | a_e |
| WNMW 12 | 3,5 | 0,9 | 8,4 | 8,0 |

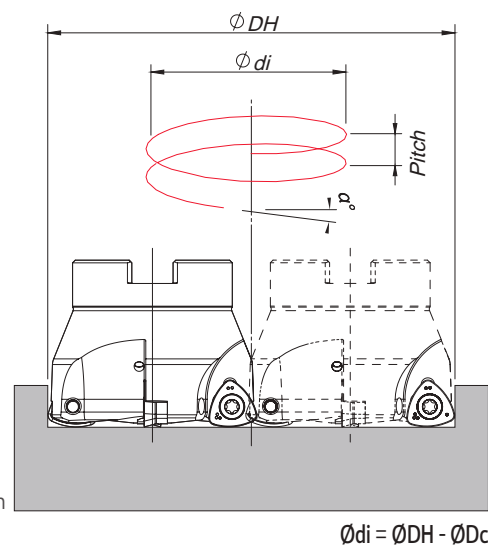


RAMPING AND HELICAL INTERPOLATION

Descida em rampa e interpolação helicoidal | Bajada en rampa e interpolación circular



Helical Interpolation

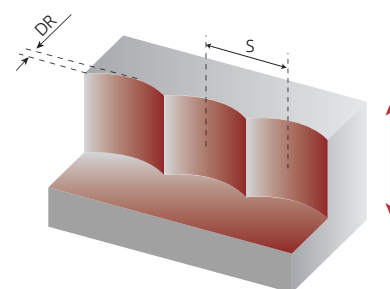


| ϕDc | Ramping | | | Helical Interpolation | | |
|-----------|--------------------|----------|--------|-----------------------|-----------------|----------------|
| | Max Ramp a° | Max ap | Min Lr | ϕDH_{min} | ϕDH_{max} | Max Pitch/Rev. |
| 35 | 3,0 | 1,8 | 34,3 | 53,2 - | - 68,0 | 2 5 |
| 52 | 1,8 | 1,8 | 57,3 | 87,2 - | - 102,0 | 3 4 |
| 63 | 1,2 | 1,8 | 85,9 | 109,2 - | - 124,0 | 3 4 |
| 66 | 1,0 | 1,8 | 114,6 | 115,2 - | - 130,0 | 3 3 |
| 80 | 0,9 | 1,8 | 114,6 | 143,0 - | - 158,0 | 3 3 |

Note: During helical interpolation do not exceed max Pitch.

PLUNGING | Mergulho | Plunge

| $L \leq 3Dc$ | $L > 3Dc$ | S_{max} |
|--------------|-----------|---------------------------------------|
| f_z (mm/t) | | |
| 0,10-0,20 | 0,07-0,14 | $S_{max} = \sqrt{Dc \cdot DR - DR^2}$ |



| S max and DR corresponding cutting diameter Dc (mm) | | | | | |
|---|---------|------|------|------|------|
| DR (mm) | Dc (mm) | | | | |
| | 35 | 52 | 63 | 66 | 80 |
| 1,0 | 5,8 | 7,1 | 7,9 | 8,1 | 8,9 |
| 2,0 | 8,1 | 10,0 | 11,0 | 11,3 | 12,5 |
| 3,0 | 9,8 | 12,1 | 13,4 | 13,7 | 15,2 |
| 4,0 | 11,1 | 13,9 | 15,4 | 15,7 | 17,4 |
| 5,0 | 12,2 | 15,3 | 17,0 | 17,5 | 19,4 |
| 6,0 | 13,2 | 16,6 | 18,5 | 19,0 | 21,1 |
| 7,0 | 14,0 | 17,7 | 19,8 | 20,3 | 22,6 |
| 8,0 | 14,7 | 18,8 | 21,0 | 21,5 | 24,0 |

Note: Recommended for $L \leq 4 Dc$, for $L > 4 Dc$ steps must be reduced to 40%.

HIFEED 06590

A

MILLING

Overview

Face milling

Hifeed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

Spot face

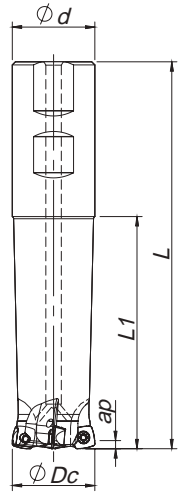
Spare Parts

Technical Data

End Mills



Weldon Shank

 $\gamma_p = +5^\circ$ | $R_p = 1,8$


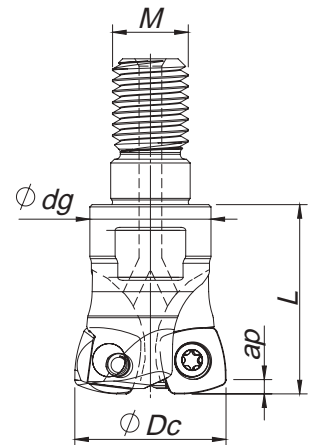
| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|----------|-----|-----|-------|----------------|-------------------------------|-------|
| | | | ϕDc | ϕd | L | L1 | | Ap max (mm) | | |
| 181047600 | 020W06590-02-05-020130 | 2 | 20 | 20 | 130 | 75 | 0,250 | 1,2 | SP... 08T3... | |
| 181047900 | 020W06590-02-05-020190 | 2 | 20 | 20 | 190 | 110 | 0,380 | 1,2 | SP... 08T3... | |
| 181047700 | 025W06590-03-05-025140 | 3 | 25 | 25 | 140 | 80 | 0,431 | 1,2 | SP... 08T3... | |
| 181048000 | 025W06590-03-05-025200 | 3 | 25 | 25 | 200 | 130 | 0,611 | 1,2 | SP... 08T3... | |
| 181047800 | 032W06590-04-05-032150 | 4 | 32 | 32 | 150 | 90 | 0,780 | 1,2 | SP... 08T3... | |
| 181048100 | 032W06590-04-05-032200 | 4 | 32 | 32 | 200 | 130 | 1,040 | 1,2 | SP... 08T3... | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)



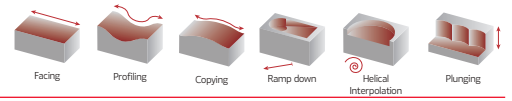
Threaded Coupling

 $\gamma = +5^\circ$ | $R_p = 1,8$


| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|----------|-----------|----|-------|----------------|-------------------------------|-------|
| | | | ϕDc | ϕM | ϕdg | L | | Ap max (mm) | | |
| 181031100 | 020R06590-02-05-M10025 | 2 | 20 | M10 | 16 | 25 | 0,040 | 1,2 | SP... 08T3... | |
| 181029400 | 025R06590-03-05-M12028 | 3 | 25 | M12 | 21 | 28 | 0,071 | 1,2 | SP... 08T3... | |
| 181029600 | 032R06590-04-05-M16035 | 4 | 32 | M16 | 29 | 35 | 0,162 | 1,2 | SP... 08T3... | |
| 181045800 | 035R06590-04-05-M16035 | 4 | 35 | M16 | 29 | 35 | 0,176 | 1,2 | SP... 08T3... | |
| 181031000 | 042R06590-05-05-M16035 | 5 | 42 | M16 | 29 | 35 | 0,215 | 1,2 | SP... 08T3... | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

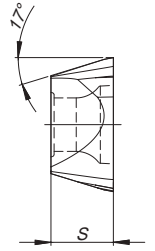
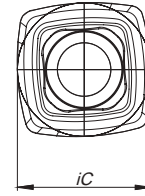


SP..08T3.. || Inserts | Pastilhas | Plaquetas

SPKW

SPKT

SPKW | SPKT



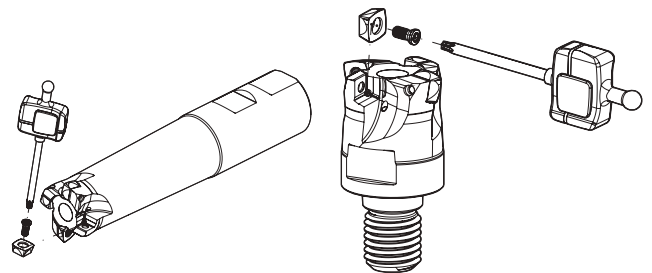
| | | P | M | K | Dimensions Dimensões Dimensiones (mm) | |
|-------------------|---------------|--------|--------|--------|--|------|
| | | PVD | PVD | PVD | iC | S |
| (2) Grade code | | 68 | 68 | 68 | | |
| (1) Geometry code | ISO Reference | PH6920 | PH6920 | PH6920 | | |
| 1111364 | SPKW 08T308-E | Ⓢ | | Ⓢ | 8,50 | 3,97 |
| 1121227 | SPKW 08T308-S | Ⓢ | | Ⓢ | 8,50 | 3,97 |
| 1111314 | SPKT 08T308-E | Ⓢ | Ⓢ | Ⓢ | 8,50 | 3,97 |

Ⓢ First choice | Primeira opção | 1ª opción Ⓢ Stock item | Produto de stock | Itens de stock ○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9) Insert order code = (1) Geometry Code + (2) Grade Code

SPARE PARTS || Complementos | Repuestos

| Cutter ØDc | Insert Screw | Key (Torx) | Order separately | |
|------------------|--------------|------------|------------------|--------------|
| | | | Key (Torx - Nm) | Torque Value |
| W06590 - 20 - 32 | P0300800 | XT09 | DT0914 | 1,4 |
| R06590 - 20 - 42 | P0300800 | XT09 | DT0914 | 1,4 |

Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241. Check the procedures for the clamping screws on the page A-241.



HIFEEED 06590

RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | Feed fz (mm/t) | |
|-----|-----|-----------------------------------|--------------|------------|---------------|----------------|--|
| | | | | PH6920 | SP ... 08T308 | | |
| P | 1 | Unalloyed Steel | 125-220 | 150-230 | | 0,30-1,50 | |
| | 2 | Low-Alloyed Steel | 220-280 | 140-220 | | 0,30-1,50 | |
| | 3 | High-Alloyed Steel | 280-380 | 130-180 | | 0,30-1,30 | |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | 120-160 | | 0,30-1,40 | |
| | 5 | SS - Austenitic | 200-330 | 100-150 | | 0,30-1,40 | |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | 70-110 | | 0,30-1,20 | |
| K | 7 | Malleable Cast Iron | 130-230 | 150-280 | | 0,30-1,50 | |
| | 8 | Grey Cast Iron | 180-245 | 130-230 | | 0,30-1,50 | |
| | 9 | Nodular Cast iron | 160-250 | 80-190 | | 0,30-1,40 | |

(Note 1) Cutting conditions $a_e/D_c=70\%$.

(Note 2) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

(Note 3) Use only air.

(Note 4) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

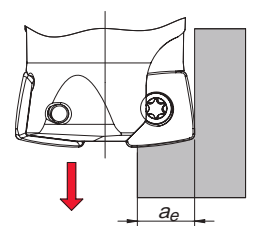
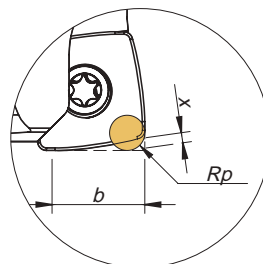
- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

CHIP-BREAKER SELECTION GUIDE | Guia para aplicações do quebra-apanas | Guía para aplicación del rompevirutas

| ISO | PSM | Material | HB (Brinell) | Chip-Breaker Application | |
|-----|-----|-----------------------------------|--------------|--------------------------|----------------------|
| | | | | 1st choice | Difficult Operations |
| P | 1 | Unalloyed Steel | 125-220 | SPKT 08... | SPKW 08... |
| | 2 | Low-Alloyed Steel | 220-280 | SPKW 08... | - |
| | 3 | High-Alloyed Steel | 280-380 | SPKW 08... | - |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | SPKT 08... | - |
| | 5 | SS - Austenitic | 200-330 | SPKT 08... | - |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | SPKW 08... | SPKW 08... |
| K | 7 | Malleable Cast Iron | 130-230 | SPKT 08... | SPKW 08... |
| | 8 | Grey Cast Iron | 180-245 | SPKW 08... | - |
| | 9 | Nodular Cast iron | 160-250 | SPKW 08... | - |

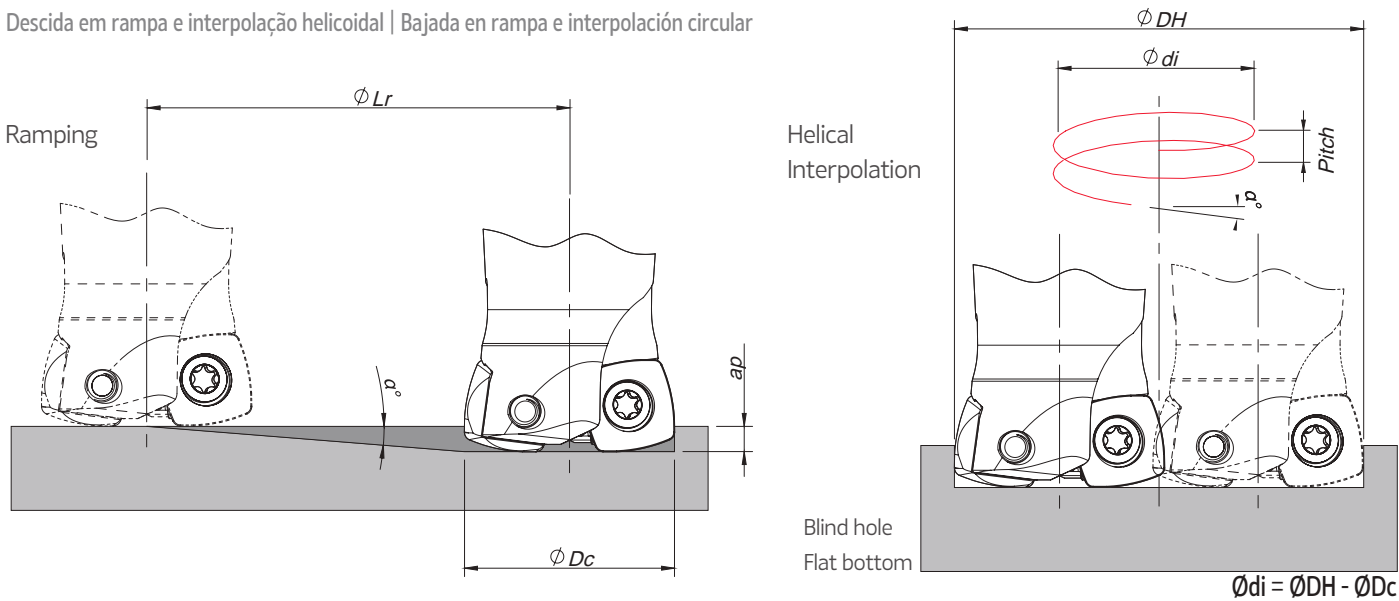
PROGRAMMING DATA | Dados para programação | Datos para la programación

| Insert | Programming Data | | | |
|---------------|------------------|-----|-----|-------|
| | Rp | X | b | a_e |
| SP... 08T3... | 1,9 | 0,7 | 5,6 | 6,6 |



RAMPING AND HELICAL INTERPOLATION

Descida em rampa e interpolação helicoidal | Bajada en rampa e interpolación circular

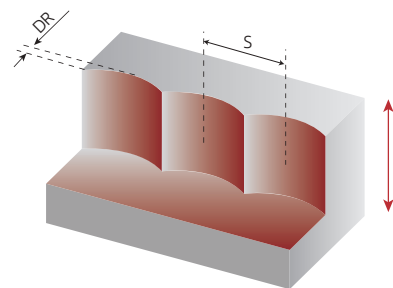


| ϕDc | Ramping | | | Helical Interpolation | | |
|-----------|--------------------|----------|----------|-----------------------|-----------------|----------------|
| | Max Ramp a° | Max ap | Min Lr | ϕDH_{min} | ϕDH_{max} | Max Pitch/Rev. |
| 20 | 0,5 | 1,2 | 137,5 | 27,8 | - | 0,2 |
| 25 | 1 | 1,2 | 68,7 | 37,8 | 38,0 | 0,5 |
| 32 | 1,4 | 1,2 | 49,1 | 51,8 | 48,0 | 0,7 |
| 35 | 1,1 | 1,2 | 62,5 | 57,8 | 62,0 | 1,2 |
| 42 | 0,9 | 1,2 | 76,4 | 71,8 | 68,0 | 1,5 |
| | | | | | 82,0 | 2,3 |
| | | | | | | 1,3 |
| | | | | | | 2,0 |
| | | | | | | 1,4 |
| | | | | | | 1,9 |

Note: During helical interpolation do not exceed max Pitch.

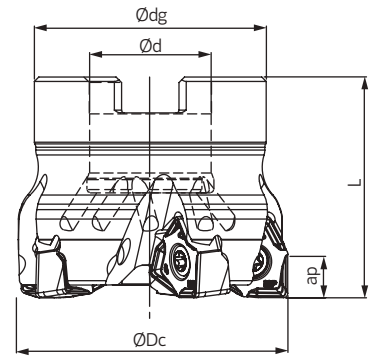
PLUNGING | Mergulho | Plunge

| $L \leq 3Dc$ | $L > 3Dc$ | S_{max} |
|--------------|-----------|---------------------------------------|
| f_z (mm/t) | | |
| 0,08-0,15 | 0,05-0,10 | $S_{max} = \sqrt{DC \cdot Dr - Dr^2}$ |



| S max and DR corresponding cutting diameter Dc (mm) | | | | | |
|---|---------|------|------|------|------|
| DR (mm) | Dc (mm) | | | | |
| | 20 | 25 | 32 | 35 | 42 |
| 1,0 | 4,4 | 4,9 | 5,6 | 5,8 | 6,4 |
| 2,0 | 6,0 | 6,8 | 7,7 | 8,1 | 8,9 |
| 3,0 | 7,1 | 8,1 | 9,3 | 9,8 | 10,8 |
| 4,0 | 8,0 | 9,2 | 10,6 | 11,1 | 12,3 |
| 5,0 | 8,7 | 10,0 | 11,6 | 12,2 | 13,6 |
| 6,0 | 9,2 | 10,7 | 12,5 | 13,2 | 14,7 |

Note: Recommended for $L \leq 4 Dc$ for extra long tool this step and side cut must be reduced.



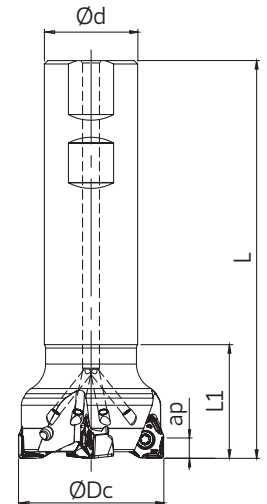
Arbor Mounting

$$K_r = 90^\circ \quad | \quad \gamma_p = -6^\circ$$

| (1) Geometry code | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|--|---|----|-----|----|------|----------------|-------------|-------------------------------|-------|
| | | | ØDc | Ød | Ødg | L | | Arbor Type | Ap max (mm) | | |
| 181174900 | 040A49590-03-06-016040 | | 40 | 16 | 32 | 40 | 0,15 | A | 7,5 | WNXT 0806... | |
| 181175000 | 040A49590-04-06-016040 | | 40 | 16 | 32 | 40 | 0,13 | A | 7,5 | WNXT 0806... | |
| 181173400 | 050A49590-04-06-022040 | | 50 | 22 | 42 | 40 | 0,39 | A | 7,5 | WNXT 0806... | |
| 181165600 | 050A49590-05-06-022040 | | 50 | 22 | 42 | 40 | 0,38 | A | 7,5 | WNXT 0806... | |
| 181173500 | 063A49590-05-06-022040 | | 63 | 22 | 52 | 40 | 0,5 | A | 7,5 | WNXT 0806... | |
| 181173600 | 063A49590-06-06-022040 | | 63 | 22 | 52 | 40 | 0,49 | A | 7,5 | WNXT 0806... | |
| 181173700 | 080A49590-07-06-027050 | | 80 | 27 | 60 | 50 | 1,18 | B | 7,5 | WNXT 0806... | |
| 181173800 | 080A49590-09-06-027050 | | 80 | 27 | 60 | 50 | 1,16 | B | 7,5 | WNXT 0806... | |
| 181173900 | 100A49590-08-06-032050 | | 100 | 32 | 80 | 50 | 1,62 | B | 7,5 | WNXT 0806... | |
| 181174000 | 100A49590-11-06-032050 | | 100 | 32 | 80 | 50 | 1,55 | B | 7,5 | WNXT 0806... | |
| 181174100 | 125A49590-11-06-040063 | | 125 | 40 | 90 | 63 | 2,82 | B | 7,5 | WNXT 0806... | |
| 181174200 | 125A49590-14-06-040063 | | 125 | 40 | 90 | 63 | 2,76 | B | 7,5 | WNXT 0806... | |

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta
Disponível bajo consulta



Weldon Shank

$$K_r = 90^\circ \quad | \quad \gamma_p = -6^\circ$$

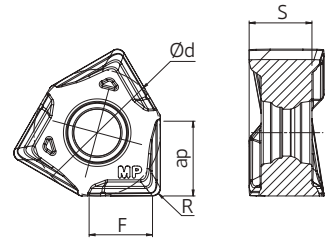
| (1) Geometry code | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|--|---|----|-----|----|------|----------------|--------------|-------------------------------|-------|
| | | | ØDc | Ød | L | L1 | | ap max (mm) | | | |
| 181174300 | 032W49590-02-06-032125 | | 32 | 32 | 125 | 40 | 0,65 | 7,5 | WNXT 0806... | | |
| 181174400 | 032W49590-03-06-032125 | | 32 | 32 | 125 | 40 | 0,60 | 7,5 | WNXT 0806... | | |
| 181174500 | 040W49590-03-06-032130 | | 40 | 32 | 130 | 40 | 0,70 | 7,5 | WNXT 0806... | | |
| 181174600 | 040W49590-04-06-032130 | | 40 | 32 | 130 | 40 | 0,65 | 7,5 | WNXT 0806... | | |
| 181174700 | 050W49590-04-06-032140 | | 50 | 32 | 140 | 45 | 0,86 | 7,5 | WNXT 0806... | | |
| 181174800 | 050W49590-05-06-032140 | | 50 | 32 | 140 | 45 | 0,81 | 7,5 | WNXT 0806... | | |

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta
Disponível bajo consulta

WNXT | Inserts | Pastilhas | Plaquetas

WNXT **NEW**



| (1) Geometry code | (2) Grade code Reference Referência Referencia | P | | K | | Dimensions Dimensões Dimensiones (mm) | | |
|----------------------|---|--------|--------|--------|--------|---|-----|-----|
| | | PVD | | PVD | | | | |
| | | T1 | P4 | T1 | P4 | iC | S | R |
| 1113000 | WNXT 080608 PNSR-MP | PHP920 | PHP930 | PHP920 | PHP930 | 12,7 | 6,3 | 0,8 |

First choice | Primeira opção | 1ª opção

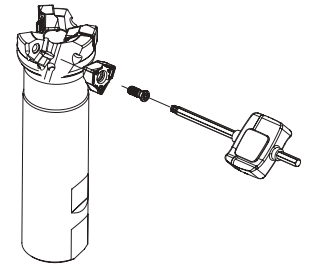
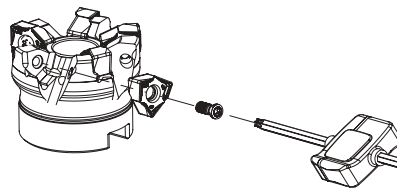
Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta
Disponível bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code




SPARE PARTS Complementos | Repuestos

| Cutter ØDc | Insert Screw | Key (Torx) | Key (Torx - Nm) | Torque Value | Screw | DIN 6368 Wrench | Retaining Screw |
|------------------|------------------|----------------|------------------------|------------------|-----------|------------------------|------------------------|
| W49590 - 25 - 50 | P0401200 | XT15 | DT1530 | 3,0 | - | - | - |
| A49590 - 40 | P0401200 | XT15 | DT1530 | 3,0 | - | - | - |
| A49590 - 50 - 63 | P0401200 | XT15 | DT1530 | 3,0 | - | - | 290087600 |
| A49590 - 80 | P0401200 | XT15 | DT1530 | 3,0 | J0123510 | SD6368-12 | - |
| A49590 - 100 | P0401200 | PT15 | DT1530 | 3,0 | J0164110 | SD6368-16 | - |
| A49590 - 125 | P0401200 | PT15 | DT1530 | 3,0 | J0204610 | SD6368-20 | - |



GRADES SELECTION GUIDE | Guia para selecção de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | |
|-----|-----|---------------------|--------------|-------------------|-------------|
| | | | | ← Wear Resistance | Toughness → |
| | | | | PHP920 | PHP930 |
| P | 1 | Unalloyed Steel | 125-220 | ✓ | ✓ |
| | 2 | Low-Alloyed Steel | 220-280 | ✓ | ✓ |
| | 3 | High-Alloyed Steel | 280-380 | ✓ | ✓ |
| K | 7 | Malleable Cast Iron | 130-230 | ✓ | ✓ |
| | 8 | Grey Cast Iron | 180-245 | ✓ | ✓ |
| | 9 | Nodular Cast iron | 160-250 | ✓ | ✓ |

-  Good Conditions
-  Average Conditions
-  Difficult Conditions

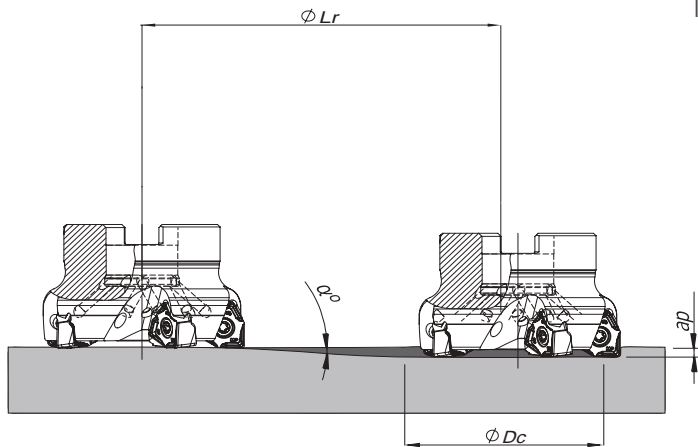
RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | Feed fz (mm/t) |
|-----|-----|---------------------|--------------|-------------------|-------------|----------------|
| | | | | ← Wear Resistance | Toughness → | |
| | | | | PHP920 | PHP930 | |
| P | 1 | Unalloyed Steel | 125-220 | 180-250 | 160-230 | 0,08 - 0,25 |
| | 2 | Low-Alloyed Steel | 220-280 | 160-230 | 140-210 | 0,08 - 0,25 |
| | 3 | High-Alloyed Steel | 280-380 | 140-220 | 120-200 | 0,08 - 0,20 |
| K | 7 | Malleable Cast Iron | 130-230 | 130-230 | 150-250 | 0,08 - 0,25 |
| | 8 | Grey Cast Iron | 180-245 | 180-245 | 140-230 | 0,08 - 0,25 |
| | 9 | Nodular Cast iron | 160-250 | 120-210 | 100-200 | 0,08 - 0,20 |

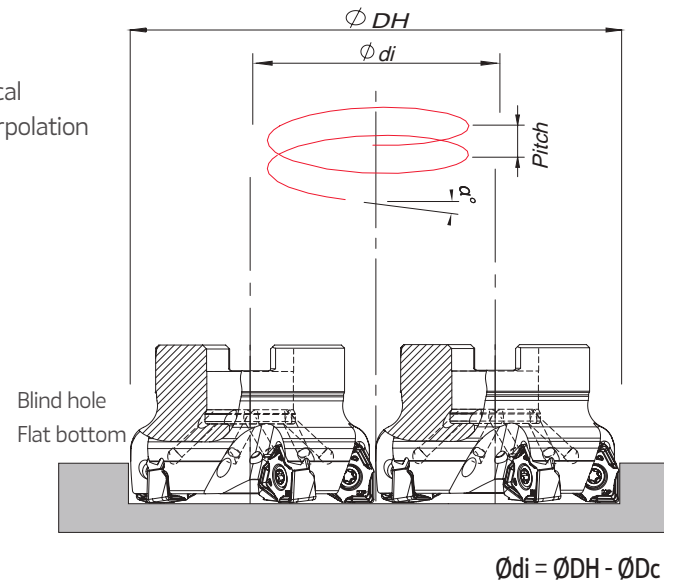
RAMPING AND HELICAL INTERPOLATION

Descida em rampa e interpolação helicoidal | Bajada en rampa e interpolación circular

Ramping



Helical Interpolation



| ϕ_{Dc} | Ramping | | | Helical Interpolation | | |
|-------------|--------------------|-----------|--------|-----------------------|----------------|----------------|
| | Max Ramp a° | Max a_p | Min Lr | ϕ_{DHmin} | ϕ_{DHmax} | Max Pitch/Rev. |
| 32 | 4,0 | 7,5 | 107,3 | 52 - | - 62 | 4,3 6,6 |
| 40 | 3,8 | 7,5 | 112,9 | 68 - | - 78 | 5,8 8 |
| 50 | 3,5 | 7,5 | 122,6 | 88 - | - 98 | 7,3 9,2 |
| 63 | 3,5 | 7,5 | 122,6 | 114 - | - 124 | 9 11,7 |
| 80 | 3,0 | 7,5 | 143,1 | 148 - | - 158 | 11,1 12,9 |
| 100 | 2,1 | 7,5 | 204,5 | 188 - | - 198 | 10,1 11,3 |
| 125 | 1,4 | 7,5 | 306,9 | 238 - | - 248 | 8,6 9,4 |

Note: During helical interpolation do not exceed max Pitch.

(*) Down cutting is recommended, tool pass rotation should be counter-clockwise.

(*) In case of ramping and helical interpolation, apply 70% or less feed (f_z) from recommended cutting conditions table.

A

MILLING

Overview

Face milling

Hi-feed milling

Shoulder milling

Profile milling

Hardmill

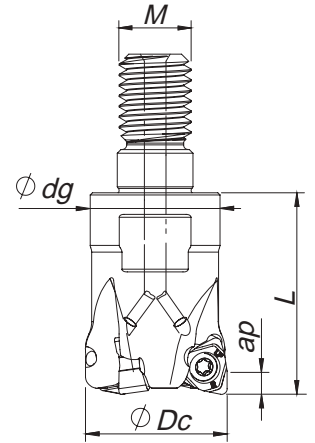
Center & Chamfer

Spot face

Spare Parts

Technical Data

End Mills



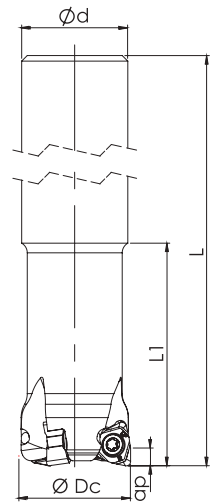
Threaded Coupling

$\kappa_r = 90^\circ$ | $\gamma_p = -7^\circ$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specification | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|-----|-----------|----|-------|----------------|-------------------------------|-------|
| | | | ϕDc | M | ϕdg | L | | A_p max (mm) | | |
| 181136000 | 016R49090-02-07-M08023 | 2 | 16 | M08 | 13 | 23 | 0,023 | 3,00 | WNHU 04T308-LP | |
| 181128300 | 020R49090-03-07-M10028 | 3 | 20 | M10 | 18 | 28 | 0,052 | 3,00 | WNHU 04T308-LP | |
| 181110900 | 025R49090-04-07-M12030 | 4 | 25 | M12 | 21 | 30 | 0,078 | 3,00 | WNHU 04T308-LP | |
| 181128400 | 032R49090-05-07-M16035 | 5 | 32 | M16 | 29 | 35 | 0,150 | 3,00 | WNHU 04T308-LP | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)



Cylindrical Shank

$\kappa_r = 90^\circ$ | $\gamma_p = -7^\circ$

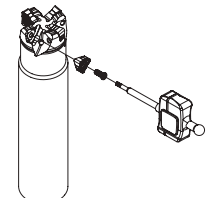
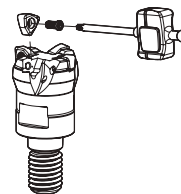
| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specification | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|----------|-----|-------|-------|----------------|-------------------------------|-------|
| | | | ϕDc | ϕd | L | L_1 | | A_p max (mm) | | |
| 181136100 | 016E49090-02-07-U015150 | 2 | 16 | 15 | 150 | 32 | 0,185 | 3,00 | WNHU 04T308-LP | |
| 181136200 | 020E49090-03-07-U019150 | 3 | 20 | 19 | 150 | 40 | 0,292 | 3,00 | WNHU 04T308-LP | |
| 181136300 | 025E49090-04-07-U024150 | 4 | 25 | 24 | 150 | 50 | 0,471 | 3,00 | WNHU 04T308-LP | |

Stock item | Produto de stock | Itens de stock

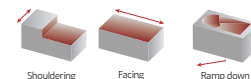
Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

SPARE PARTS || Complementos | Repuestos

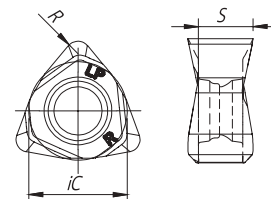
| Cutter ϕDc | Order separately | | | |
|---------------------|------------------|------------|-----------------|--------------|
| | Insert Screw | Key (Torx) | Key (Torx - Nm) | Torque Value |
| R49090 - 20-32 | P0250704 | XT08 | DT0812 | 1,2 |
| E49090 - 16-25 | P0250704 | XT08 | DT0812 | 1,2 |



Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
Check the procedures for the clamping screws on the page A-241.



WNHU 04T308 | Inserts | Pastilhas | Plaquetas



| (1) Geometry code | (2) Grade code | P | | | K | | | Dimensions Dimensões Dimensiones (mm) | | |
|-------------------------|---------------------|--------|--------|--------|--------|--------|--------|--|------|------|
| | | PVD | | | PVD | | | iC | S | R |
| | | X5 | T1 | P4 | X5 | T1 | P4 | | | |
| 1112277 | WNHU 04T308 PNER-LP | PHP910 | PHP920 | PHP930 | PHP910 | PHP920 | PHP930 | 6,35 | 3,50 | 0,80 |

⊗ First choice | Primeira opção | 1ª opción
 ⊗ Stock item | Produto de stock | Itens de stock
 ○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9)
 Insert order code = (1) Geometry Code + (2) Grade Code

GRADES SELECTION GUIDE | Guia para selecção de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | | |
|-----|-----|---------------------|-----------------|-------------------|--------|-------------|
| | | | | ← Wear Resistance | | Toughness → |
| | | | | PHP910 | PHP920 | PHP930 |
| P | 1 | Unalloyed Steel | 125-220 | ● | ● | ● |
| | 2 | Low-Alloyed Steel | 220-280 | ● | ● | ● |
| | 3 | High-Alloyed Steel | 280-380 | ● | ● | ● |
| K | 7 | Malleable Cast Iron | 130-230 | ● | ● | ● |
| | 8 | Grey Cast Iron | 180-245 | ● | ● | ● |
| | 9 | Nodular Cast iron | 160-250 | ● | ● | ● |

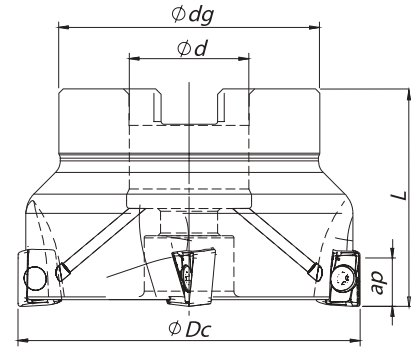
- Good Conditions
- Average Conditions
- Difficult Conditions

RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | | Feed fz (mm/t) |
|-----|-----|---------------------|-----------------|-------------------|---------|-------------|----------------|
| | | | | ← Wear Resistance | | Toughness → | |
| | | | | PHP910 | PHP920 | PHP930 | WNHU 04T3 |
| P | 1 | Unalloyed Steel | 125-220 | 180-250 | 180-250 | 160-230 | 0,10-0,30 |
| | 2 | Low-Alloyed Steel | 220-280 | 160-240 | 160-230 | 140-210 | 0,10-0,30 |
| | 3 | High-Alloyed Steel | 280-380 | 140-230 | 140-220 | 120-200 | 0,10-0,25 |
| K | 7 | Malleable Cast Iron | 130-230 | 180-300 | 160-270 | 150-250 | 0,10-0,30 |
| | 8 | Grey Cast Iron | 180-245 | 160-250 | 140-250 | 140-230 | 0,10-0,30 |
| | 9 | Nodular Cast iron | 160-250 | 150-210 | 120-210 | 100-200 | 0,10-0,25 |

| Insert | Feed fz (mm/t) | | ap Rec. |
|----------------|----------------|-----------|-----------|
| | Roughing | Finishing | |
| WNHU 04T308-LP | 0.15-0.30 | 0.10-0.25 | 0.50-3.00 |

(Note 1) Cutting conditions should be adjusted according to the machine and work rigidity.
 (Note 2) If chattering occurs, reduce ap and Vc by 30% and keep the same fz per tooth.



Arbor Mounting

$K_r = 90^\circ$ | $\gamma_p = -7^\circ$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|----|---|----------|-----------|----|------|----------------|-------------|-------------------------------|-------|
| | | | ϕDc | ϕd | ϕdg | L | | Arbor Type | Ap max (mm) | | |
| 181075300 | 040A17190-04-07-016040 | 4 | 40 | 16 | 32 | 40 | 0,21 | A | 9,00 | ANHX 1004... | |
| 181075400 | 040A17190-05-07-016040 | 5 | 40 | 16 | 32 | 40 | 0,21 | A | 9,00 | ANHX 1004... | |
| 181075500 | 050A17190-05-07-022040 | 5 | 50 | 22 | 42 | 40 | 0,35 | A | 9,00 | ANHX 1004... | |
| 181075600 | 050A17190-07-07-022040 | 7 | 50 | 22 | 42 | 40 | 0,34 | A | 9,00 | ANHX 1004... | |
| 181075700 | 063A17190-07-07-022040 | 7 | 63 | 22 | 52 | 40 | 0,55 | A | 9,00 | ANHX 1004... | |
| 181075800 | 063A17190-09-07-022040 | 9 | 63 | 22 | 52 | 40 | 0,54 | A | 9,00 | ANHX 1004... | |
| 181075900 | 080A17190-08-07-027050 | 8 | 80 | 27 | 60 | 50 | 1,00 | B | 9,00 | ANHX 1004... | |
| 181076000 | 080A17190-10-07-027050 | 10 | 80 | 27 | 60 | 50 | 1,00 | B | 9,00 | ANHX 1004... | |
| 181076100 | 100A17190-09-07-032050 | 9 | 100 | 32 | 80 | 50 | 1,80 | B | 9,00 | ANHX 1004... | |
| 181076200 | 100A17190-12-07-032050 | 12 | 100 | 32 | 80 | 50 | 1,80 | B | 9,00 | ANHX 1004... | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

ANHX 1004.. | Inserts | Pastilhas | Plaquitas

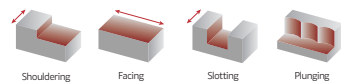


| (1) Geometry code | (2) Grade code | P | | | | M | | K | | | | N | S | | Dimensions Dimensões Dimensiones (mm) | | | | | | |
|-------------------|---------------------|-----|----|----|----|----|----|-----|----|-----|----|----|----|-----|---|--|------|------|-------|------|------|
| | | PVD | | | | | | PVD | | PVD | | | | UNC | PVD | | iC | S | I | R | F |
| | | X5 | T1 | P4 | G6 | X9 | G6 | X5 | T1 | P4 | G6 | 10 | X9 | G6 | | | | | | | |
| 1111652 | ANHX 100405 PNR-LP | | | | | | | | | | | | | | | | 6,60 | 6,20 | 10,00 | 0,50 | 0,85 |
| 1112106 | ANHX 100408 PNR-LP | | | | | | | | | | | | | | | | 6,60 | 6,20 | 10,00 | 0,80 | 0,60 |
| 1111908 | ANHX 100412 PNR-LP | | | | | | | | | | | | | | | | 6,60 | 6,20 | 10,00 | 1,20 | 0,30 |
| 1112005 | ANHX 100405 PNER-LM | | | | | | | | | | | | | | | | 6,60 | 6,20 | 10,00 | 0,50 | 0,85 |
| 1112162 | ANHX 100408 PNER-LM | | | | | | | | | | | | | | | | 6,60 | 6,20 | 10,00 | 0,80 | 0,60 |
| 1112103 | ANHX 100412 PNER-LM | | | | | | | | | | | | | | | | 6,60 | 6,20 | 10,00 | 1,20 | 0,30 |
| 1111997 | ANHX 100405 PNFR-LN | | | | | | | | | | | | | | | | 6,60 | 6,20 | 10,00 | 0,50 | 0,85 |
| 1112102 | ANHX 100412 PNR-LN | | | | | | | | | | | | | | | | 6,60 | 6,20 | 10,00 | 1,20 | 0,30 |

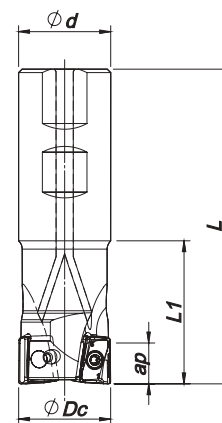
First choice | Primeira opção | 1ª opción Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

Insert order code = (1) Geometry Code + (2) Grade Code



Weldon Shank
 $K_r = 90^\circ$ | $\gamma_p = -7^\circ (-6^\circ \times)$



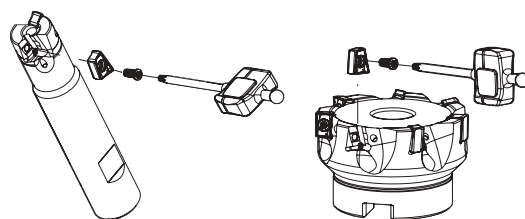
| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|----|-----|----|-------|----------------|-------------------------------|-------|
| | | | ØDc | Ød | L | L1 | | Ap max (mm) | | |
| 181075000 | 014W17190-01-06-016090* | 1 | 14 | 16 | 90 | 23 | 0,188 | 9,00 | ANHX 1004... | |
| 181101400 | 016W17190-02-06-016090* | 2 | 16 | 16 | 90 | 25 | 0,123 | 9,00 | ANHX 1004... | |
| 181096800 | 016W17190-02-06-016150* | 2 | 16 | 16 | 150 | 25 | 0,190 | 9,00 | ANHX 1004... | |
| 181075200 | 018W17190-02-06-016090* | 2 | 18 | 16 | 90 | 23 | 0,125 | 9,00 | ANHX 1004... | |
| 181071400 | 020W17190-02-06-020100* | 2 | 20 | 20 | 100 | 30 | 0,210 | 9,00 | ANHX 1004... | |
| 181071500 | 020W17190-03-06-020100* | 3 | 20 | 20 | 100 | 30 | 0,206 | 9,00 | ANHX 1004... | |
| 181074400 | 025W17190-02-06-025115* | 2 | 25 | 25 | 115 | 35 | 0,391 | 9,00 | ANHX 1004... | |
| 181074500 | 025W17190-03-06-025115* | 3 | 25 | 25 | 115 | 35 | 0,387 | 9,00 | ANHX 1004... | |
| 181074600 | 032W17190-03-06-032125* | 3 | 32 | 32 | 125 | 40 | 0,701 | 9,00 | ANHX 1004... | |
| 181074700 | 032W17190-04-06-032125* | 4 | 32 | 32 | 125 | 40 | 0,698 | 9,00 | ANHX 1004... | |
| 181074800 | 040W17190-04-07-032130 | 4 | 40 | 32 | 130 | 40 | 0,780 | 9,00 | ANHX 1004... | |
| 181074900 | 040W17190-05-07-032130 | 5 | 40 | 32 | 130 | 40 | 0,777 | 9,00 | ANHX 1004... | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

SPARE PARTS | Complementos | Repuestos

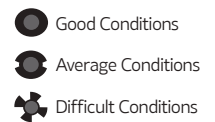
| Cutter ØDc | Insert Screw | Key (Torx) | Order separately | | Order separately | |
|------------------|--------------|------------|------------------|--------------|------------------|-----------------|
| | | | Key (Torx - Nm) | Torque Value | Screw | DIN 6368 Wrench |
| W17190 - 14 - 40 | P0300800 | XT09 | DT0914 | 1,4 | - | - |
| A17190 - 40 - 63 | P0300800 | XT09 | DT0914 | 1,4 | - | - |
| A17190 - 80 | P0300800 | XT09 | DT0914 | 1,4 | J0123510 | SD6368-12 |
| A17190 - 100 | P0300800 | XT09 | DT0914 | 1,4 | J0164110 | SD6368-16 |



Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
 Check the procedures for the clamping screws on the page A-241.

GRADES SELECTION GUIDE | Guia para selecção de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | | | | | |
|-----|-----|-----------------------------------|--------------|-------------------|--------|--------|--------|-------------|--------|
| | | | | ← Wear Resistance | | | | Toughness → | |
| | | | | PH0910 | PHP910 | PHP920 | PHP930 | PHH930 | PH7740 |
| P | 1 | Unalloyed Steel | 125-220 | ● | ✓ | ✓ | ✓ | | ✓ |
| | 2 | Low-Alloyed Steel | 220-280 | | ✓ | ✓ | ✓ | | ✓ |
| | 3 | High-Alloyed Steel | 280-380 | | ✓ | ✓ | ✓ | | ✓ |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | | | | | ✓ | ✓ |
| | 5 | SS - Austenitic | 200-330 | | | | | ✓ | ✓ |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | | | | | ✓ | ✓ |
| K | 7 | Malleable Cast Iron | 130-230 | | ✓ | ✓ | ✓ | | ✓ |
| | 8 | Grey Cast Iron | 180-245 | | ✓ | ✓ | ✓ | | ✓ |
| | 9 | Nodular Cast iron | 160-250 | | ✓ | ✓ | ✓ | | ✓ |
| N | 10 | Aluminium and Non Ferrous | 30-130 | ✓ | | | | | |
| S | 11 | Heat Resistant Super Alloys | 200-320 | | | | | ✓ | ✓ |



RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | | | | | Feed fz (mm/t) | | |
|-----|-----|-----------------------------------|--------------|-------------------|---------|---------|-------------|---------|---------|----------------|------------|------------|
| | | | | ← Wear Resistance | | | Toughness → | | | ANHX... LP | ANHX... LM | ANHX... LN |
| | | | | PH0910 | PHP910 | PHP920 | PHP930 | PHH930 | PH7740 | | | |
| P | 1 | Unalloyed Steel | 125-220 | - | 180-250 | 180-250 | 160-230 | - | 140-200 | 0,08-0,20 | 0,08-0,20 | - |
| | 2 | Low-Alloyed Steel | 220-280 | - | 160-240 | 160-230 | 140-210 | - | 130-180 | 0,08-0,20 | 0,08-0,15 | - |
| | 3 | High-Alloyed Steel | 280-380 | - | 140-230 | 140-220 | 120-200 | - | 100-170 | 0,08-0,15 | 0,08-0,15 | - |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | - | - | - | - | 140-210 | 130-180 | - | 0,08-0,20 | - |
| | 5 | SS - Austenitic | 200-330 | - | - | - | - | 120-170 | 110-160 | - | 0,08-0,15 | - |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | - | - | - | - | 100-150 | 90-150 | - | 0,08-0,15 | - |
| K | 7 | Malleable Cast Iron | 130-230 | - | 180-300 | 160-270 | 150-250 | - | 140-220 | 0,08-0,25 | 0,08-0,20 | - |
| | 8 | Grey Cast Iron | 180-245 | - | 160-250 | 140-250 | 140-230 | - | 120-210 | 0,08-0,20 | 0,08-0,20 | - |
| | 9 | Nodular Cast iron | 160-250 | - | 150-210 | 120-210 | 100-200 | - | 100-190 | 0,08-0,20 | 0,08-0,15 | - |
| N | 10 | Aluminium and Non Ferrous | 30-130 | 100-2000 | - | - | - | - | - | - | - | 0,08-0,20 |
| S | 11 | Heat Resistant Super Alloys | 200-320 | - | - | - | - | 30-110 | 30-100 | - | 0,08-0,15 | - |

(Note 1) Cutting conditions $a_e/D_c=70\%$.

(Note 2)

| Operation | a_e | Vc & fz | a_p (mm) |
|-------------|-------|---------|------------|
| Slotting | 100% | <20% | 2,0-3,5 |
| Shouldering | <50% | >8% | 3,0-6,0 |
| | ≤25% | >12% | 6,0-8,5 |

(Note 3)

It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

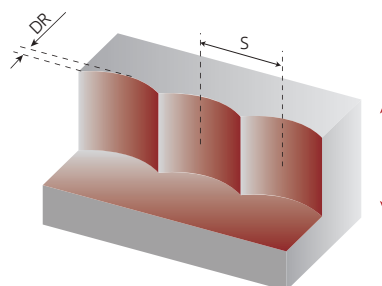
- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

CHIP-BREAKER SELECTION GUIDE | Guia de selecção do quebra- aparas | Guía de selección del rompevirutas

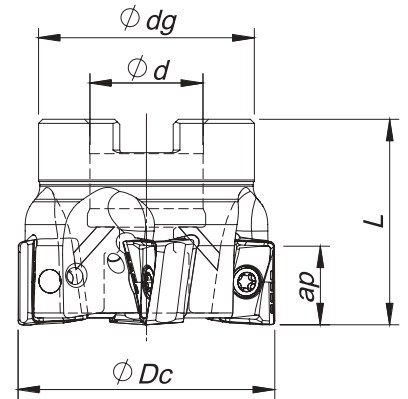
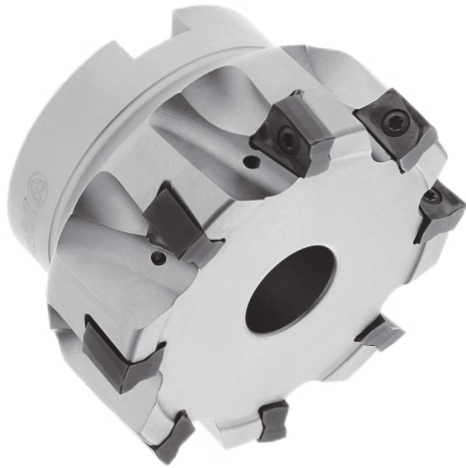
| ISO | PSM | Material | HB (Brinell) | Chip Breaker Application | |
|-----|-----|-----------------------------------|--------------|--------------------------|----------------------|
| | | | | 1 st choice | Difficult Operations |
| P | 1 | Unalloyed Steel | 125-220 | ANHX 10... LM | ANHX 10... LP |
| | 2 | Low-Alloyed Steel | 220-280 | ANHX 10... LM | ANHX 10... LP |
| | 3 | High-Alloyed Steel | 280-380 | ANHX 10... LM | ANHX 10... LP |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | ANHX 10... LM | - |
| | 5 | SS - Austenitic | 200-330 | ANHX 10... LM | - |
| | 6 | SS - Austenitic-ferritic (Duplex) | 220-260 | ANHX 10... LM | - |
| K | 7 | Malleable Cast Iron | 130-230 | ANHX 10... LM | ANHX 10... LP |
| | 8 | Grey Cast Iron | 180-245 | ANHX 10... LM | ANHX 10... LP |
| | 9 | Nodular Cast iron | 160-250 | ANHX 10... LP | - |
| N | 10 | Aluminium and Non Ferrous | 30-130 | ANHX 10... LN | - |
| S | 11 | Heat Resistant Super Alloys | 200-320 | ANHX 10... LM | - |

PLUNGING | Mergulho | Plunge

| L < 3Dc | L > 3Dc | S max. |
|-----------------------|-----------|---------------------------------------|
| f _z (mm/t) | | |
| 0,10-0,20 | 0,10-0,14 | $S_{max} = \sqrt{Dc \cdot Dr - Dr^2}$ |



| S max and DR corresponding cutting diameter Dc (mm) | | | | | | | | | | | |
|---|---------|-----|-----|-----|-----|-----|------|------|------|------|------|
| DR (mm) | Dc (mm) | | | | | | | | | | |
| | 14 | 16 | 18 | 20 | 25 | 32 | 40 | 50 | 63 | 80 | 100 |
| 1,0 | 3,6 | 3,9 | 4,1 | 4,4 | 4,9 | 5,6 | 6,2 | 7,0 | 7,9 | 8,9 | 9,9 |
| 2,0 | 4,9 | 5,3 | 5,7 | 6,0 | 6,8 | 7,7 | 8,7 | 9,8 | 11,0 | 12,5 | 14,0 |
| 3,0 | 5,7 | 6,2 | 6,7 | 7,1 | 8,1 | 9,3 | 10,5 | 11,9 | 13,4 | 15,2 | 17,1 |



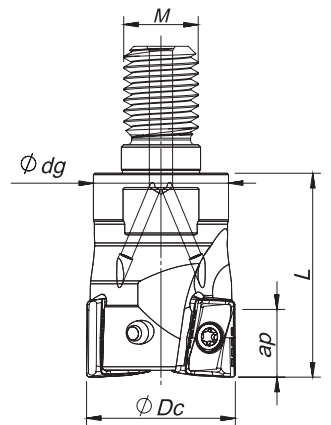
Arbor Mounting

$K_r = 90^\circ$ | $\gamma_p = -6^\circ$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|----|---|----------|-----------|----|------|----------------|--------|-------------------------------|-------|
| | | | ϕDc | ϕd | ϕDg | L | | Arbor Type | Ap max | | |
| 181116400 | 040A17590-04-06-016040 | 4 | 40 | 16 | 32 | 40 | 0,17 | A | 11,00 | ANHX 1206... | |
| 181114500 | 050A17590-05-06-022040 | 5 | 50 | 22 | 42 | 40 | 0,30 | A | 11,00 | ANHX 1206... | |
| 181115900 | 050A17590-06-06-022040 | 6 | 50 | 22 | 42 | 40 | 0,30 | A | 11,00 | ANHX 1206... | |
| 181116500 | 063A17590-05-06-022040 | 5 | 63 | 22 | 52 | 40 | 0,55 | A | 11,00 | ANHX 1206... | |
| 181116600 | 063A17590-07-06-022040 | 7 | 63 | 22 | 52 | 40 | 0,52 | A | 11,00 | ANHX 1206... | |
| 181116700 | 080A17590-08-06-027050 | 8 | 80 | 27 | 60 | 50 | 1,10 | A | 11,00 | ANHX 1206... | |
| 181116800 | 080A17590-10-06-027050 | 10 | 80 | 27 | 60 | 50 | 1,10 | A | 11,00 | ANHX 1206... | |
| 181116900 | 100A17590-12-06-032050 | 12 | 100 | 32 | 80 | 50 | 1,65 | B | 11,00 | ANHX 1206... | |
| 181117000 | 125A17590-14-06-040063 | 14 | 125 | 40 | 90 | 63 | 3,16 | B | 11,00 | ANHX 1206... | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)



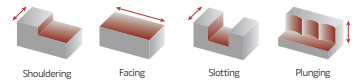
Threaded Coupling

$K_r = 90^\circ$ | $\gamma_p = -6^\circ$

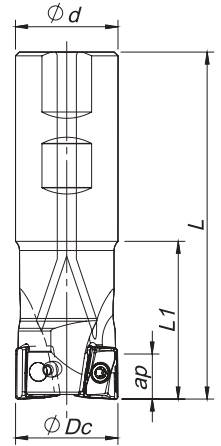
| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|----------|-----------|----|------|----------------|--------------|-------------------------------|-------|
| | | | ϕDc | ϕM | ϕdg | L | | Ap max | | | |
| 181117100 | 025R17590-02-06-M12035 | 2 | 25 | M12 | 21 | 35 | 0,09 | 11,00 | ANHX 1206... | | |
| 181117200 | 032R17590-03-06-M16043 | 3 | 32 | M16 | 29 | 43 | 0,20 | 11,00 | ANHX 1206... | | |
| 181117300 | 042R17590-04-06-M16043 | 4 | 42 | M16 | 29 | 43 | 0,26 | 11,00 | ANHX 1206... | | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)



Weldon Shank
 $K_r = 90^\circ$ | $\gamma_p = -6^\circ$



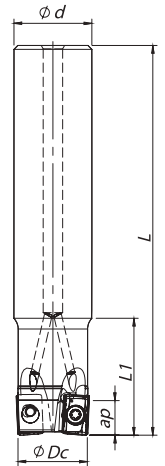
| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|----------|-----|----|------|----------------|--------------|-------------------------------|-------|
| | | | ϕD_c | ϕd | L | L1 | | Ap max | | | |
| 181116000 | 025W17590-02-06-025110 | 2 | 25 | 25 | 110 | 35 | 0,37 | 11,00 | ANHX 1206... | | |
| 181120600 | 032W17590-03-06-032150 | 3 | 32 | 32 | 150 | 35 | 0,84 | 11,00 | ANHX 1206... | | |
| 181116100 | 040W17590-04-06-032150 | 4 | 40 | 32 | 150 | 40 | 0,88 | 11,00 | ANHX 1206... | | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)



Cylindrical Shank
 $K_r = 90^\circ$ | $\gamma_p = -6^\circ$



| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|----------|-----|----|------|----------------|--------------|-------------------------------|-------|
| | | | ϕD_c | ϕd | L | L1 | | Ap max | | | |
| 181116300 | 026E17590-02-06-025200 | 2 | 26 | 25 | 200 | 40 | 0,66 | 11,00 | ANHX 1206... | | |
| 181116200 | 033E17590-03-06-032250 | 3 | 33 | 32 | 250 | 40 | 1,40 | 11,00 | ANHX 1206... | | |

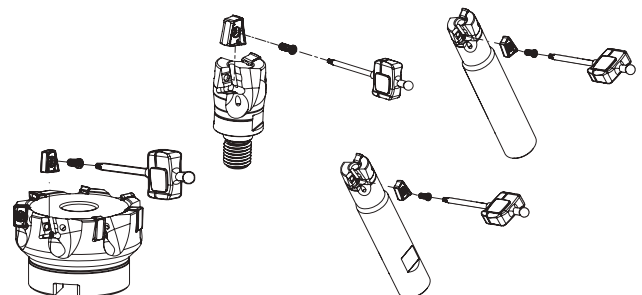
Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

SPARE PARTS | Complementos | Repuestos

| Cutter ϕD_c | Order separately | | | |
|----------------------|------------------|------------|-----------------|--------------|
| | Insert Screw | Key (Torx) | Key (Torx - Nm) | Torque Value |
| E17590 - 26 - 33 | P0350904 | XT10 | DT1020 | 2,0 |
| A17590 - 40 - 100 | P0350904 | XT10 | DT1020 | 2,0 |
| A17590 - 125 | P0350904 | PT10 | DT1020 | 2,0 |
| R17590 - 25 - 42 | P0350904 | XT10 | DT1020 | 2,0 |
| W17590 - 25-40 | P0350904 | XT10 | DT1020 | 2,0 |

Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
Check the procedures for the clamping screws on the page A-241.



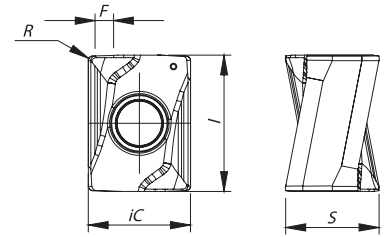
PLUS 17590

ANHX 1206.. | Inserts | Pastilhas | Plaquitas

ANHX-LS

ANHX-MP

ANHX-LS | MP



| | (2) Grade code | P | | | | | M | | | K | | | | | S | | | Dimensions Dimensões Dimensiones (mm) | | | | |
|-------------------|---------------------|-----|-----|----|----|----|-----|----|----|-----|----|----|----|----|-----|----|----|--|-----|------|-----|-----|
| | | CVD | PVD | | | | PVD | | | PVD | | | | | PVD | | | | | | | |
| (1) Geometry code | ISO Reference | T9 | G4 | T1 | P3 | G6 | P3 | X9 | G6 | L6 | G4 | T1 | P3 | G6 | P3 | X9 | G6 | iC | S | I | R | F |
| 1112474 | ANHX 120604 PNER-LS | | ⊗ | | ⊗ | ⊗ | ⊗ | | ⊗ | | ⊗ | | ⊗ | ⊗ | ⊗ | | ⊗ | 9,0 | 8,3 | 12,0 | 0,4 | 1,6 |
| 1112237 | ANHX 120608 PNER-LS | | ⊗ | | | ⊗ | ⊗ | | ⊗ | | ⊗ | | ⊗ | | | ⊗ | ⊗ | 9,0 | 8,3 | 12,0 | 0,8 | 1,2 |
| 1112429 | ANHX 120616 PNER-LS | | ⊗ | | ⊗ | ⊗ | ⊗ | | ⊗ | | ⊗ | | ⊗ | ⊗ | ⊗ | | ⊗ | 9,0 | 8,3 | 12,0 | 1,6 | 0,4 |
| 1112473 | ANHX 120604 PNSR-MP | | | ⊗ | | ⊗ | | | ⊗ | ⊗ | ⊗ | ⊗ | | ⊗ | | | | 9,0 | 8,3 | 12,0 | 0,4 | 1,6 |
| 1112238 | ANHX 120608 PNSR-MP | ⊗ | | ⊗ | | ⊗ | | | ⊗ | ⊗ | ⊗ | ⊗ | | ⊗ | | | | 9,0 | 8,3 | 12,0 | 0,8 | 1,2 |
| 1112430 | ANHX 120616 PNSR-MP | | ⊗ | ⊗ | | ⊗ | | | ⊗ | ⊗ | ⊗ | ⊗ | | ⊗ | | | | 9,0 | 8,3 | 12,0 | 1,6 | 0,4 |

⊗ First choice | Primeira opção | 1ª opción ⊗ Stock item | Produto de stock | Itens de stock ○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9) Insert order code = (1) Geometry Code + (2) Grade Code
 ⊗ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock

RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | | | | | | Feed fz (mm/t) | |
|-----|-----|-----------------------------------|--------------|-------------------|---------|---------|---------|-------------|---------|---------|----------------|---------------|
| | | | | ← Wear Resistance | | | | Toughness → | | | ANHX 12... LS | ANHX 12... MP |
| | | | | PH5320 | PHP920 | PH7920 | PHH930 | PH7930 | PHS740 | PH7740 | | |
| P | 1 | Unalloyed Steel | 125-220 | - | 180-250 | 180-240 | - | 160-220 | 140-220 | 140-200 | 0,08-0,20 | 0,08-0,30 |
| | 2 | Low-Alloyed Steel | 220-280 | - | 160-230 | 160-220 | - | 140-200 | 120-200 | 130-180 | 0,08-0,20 | 0,08-0,25 |
| | 3 | High-Alloyed Steel | 280-380 | - | 140-220 | 140-210 | - | 120-190 | 100-190 | 100-170 | 0,08-0,15 | 0,08-0,20 |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | - | - | 140-220 | 140-210 | 140-200 | - | 130-180 | 0,08-0,20 | - |
| | 5 | SS - Austenitic | 200-330 | - | - | 130-180 | 120-170 | 120-160 | - | 110-160 | 0,08-0,15 | - |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | - | - | 120-160 | 100-150 | 100-140 | - | 90-150 | 0,08-0,15 | - |
| K | 7 | Malleable Cast Iron | 130-230 | 150-280 | 160-270 | 160-260 | - | 150-240 | - | 140-220 | 0,08-0,20 | 0,08-0,30 |
| | 8 | Grey Cast Iron | 180-245 | 160-320 | 140-250 | 140-240 | - | 140-230 | - | 120-210 | 0,08-0,20 | 0,08-0,25 |
| | 9 | Nodular Cast iron | 160-250 | 100-190 | 120-210 | 120-200 | - | 100-190 | - | 100-190 | 0,08-0,20 | 0,08-0,20 |
| S | 11 | Heat Resistant Super Alloys | 200-320 | - | - | - | 30-110 | 30-100 | - | 30-100 | 0,07-0,10 | - |

(Note 1) Cutting conditions $a_e/D_c=70\%$.

(Note 2)

| Operation | a_e | Vc & fz | a_p (mm) |
|-------------|-------|---------|------------|
| Slotting | 100% | <20% | 2,5-4,0 |
| Shouldering | <50% | >8% | 4,0-7,0 |
| | ≤25% | >12% | 7,0-10,0 |

(Note 3)

It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:
 - When using long shank;
 - When using long tool overhang with arbor type;
 - When application has poor clamping rigidity or when using a low rigidity machine.

GRADES SELECTION GUIDE | Guia para selecção de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | | | | | | |
|-----|-----|-----------------------------------|--------------|-------------------|--------|--------|-------------|--------|--------|--------|
| | | | | ← Wear Resistance | | | Toughness → | | | |
| | | | | PH5320 | PHP920 | PH7920 | PHH930 | PH7930 | PHS740 | PH7740 |
| P | 1 | Unalloyed Steel | 125-220 | ● | ● | ● | ● | ● | ● | ● |
| | 2 | Low-Alloyed Steel | 220-280 | | ● | ● | | ● | ● | ● |
| | 3 | High-Alloyed Steel | 280-380 | | ● | ● | | ● | ● | ● |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | | | | ● | ● | | ● |
| | 5 | SS - Austenitic | 200-330 | | | | ● | ● | | ● |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | | | | ● | ● | | ● |
| K | 7 | Malleable Cast Iron | 130-230 | ● | ● | ● | | ● | | ● |
| | 8 | Grey Cast Iron | 180-245 | ● | ● | ● | | ● | | ● |
| | 9 | Nodular Cast iron | 160-250 | ● | ● | ● | | ● | | ● |
| S | 11 | Heat Resistant Super Alloys | 200-320 | | | | | ● | | ● |

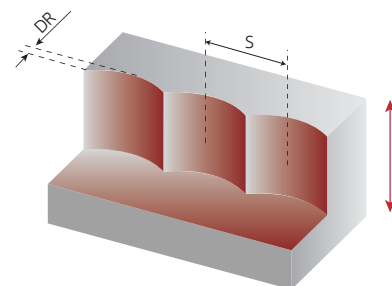
● Good Conditions ● Average Conditions ● Difficult Conditions

CHIP-BREAKER SELECTION GUIDE | Guia de selecção do quebra-apanas | Guía de selección del rompevirutas

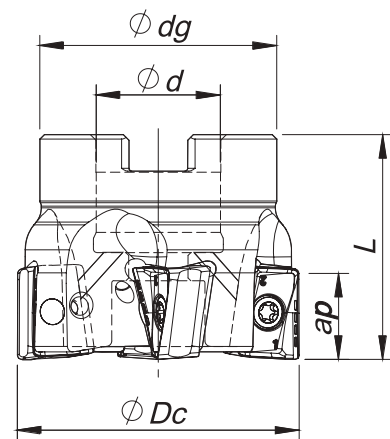
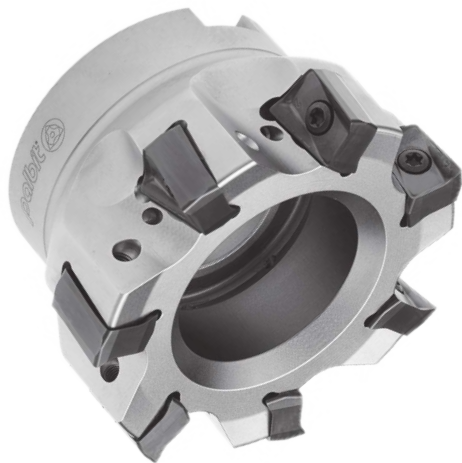
| ISO | PSM | Material | HB (Brinell) | Chip Breaker Application | |
|-----|-----|-----------------------------------|--------------|--------------------------|----------------------|
| | | | | 1 st choice | Difficult Operations |
| P | 1 | Unalloyed Steel | 125-220 | ANHX 12... LS | ANHX 12... MP |
| | 2 | Low-Alloyed Steel | 220-280 | ANHX 12... MP | - |
| | 3 | High-Alloyed Steel | 280-380 | ANHX 12... MP | - |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | ANHX 12... LS | - |
| | 5 | SS - Austenitic | 200-330 | ANHX 12... LS | - |
| | 6 | SS - Austenitic-ferritic (Duplex) | 220-260 | ANHX 12... LS | - |
| K | 7 | Malleable Cast Iron | 130-230 | ANHX 12... LS | ANHX 12... MP |
| | 8 | Grey Cast Iron | 180-245 | ANHX 12... MP | - |
| | 9 | Nodular Cast iron | 160-250 | ANHX 12... MP | - |
| S | 11 | Heat Resistant Super Alloys | 200-320 | ANHX 12... LS | - |

PLUNGING | Mergulho | Plunge

| L ≤ 3Dc | L > 3Dc | S max. |
|-----------------------|-----------|---------------------------------------|
| f _z (mm/t) | | |
| 0,10-0,20 | 0,10-0,14 | $S_{max} = \sqrt{DC \cdot Dr - Dr^2}$ |



| S max and DR corresponding cutting diameter Dc (mm) | | | | | | | |
|---|---------|------|------|------|------|------|------|
| DR (mm) | Dc (mm) | | | | | | |
| | 32 | 40 | 50 | 63 | 80 | 100 | 125 |
| 1,0 | 5,6 | 6,2 | 7,0 | 7,9 | 8,9 | 9,9 | 11,1 |
| 2,0 | 7,7 | 8,7 | 9,8 | 11,0 | 12,5 | 14,0 | 15,7 |
| 3,0 | 9,3 | 10,5 | 11,9 | 13,4 | 15,2 | 17,1 | 19,1 |



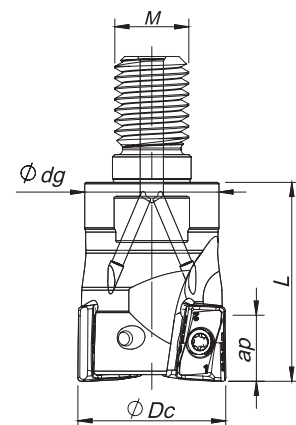
Arbor Mounting

$K_r = 90^\circ$ | $\gamma_p = -4^\circ$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|----|---|----------|-----------|----|------|----------------|--------|-------------------------------|-------|
| | | | ϕDc | ϕd | ϕDg | L | | Arbor Type | Ap max | | |
| 181067600 | 050A18190-03-04-022040 | 3 | 50 | 22 | 42 | 40 | 0,28 | A | 15,0 | ANHX 1607... | |
| 181067700 | 050A18190-04-04-022040 | 4 | 50 | 22 | 42 | 40 | 0,27 | A | 15,0 | ANHX 1607... | |
| 181067800 | 063A18190-04-04-022040 | 4 | 63 | 22 | 52 | 40 | 0,51 | A | 15,0 | ANHX 1607... | |
| 181067900 | 063A18190-06-04-022040 | 6 | 63 | 22 | 52 | 40 | 0,48 | A | 15,0 | ANHX 1607... | |
| 181068000 | 080A18190-05-04-027050 | 5 | 80 | 27 | 60 | 50 | 0,88 | B | 15,0 | ANHX 1607... | |
| 181051800 | 080A18190-07-04-027050 | 7 | 80 | 27 | 60 | 50 | 0,36 | B | 15,0 | ANHX 1607... | |
| 181068100 | 100A18190-05-04-032050 | 5 | 100 | 32 | 80 | 50 | 1,60 | B | 15,0 | ANHX 1607... | |
| 181068200 | 100A18190-08-04-032050 | 8 | 100 | 32 | 80 | 50 | 1,59 | B | 15,0 | ANHX 1607... | |
| 181068300 | 125A18190-07-04-040063 | 7 | 125 | 40 | 90 | 63 | 2,93 | B | 15,0 | ANHX 1607... | |
| 181068400 | 125A18190-10-04-040063 | 10 | 125 | 40 | 90 | 63 | 2,89 | B | 15,0 | ANHX 1607... | |
| 181068500 | 160A18190-08-04-U040063 | 8 | 160 | 40 | 110 | 63 | 4,29 | C | 15,0 | ANHX 1607... | |
| 181068600 | 160A18190-12-04-U040063 | 12 | 160 | 40 | 110 | 63 | 4,29 | C | 15,0 | ANHX 1607... | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)



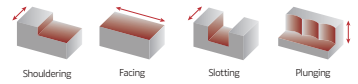
Threaded Coupling

$K_r = 90^\circ$ | $\gamma_p = -4^\circ$

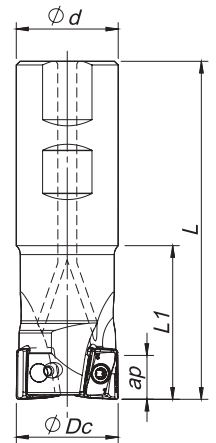
| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|----------|-----------|----|------|----------------|--------------|-------------------------------|-------|
| | | | ϕDc | ϕM | ϕdg | L | | Ap max | | | |
| 181082800 | 032R18190-02-04-M16043 | 2 | 32 | M16 | 29 | 43 | 0,20 | 15,0 | ANHX 1607... | | |
| 181082900 | 040R18190-03-04-M16043 | 3 | 40 | M16 | 29 | 43 | 0,24 | 15,0 | ANHX 1607... | | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)



Weldon Shank
 $K_r = 90^\circ$ | $\gamma_p = -4^\circ$



| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|----------|-----|----|------|----------------|-------------------------------|-------|
| | | | ϕD_c | ϕd | L | L1 | | Ap max | | |
| 181051600 | 032W18190-02-04-032110 | 2 | 32 | 32 | 110 | 50 | 0,66 | 15,0 | ANHX 1607... | |
| 181067500 | 040W18190-03-04-032115 | 3 | 40 | 32 | 115 | 40 | 0,66 | 15,0 | ANHX 1607... | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

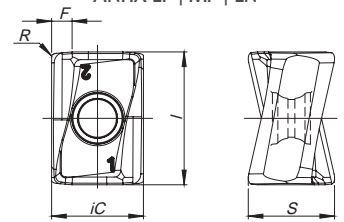
ANHX 1607.. | Inserts | Pastilhas | Plaquetas

ANHX-LP

ANHX-MP

ANHX-LN

ANHX-LP | MP | LN



| (1) Geometry code | (2) Grade code ISO Reference | P | | | | | | K | | | | | N | Dimensions Dimensões Dimensiones (mm) | | | | |
|-------------------------|---------------------------------------|-----|-----|----|----|----|----|-----|----|----|----|----|-----|--|-------|----|-----|-----|
| | | CVD | PVD | | | | | PVD | | | | | UNC | | | | | |
| | | T9 | G1 | G4 | T1 | P3 | P4 | G1 | G4 | T1 | P3 | P4 | 10 | iC | S | I | R | F |
| 1111519 | ANHX 160708 PNR-LP | | | | | | | | | | | | | 11,20 | 10,80 | 16 | 0,8 | 1,4 |
| 1111596 | ANHX 160712 PNR-LP | | | | | | | | | | | | | 11,20 | 10,50 | 16 | 1,2 | 1,2 |
| 1111595 | ANHX 160708 PNER-MP | | | | | | | | | | | | | 11,20 | 10,80 | 16 | 0,8 | 1,4 |
| 1111598 | ANHX 160712 PNER-MP | | | | | | | | | | | | | 11,20 | 10,50 | 16 | 1,2 | 1,2 |
| 1111659 | ANHX 160708 PNFR-LN | | | | | | | | | | | | | 11,20 | 10,80 | 16 | 0,8 | 1,4 |
| 1111597 | ANHX 160712 PNFR-LN | | | | | | | | | | | | | 11,20 | 10,50 | 16 | 1,2 | 1,2 |

First choice | Primeira opção | 1ª opción

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

Insert order code = (1) Geometry Code + (2) Grade Code

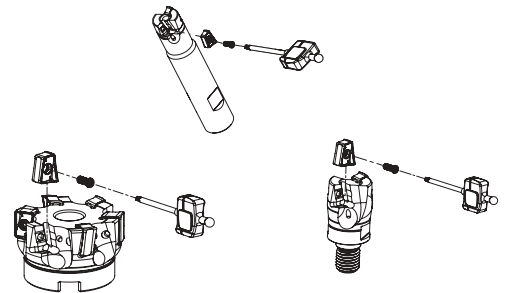
Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock

A
MILLING
Overview
Face milling
Hifeed milling
Shoulder milling
Profile milling
Hardmill
Center & Chamfer
Spot face
Spare Parts
Technical Data
End Mills

PLUS 18190

SPARE PARTS | Complementos | Repuestos

| Cutter ØDc | Insert Screw | Key (Torx) | Order separately | | Order separately | |
|------------------|--------------|------------|------------------|--------------|------------------|-----------------|
| | | | Key (Torx - Nm) | Torque Value | Screw | DIN 6368 Wrench |
| W18190 - 32 - 40 | P0401200 | XT15 | DT1530 | 3,0 | - | - |
| R18190 - 32 - 40 | P0401200 | XT15 | DT1530 | 3,0 | - | - |
| A18190 - 50 - 63 | P0401200 | XT15 | DT1530 | 3,0 | - | - |
| A18190 - 80 | P0401200 | XT15 | DT1530 | 3,0 | J0123510 | SD6368-12 |
| A18190 - 100 | P0401200 | XT15 | DT1530 | 3,0 | J0164110 | SD6368-16 |
| A18190 - 125 | P0401200 | PT15 | DT1530 | 3,0 | J0204610 | SD6368-20 |
| A18190 - 160 | P0401200 | PT15 | DT1530 | 3,0 | - | - |



Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
Check the procedures for the clamping screws on the page A-241.

RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendadas

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | | | | | | Feed fz (mm/t) | | |
|-----|-----|---------------------------|--------------|-------------------------------|---------|---------|---------|---------|---------|---------|----------------|---------------|---------------|
| | | | | ← Wear Resistance Toughness → | | | | | | | ANHX 12... LP | ANHX 12... MP | ANHX 12... LN |
| | | | | PH0910 | PH7910 | PHP920 | PH7920 | PHP930 | PH7930 | PHS740 | | | |
| P | 1 | Unalloyed Steel | 125-220 | - | 180-250 | 180-250 | 180-240 | 160-230 | 160-220 | 140-220 | 0,10-0,25 | 0,10-0,25 | - |
| | 2 | Low-Alloyed Steel | 220-280 | - | 160-230 | 160-230 | 160-220 | 140-210 | 140-200 | 120-200 | 0,10-0,25 | 0,10-0,25 | - |
| | 3 | High-Alloyed Steel | 280-380 | - | 140-220 | 140-220 | 140-210 | 120-200 | 120-190 | 100-190 | 0,10-0,20 | 0,10-0,20 | - |
| K | 7 | Malleable Cast Iron | 130-230 | - | 180-300 | 160-270 | 160-260 | 150-250 | 150-240 | - | 0,10-0,25 | 0,10-0,25 | - |
| | 8 | Grey Cast Iron | 180-245 | - | 160-250 | 140-250 | 140-240 | 140-230 | 140-230 | - | 0,10-0,25 | 0,10-0,25 | - |
| | 9 | Nodular Cast iron | 160-250 | - | 150-200 | 120-210 | 120-200 | 100-200 | 100-190 | - | 0,10-0,20 | 0,10-0,25 | - |
| N | 10 | Aluminium and Non Ferrous | 30-130 | 100-2000 | - | - | - | - | - | - | - | - | 0,10-0,40 |

(Note 1)
Cutting conditions $a_e/D_c=70\%$.

(Note 2)

| Operation | a_e | Vc & fz | a_p (mm) |
|-------------|-------|---------|------------|
| Slotting | 100% | <20% | 2,0-4,5 |
| Shouldering | <50% | >8% | 6,0-8,0 |
| | ≤25% | >12% | 8,0-15,0 |

(Note 3)

It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

GRADES SELECTION GUIDE | Guia para selecção de graus | Guía para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | | | | | | |
|-----|-----|---------------------------|--------------|-------------------|--------|--------|--------|-------------|--------|--------|
| | | | | ← Wear Resistance | | | | Toughness → | | |
| | | | | PH0910 | PH7910 | PHP920 | PH7920 | PHP930 | PH7930 | PHS740 |
| P | 1 | Unalloyed Steel | 125-220 | ● | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 2 | Low-Alloyed Steel | 220-280 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 3 | High-Alloyed Steel | 280-380 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| K | 7 | Malleable Cast Iron | 130-230 | | ✓ | ✓ | ✓ | ✓ | ✓ | |
| | 8 | Grey Cast Iron | 180-245 | | ✓ | ✓ | ✓ | ✓ | ✓ | |
| | 9 | Nodular Cast iron | 160-250 | | ✓ | ✓ | ✓ | ✓ | ✓ | |
| N | 10 | Aluminium and Non Ferrous | 30-130 | ✓ | | | | | | |

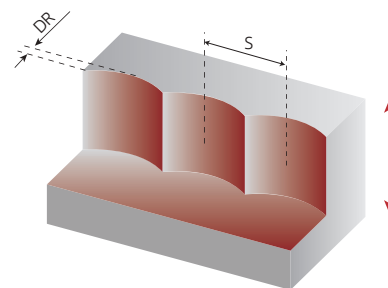
- Good Conditions
- Average Conditions
- Difficult Conditions

CHIP-BREAKER SELECTION GUIDE | Guia para aplicações do quebra-apanas | Guía para aplicación del rompevirutas

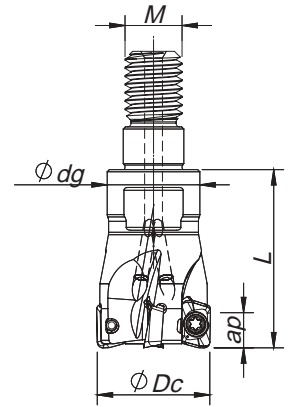
| ISO | PSM | Material | HB (Brinell) | Chip Breaker Application | |
|-----|-----|---------------------------|--------------|--------------------------|----------------------|
| | | | | 1 st choice | Difficult Operations |
| P | 1 | Unalloyed Steel | 125-220 | ANHX 16... LP | ANHX 16... MP |
| | 2 | Low-Alloyed Steel | 220-280 | ANHX 16... LP | ANHX 16... MP |
| | 3 | High-Alloyed Steel | 280-380 | ANHX 16... LP | ANHX 16... MP |
| K | 7 | Malleable Cast Iron | 130-230 | ANHX 16... LP | ANHX 16... MP |
| | 8 | Grey Cast Iron | 180-245 | ANHX 16... LP | ANHX 16... MP |
| | 9 | Nodular Cast iron | 160-250 | ANHX 16... LP | ANHX 16... MP |
| N | 10 | Aluminium and Non Ferrous | 30-130 | ANHX 16... LN | - |

PLUNGING | Mergulho | Plunge

| L < 3Dc | L > 3Dc | S max. |
|-----------------------|-----------|--|
| f _z (mm/t) | | |
| 0,10-0,20 | 0,10-0,14 | $S_{max} = \sqrt{D_c \cdot DR - DR^2}$ |



| S max and DR corresponding cutting diameter Dc (mm) | | | | | | | | |
|---|---------|------|------|------|------|------|------|------|
| DR (mm) | Dc (mm) | | | | | | | |
| | 32 | 40 | 50 | 63 | 80 | 100 | 125 | 160 |
| 1,0 | 5,6 | 6,2 | 7,0 | 7,9 | 8,9 | 9,9 | 11,1 | 12,6 |
| 2,0 | 7,7 | 8,7 | 9,8 | 11,0 | 12,5 | 14,0 | 15,7 | 17,8 |
| 3,0 | 9,3 | 10,5 | 11,9 | 13,4 | 15,2 | 17,1 | 19,1 | 21,7 |
| 4,0 | 10,6 | 12,0 | 13,6 | 15,4 | 17,4 | 19,6 | 22,0 | 25,0 |
| 5,0 | 11,6 | 13,2 | 15,0 | 17,0 | 19,4 | 21,8 | 24,5 | 27,8 |



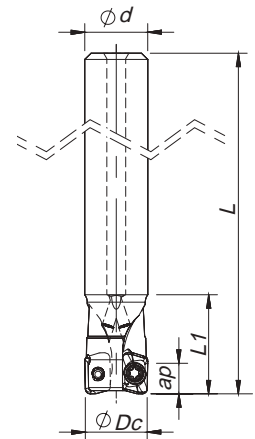
Threaded Coupling

$K_r=90^\circ$ | $\gamma_p=+4^\circ$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Max ap (mm) | | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|----------|-----------|----|------|-------------|------|------|-------------------------------|-------|
| | | | ϕDc | ϕM | ϕdg | L | | LP LN | HF | MH | | |
| 181120400 | 010R20090-02-04-M06020 | 2 | 10 | M6 | 9,8 | 20 | 0,01 | 4,00 | 0,30 | 2,00 | XP... 0602... | |
| 181112800 | 011R20090-02-04-M06020 | 2 | 11 | M6 | 9,8 | 20 | 0,01 | 4,00 | 0,30 | 2,00 | XP... 0602... | |
| 181120500 | 012R20090-03-04-M06020 | 3 | 12 | M6 | 9,8 | 20 | 0,02 | 4,00 | 0,30 | 2,00 | XP... 0602... | |
| 181112900 | 013R20090-03-04-M06020 | 3 | 13 | M6 | 9,8 | 20 | 0,02 | 4,00 | 0,30 | 2,00 | XP... 0602... | |
| 181087500 | 016R20090-04-04-M08025 | 4 | 16 | M8 | 13,0 | 25 | 0,03 | 4,00 | 0,30 | 2,00 | XP... 0602... | |
| 181113000 | 017R20090-04-04-M08025 | 4 | 17 | M8 | 13,0 | 25 | 0,04 | 4,00 | 0,30 | 2,00 | XP... 0602... | |
| 181087600 | 020R20090-05-04-M10030 | 5 | 20 | M10 | 18,0 | 30 | 0,06 | 4,00 | 0,30 | 2,00 | XP... 0602... | |
| 181087700 | 025R20090-07-04-M12030 | 7 | 25 | M12 | 21,0 | 30 | 0,09 | 4,00 | 0,30 | 2,00 | XP... 0602... | |
| 181087800 | 032R20090-08-04-M16035 | 8 | 32 | M16 | 29,0 | 35 | 0,19 | 4,00 | 0,30 | 2,00 | XP... 0602... | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire página A-8)



Cylindrical Shank

$K_r=90^\circ$ | $\gamma_p=+4^\circ$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Max ap (mm) | | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|----------|-----|----|------|-------------|------|------|-------------------------------|-------|
| | | | ϕDc | ϕd | L | L1 | | LP LN | HF | MH | | |
| 181087100 | 010E20090-02-04-010055 | 2 | 10 | 10 | 55 | 16 | 0,03 | 4,00 | 0,30 | 2,00 | XP... 0602... | |
| 181108300 | 010E20090-02-04-010100 | 2 | 10 | 10 | 100 | 25 | 0,03 | 4,00 | 0,30 | 2,00 | XP... 0602... | |
| 181087200 | 012E20090-02-04-012080 | 2 | 12 | 12 | 80 | 17 | 0,06 | 4,00 | 0,30 | 2,00 | XP... 0602... | |
| 181109900 | 012E20090-03-04-012120 | 3 | 12 | 12 | 120 | 30 | 0,06 | 4,00 | 0,30 | 2,00 | XP... 0602... | |
| 181087300 | 016E20090-03-04-016090 | 3 | 16 | 16 | 90 | 20 | 0,12 | 4,00 | 0,30 | 2,00 | XP... 0602... | |
| 181087400 | 016E20090-04-04-016090 | 4 | 16 | 16 | 90 | 20 | 0,11 | 4,00 | 0,30 | 2,00 | XP... 0602... | |
| 181097100 | 017E20090-05-04-016090 | 5 | 17 | 16 | 90 | 35 | 0,11 | 4,00 | 0,30 | 2,00 | XP... 0602... | |
| 181097200 | 021E20090-05-04-020090 | 5 | 21 | 20 | 90 | 35 | 0,13 | 4,00 | 0,30 | 2,00 | XP... 0602... | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire página A-8)



XP... 0602... || Inserts | Pastilhas | Plaquetas

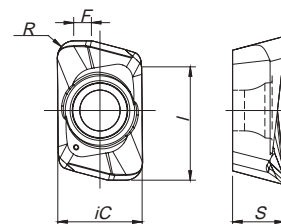
XPET-LP



XPET-LN



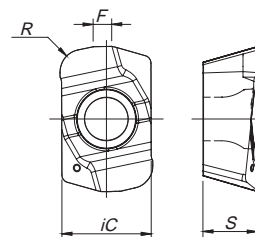
XPET-LP | LN



XPET-HF
(HiFeed geometry)



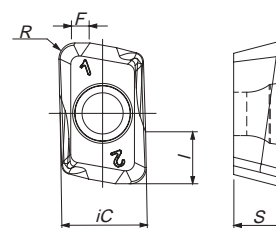
XPET-HF



XPHW-MH
(finishing geometry)



XPHW-MH



| (1) Geometry code | (2) Grade code ISO Reference | P | | | | M | K | N | S | H | Dimensions Dimensões Dimensiones (mm) | | | | | | |
|----------------------|---------------------------------|-----|----|----|----|-----|-----|-----|-----|-----|--|----|------|------|------|------|------|
| | | PVD | | | | CVD | CVD | PVD | UNC | PVD | PVD | | iC | S | I | R | F |
| | | X4 | X6 | T1 | P4 | X9 | T1 | P4 | 10 | X9 | X4 | X6 | | | | | |
| 1112002 | XPET 060204 PDER-LP | | | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | ⊗ | | | 3,90 | 2,40 | 5,30 | 0,40 | 0,80 |
| 1112003 | XPET 060208 PDER-LP | | | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | ⊗ | | | 3,90 | 2,40 | 5,30 | 0,80 | 0,70 |
| 1112004 | XPET 060216 PDER-LP | | | ⊗ | ⊗ | | ⊗ | ⊗ | | | | | 3,90 | 2,40 | 5,30 | 1,60 | 0,60 |
| 1112579 | XPET 060202 PDFR-LN | | | | | | | | ⊗ | | | | 3,90 | 2,40 | 5,10 | 0,20 | 0,95 |
| 1112580 | XPET 060204 PDFR-LN | | | | | | | | ⊗ | | | | 3,90 | 2,40 | 5,10 | 0,40 | 0,80 |
| 1112049 | XPET 060210 ZER-HF | | | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | ⊗ | | | 3,90 | 2,40 | - | 1,00 | 0,80 |
| 1112259 | XPHW 060208 ZER-MH | ⊗ | ⊗ | | | | | | | | ⊗ | ⊗ | 3,90 | 2,40 | 2,40 | 0,80 | 0,70 |

⊗ First choice | Primeira opção | 1ª opción ⊗ Stock item | Produto de stock | Itens de stock ○ Available under request (see page A-9) | Disponível| sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9) Insert order code = (1) Geometry Code + (2) Grade Code

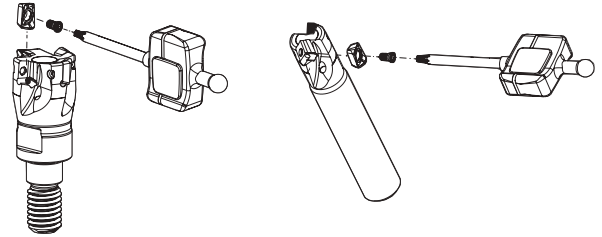
LINEPRO 20090

A

SPARE PARTS | Complementos | Repuestos

MILLING

| Cutter ØDc | Insert Screw | Key (Torx) | Order separately | |
|----------------|--------------|------------|------------------|--------------|
| | | | Key (Torx - Nm) | Torque Value |
| E20090 - 10 | P0180300 | XT06IP | DT0606IP | 0,6 |
| E20090 - 12-16 | P0180400 | XT06IP | DT0606IP | 0,6 |
| R20090 - 12-16 | P0180400 | XT06IP | DT0606IP | 0,6 |



Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241. Check the procedures for the clamping screws on the page A-241.

Overview

Face milling

Hi-feed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

Spot face

Spare Parts

Technical Data

End Mills

GRADES SELECTION GUIDE | Guia para selección de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | | | | | |
|-----|-----|-----------------------------------|-----------------|-------------------|--------|--------|-------------|--------|--------|
| | | | | ← Wear Resistance | | | Toughness → | | |
| | | | | PH0910 | PHH603 | PHH910 | PHP920 | PHP930 | PHH930 |
| P | 1 | Unalloyed Steel | 125-220 | ● | ● | ● | ✓ | ✓ | |
| | 2 | Low-Alloyed Steel | 220-280 | | | ✓ | ✓ | ✓ | |
| | 3 | High-Alloyed Steel | 280-380 | | ✓ | ✓ | ✓ | ✓ | |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | | | | | | ✓ |
| | 5 | SS - Austenitic | 200-330 | | | | | | ✓ |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | | | | | | ✓ |
| K | 7 | Malleable Cast Iron | 130-230 | | | | ✓ | ✓ | |
| | 8 | Grey Cast Iron | 180-245 | | | | ✓ | ✓ | |
| | 9 | Nodular Cast iron | 160-250 | | | | ✓ | ✓ | |
| N | 10 | Aluminium and Non Ferrous | 30-130 | ✓ | | | | | |
| S | 11 | Heat Resistant Super Alloys | 200-320 | | | | | | ✓ |
| H | 12 | Hardened Steels | 40-55 HRC | | ✓ | ✓ | | | |

- Good Conditions
- Average Conditions
- Difficult Conditions

RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | | | | |
|-----|-----|-----------------------------------|--------------|-------------------|---------|---------|---------|-------------|---------|
| | | | | ← Wear Resistance | | | | Toughness → | |
| | | | | PH0910 | PHH603 | PHH910 | PHP920 | PHP930 | PHH930 |
| P | 1 | Unalloyed Steel | 125-220 | - | - | - | 180-250 | 160-230 | - |
| | 2 | Low-Alloyed Steel | 220-280 | - | - | 160-270 | 160-230 | 140-210 | - |
| | 3 | High-Alloyed Steel | 280-380 | - | 180-310 | 140-230 | 140-220 | 120-200 | - |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | - | - | - | - | - | 140-210 |
| | 5 | SS - Austenitic | 200-330 | - | - | - | - | - | 120-170 |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | - | - | - | - | - | 100-150 |
| K | 7 | Malleable Cast Iron | 130-230 | - | - | - | 160-270 | 150-250 | - |
| | 8 | Grey Cast Iron | 180-245 | - | - | - | 140-250 | 140-230 | - |
| | 9 | Nodular Cast iron | 160-250 | - | - | - | 120-210 | 100-200 | - |
| N | 10 | Aluminium and Non Ferrous | 30-130 | 100-2000 | - | - | - | - | - |
| S | 11 | Heat Resistant Super Alloys | 200-320 | - | - | - | - | - | 30-110 |
| H | 12 | Hardened Steels | 40-55 HRC | - | 70-270 | 70-260 | - | - | - |

| ISO | PSM | Material | HB (Brinell) | Feed fz (mm/t) | | | |
|-----|--------------------|-----------------------------------|--------------|----------------|--------------|-----------------|--------------|
| | | | | XPET 06...LP | XPET 06...LN | XPET 06...HF | XPHW 06...MH |
| | | | | P | 1 | Unalloyed Steel | 125-220 |
| 2 | Low-Alloyed Steel | 220-280 | 0,05-0,07 | | - | 0,40-0,80 | 0,05-0,12 |
| 3 | High-Alloyed Steel | 280-380 | 0,05-0,07 | | - | 0,40-0,60 | 0,05-0,12 |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | 0,05-0,07 | - | 0,40-0,80 | - |
| | 5 | SS - Austenitic | 200-330 | 0,05-0,07 | - | 0,40-0,60 | - |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | 0,05-0,07 | - | 0,40-0,60 | - |
| K | 7 | Malleable Cast Iron | 130-230 | 0,05-0,07 | - | 0,40-0,80 | - |
| | 8 | Grey Cast Iron | 180-245 | 0,05-0,07 | - | 0,40-0,80 | - |
| | 9 | Nodular Cast iron | 160-250 | 0,05-0,07 | - | 0,40-0,80 | - |
| N | 10 | Aluminium and Non Ferrous | 30-130 | - | 0,05-0,07 | - | - |
| S | 11 | Heat Resistant Super Alloys | 200-320 | 0,05-0,07 | - | 0,40-0,60 | - |
| H | 12 | Hardened Steels | 40-55 HRC | - | - | - | 0,03-0,10 |

(Note 1) Cutting conditions $a_e/D_c=70\%$.

(Note 2) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

(Note 3) PH5... and PHS... can be used wet or dry. PH7... use only air.

(Note 4) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

| Operation | a_e | Vc & fz | a_p (mm) |
|-------------|-------|---------|------------|
| Slotting | 100% | <20% | 1,0-3,0 |
| Shouldering | <50% | >8% | 1,0-4,0 |
| | ≤25% | >12% | 1,0-4,0 |

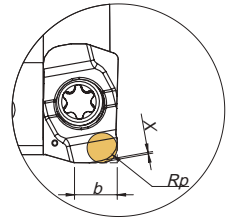
LINEPRO 20090

CHIP-BREAKER SELECTION GUIDE | Guia para aplicações do quebra- aparas | Guía para aplicación del rompevirutas

| ISO | PSM | Material | HB (Brinell) | Chip-Breaker Application | |
|-----|-----|-----------------------------------|--------------|--------------------------|----------------------|
| | | | | 1st choise | Difficult Operations |
| P | 1 | Unalloyed Steel | 125-220 | XPET 06... LP/HF | - |
| | 2 | Low-Alloyed Steel | 220-280 | XPET 06... LP/HF | XPHW 06... MH |
| | 3 | High-Alloyed Steel | 280-380 | XPET 06... LP/HF | XPHW 06... MH |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | XPET 06... LP/HF | - |
| | 5 | SS - Austenitic | 200-330 | XPET 06... LP/HF | - |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | XPET 06... LP/HF | - |
| K | 7 | Malleable Cast Iron | 130-230 | XPET 06... LP/HF | - |
| | 8 | Grey Cast Iron | 180-245 | XPET 06... LP/HF | - |
| | 9 | Nodular Cast iron | 160-250 | XPET 06... LP/HF | - |
| N | 10 | Aluminium and Non Ferrous | 30-130 | XPET 06... LN | - |
| S | 11 | Heat Resistant Super Alloys | 200-320 | XPET 06... LP/HF | - |
| H | 12 | Hardened Steels | 40-55 HRC | XPHW 06... MH | - |

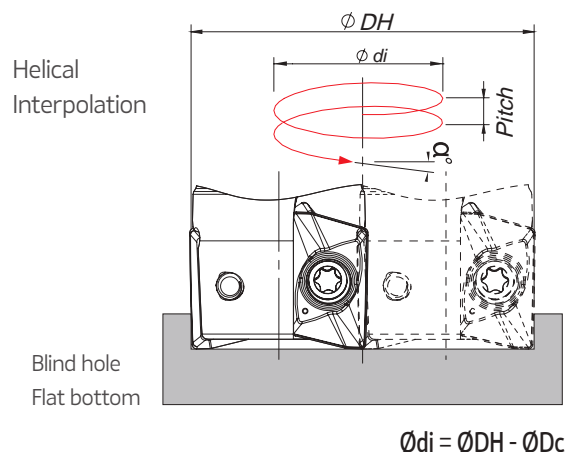
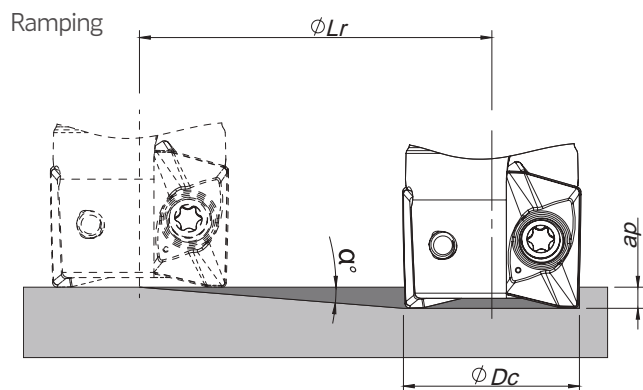
PROGRAMMING DATA | Dados para programação | Datos para la programación

| Insert | Programming Data | | |
|------------|------------------|------|-----|
| | Rp | X | b |
| XPET 06 HF | 1,1 | 0,84 | 2,3 |



RAMPING AND HELICAL INTERPOLATION

Descida em rampa e interpolação helicoidal | Bajada en rampa e interpolación circular



| ϕDc | Ramping | | | Helical Interpolation | | |
|-----------|-------------------------|----------|--------|---|-----------------|----------------|
| | Max Ramp α° | Max ap | Min Lr | Diameter for Blind Hole, Flat Bottom Face (1) | | Max Pitch/Rev. |
| | | | | ϕDH_{min} | ϕDH_{max} | |
| 10 | 5,5 | 4,0 | 41,5 | 17,2 - | - 18,4 | 2,2 2,5 |
| 12 | 4,0 | 4,0 | 57,2 | 21,2 - | - 22,4 | 2,0 2,3 |
| 16 | 2,5 | 4,0 | 91,6 | 29,2 - | - 30,4 | 1,8 2,0 |
| 17 | 2,2 | 4,0 | 104,1 | 31,2 - | - 32,4 | 1,7 1,9 |
| 20 | 1,9 | 4,0 | 120,6 | 37,2 - | - 38,4 | 1,8 1,9 |
| 21 | 1,6 | 4,0 | 143,2 | 39,2 - | - 40,4 | 1,6 1,7 |
| 25 | 1,3 | 4,0 | 171,0 | 47,2 - | - 48,4 | 1,6 1,7 |
| 32 | 1,0 | 4,0 | 229,2 | 61,2 - | - 62,4 | 1,6 1,7 |

(1) using LP insert with radius 0,8 mm

Note: During helical interpolation do not exceed maximum pitch

When using HF insert or other different insert radius to calculate the ϕDH_{min} and ϕDH_{max} use the equation below:

- Minimum Diameter: $\phi DH_{min} = 2 \times (\phi Dc - (R \text{ corner radius} + F \text{ width of edge wiper}))$

- Maximum Diameter: $\phi DH_{max} = 2 \times (\phi Dc - R \text{ corner radius})$

(On HF insert the corner radius should be corner radius programming)

A

MILLING

Overview

Face milling

Hi-feed milling

Shoulder milling

Profile milling

Hardmill

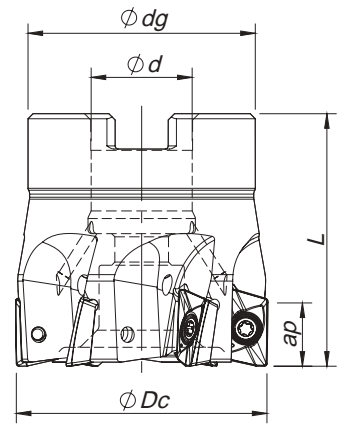
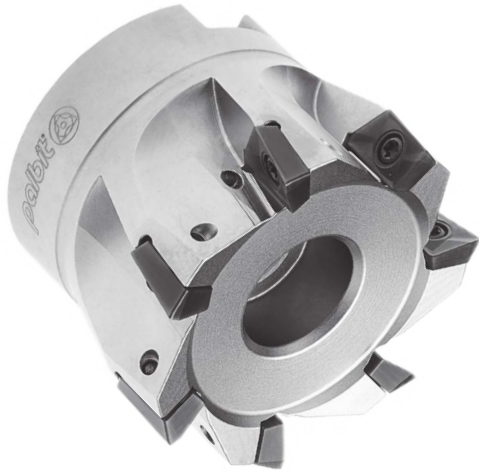
Center & Chamfer

Spot face

Spare Parts

Technical Data

End Mills



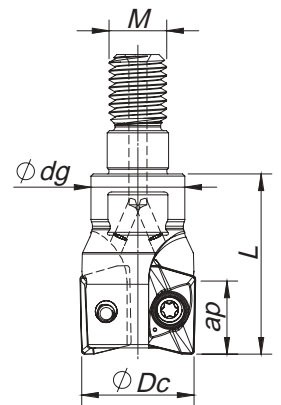
Arbor Mounting

$K_r=90^\circ$ | $\gamma_p=+8^\circ$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Max ap (mm) | | | Arbor Style | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|--|---|----------|-----------|----|------|-------------|------|------|-------------|-------------------------------|-------|
| | | | ϕDc | ϕd | ϕdg | L | | LP/MP | HF | MH | | | |
| 181088600 | 040A20190-06-08-016040 | | 40 | 16 | 36 | 40 | 0,22 | 10,0 | 0,80 | 3,00 | A | XP... 1003... | |
| 181088700 | 050A20190-07-08-022040 | | 50 | 22 | 42 | 40 | 0,31 | 10,0 | 0,80 | 3,00 | A | XP... 1003... | |
| 181088800 | 063A20190-08-08-022040 | | 63 | 22 | 52 | 40 | 0,43 | 10,0 | 0,80 | 3,00 | A | XP... 1003... | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)



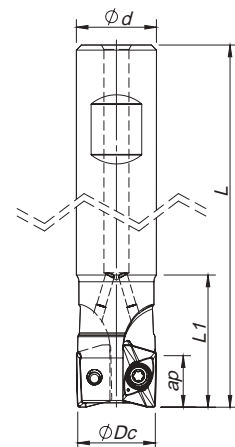
Threaded Coupling

$K_r=90^\circ$ | $\gamma_p=+5^\circ \sim +6^\circ$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Max ap (mm) | | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|--|---|----------|-----------|----|------|-------------|------|------|-------------------------------|-------|
| | | | ϕDc | ϕM | ϕdg | L | | LP/MP | HF | MH | | |
| 181088200 | 016R20190-02-05-M08025 | | 16 | M8 | 14 | 25 | 0,03 | 10,0 | 0,80 | 3,00 | XP... 1003... | |
| 181088300 | 020R20190-03-05-M10030 | | 20 | M10 | 18 | 30 | 0,06 | 10,0 | 0,80 | 3,00 | XP... 1003... | |
| 181088400 | 025R20190-04-05-M12035 | | 25 | M12 | 21 | 35 | 0,12 | 10,0 | 0,80 | 3,00 | XP... 1003... | |
| 181088500 | 032R20190-05-06-M16035 | | 32 | M16 | 29 | 35 | 0,15 | 10,0 | 0,80 | 3,00 | XP... 1003... | |
| 181149100 | 040R20190-06-08-M16043 | | 40 | M16 | 29 | 43 | 0,25 | 10,0 | 0,80 | 3,00 | XP... 1003... | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)



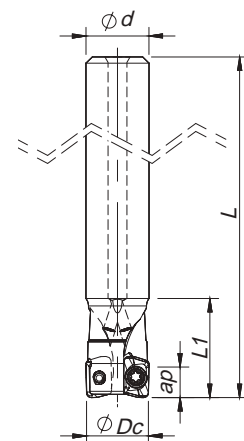
Weldon Shank

$K_r=90^\circ$ | $\gamma_p=+5^\circ\sim 8^\circ$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Max ap (mm) | | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|----------|-----|----|------|-------------|------|------|-------------------------------|-------|
| | | | ϕDc | ϕd | L | L1 | | LP/MP | HF | MH | | |
| 181087900 | 016W20190-02-05-016085 | 2 | 16 | 16 | 85 | 32 | 0,10 | 10,0 | 0,80 | 3,00 | XP... 1003... | |
| 181100600 | 016W20190-02-05-016150 | 2 | 16 | 16 | 150 | 70 | 0,13 | 10,0 | 0,80 | 3,00 | XP... 1003... | |
| 181108600 | 017W20190-02-05-016150 | 2 | 17 | 16 | 150 | 36 | 0,14 | 10,0 | 0,80 | 3,00 | XP... 1003... | |
| 181088000 | 020W20190-03-05-020090 | 3 | 20 | 20 | 90 | 28 | 0,21 | 10,0 | 0,80 | 3,00 | XP... 1003... | |
| 181100700 | 020W20190-03-05-020150 | 3 | 20 | 20 | 150 | 70 | 0,26 | 10,0 | 0,80 | 3,00 | XP... 1003... | |
| 181108700 | 022W20190-03-05-020150 | 3 | 22 | 20 | 150 | 70 | 0,30 | 10,0 | 0,80 | 3,00 | XP... 1003... | |
| 181088100 | 025W20190-04-05-025095 | 4 | 25 | 25 | 95 | 30 | 0,33 | 10,0 | 0,80 | 3,00 | XP... 1003... | |
| 181100800 | 025W20190-04-05-025150 | 4 | 25 | 25 | 150 | 80 | 0,36 | 10,0 | 0,80 | 3,00 | XP... 1003... | |
| 181108800 | 027W20190-04-05-025150 | 4 | 27 | 25 | 150 | 80 | 0,38 | 10,0 | 0,80 | 3,00 | XP... 1003... | |
| 181085400 | 032W20190-04-08-032110 | 4 | 32 | 32 | 110 | 50 | 0,55 | 10,0 | 0,80 | 3,00 | XP... 1003... | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)



Cylindrical Shank

$K_r=90^\circ$ | $\gamma_p=+4^\circ$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Max ap (mm) | | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|----------|-----|----|------|-------------|-----|-----|-------------------------------|-------|
| | | | ϕDc | ϕd | L | L1 | | LP/MP | HF | MH | | |
| 181171700 | 016E20190-02-05-016085 | 2 | 16 | 16 | 85 | 32 | 0,10 | 10,0 | 0,8 | 3,0 | XP...1003... | |
| 181173000 | 016E20190-02-05-016150 | 2 | 16 | 16 | 150 | 70 | 0,13 | 10,0 | 0,8 | 3,0 | XP...1003... | |
| 181171600 | 020E20190-03-05-020090 | 3 | 20 | 20 | 90 | 28 | 0,21 | 10,0 | 0,8 | 3,0 | XP...1003... | |
| 181171800 | 020E20190-03-05-020150 | 3 | 20 | 20 | 150 | 70 | 0,26 | 10,0 | 0,8 | 3,0 | XP...1003... | |
| 181171400 | 025E20190-04-05-025095 | 4 | 25 | 25 | 95 | 30 | 0,33 | 10,0 | 0,8 | 3,0 | XP...1003... | |
| 181172900 | 025E20190-04-05-025150 | 4 | 25 | 25 | 150 | 80 | 0,36 | 10,0 | 0,8 | 3,0 | XP...1003... | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

LINEPRO 20190

XP... 1003... | Inserts | Pastilhas | Plaquetas

A

MILLING

Overview

Face milling

Hifeed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

Spot face

Spare Parts

Technical Data

End Mills

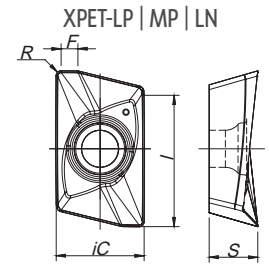
XPET-LP
(PHH-PHP grade)



XPET-MP
(PHH-PHP grade)



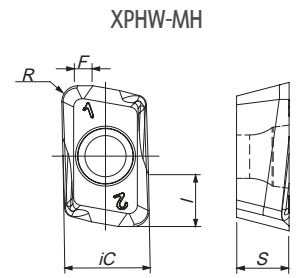
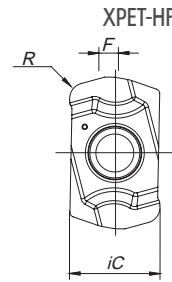
XPET-LN



XPET-HF
(HiFeed geometry)

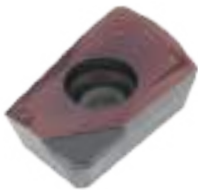


XPHW-MH
(finishing geometry)

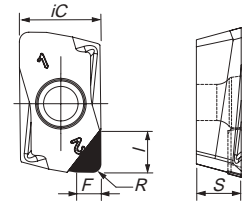


XPHW-R Z1

NEW



XPHW-R Z1



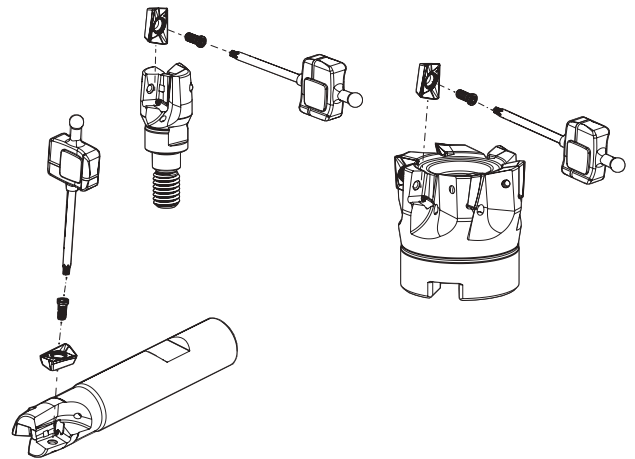
| | | P | | M | K | | | N | S | H | | Dimensions Dimensões Dimensiones (mm) | | | | | | | | | | |
|---------------|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|--------|--------|--------|--------|--------|------|------|-------|------|------|
| | | CVD | PVD | | | PVD | CVD | PVD | | UNC | PCD | | | | | | PVD | PVD | | | | |
| (1) | (2) Grade code | T9 | G1 | X5 | T1 | P4 | X9 | L5 | L9 | X5 | T1 | P4 | 10 | D6 | X9 | X4 | X6 | iC | S | I | R | F |
| Geometry code | ISO Reference | PHS740 | PH7910 | PHP910 | PHP920 | PHP930 | PHH930 | PH5705 | PH5740 | PHP910 | PHP920 | PHP930 | PH0910 | PDP410 | PHH930 | PHH603 | PHH910 | | | | | |
| 1111980 | XPET 100304 PDER-LP | | | | ⊗ | ⊗ | ⊗ | | | | ⊗ | ⊗ | | | ⊗ | | | 6,95 | 3,96 | 10,50 | 0,40 | 1,30 |
| 1111981 | XPET 100308 PDER-LP | ⊗ | | | ⊗ | ⊗ | ⊗ | | | | ⊗ | ⊗ | | | ⊗ | | | 6,95 | 3,96 | 10,50 | 0,80 | 1,40 |
| 1112022 | XPET 100316 PDER-LP | | | | ⊗ | ⊗ | ⊗ | | | | ⊗ | ⊗ | | | ⊗ | | | 6,95 | 3,96 | 10,50 | 1,60 | 0,80 |
| 1111982 | XPET 100304 PDSR-MP | | ⊗ | | ⊗ | ⊗ | | ⊗ | ⊗ | | ⊗ | ⊗ | | | | | | 6,95 | 3,96 | 10,50 | 0,40 | 1,10 |
| 1111983 | XPET 100308 PDSR-MP | ⊗ | ⊗ | | ⊗ | ⊗ | | ⊗ | ⊗ | | ⊗ | ⊗ | | | | | | 6,95 | 3,96 | 10,50 | 0,80 | 1,35 |
| 1111984 | XPET 100304 PDFR-LN | | | | | | | | | | | | ⊗ | | | | | 6,95 | 3,96 | 10,50 | 0,40 | 0,75 |
| 1112906 | XPET 100308 PDFR-LN | | | | | | | | | | | | ⊗ | | | | | 6,95 | 3,96 | 10,50 | 0,80 | 1,05 |
| 1111985 | XPET 100312 PDFR-LN | | | | | | | | | | | | ⊗ | | | | | 6,95 | 3,96 | 10,50 | 1,20 | 0,75 |
| 1112376 | XPET 100312 ZDR-HF | | | ⊗ | ⊗ | ⊗ | ⊗ | | | ⊗ | ⊗ | ⊗ | | | ⊗ | | | 6,95 | 3,96 | - | 1,20 | 1,50 |
| 1112500 | XPHW 100308 ZER-MH | | | | | | | | | | | | | | | ⊗ | ⊗ | 6,95 | 3,60 | 3,00 | 0,80 | 1,30 |
| 1112736 | XPHW 100310 ZER-MH | | | | | | | | | | | | | | | ⊗ | | 6,95 | 3,60 | 3,00 | 1,00 | 0,35 |
| 1112735 | XPHW 100320 ZER-MH | | | | | | | | | | | | | | | ⊗ | | 6,95 | 3,60 | 3,00 | 1,20 | 1,10 |
| 1112556 | XPHW 100308 R Z1 | | | | | | | | | | | | | ⊗ | | | | 6,95 | 3,60 | 3,80 | 0,80 | 2,30 |

⊗ First choice | Primeira opção | 1ª opción ⊗ Stock item | Produto de stock | Itens de stock ○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9) Insert order code = (1) Geometry Code + (2) Grade Code

SPARE PARTS | Complementos | Repuestos

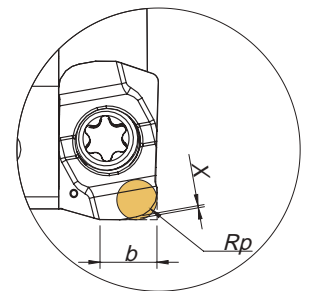
| Cutter ØDc | Insert Screw | Key (Torx) | Order separately | |
|----------------|--------------|------------|--------------------|--------------|
| | | | Key (Torx - Nm) | Torque Value |
| W20190 - 16-17 | P0250503 | XT08 | DT0812 | 1,2 |
| W20190 - 20-32 | P0250704 | XT08 | DT0812 | 1,2 |
| R20190 - 16 | P0250503 | XT08 | DT0812 | 1,2 |
| R20190 - 20-40 | P0250704 | XT08 | DT0812 | 1,2 |
| A20190 - 40-63 | P0250704 | XT08 | DT0812 | 1,2 |

Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
Check the procedures for the clamping screws on the page A-241.



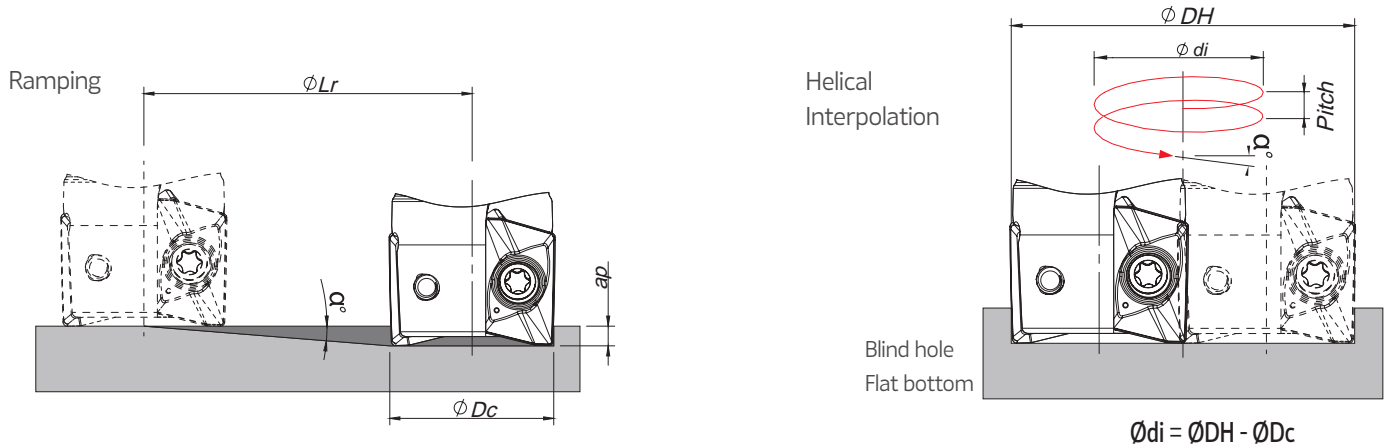
PROGRAMMING DATA | Dados para programação | Datos para la programación

| Insert | Programming Data | | |
|------------|------------------|------|------|
| | Rp | X | b |
| XPET 10 HF | 1,6 | 0,33 | 3,45 |



RAMPING AND HELICAL INTERPOLATION

Descida em rampa e interpolação helicoidal | Bajada en rampa e interpolación circular



| ϕDc | Ramping | | | Helical Interpolation | | |
|-----------|--------------------|----------|--------|---|-----------------|----------------|
| | Max Ramp a° | Max ap | Min Lr | Diameter for Blind Hole, Flat Bottom Face (1) | | Max Pitch/Rev. |
| | | | | ϕDH_{min} | ϕDH_{max} | |
| 16 | 7,5 | 10,0 | 76,0 | 27,6 - | - 30,4 | 4,8 6,0 |
| 17 | 7,0 | 10,0 | 81,4 | 29,6 - | - 32,4 | 4,9 5,9 |
| 20 | 5,0 | 10,0 | 114,3 | 35,6 - | - 38,4 | 4,3 5,1 |
| 22 | 4,5 | 10,0 | 127,1 | 39,6 - | - 42,4 | 4,3 5,0 |
| 25 | 3,5 | 10,0 | 163,5 | 45,6 - | - 48,4 | 4,0 4,5 |
| 27 | 3,0 | 10,0 | 190,8 | 49,6 - | - 52,4 | 3,7 4,2 |
| 32 | 2,5 | 10,0 | 229,0 | 59,6 - | - 62,4 | 3,8 4,2 |
| 40 | 1,7 | 10,0 | 336,9 | 75,6 - | - 78,4 | 3,3 3,6 |
| 50 | 1,3 | 10,0 | 440,7 | 95,6 - | - 98,4 | 3,2 3,4 |
| 63 | 1,0 | 10,0 | 572,9 | 121,6 - | - 124,4 | 3,2 3,4 |

(1) using LP insert with radius 0,8 mm

Note: During helical interpolation do not exceed maximum pitch

When using HF insert or other different insert radius to calculate the ϕDH_{min} and ϕDH_{max} use the equation below:

- Minimum Diameter: $\phi DH_{min} = 2 \times (\phi Dc - (R \text{ corner radius} + F \text{ width of edge wiper}))$

- Maximum Diameter: $\phi DH_{max} = 2 \times (\phi Dc - R \text{ corner radius})$

CHIP-BREAKER SELECTION GUIDE | Guia para aplicações do quebra- aparas | Guía para aplicación del rompevirutas

| ISO | PSM | Material | HB (Brinell) | Chip-Breaker Application | |
|-----|-----|-----------------------------------|--------------|--------------------------|----------------------|
| | | | | 1st choice | Difficult Operations |
| P | 1 | Unalloyed Steel | 125-220 | XPET 10 ... LP/HF | XPET 10 ... MP |
| | 2 | Low-Alloyed Steel | 220-280 | XPET 10 ... LP/HF | XPET 10 ... MP |
| | 3 | High-Alloyed Steel | 280-380 | XPET 10 ... MP/HF | - |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | XPET 10 ... LP/HF | - |
| | 5 | SS - Austenitic | 200-330 | XPET 10 ... LP/HF | - |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | XPET 10 ... LP/HF | - |
| K | 7 | Malleable Cast Iron | 130-230 | XPET 10 ... LP/HF | XPET 10 ... MP |
| | 8 | Grey Cast Iron | 180-245 | XPET 10 ... MP/HF | - |
| | 9 | Nodular Cast iron | 160-250 | XPET 10 ... MP/HF | - |
| N | 10 | Aluminium and Non Ferrous | 30-130 | XPET 10 ... LN | - |
| S | 11 | Heat Resistant Super Alloys | 200-320 | XPET 10 ... LP/HF | - |
| H | 12 | Hardened Steels | 40-55 HRC | XPHW 10 ... MH | - |

GRADES SELECTION GUIDE | Guia para selecção de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | | | | | | | | | |
|-----|-----|-----------------------------------|--------------|-------------------|--------|--------|--------|-------------|--------|--------|--------|--------|---|
| | | | | ← Wear Resistance | | | | Toughness → | | | | | |
| | | | | PH0910 | PH5705 | PHH603 | PHP910 | PHP920 | PHP930 | PHH930 | PH5740 | PHS740 | |
| P | 1 | Unalloyed Steel | 125-220 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | 2 | Low-Alloyed Steel | 220-280 | | | | ● | ● | ● | | | | ● |
| | 3 | High-Alloyed Steel | 280-380 | | | ● | ● | ● | ● | | | | ● |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | | | | | | | | ● | | |
| | 5 | SS - Austenitic | 200-330 | | | | | | | | ● | | |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | | | | | | | | ● | | |
| K | 7 | Malleable Cast Iron | 130-230 | | ● | | ● | ● | ● | | | ● | |
| | 8 | Grey Cast Iron | 180-245 | | ● | | ● | ● | ● | | | ● | |
| | 9 | Nodular Cast iron | 160-250 | | ● | | ● | ● | ● | | | ● | |
| N | 10 | Aluminium and Non Ferrous | 30-130 | ● | | | | | | | | | |
| S | 11 | Heat Resistant Super Alloys | 200-320 | | | | | | | | ● | | |
| H | 12 | Hardened Steels | 40-55 HRC | | | ● | | | | | | | |

● Good Conditions

● Average Conditions

● Difficult Conditions

RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | | | | | | | |
|-----|-----|-----------------------------------|--------------|-------------------|---------|---------|---------|---------|---------|-------------|---------|---------|
| | | | | ← Wear Resistance | | | | | | Toughness → | | |
| | | | | PH0910 | PH5705 | PHH603 | PHP910 | PHP920 | PHP930 | PHH930 | PH5740 | PHS740 |
| P | 1 | Unalloyed Steel | 125-220 | - | - | - | 180-250 | 180-250 | 160-230 | - | - | 140-220 |
| | 2 | Low-Alloyed Steel | 220-280 | - | - | - | 160-240 | 160-230 | 140-210 | - | - | 120-200 |
| | 3 | High-Alloyed Steel | 280-380 | - | - | 180-310 | 140-230 | 140-220 | 120-200 | - | - | 100-190 |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | - | - | - | - | - | - | 140-210 | - | - |
| | 5 | SS - Austenitic | 200-330 | - | - | - | - | - | - | 120-170 | - | - |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | - | - | - | - | - | - | 100-150 | - | - |
| K | 7 | Malleable Cast Iron | 130-230 | - | 160-290 | - | 180-300 | 160-270 | 150-250 | - | 160-260 | - |
| | 8 | Grey Cast Iron | 180-245 | - | 170-320 | - | 160-250 | 140-250 | 140-230 | - | 140-240 | - |
| | 9 | Nodular Cast iron | 160-250 | - | 140-200 | - | 150-210 | 120-210 | 100-200 | - | 120-200 | - |
| N | 10 | Aluminium and Non Ferrous | 30-130 | 100-2000 | - | - | - | - | - | - | - | - |
| S | 11 | Heat Resistant Super Alloys | 200-320 | - | - | - | - | - | - | 30-110 | - | - |
| H | 12 | Hardened Steels | 40-55 HRC | - | - | 70-270 | - | - | - | - | - | - |

(Note 1): Cutting conditions $a_e/D_c=70\%$.

(Note 2): PH5... and PHS... can be used wet or dry. PH7... use only air.

(Note 3):

| Operation | a_e | Vc & fz | a_p (mm) |
|-------------|-------|---------|------------|
| Slotting | 100% | <20% | 2,0-4,0 |
| Shouldering | <50% | >8% | 3,0-6,0 |
| | ≤25% | >12% | 7,0-9,0 |

(Note 4):

It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

| Feed fz (mm/t) | | | | |
|----------------|---------------|---------------|---------------|---------------|
| XPET 10... LP | XPET 10... MP | XPET 10... LN | XPET 10... HF | XPHW 10... MH |
| 0,08-0,20 | 0,10-0,25 | - | 0,40-0,80 | 0,10-0,25 |
| 0,08-0,20 | 0,10-0,20 | - | 0,40-0,80 | 0,10-0,25 |
| 0,08-0,15 | 0,10-0,20 | - | 0,40-0,60 | 0,10-0,25 |
| 0,08-0,20 | 0,10-0,20 | - | 0,40-0,70 | - |
| 0,08-0,20 | 0,10-0,20 | - | 0,40-0,70 | - |
| 0,08-0,15 | 0,10-0,20 | - | 0,40-0,60 | - |
| 0,08-0,20 | 0,10-0,25 | - | 0,50-0,80 | - |
| 0,08-0,20 | 0,10-0,25 | - | 0,50-0,80 | - |
| 0,08-0,20 | 0,10-0,20 | - | 0,50-0,60 | - |
| - | - | 0,07-0,25 | - | - |
| 0,05-0,07 | - | - | 0,40-0,60 | - |
| - | - | - | - | 0,08-0,15 |

A

MILLING

Overview

Face milling

Hifeed milling

Shoulder milling

Profile milling

Hardmill

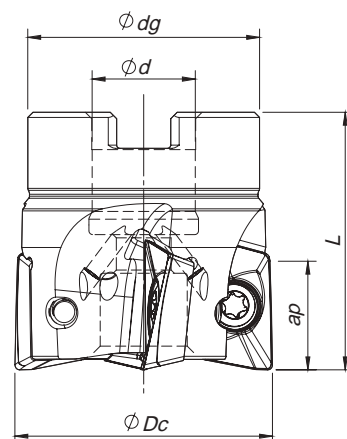
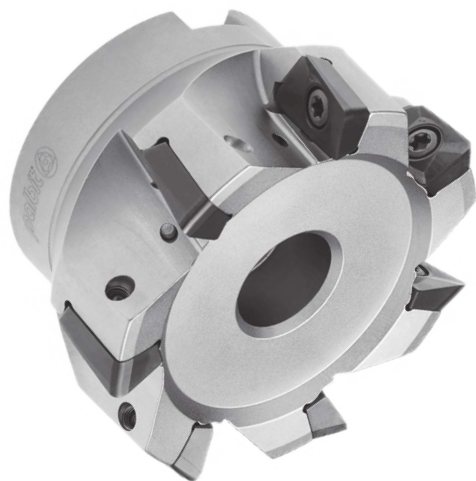
Center & Chamfer

Spot face

Spare Parts

Technical Data

End Mills



Arbor Mounting

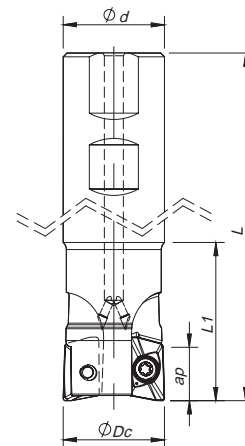
$K_r=90^\circ$ | $\gamma_p=+7^\circ \sim +8^\circ$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|----------|-----------|----|------|----------------|-------------|-------------------------------|-------|
| | | | ϕDc | ϕd | ϕdg | L | | Arbor Type | Ap max (mm) | | |
| 181090900 | 040A20290-04-07-016040 | 4 | 40 | 16 | 32 | 40 | 0,18 | A | 17,0 | XPET 1706... | |
| 181091000 | 050A20290-05-08-022040 | 5 | 50 | 22 | 42 | 40 | 0,29 | A | 17,0 | XPET 1706... | |
| 181091100 | 063A20290-06-08-027040* | 6 | 63 | 27 | 52 | 40 | 0,53 | A | 17,0 | XPET 1706... | |
| 181091200 | 080A20290-07-08-027050 | 7 | 80 | 27 | 60 | 50 | 0,92 | A | 17,0 | XPET 1706... | |
| 181091300 | 100A20290-08-08-032050 | 8 | 100 | 32 | 80 | 50 | 1,68 | A | 17,0 | XPET 1706... | |
| 181091400 | 125A20290-09-08-040063 | 9 | 125 | 40 | 90 | 63 | 3,01 | A | 17,0 | XPET 1706... | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

* For shank assembly a DIN 6920 screw is needed.



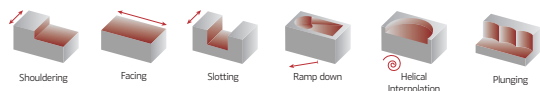
Weldon Shank

$K_r=90^\circ$ | $\gamma_p=+6^\circ \sim +7^\circ$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|----------|-----|----|------|----------------|--------------|-------------------------------|-------|
| | | | ϕDc | ϕd | L | L1 | | Ap max (mm) | | | |
| 181090500 | 032W20290-02-06-032110 | 2 | 32 | 32 | 110 | 50 | 0,56 | 17,0 | XPET 1706... | | |
| 181090600 | 032W20290-02-06-032200 | 2 | 32 | 32 | 200 | 60 | 1,10 | 17,0 | XPET 1706... | | |
| 181090700 | 040W20290-03-07-032115 | 3 | 40 | 32 | 115 | 50 | 0,67 | 17,0 | XPET 1706... | | |
| 181090800 | 040W20290-03-07-032200 | 3 | 40 | 32 | 200 | 60 | 1,19 | 17,0 | XPET 1706... | | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)



XPET 1706... | Inserts | Pastilhas | Plaquetas

XPET-LP



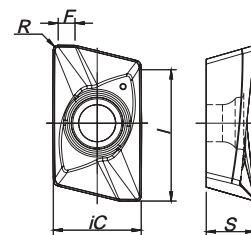
XPET-MP



XPET-LN



XPET-LP | MP | LN | LS



XPET-LS (PHH grade) **NEW**

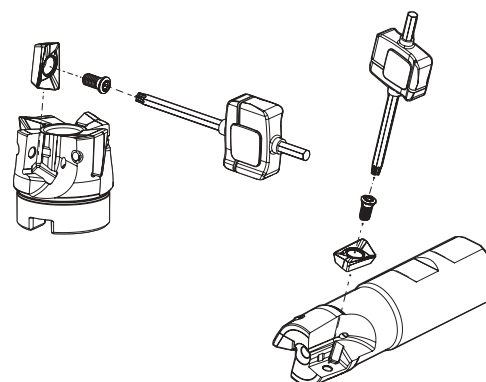


| (1) Geometry code | (2) Grade code | P | | M | | K | | | | N | | S | | Dimensions Dimensões Dimensiones (mm) | | | | | |
|--------------------|---------------------|-----|-----|----|----|-----|----|-----|----|-----|----|-----|-----|---|------|-------|------|------|---|
| | | CVD | PVD | | | PVD | | CVD | | PVD | | UNC | PVD | | iC | S | I | R | F |
| | | T9 | T1 | G6 | X9 | G6 | L5 | L9 | T1 | G6 | 10 | X9 | G6 | | | | | | |
| 1111986 | XPET 170608 PDER-LP | | ⊗ | ⊗ | | ⊗ | | | ⊗ | ⊗ | | | ⊗ | 11,30 | 6,35 | 17,50 | 0,80 | 1,80 | |
| 1111987 | XPET 170616 PDER-LP | | ⊗ | ⊗ | | ⊗ | | | ⊗ | ⊗ | | | ⊗ | 11,30 | 6,35 | 17,50 | 1,60 | 1,20 | |
| 1111988 | XPET 170608 PDSR-MP | ⊗ | ⊗ | ⊗ | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | 11,30 | 6,35 | 17,50 | 0,80 | 1,80 | |
| 1111989 | XPET 170616 PDSR-MP | | ⊗ | ⊗ | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | 11,30 | 6,35 | 17,50 | 1,60 | 1,00 | |
| 1111990 | XPET 170608 PDFR-LN | | | | | | | | | | ⊗ | | | 11,30 | 6,35 | 17,50 | 0,80 | 1,20 | |
| 1111991 | XPET 170620 PDFR-LN | | | | | | | | | | ⊗ | | | 11,30 | 6,35 | 17,50 | 2,00 | 1,00 | |
| 1111992 | XPET 170632 PDFR-LN | | | | | | | | | | ⊗ | | | 11,30 | 6,35 | 17,50 | 3,20 | 0,80 | |
| NEW 1112223 | XPET 170608 PDER-LS | | | | ⊗ | ⊗ | | | | | | ⊗ | ⊗ | 11,3 | 6,35 | 17,5 | 0,8 | 1,8 | |

⊗ First choice | Primeira opção | 1ª opción ⊗ Stock item | Produto de stock | Itens de stock ○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9) Insert order code = (1) Geometry Code + (2) Grade Code

SPARE PARTS | Complementos | Repuestos

| Cutter ØDc | Order separately | | | | |
|----------------|------------------|------------|-----------------|--------------|-----------------|
| | Insert Screw | Key (Torx) | Key (Torx - Nm) | Torque Value | Retaining Screw |
| W20290 - 32-40 | P0451001 | XT20 | DT2050 | 5 | - |
| A20290 - 40-80 | P0451001 | XT20 | DT2050 | 5 | - |
| A20290 - 100 | P0451001 | PT20 | DT2050 | 5 | D1603500 |
| A20290 - 125 | P0451001 | PT20 | DT2050 | 5 | D2004000 |



Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241. Check the procedures for the clamping screws on the page A-241.

LINEPRO 20290

A

GRADES SELECTION GUIDE | Guia para selecção de graus | Tabla para selección de calidades

MILLING

Overview

Face milling

Hifeed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

Spot face

Spare Parts

Technical Data

End Mills

| ISO | PSM | Material | HB (Brinell) | Grades | | | | | | | |
|-----|-----|-----------------------------------|--------------|-------------------|--------|--------|--------|-------------|--------|--------|--------|
| | | | | ← Wear Resistance | | | | Toughness → | | | |
| | | | | PH0910 | PH5705 | PHP920 | PHP930 | PHH930 | PH5740 | PHS740 | PH7740 |
| P | 1 | Unalloyed Steel | 125-220 | ● | ● | ● | ● | ● | ● | ● | ● |
| | 2 | Low-Alloyed Steel | 220-280 | | | ● | ● | | | ● | ● |
| | 3 | High-Alloyed Steel | 280-380 | | | ● | ● | | | ● | ● |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | | | | | ● | | | ● |
| | 5 | SS - Austenitic | 200-330 | | | | | ● | | | ● |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | | | | | ● | | | ● |
| K | 7 | Malleable Cast Iron | 130-230 | | ● | ● | ● | | ● | | ● |
| | 8 | Grey Cast Iron | 180-245 | | ● | ● | ● | | ● | | ● |
| | 9 | Nodular Cast iron | 160-250 | | ● | ● | ● | | ● | | ● |
| N | 10 | Aluminium and Non Ferrous | 30-130 | ● | | | | | | | |
| S | 11 | Heat Resistant Super Alloys | 200-320 | | | | | ● | | | ● |

● Good Conditions

● Average Conditions

● Difficult Conditions

CHIP-BREAKER SELECTION GUIDE | Guia para aplicações do quebra-apanas | Guía para aplicación del rompevirutas

| ISO | PSM | Material | HB (Brinell) | Chip-Breaker Application | |
|-----|--------------------|-----------------------------------|---------------|--------------------------|----------------------|
| | | | | 1st choice | Difficult Operations |
| | | | | P | 1 |
| 2 | Low-Alloyed Steel | 220-280 | XPET 17... LP | | XPET 17... MP |
| 3 | High-Alloyed Steel | 280-380 | XPET 17... MP | | - |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | XPET 17... LS | XPET 17... LP |
| | 5 | SS - Austenitic | 200-330 | XPET 17... LS | XPET 17... LP |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | XPET 17... LS | XPET 17... LP |
| K | 7 | Malleable Cast Iron | 130-230 | XPET 17... LP | XPET 17... MP |
| | 8 | Grey Cast Iron | 180-245 | XPET 17... MP | - |
| | 9 | Nodular Cast iron | 160-250 | XPET 17... MP | - |
| N | 10 | Aluminium and Non Ferrous | 30-130 | XPET 17... LN | - |
| S | 11 | Heat Resistant Super Alloys | 200-320 | XPET 17... LS | XPET 17... LP |

RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | | | |
|-----|-----|-----------------------------------|--------------|-------------------|---------|---------|---------|---------|
| | | | | ← Wear Resistance | | | | |
| | | | | PH0910 | PH5705 | PHP920 | PHP930 | PHH930 |
| P | 1 | Unalloyed Steel | 125-220 | - | - | 180-250 | 160-230 | - |
| | 2 | Low-Alloyed Steel | 220-280 | - | - | 160-230 | 140-210 | - |
| | 3 | High-Alloyed Steel | 280-380 | - | - | 140-220 | 120-200 | - |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | - | - | - | - | 140-210 |
| | 5 | SS - Austenitic | 200-330 | - | - | - | - | 120-170 |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | - | - | - | - | 100-150 |
| K | 7 | Malleable Cast Iron | 130-230 | - | 160-290 | 160-270 | - | - |
| | 8 | Grey Cast Iron | 180-245 | - | 170-320 | 140-250 | - | - |
| | 9 | Nodular Cast iron | 160-250 | - | 140-200 | 120-210 | - | - |
| N | 10 | Aluminium and Non Ferrous | 30-130 | 100-2000 | - | - | - | - |
| S | 11 | Heat Resistant Super Alloys | 200-320 | - | - | - | - | 30-110 |

(Note 1) Cutting conditions ae/DC=70%

(Note 2) Cutting conditions should be adjusted according to the machine and work rigidity.

(Note 3):

| Operation | ae | Vc & fz | ap (mm) |
|-------------|------|---------|-----------|
| Slotting | 100% | <20% | 2,0-6,0 |
| Shouldering | <50% | >8% | 7,0-13,0 |
| | ≤25% | >12% | 13,0-16,0 |

(Note 4) It's possible to occur vibrations in certain cases.

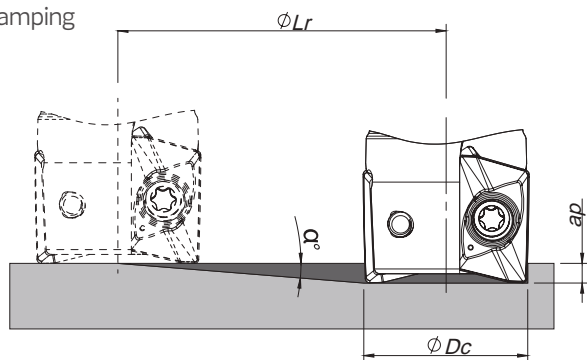
Please reduce depth of cut and / or reduce cutting conditions in following cases:

- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

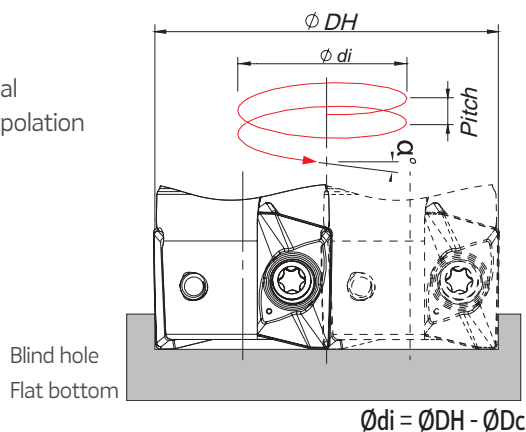
RAMPING AND HELICAL INTERPOLATION

Descida em rampa e interpolação helicoidal | Bajada en rampa e interpolación circular

Ramping



Helical Interpolation



| ØDc | Ramping | | | Helical Interpolation | | |
|-----|-------------|--------|--------|---|------------|----------------|
| | Max Ramp α° | Max ap | Min Lr | Diameter for Blind Hole, Flat Bottom Face (1) | | Max Pitch/Rev. |
| | | | | ØDHmin | ØDHmax | |
| 32 | 3,8 | 17,0 | 255,9 | 58,8 - | - 62,4 | 5,6 6,3 |
| 40 | 2,7 | 17,0 | 360,5 | 74,8 - | - 78,4 | 5,2 5,7 |
| 50 | 2,0 | 17,0 | 486,8 | 94,8 - | - 98,4 | 4,9 5,3 |
| 63 | 1,5 | 17,0 | 649,2 | 120,8 - | - 124,4 | 4,8 5,0 |
| 80 | 1,0 | 17,0 | 973,9 | 154,8 - | - 158,4 | 4,1 4,3 |
| 100 | 0,8 | 17,0 | 1217,5 | 194,8 - | - 198,4 | 4,2 4,3 |
| 125 | 0,7 | 17,0 | 1498,4 | 244,8 - | - 248,4 | 4,3 4,4 |

(1) using LP insert with radius 0,8 mm

Note: During helical interpolation do not exceed maximum pitch

When using HF insert or other different insert radius to calculate the ØDHmin and ØDHmax use the equation below:

- Minimum Diameter: $\text{ØDHmin} = 2 \times (\text{ØDc} - (\text{R corner radius} + \text{F width of edge wiper}))$
- Maximum Diameter: $\text{ØDHmax} = 2 \times (\text{ØDc} - \text{R corner radius})$

| Vc (m/min) | | | Feed fz (mm/t) | | | |
|-------------|---------|---------|----------------|---------------|---------------|---------------|
| Toughness → | | | | | | |
| PH5740 | PHS740 | PH7740 | XPET 17... LP | XPET 17... MP | XPET 17... LN | XPET 17... LS |
| - | 140-220 | 140-200 | 0,10-0,35 | 0,10-0,35 | - | - |
| - | 120-200 | 130-180 | 0,10-0,35 | 0,10-0,35 | - | - |
| - | 100-190 | 100-170 | 0,10-0,30 | 0,10-0,30 | - | - |
| - | - | 130-180 | 0,10-0,30 | - | - | 0,10-0,35 |
| - | - | 110-160 | 0,10-0,30 | - | - | 0,10-0,30 |
| - | - | 90-150 | 0,10-0,25 | - | - | 0,10-0,25 |
| 160-260 | - | 140-220 | 0,10-0,35 | 0,10-0,35 | - | - |
| 140-240 | - | 120-210 | 0,10-0,35 | 0,10-0,35 | - | - |
| 120-200 | - | 100-190 | 0,10-0,30 | 0,10-0,30 | - | - |
| - | - | - | - | - | 0,10-0,35 | - |
| - | - | 30-100 | 0,10-0,20 | - | - | 0,10-0,20 |

A

MILLING

Overview

Face milling

Hifeed milling

Shoulder milling

Profile milling

Hardmill

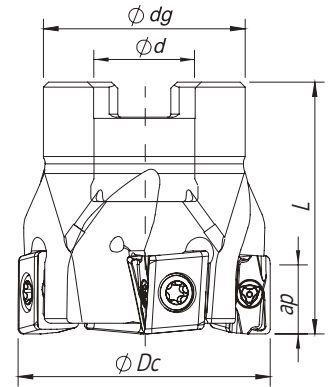
Center & Chamfer

Spot face

Spare Parts

Technical Data

End Mills



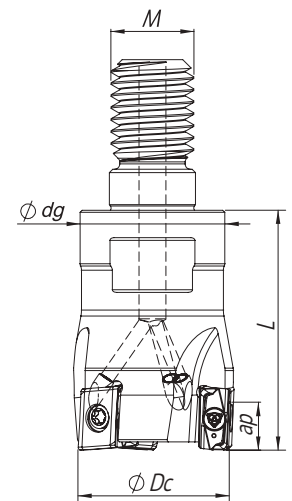
Arbor Mounting

$K_r=90^\circ$ | $\gamma_p=-4^\circ$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert | Stock |
|----------------------|---------------------------------------|----|---|----------|-----------|----|------|----------------|------------|--------------|-------|
| | | | ϕDc | ϕd | ϕDg | L | | Ap max (mm) | Arbor Type | | |
| 181144400 | 040A90090-04-04-016040 | 4 | 40 | 16 | 36 | 40 | 0,24 | 7,0 | A | LNXT 0904... | |
| 181144500 | 050A90090-05-04-022040 | 5 | 50 | 22 | 40 | 40 | 0,32 | 7,0 | A | LNXT 0904... | |
| 181144600 | 063A90090-07-04-022040 | 7 | 63 | 22 | 48 | 40 | 0,54 | 7,0 | A | LNXT 0904... | |
| 181146600 | 063A90090-10-04-022040 | 10 | 63 | 22 | 48 | 40 | 0,54 | 7,0 | A | LNXT 0904... | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)



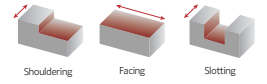
Threaded Coupling

$K_r=90^\circ$ | $\gamma_p=-4^\circ$

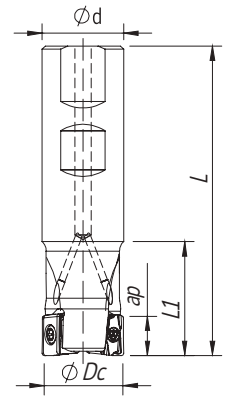
| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert | Stock |
|----------------------|---------------------------------------|---|---|----------|-----------|----|------|----------------|--------------|--------|-------|
| | | | ϕDc | ϕM | ϕdg | L | | Ap max (mm) | Arbor Type | | |
| 181144200 | 025R90090-03-04-M12035 | 3 | 25 | 12 | 21 | 35 | 0,10 | 7,0 | LNXT 0904... | | |
| 181144300 | 032R90090-04-04-M16040 | 4 | 32 | 16 | 29 | 40 | 0,21 | 7,0 | LNXT 0904... | | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)



Weldon Shank
 $K_r = 90^\circ$ | $\gamma_p = -4^\circ \sim -6^\circ$



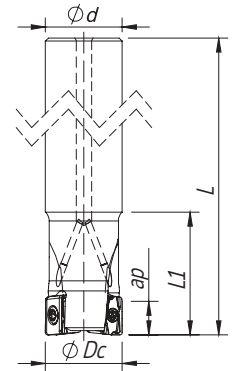
| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | Insert | Stock |
|----------------------|---------------------------------------|---|---|-----------------|-----|----|------|----------------|--------------|-------|
| | | | $\varnothing Dc$ | $\varnothing d$ | L | L1 | | A_p max (mm) | | |
| 181109400 | 016W90090-02-06-016090 | 2 | 16 | 16 | 90 | 25 | 0,12 | 7,0 | LNXT 0904... | |
| 181109500 | 025W90090-03-04-025095 | 3 | 25 | 25 | 95 | 30 | 0,31 | 7,0 | LNXT 0904... | |
| 181144100 | 032W90090-04-04-032110 | 4 | 32 | 32 | 110 | 30 | 0,61 | 7,0 | LNXT 0904... | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)



Cylindrical Shank
 $K_r = 90^\circ$ | $\gamma_p = -4^\circ$



| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | Insert | Stock |
|----------------------|---------------------------------------|---|---|-----------------|-----|----|------|----------------|--------------|-------|
| | | | $\varnothing Dc$ | $\varnothing d$ | L | L1 | | A_p max (mm) | | |
| NEW 181158800 | 020E90090-02-04-020150 | 2 | 20 | 20 | 150 | 30 | 0,15 | 7,0 | LNXT 0904... | |
| 181148100 | 025E90090-03-04-025200 | 3 | 25 | 25 | 200 | 30 | 0,31 | 7,0 | LNXT 0904... | |
| 181148200 | 032E90090-04-04-032250 | 4 | 32 | 32 | 250 | 30 | 0,78 | 7,0 | LNXT 0904... | |

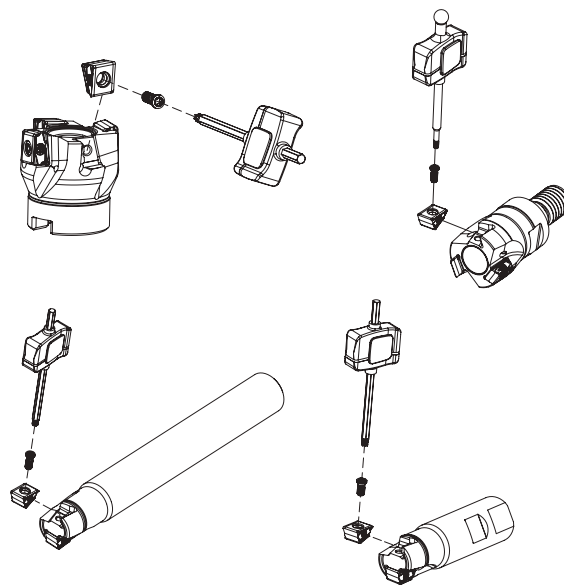
Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

SPARE PARTS | Complementos | Repuestos

| Cutter ØDc | Insert Screw | Key (Torx) | Order separately | |
|----------------|--------------|------------|--------------------|--------------|
| | | | Key (Torx - Nm) | Torque Value |
| E90090 - 25-32 | P0250700 | XT07 | DT0709 | 1,2 |
| W90090 - 16-32 | P0250700 | XT07 | DT0709 | 1,2 |
| A90090 - 40-63 | P0250700 | XT07 | DT0709 | 1,2 |
| R90090 - 25-32 | P0250700 | XT07 | DT0709 | 1,2 |

Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241. Check the procedures for the clamping screws on the page A-241.



LNXT 0904... | Inserts | Pastilhas | Plaquetas

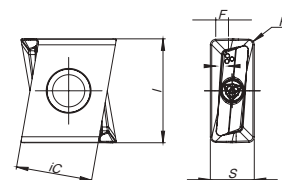
LNXT-MP

LNXT-LS
(PHH grade)

NEW



LNXT-MP | LS



| Geometry code | ISO Reference | P | | | M | K | | S | Dimensions Dimensões Dimensiones (mm) | | | | | |
|---------------|---------------------|-----|-----|----|-----|-----|-----|-----|--|-----|-----|-----|-----|---|
| | | CVD | PVD | | PVD | CVD | PVD | PVD | iC | S | I | R | F | |
| (1) | (2) Grade code | T9 | T1 | G6 | X9 | L6 | T1 | G6 | X9 | | | | | |
| 1112225 | LNXT 090404 PNER-MP | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 9,4 | 4,5 | 9,0 | 0,4 | - |
| 1112226 | LNXT 090408 PNER-MP | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 9,4 | 4,5 | 9,0 | 0,8 | - |
| NEW 1112868 | LNXT 090404 PNER-LS | | | | ⊗ | | | | ⊗ | 9,4 | 4,5 | 9,0 | 0,8 | - |

⊗ First choice | Primeira opção | 1ª opción ⊗ Stock item | Produto de stock | Itens de stock ○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9) Insert order code = (1) Geometry Code + (2) Grade Code

GRADES SELECTION GUIDE | Guia para selecção de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | | | | |
|-----|-----|-----------------------------------|--------------|-------------------|--------|--------|-------------|--------|
| | | | | ← Wear Resistance | | | Toughness → | |
| | | | | PH5320 | PHP920 | PHH930 | PHS740 | PH7740 |
| P | 1 | Unalloyed Steel | 125-220 | ● | ● | ● | ● | ● |
| | 2 | Low-Alloyed Steel | 220-280 | | ● | | ● | ● |
| | 3 | High-Alloyed Steel | 280-380 | | ● | | ● | ● |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | | | ● | | |
| | 5 | SS - Austenitic | 200-330 | | | ● | | |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | | | ● | | |
| K | 7 | Malleable Cast Iron | 130-230 | ● | ● | | | ● |
| | 8 | Grey Cast Iron | 180-245 | ● | ● | | | ● |
| | 9 | Nodular Cast iron | 160-250 | ● | ● | | | ● |
| S | 11 | Heat Resistant Super Alloys | 200-320 | | | ● | | |



Good Conditions



Average Conditions



Difficult Conditions

RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | | | | Feed fz (mm/t) | |
|-----|-----|-----------------------------------|--------------|-------------------|---------|---------|-------------|---------|----------------|---------------|
| | | | | ← Wear Resistance | | | Toughness → | | LNXT 09... MP | LNXT 09... LS |
| | | | | PH5320 | PHP920 | PHH930 | PHS740 | PH7740 | | |
| P | 1 | Unalloyed Steel | 125-220 | - | 180-250 | - | 140-220 | 140-200 | 0,08-0,25 | - |
| | 2 | Low-Alloyed Steel | 220-280 | - | 160-230 | - | 120-200 | 130-180 | 0,08-0,25 | - |
| | 3 | High-Alloyed Steel | 280-380 | - | 140-220 | - | 100-190 | 100-170 | 0,08-0,15 | - |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | - | - | 140-210 | - | - | 0,08-0,25 | 0,08-0,25 |
| | 5 | SS - Austenitic | 200-330 | - | - | 120-170 | - | - | 0,08-0,20 | 0,08-0,20 |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | - | - | 100-150 | - | - | 0,08-0,15 | 0,08-0,20 |
| K | 7 | Malleable Cast Iron | 130-230 | 150-280 | 160-270 | - | - | 140-220 | 0,08-0,30 | - |
| | 8 | Grey Cast Iron | 180-245 | 160-320 | 140-250 | - | - | 120-210 | 0,08-0,25 | - |
| | 9 | Nodular Cast iron | 160-250 | 100-190 | 120-210 | - | - | 100-190 | 0,08-0,20 | - |
| S | 11 | Heat Resistant Super Alloys | 200-320 | - | - | 30-110 | - | - | - | - |

(Note 1) Cutting conditions $a_e/D_c=70\%$.

(Note 2) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

A

MILLING

Overview

Face milling

Hi-feed milling

Shoulder milling

Profile milling

Hardmill

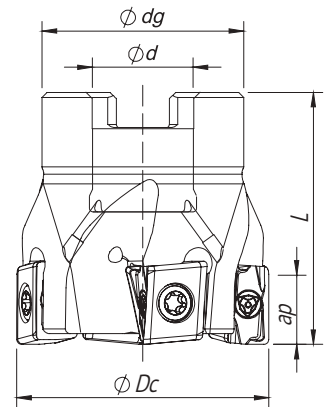
Center & Chamfer

Spot face

Spare Parts

Technical Data

End Mills

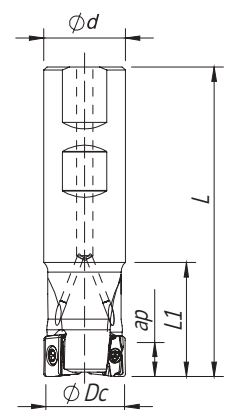


Arbor Mounting
 $K_r=90^\circ$ | $\gamma_p=-4^\circ$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert | Stock |
|----------------------|---------------------------------------|----|---|----------|-----------|----|------|----------------|------------|--------------|-------|
| | | | ϕDc | ϕd | ϕdg | L | | Ap max (mm) | Arbor Type | | |
| 181118800 | 040A90190-04-04-016040 | 4 | 40 | 16 | 32 | 40 | 0,17 | 11 | A | LNXT 1306... | |
| 181118900 | 040A90190-05-04-016040 | 5 | 40 | 16 | 32 | 40 | 0,18 | 11 | A | LNXT 1306... | |
| 181111200 | 050A90190-05-04-022040 | 5 | 50 | 22 | 42 | 40 | 0,27 | 11 | A | LNXT 1306... | |
| 181111300 | 050A90190-06-04-022040 | 6 | 50 | 22 | 42 | 40 | 0,28 | 11 | A | LNXT 1306... | |
| 181119000 | 063A90190-06-04-022040 | 6 | 63 | 22 | 52 | 40 | 0,52 | 11 | A | LNXT 1306... | |
| 181119100 | 063A90190-08-04-022040 | 8 | 63 | 22 | 52 | 40 | 0,52 | 11 | A | LNXT 1306... | |
| 181119200 | 080A90190-07-04-027050 | 7 | 80 | 27 | 60 | 50 | 0,88 | 11 | B | LNXT 1306... | |
| 181119300 | 080A90190-10-04-027050 | 10 | 80 | 27 | 60 | 50 | 0,86 | 11 | B | LNXT 1306... | |
| 181119400 | 100A90190-09-04-032050 | 9 | 100 | 32 | 80 | 50 | 1,56 | 11 | B | LNXT 1306... | |
| 181119500 | 100A90190-13-04-032050 | 13 | 100 | 32 | 80 | 50 | 1,56 | 11 | B | LNXT 1306... | |
| 181119600 | 125A90190-11-04-040063 | 11 | 125 | 40 | 90 | 63 | 2,87 | 11 | B | LNXT 1306... | |
| 181119700 | 125A90190-16-04-040063 | 16 | 125 | 40 | 90 | 63 | 2,86 | 11 | B | LNXT 1306... | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

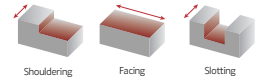


Weldon Shank
 $K_r=90^\circ$ | $\gamma_p=-4^\circ$

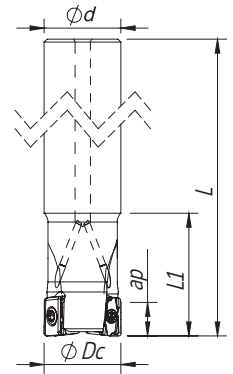
| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert | Stock |
|----------------------|---------------------------------------|---|---|----------|-----|----|------|----------------|--------------|--------|-------|
| | | | ϕDc | ϕd | L | L1 | | Ap max (mm) | Arbor Type | | |
| 181118300 | 025W90190-02-04-025095 | 2 | 25 | 25 | 95 | 45 | 0,29 | 11 | LNXT 1306... | | |
| 181109800 | 032W90190-03-04-032110 | 3 | 32 | 32 | 110 | 50 | 0,55 | 11 | LNXT 1306... | | |
| 181118400 | 040W90190-04-04-032110 | 4 | 40 | 32 | 110 | 50 | 0,60 | 11 | LNXT 1306... | | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)



Cylindrical Shank
 $K_r = 90^\circ$ | $\gamma_p = -4^\circ$



| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications Ap max (mm) | Insert | Stock |
|----------------------|---------------------------------------|---|---|----|-----|----|------|-------------------------------|--------------|-------|
| | | | ØDc | Ød | L | L1 | | | | |
| 181118500 | 025E90190-02-04-025200 | 2 | 25 | 25 | 200 | 40 | 0,66 | 11 | LNXT 1306... | |
| 181118600 | 032E90190-03-04-032250 | 3 | 32 | 32 | 250 | 50 | 1,37 | 11 | LNXT 1306... | |
| 181118700 | 040E90190-04-04-032250 | 4 | 40 | 32 | 250 | 50 | 1,42 | 11 | LNXT 1306... | |

Stock item | Produto de stock | Itens de stock

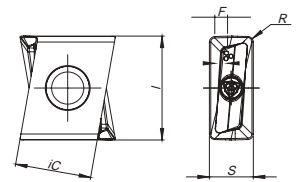
Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

LNXT 1306... | Inserts | Pastilhas | Plaquitas

LNXT-MP



LNXT-MP



| Geometry code | ISO Reference | P | | | M | K | | | Dimensions Dimensões Dimensiones (mm) | | | | |
|----------------|---------------------|--------|--------|--------|--------|--------|--------|--------|---|-----|------|-----|-----|
| | | CVD | PVD | | PVD | CVD | PVD | | | | | | |
| | | T9 | T1 | G6 | G6 | L6 | T1 | G6 | | | | | |
| ⁽¹⁾ | | PH5740 | PHP920 | PH7740 | PH7740 | PH5320 | PHP920 | PH7740 | iC | S | I | R | F |
| 1112242 | LNXT 130604 PNER-MP | | | | | | | | 9,8 | 6,8 | 13,0 | 0,4 | 0,9 |
| 1112243 | LNXT 130608 PNER-MP | | | | | | | | 9,8 | 6,8 | 13,0 | 0,8 | 0,9 |

First choice | Primeira opção | 1ª opción

Stock item | Produto de stock | Itens de stock

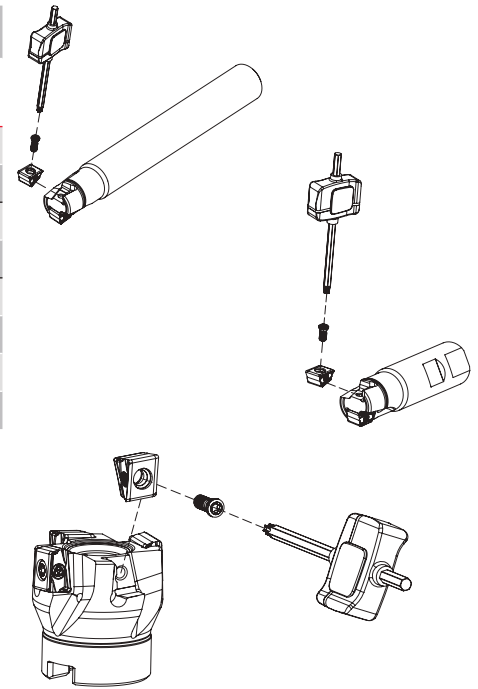
Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

Insert order code = (1) Geometry Code + (2) Grade Code

TGPLUS 90190

SPARE PARTS | Complementos | Repuestos

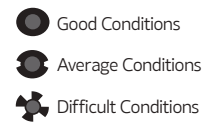
| Cutter ØDc | Insert Screw | Key (Torx) | Order separately | | Order separately | |
|----------------|--------------|------------|------------------|--------------|------------------|-----------------|
| | | | Key (Torx - Nm) | Torque Value | Screw | DIN 6368 Wrench |
| E90190 - 25 | PO400900 | XT15 | DT1530 | 3,0 | - | - |
| E90190 - 32-40 | PO401200 | XT15 | DT1530 | 3,0 | - | - |
| W90190 - 25 | PO400900 | XT15 | DT1530 | 3,0 | - | - |
| W90190 - 32-40 | PO401200 | XT15 | DT1530 | 3,0 | - | - |
| A90190 - 40-63 | PO401200 | XT15 | DT1530 | 3,0 | - | - |
| A90190 - 80 | PO401200 | XT15 | DT1530 | 3,0 | J0123510 | SD6368-12 |
| A90190 - 100 | PO401200 | XT15 | DT1530 | 3,0 | J0164110 | SD6368-16 |
| A90190 -125 | PO401200 | XT15 | DT1530 | 3,0 | J0204610 | SD6368-20 |



Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
Check the procedures for the clamping screws on the page A-241.

GRADES SELECTION GUIDE | Guia para selección de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | | | |
|-----|-----|-----------------------------------|-----------------|-------------------|--------|-------------|--------|
| | | | | ← Wear Resistance | | Toughness → | |
| | | | | PH5320 | PHP920 | PHS740 | PH7740 |
| P | 1 | Unalloyed Steel | 125-220 | | ✓ | ✓ | ✓ |
| | 2 | Low-Alloyed Steel | 220-280 | | ✓ | ✓ | ✓ |
| | 3 | High-Alloyed Steel | 280-380 | | ✓ | ✓ | ✓ |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | | | | ✓ |
| | 5 | SS - Austenitic | 200-330 | | | | ✓ |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | | | | ✓ |
| K | 7 | Malleable Cast Iron | 130-230 | ✓ | ✓ | | ✓ |
| | 8 | Grey Cast Iron | 180-245 | ✓ | ✓ | | ✓ |
| | 9 | Nodular Cast iron | 160-250 | ✓ | ✓ | | ✓ |



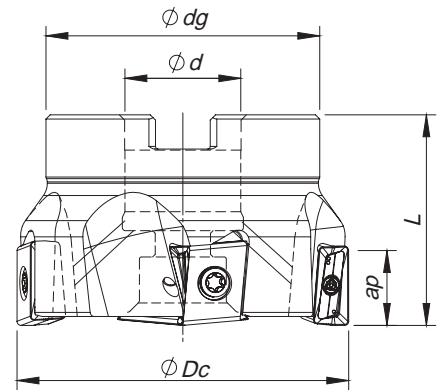
RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | | | Feed fz (mm/t) |
|-----|-----|-----------------------------------|-----------------|-------------------|---------|---------|-------------|----------------|
| | | | | ← Wear Resistance | | | Toughness → | |
| | | | | PH5320 | PHP920 | PHS740 | PH7740 | |
| P | 1 | Unalloyed Steel | 125-220 | - | 180-250 | 140-220 | 140-200 | 0,10-0,35 |
| | 2 | Low-Alloyed Steel | 220-280 | - | 160-230 | 120-200 | 130-180 | 0,10-0,30 |
| | 3 | High-Alloyed Steel | 280-380 | - | 140-220 | 100-190 | 100-170 | 0,10-0,20 |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | - | - | - | - | 0,10-0,30 |
| | 5 | SS - Austenitic | 200-330 | - | - | - | - | 0,10-0,25 |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | - | - | - | - | 0,10-0,20 |
| K | 7 | Malleable Cast Iron | 130-230 | 150-280 | 170-300 | - | 140-220 | 0,10-0,35 |
| | 8 | Grey Cast Iron | 180-245 | 160-320 | 150-250 | - | 120-210 | 0,10-0,30 |
| | 9 | Nodular Cast iron | 160-250 | 100-190 | 90-210 | - | 100-190 | 0,10-0,25 |

(Note 1) Cutting conditions $a_e/D_c=70\%$.

(Note 2) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.



Arbor Mounting
 $K_r=90^\circ$ | $\gamma_p=-5^\circ$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|----|---|----------|-----------|----|-------|----------------|-------------|-------------------------------|-------|
| | | | ϕDc | ϕd | ϕdg | L | | Arbor Type | Ap max (mm) | | |
| 181069200 | 050A90390-05-05-022040 | 5 | 50 | 22 | 42 | 40 | 0,315 | A | 14,0 | LNXT 1506... | |
| 181066400 | 063A90390-05-05-022040 | 5 | 63 | 22 | 52 | 40 | 0,524 | A | 14,0 | LNXT 1506... | |
| 181051000 | 063A90390-08-05-022040 | 8 | 63 | 22 | 52 | 40 | 0,550 | A | 14,0 | LNXT 1506... | |
| 181066500 | 080A90390-07-05-027050 | 7 | 80 | 27 | 60 | 50 | 0,936 | B | 14,0 | LNXT 1506... | |
| 181052000 | 080A90390-10-05-027050 | 10 | 80 | 27 | 60 | 50 | 0,939 | B | 14,0 | LNXT 1506... | |
| 181066600 | 100A90390-08-05-032050 | 8 | 100 | 32 | 80 | 50 | 1,586 | B | 14,0 | LNXT 1506... | |
| 181051100 | 100A90390-12-05-032050 | 12 | 100 | 32 | 80 | 50 | 1,690 | B | 14,0 | LNXT 1506... | |
| 181066700 | 125A90390-09-05-040063 | 9 | 125 | 40 | 90 | 63 | 3,001 | B | 14,0 | LNXT 1506... | |
| 181051200 | 125A90390-15-05-040063 | 15 | 125 | 40 | 90 | 63 | 3,113 | B | 14,0 | LNXT 1506... | |
| 181051300 | 160A90390-10-05-U040063 | 10 | 160 | 40 | 110 | 63 | 4,470 | C | 14,0 | LNXT 1506... | |
| 181066800 | 160A90390-20-05-U040063 | 20 | 160 | 40 | 110 | 63 | 4,580 | C | 14,0 | LNXT 1506... | |

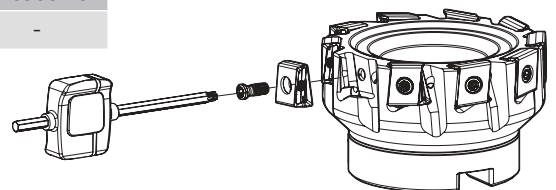
Stock item | Produto de stock | Itens de stock

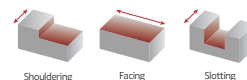
Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

SPARE PARTS | Complementos | Repuestos

| Cutter ϕDc | Insert Screw | Order separately | | | Order separately | |
|---------------------|--------------|------------------|-----------------|--------------|------------------|-----------------|
| | | Key (Torx) | Key (Torx - Nm) | Torque Value | Screw | DIN 6368 Wrench |
| A90390 - 50 - 63 | P0401200 | XT15 | DT1530 | 3,0 | - | - |
| A90390 - 80 | P0401200 | XT15 | DT1530 | 3,0 | J0123510 | SD6368-12 |
| A90390 - 100 | P0401200 | XT15 | DT1530 | 3,0 | J0164110 | SD6368-16 |
| A90390 - 125 | P0401200 | XT15 | DT1530 | 3,0 | J0204610 | SD6368-20 |
| A90390 - 160 | P0401200 | XT15 | DT1530 | 3,0 | - | - |

Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
 Check the procedures for the clamping screws on the page A-241.





LNXT 1506... | Inserts | Pastilhas | Plaquetas

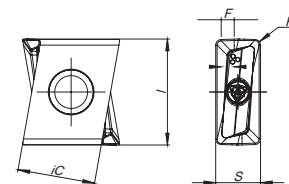
LNXT-HP



LNXT-MP
(PHP grade)



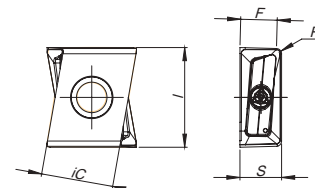
LNXT - MP | HP



LNXT-W



LNXT-W



| | (2) Grade code | P | | | | | K | | | | | | Dimensions Dimensões Dimensiones (mm) | | | | |
|-------------------|---------------------|-----|-----|----|----|----|-----|----|-----|----|----|----|--|------|------|-----|-----|
| | | CVD | PVD | | | | CVD | | PVD | | | | | | | | |
| (1) Geometry code | ISO Reference | T9 | G1 | G4 | T1 | G6 | L5 | L9 | G1 | G4 | T1 | G6 | iC | S | I | R | F |
| 1111313 | LNXT 150608 PNER-MP | ☉ | ☉ | ☉ | ☹ | ☉ | ☉ | ☉ | ☉ | ☉ | ☹ | ☉ | 11,0 | 6,35 | 15,0 | 0,8 | 1,8 |
| 1111590 | LNXT 150612 PNER-MP | | | ☉ | ☹ | ☉ | ☉ | ☉ | | ☉ | ☹ | ☉ | 11,0 | 6,35 | 15,0 | 1,2 | 1,8 |
| 1111591 | LNXT 150608 PNSR-HP | | | ☹ | | ☉ | | | | ☹ | | ☉ | 11,0 | 6,35 | 15,0 | 0,8 | 1,8 |
| 1111524 | LNXT 150608 PNER-W | | ☉ | | | | ☹ | | ☉ | | | | 11,0 | 6,35 | 15,2 | 0,8 | 5,5 |

☉ First choice | Primeira opção | 1ª opción ☉ Stock item | Produto de stock | Itens de stock ○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9) Insert order code = (1) Geometry Code + (2) Grade Code

GRADES SELECTION GUIDE | Guia para selecção de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | | | | | | |
|-----|-----|---------------------|-----------------|-------------------|--------|--------|--------|-------------|--------|--------|
| | | | | ← Wear Resistance | | | | Toughness → | | |
| | | | | PH5705 | PH7910 | PHP920 | PH7920 | PH5740 | PHS740 | PH7740 |
| P | 1 | Unalloyed Steel | 125-220 | ☹ | ☉ | ☉ | ☉ | ☹ | ☉ | ☉ |
| | 2 | Low-Alloyed Steel | 220-280 | ☹ | ☉ | ☉ | ☉ | ☹ | ☉ | ☉ |
| | 3 | High-Alloyed Steel | 280-380 | ☹ | ☉ | ☉ | ☉ | ☹ | ☉ | ☉ |
| K | 7 | Malleable Cast Iron | 130-230 | ☉ | ☉ | ☉ | ☉ | ☉ | | ☉ |
| | 8 | Grey Cast Iron | 180-245 | ☉ | ☉ | ☉ | ☉ | ☉ | | ☉ |
| | 9 | Nodular Cast iron | 160-250 | ☉ | ☉ | ☉ | ☉ | ☉ | | ☉ |

☉ Good Conditions ☹ Average Conditions ☹ Difficult Conditions

RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | | | | | |
|-----|-----|---------------------|--------------|-------------------|---------|---------|---------|---------|-------------|---------|
| | | | | ← Wear Resistance | | | | | Toughness → | |
| | | | | PH5705 | PH7910 | PHP920 | PH7920 | PH5740 | PHS740 | PH7740 |
| P | 1 | Unalloyed Steel | 125-220 | - | 180-250 | 180-250 | 180-240 | - | 140-220 | 140-200 |
| | 2 | Low-Alloyed Steel | 220-280 | - | 160-230 | 160-230 | 160-220 | - | 120-200 | 130-180 |
| | 3 | High-Alloyed Steel | 280-380 | - | 140-220 | 140-220 | 140-210 | - | 100-190 | 100-170 |
| K | 7 | Malleable Cast Iron | 130-230 | 160-290 | 180-300 | 160-270 | 160-260 | 160-260 | - | 140-220 |
| | 8 | Grey Cast Iron | 180-245 | 170-320 | 160-250 | 140-250 | 140-240 | 140-240 | - | 120-210 |
| | 9 | Nodular Cast iron | 160-250 | 140-200 | 150-200 | 120-210 | 120-200 | 120-200 | - | 100-190 |

| ISO | PSM | Material | HB (Brinell) | Feed fz (mm/t) | | |
|-----|--------------------|---------------------|--------------|----------------|---------------|-----------------|
| | | | | LNXT 15... MP | LNXT 15... HP | LNXT 15... W |
| | | | | P | 1 | Unalloyed Steel |
| 2 | Low-Alloyed Steel | 220-280 | 0,10-0,30 | | 0,10-0,30 | 0,10-0,35 |
| 3 | High-Alloyed Steel | 280-380 | 0,10-0,25 | | 0,10-0,25 | 0,10-0,35 |
| K | 7 | Malleable Cast Iron | 130-230 | 0,10-0,40 | 0,10-0,40 | 0,10-0,50 |
| | 8 | Grey Cast Iron | 180-245 | 0,10-0,35 | 0,10-0,35 | 0,10-0,50 |
| | 9 | Nodular Cast iron | 160-250 | 0,10-0,30 | 0,10-0,30 | 0,10-0,50 |

(Note 1) Cutting conditions $a_e/D_c=70\%$.

(Note 2) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

CHIP-BREAKER SELECTION GUIDE | Guia para aplicações do quebra- aparas | Guía para aplicación del rompevirutas

| ISO | PSM | Material | HB (Brinell) | Chip-Breaker Application | |
|-----|-----|---------------------|--------------|--------------------------|----------------------|
| | | | | 1st choice | Difficult Operations |
| P | 1 | Unalloyed Steel | 125-220 | LNXT 15... MP | LNXT 15... HP |
| | 2 | Low-Alloyed Steel | 220-280 | LNXT 15... MP | LNXT 15... HP |
| | 3 | High-Alloyed Steel | 280-380 | LNXT 15... MP | LNXT 15... HP |
| K | 7 | Malleable Cast Iron | 130-230 | LNXT 15... MP | LNXT 15... HP |
| | 8 | Grey Cast Iron | 180-245 | LNXT 15... MP | LNXT 15... HP |
| | 9 | Nodular Cast iron | 160-250 | LNXT 15... MP | LNXT 15... HP |

WIPER INSERTS

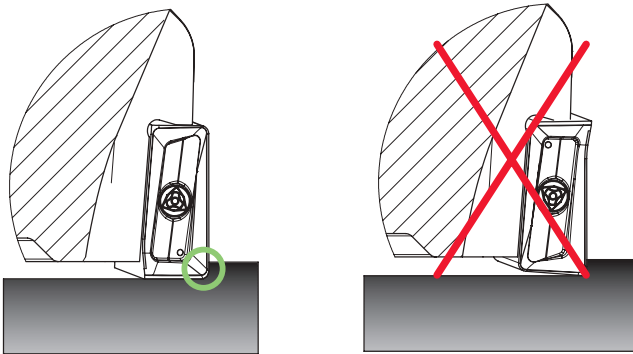
Rec. Cutting Conditions

- F_w at least 40% larger than f_n ($f_n - f_z \times Z$);
- Axial depth of cut is 0,5 - 0,8mm.

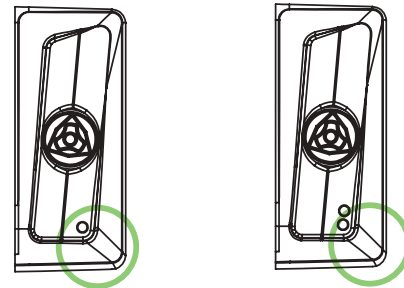
Example:

- The width of the parallel land (F) of the insert is 1,8mm
- With a cutter of 10 inserts and using a feed per tooth (f_z) of 0,3mm, the feed per revolution (f_n) will be 3mm, i.e. 40% bigger than the parallel land.
- To obtain a good surface finish, the feed per revolution should be a maximum of 80% of 1,8mm = 1,44mm.
- The wiper insert will have a parallel land (F_w) with a width of approximately 5,5mm.
- Result: Feed per revolution (f_n) could be increased from 0,8mm to 60% of 5,5mm = 3,3mm.

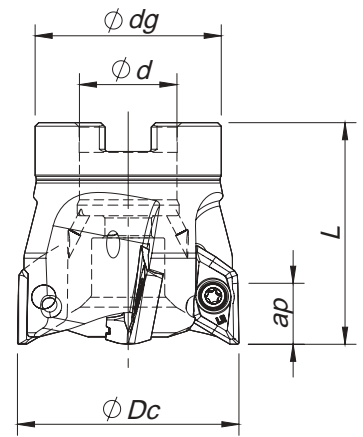
Note: Other limitations, such as machine power, must be taken into consideration.



The points on the insert indicates the side that should be parallel to the workspace material.



Wiper insert with 2 Right-hand cutting edges.
The side work of the insert it's indicated by points.



Arbor Mounting

$K_r=90^\circ$ | $\gamma_p=+11^\circ$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | | Insert radius Raio da pastilha Rayo del Inserto | Stock |
|----------------------|---------------------------------------|---|---|----------|-----------|----|-----|----------------|-------------|---------|---|-------|
| | | | ϕDc | ϕd | ϕdg | L | | Cutter Type | Max ap (mm) | rpm max | | |
| 181094200 | 040A76090-03-11-016050-A | 3 | 40 | 16 | 32 | 50 | 0,3 | A | 14,0 | 29 000 | 0,4-3,2 | |
| 181083400 | 050A76090-04-11-022050-A | 4 | 50 | 22 | 42 | 50 | 0,4 | A | 14,0 | 24 000 | 0,4-3,2 | |
| 181085300 | 063A76090-05-11-022050-A | 5 | 63 | 22 | 48 | 50 | 0,7 | A | 14,0 | 21 000 | 0,4-3,2 | |
| 181094300 | 080A76090-05-11-027050-A | 5 | 80 | 27 | 60 | 50 | 1,1 | A | 14,0 | 19 000 | 0,4-3,2 | |
| 181094400 | 100A76090-06-11-032063-A | 6 | 100 | 32 | 73 | 63 | 2,0 | A | 14,0 | 16 000 | 0,4-3,2 | |
| 181094500 | 040A76090-03-11-016050-B | 3 | 40 | 16 | 32 | 50 | 0,3 | B | 14,0 | 29 000 | 4,0-5,0 | |
| 181094600 | 050A76090-04-11-022050-B | 4 | 50 | 22 | 42 | 50 | 0,4 | B | 14,0 | 24 000 | 4,0-5,0 | |
| 181094700 | 063A76090-05-11-022050-B | 5 | 63 | 22 | 48 | 50 | 0,7 | B | 14,0 | 21 000 | 4,0-5,0 | |
| 181094800 | 080A76090-05-11-027050-B | 5 | 80 | 27 | 60 | 50 | 1,1 | B | 14,0 | 19 000 | 4,0-5,0 | |
| 181094900 | 100A76090-06-11-032063-B | 6 | 100 | 32 | 73 | 63 | 2,0 | B | 14,0 | 16 000 | 4,0-5,0 | |

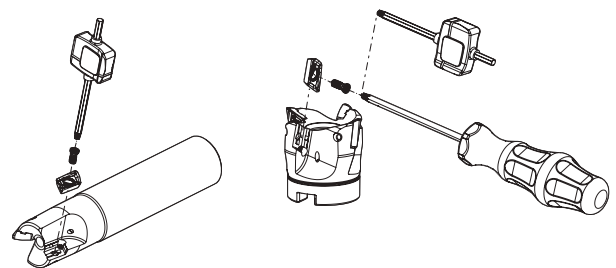
Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

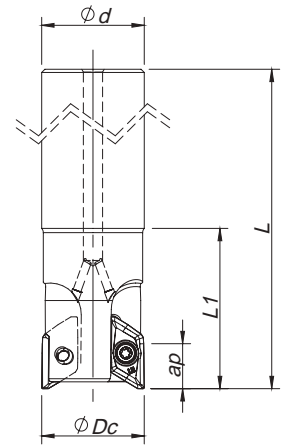
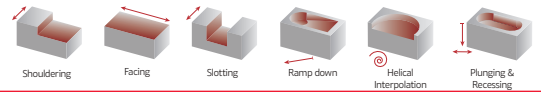
Note: Type A cutters can only assemble inserts with a radius between 0,4 and 3,2. Type B cutters can only assemble inserts with a radius between 4,0 and 5,0.

SPARE PARTS | Complementos | Repuestos

| Cutter ϕDc | Insert Screw | Key (Torx) | Order separately | |
|---------------------|--------------|------------|------------------|--------------|
| | | | Key (Torx - Nm) | Torque Value |
| A76090- 40-80 | P0400900 | XT15 | DT1530 | 3,0 |
| A76090 - 100 | P0400900 | PT15 | DT1530 | 3,0 |
| E76090 - 20-25 | P0400803 | XT15 | DT1530 | 3,0 |
| E76090 - 32-40 | P0400900 | XT15 | DT1530 | 3,0 |



Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241. Check the procedures for the clamping screws on the page A-241.



Cylindrical Shank

$K_r=90^\circ$ | $\gamma_p=+6^\circ \sim +11^\circ$

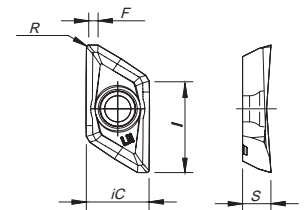
| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | | Insert radius Raio da pastilha Rayo del Inserto | Stock |
|----------------------|---------------------------------------|--|---|----|-----|-----|-----|----------------|-------------|---------|---|-------|
| | | | ØDc | Ød | L | L1 | | Cutter Type | Max ap (mm) | rpm max | | |
| 181095000 | 020E76090-01-06-020150-A | | 20 | 20 | 150 | 60 | 0,2 | A | 15,0 | 40 000 | 0,4~3,2 | |
| 181095100 | 025E76090-02-09-025180-A | | 25 | 25 | 180 | 90 | 0,4 | A | 15,0 | 38 000 | 0,4~3,2 | |
| 181095200 | 032E76090-02-09-032200-A | | 32 | 32 | 200 | 120 | 0,7 | A | 15,0 | 33 000 | 0,4~3,2 | |
| 181095300 | 040E76090-03-11-032250-A | | 40 | 32 | 250 | 65 | 1,4 | A | 15,0 | 29 000 | 0,4~3,2 | |
| 181095400 | 020E76090-01-06-020150-B | | 20 | 20 | 150 | 60 | 0,2 | B | 15,0 | 40 000 | 4,0~5,0 | |
| 181095500 | 025E76090-02-09-025180-B | | 25 | 25 | 180 | 90 | 0,4 | B | 15,0 | 38 000 | 4,0~5,0 | |
| 181095600 | 032E76090-02-09-032200-B | | 32 | 32 | 200 | 120 | 0,7 | B | 15,0 | 33 000 | 4,0~5,0 | |
| 181095700 | 040E76090-03-11-032250-B | | 40 | 32 | 250 | 65 | 1,4 | B | 15,0 | 29 000 | 4,0~5,0 | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

Note: Type A cutters can only assemble inserts with a radius between 0,4 and 3,2. Type B cutters can only assemble inserts with a radius between 4,0 and 5,0.

XDGX 15M5... || Inserts | Pastilhas | Plaquetas



| (1) Geometry code | ISO Reference | N UNC 10 PH0910 | Dimensions Dimensões Dimensiones (mm) | | | | | Cutter Type |
|-------------------|---------------------|--------------------------|---|------|------|------|------|-------------|
| | | | iC | S | I | R | F | |
| 1111624 | XDGX 15M504 PDFR-LN | | 11,20 | 5,00 | 16,0 | 0,40 | 1,50 | A |
| 1111625 | XDGX 15M508 PDFR-LN | | 11,20 | 5,00 | 16,0 | 0,80 | 1,10 | A |
| 1111626 | XDGX 15M512 PDFR-LN | | 11,20 | 5,00 | 16,0 | 1,20 | 0,70 | A |
| 1111627 | XDGX 15M516 PDFR-LN | | 11,20 | 5,00 | 16,0 | 1,60 | 0,40 | A |
| 1111628 | XDGX 15M520 PDFR-LN | | 11,20 | 5,00 | 16,0 | 2,00 | 0,20 | A |
| 1112154 | XDGX 15M530 PDFR-LN | | 11,20 | 5,00 | 16,0 | 3,00 | 0,60 | A |
| 1111629 | XDGX 15M532 PDFR-LN | | 11,20 | 5,00 | 16,0 | 3,20 | 0,60 | A |
| 1111630 | XDGX 15M540 PDFR-LN | | 11,20 | 5,00 | 16,0 | 4,00 | 0,50 | B |
| 1111631 | XDGX 15M550 PDFR-LN | | 11,20 | 5,00 | 16,0 | 5,00 | 0,40 | B |

First choice | Primeira opção | 1ª opción

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

Insert order code = (1) Geometry Code + (2) Grade Code

ALUPRO 76090

RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| SHOULDERING | | | | | | | |
|-------------|-----|---------------------------|--------------|------------|----------------------|----------------------|---------------|
| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | Width of Cut ae (mm) | Depth of Cut ap (mm) | Feed fz(mm/t) |
| | | | | PH0910 | | | |
| N | 10 | Aluminium and Non Ferrous | 30-130 | 350-3000 | ≤ 25% ØDc | ≤5.0 | 0,35 - 0,40 |
| | | | | | | 5.0 - 10.0 | 0,30 - 0,35 |
| | | | | | | 10.0 - 15.0 | 0,25 - 0,30 |
| | | | | | < 50% ØDc | ≤5.0 | 0,35 - 0,40 |
| | | | | | | 5.0 - 10.0 | 0,30 - 0,35 |
| | | | | | | 10.0 - 15.0 | 0,25 - 0,30 |
| | | | | | ≤ 75% ØDc | ≤5.0 | 0,30 - 0,35 |
| | | | | | | 5.0 - 10.0 | 0,25 - 0,30 |
| | | | | | | 10.0 - 15.0 | 0,20 - 0,25 |

| SLOTING | | | | | | | |
|---------|-----|---------------------------|--------------|------------|----------------------|----------------------|---------------|
| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | Width of Cut ae (mm) | Depth of Cut ap (mm) | Feed fz(mm/t) |
| | | | | PH0910 | | | |
| N | 10 | Aluminium and Non Ferrous | 30-130 | 350-3000 | 100% ØDc | ≤5.0 | 0,25 - 0,35 |
| | | | | | | 5.0 - 10.0 | 0,20 - 0,30 |
| | | | | | | 10.0 - 15.0 | 0,15 - 0,25 |

(Note 1) Cutting conditions $a_e/D_c=70\%$.

(Note 2) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

(Note 3) Use internal coolant supply

OPERATIONAL GUIDE | Guia operacional | Guía operativa

- The maximum allowable revolutions are shown in Table 1. Ensure that the cutter operates under the maximum allowable revolutions. The maximum allowable revolutions for safety purposes are determined in accordance with ISO 15641 (Milling Cutters for high speed machining-Safety requirements).

Table 1 - Maximum allowable revolutions:

| ØDc | Ø20 | Ø25 | Ø32 | Ø40 | Ø50 | Ø63 | Ø80 | Ø100 |
|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| RPM (min ⁻¹) | 40000 | 38000 | 33000 | 29000 | 24000 | 21000 | 19000 | 16000 |

- Even when operating under the maximum allowable spindle speed, if the spindle speed is equal or higher than the values shown in Table 2., it is recommended that the balance quality (with the arbor or chuck) according ISO 1940.

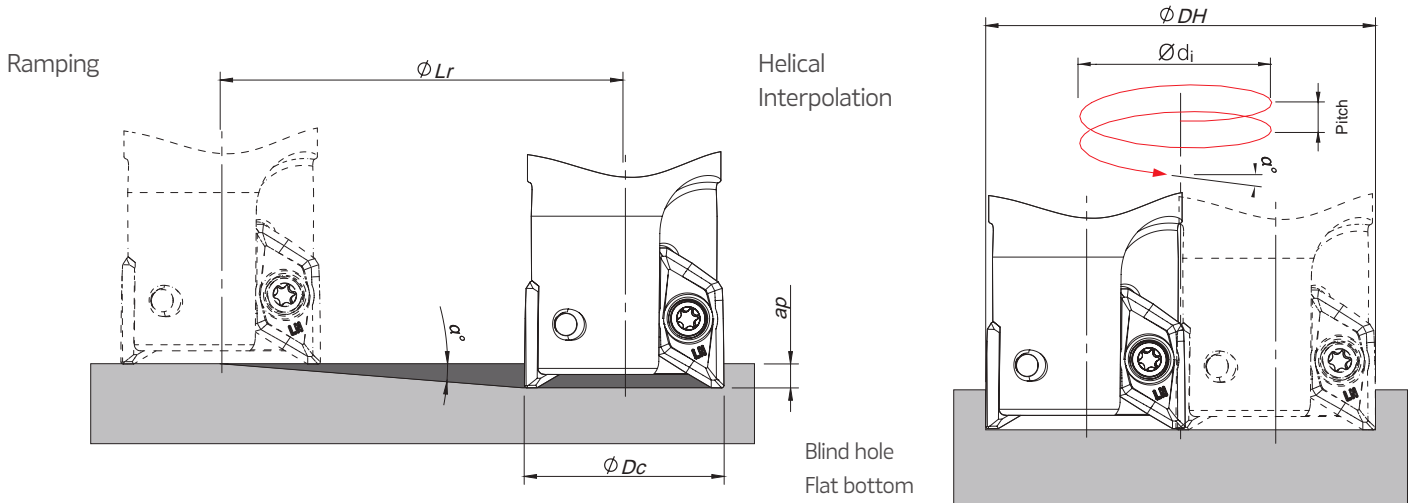
Table 2 - Maximum revolutions when balancing with the arbor or chuck has not been achieved:

| ØDc | Ø20 | Ø25 | Ø32 | Ø40 | Ø50 | Ø63 | Ø80 | Ø100 |
|--------------------------|-------|-------|------|------|------|------|------|------|
| RPM (min ⁻¹) | 15000 | 12000 | 9500 | 8500 | 7600 | 6800 | 6000 | 5400 |

- When setting the spindle speed, take into consideration the maximum allowable revolutions of arbor or chuck.
- Use the specified set bolt when using the arbor type with internal coolant supply.

RAMPING AND HELICAL INTERPOLATION

Descida em rampa e interpolação helicoidal | Bajada en rampa e interpolación circular

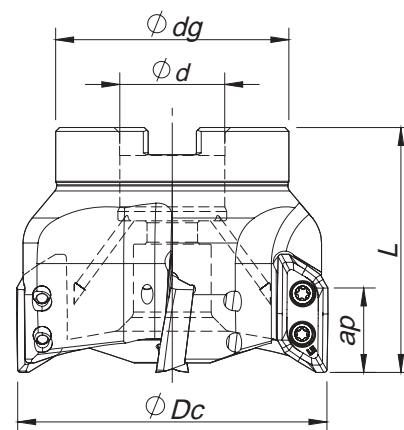


$$\phi d_i = \phi DH - \phi D_c$$

| Cutter Type | ϕD_c | Ramping | | | Helical Interpolation | | |
|-------------|------------|--------------------|-----------|-----------|---|-----------------|----------------|
| | | Max Ramp a° | Max a_p | Min L_r | Diameter for Blind Hole, Flat Bottom Face (1) | | Max Pitch/Rev. |
| | | | | | ϕDH_{min} | ϕDH_{max} | |
| A | 20 | 23 | 15,0 | 35,3 | 36,2 | - | 21,6 |
| | 25 | 21 | 15,0 | 39,1 | 46,2 | - | 24,5 |
| | 32 | 15 | 15,0 | 56,0 | 60,2 | - | 25,6 |
| | 40 | 10 | 15,0 | 85,1 | 76,2 | - | 23,7 |
| | 50 | 8 | 15,0 | 106,7 | 96,2 | - | 25,6 |
| | 63 | 6 | 15,0 | 142,7 | 122,2 | - | 20,0 |
| | 80 | 4 | 15,0 | 214,5 | 156,2 | - | 21,3 |
| | 100 | 2,5 | 15,0 | 343,6 | 196,2 | - | 20,4 |
| B | 20 | 20 | 13,5 | 37,1 | 36,2 | - | 18,5 |
| | 25 | 18,5 | 13,5 | 40,3 | 46,2 | - | 21,0 |
| | 32 | 13,5 | 13,5 | 56,2 | 60,2 | - | 22,3 |
| | 40 | 8,5 | 13,5 | 90,3 | 76,2 | - | 24,6 |
| | 50 | 7 | 13,5 | 109,9 | 96,2 | - | 21,3 |
| | 63 | 5,5 | 13,5 | 140,2 | 122,2 | - | 22,9 |
| | 80 | 3,5 | 13,5 | 220,7 | 156,2 | - | 17,0 |
| | 100 | 2,5 | 13,5 | 309,2 | 196,2 | - | 18,0 |

(1) using insert radius 0,8 mm

Note: During helical interpolation do not exceed maximum pitch.
When using different insert radius to calculate the ϕDH_{min} and ϕDH_{max} use the equation below:
- Minimum Diameter: $\phi DH_{min} = 2 \times (\phi D_c - (R \text{ corner radius} + F \text{ width of edge wiper}))$
- Maximum Diameter: $\phi DH_{max} = 2 \times (\phi D_c - R \text{ corner radius})$



Arbor Mounting
 $K_r=90^\circ$ | $\gamma_p=+7^\circ$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | | Insert radius Raio da pastilha Rayo del Inserto | Stock |
|----------------------|---------------------------------------|---|---|----------|-----------|----|-----|----------------|-------------|---------|---|-------|
| | | | ϕDc | ϕd | ϕdg | L | | Cutter Type | Max ap (mm) | rpm max | | |
| 181093000 | 050A77090-03-07-022050-A | 3 | 50 | 22 | 42 | 50 | 0,4 | A | 21,5 | 30 000 | 0,8~3,2 | |
| 181093100 | 063A77090-03-07-022050-A | 3 | 63 | 22 | 42 | 50 | 0,5 | A | 21,5 | 25 000 | 0,8~3,2 | |
| 181071600 | 080A77090-04-07-027063-A | 4 | 80 | 27 | 60 | 63 | 1,2 | A | 21,5 | 23 000 | 0,8~3,2 | |
| 181093200 | 100A77090-05-07-032063-A | 5 | 100 | 32 | 70 | 63 | 1,8 | A | 21,5 | 19 000 | 0,8~3,2 | |
| 181093300 | 125A77090-06-07-040063-A | 6 | 125 | 40 | 100 | 63 | 2,7 | A | 21,5 | 16 000 | 0,8~3,2 | |
| 181093400 | 050A77090-03-07-022050-B | 3 | 50 | 22 | 42 | 50 | 0,4 | B | 21,0 | 30 000 | 4,0~5,0 | |
| 181093500 | 063A77090-03-07-022050-B | 3 | 63 | 22 | 42 | 50 | 0,5 | B | 21,0 | 25 000 | 4,0~5,0 | |
| 181093600 | 080A77090-04-07-027063-B | 4 | 80 | 27 | 60 | 63 | 1,2 | B | 21,0 | 23 000 | 4,0~5,0 | |
| 181093700 | 100A77090-05-07-032063-B | 5 | 100 | 32 | 70 | 63 | 1,8 | B | 21,0 | 19 000 | 4,0~5,0 | |
| 181093800 | 125A77090-06-07-040063-B | 6 | 125 | 40 | 100 | 63 | 2,7 | B | 21,0 | 16 000 | 4,0~5,0 | |

Stock item | Produto de stock | Itens de stock

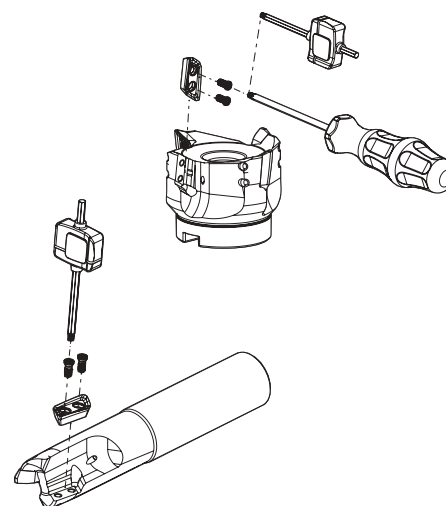
Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

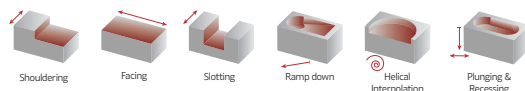
Note: Type A cutters can only assemble inserts with a radius between 0,4 and 3,2. Type B cutters can only assemble inserts with a radius between 4,0 and 5,0.

SPARE PARTS | Complementos | Repuestos

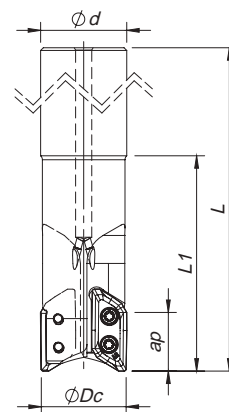
| Cutter ϕDc | Order separately | | | | Order separately | |
|---------------------|------------------|------------|-----------------|--------------|------------------|-----------------|
| | Insert Screw | Key (Torx) | Key (Torx - Nm) | Torque Value | Screw | DIN 6368 Wrench |
| A77090 - 50-80 | P0401200 | XT15 | DT1530 | 3,0 | - | - |
| A77090 - 100 | P0401200 | PT15 | DT1530 | 3,0 | J0164110 | SD6368-16 |
| A77090 - 125 | P0401200 | PT15 | DT1530 | 3,0 | J0204610 | SD6368-20 |
| E77090 - 32-40 | P0401200 | XT15 | DT1530 | 3,0 | - | - |

Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
 Check the procedures for the clamping screws on the page A-241.





Cylindrical Shank
 $K_r=90^\circ$ | $\gamma_p=+6^\circ$



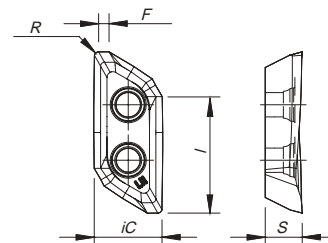
| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | | Insert radius Raio da pastilha Rayo del Inserto | Stock |
|----------------------|---------------------------------------|---|---|----|-----|----|-----|----------------|-------------|---------|---|-------|
| | | | ØDc | Ød | L | L1 | | Cutter Type | Max ap (mm) | rpm max | | |
| 181069800 | 032E77090-02-06-032170-A | 2 | 32 | 32 | 170 | 80 | 0,8 | A | 21.5 | 41 000 | 0,8~3,2 | |
| 181093900 | 040E77090-02-06-040170-A | 2 | 40 | 40 | 170 | 80 | 0,9 | A | 21.5 | 36 000 | 0,8~3,2 | |
| 181094000 | 032E77090-02-06-032170-B | 2 | 32 | 32 | 170 | 80 | 0,8 | B | 21.0 | 41 000 | 4,0~5,0 | |
| 181094100 | 040E77090-02-06-040170-B | 2 | 40 | 40 | 170 | 80 | 0,9 | B | 21.0 | 36 000 | 4,0~5,0 | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

Note: Type A cutters can only assemble inserts with a radius between 0,4 and 3,2. Type B cutters can only assemble inserts with a radius between 4,0 and 5,0.

XDGX 22M7... || Inserts | Pastilhas | Plaquitas



| (1) Geometry code | ISO Reference | N | | Dimensions Dimensões Dimensiones (mm) | | | | | Cutter Type |
|----------------------|---------------------|-----|----|---|------|------|------|------|-------------|
| | | UNC | 10 | iC | S | I | R | F | |
| 1111618 | XDGX 22M708 PDFR-LN | | | 13,00 | 7,00 | 22,0 | 0,80 | 2,00 | A |
| 1111619 | XDGX 22M716 PDFR-LN | | | 13,00 | 7,00 | 22,0 | 1,60 | 1,20 | A |
| 1111620 | XDGX 22M720 PDFR-LN | | | 13,00 | 7,00 | 22,0 | 2,00 | 0,80 | A |
| 1111621 | XDGX 22M732 PDFR-LN | | | 13,00 | 7,00 | 22,0 | 3,20 | 0,60 | A |
| 1111622 | XDGX 22M740 PDFR-LN | | | 13,00 | 7,00 | 22,0 | 4,00 | 0,90 | B |
| 1111623 | XDGX 22M750 PDFR-LN | | | 13,00 | 7,00 | 22,0 | 5,00 | 0,40 | B |

First choice | Primeira opção | 1ª opción

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

Insert order code = (1) Geometry Code + (2) Grade Code

RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| SHOULDERING | | | | | | | |
|-------------|-----|---------------------------|--------------|------------|----------------------|----------------------|---------------|
| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | Width of Cut ae (mm) | Depth of Cut ap (mm) | Feed fz(mm/t) |
| | | | | PH0910 | | | |
| N | 10 | Aluminium and Non Ferrous | 30-130 | 350-3000 | ≤ 25% ØDc | ≤5.0 | 0,35 - 0,40 |
| | | | | | | 5.0 - 10.0 | 0,30 - 0,35 |
| | | | | | | 10.0 - 15.0 | 0,25 - 0,30 |
| | | | | | | 15.0 - 20.0 | 0,20 - 0,25 |
| | | | | | < 50% ØDc | ≤5.0 | 0,35 - 0,40 |
| | | | | | | 5.0 - 10.0 | 0,30 - 0,35 |
| | | | | | | 10.0 - 15.0 | 0,25 - 0,30 |
| | | | | | | 15.0 - 20.0 | 0,20 - 0,25 |
| | | | | | ≤ 75% ØDc | ≤5.0 | 0,30 - 0,35 |
| | | | | | | 5.0 - 10.0 | 0,25 - 0,30 |
| | | | | | | 10.0 - 15.0 | 0,20 - 0,25 |
| | | | | | | 15.0 - 20.0 | 0,15 - 0,20 |

| SLOTING | | | | | | | |
|---------|-----|---------------------------|--------------|------------|----------------------|----------------------|---------------|
| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | Width of Cut ae (mm) | Depth of Cut ap (mm) | Feed fz(mm/t) |
| | | | | PH0910 | | | |
| N | 10 | Aluminium and Non Ferrous | 30-130 | 350-3000 | 100% ØDc | ≤5.0 | 0,25 - 0,35 |
| | | | | | | 5.0 - 10.0 | 0,20 - 0,30 |
| | | | | | | 10.0 - 15.0 | 0,15 - 0,25 |
| | | | | | | 15.0 - 20.0 | 0,10 - 0,20 |

(Note 1) Cutting conditions $a_e/D_c=70\%$.

(Note 2) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

(Note 3) Use internal coolant supply.

OPERATIONAL GUIDE | Guia operacional | Guía operativa

- Only use the inserts and parts provided by Palbit with this tool. Use of the correct insert clamp screws is especially important to ensure overall tool safety. Do not use damaged or worn clamp screws.

- When tightening the clamp screws, follow the order in Figure 1. The recommended torque value is 3.5Nm.

- The maximum allowable revolutions are shown in Table 1. Ensure that the cutter operates under the maximum allowable revolutions.

The maximum allowable revolutions for safety purposes are determined in accordance with ISO 15641 (Milling Cutters for high speed machining-Safety requirements).

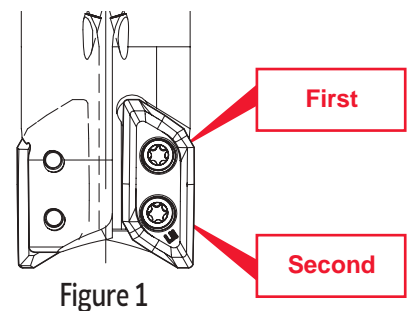


Table 1 - Maximum allowable revolutions:

| ØDc | Ø32 | Ø40 | Ø50 | Ø63 | Ø80 | Ø100 | Ø125 |
|--------------------------|-------|-------|-------|-------|-------|-------|-------|
| RPM (min ⁻¹) | 41000 | 36000 | 30000 | 25000 | 23000 | 19000 | 16000 |

- Even when operating under the maximum allowable spindle speed, if the spindle speed is equal or higher than the values shown in Table 2., it is recommended that the balance quality (with the arbor or chuck) according ISO 1940.

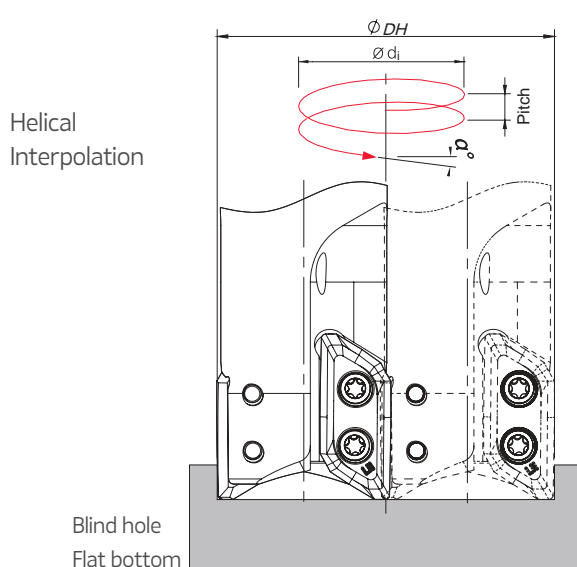
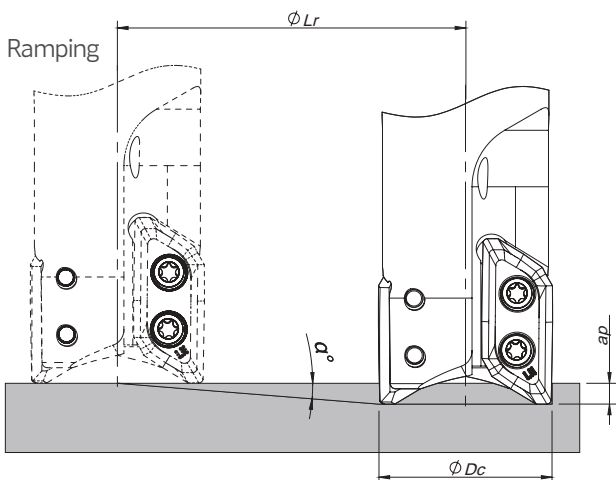
Table 2 - Maximum revolutions when balancing with the arbor or chuck has not been achieved:

| ØDc | Ø32 | Ø40 | Ø50 | Ø63 | Ø80 | Ø100 | Ø125 |
|--------------------------|------|------|------|------|------|------|------|
| RPM (min ⁻¹) | 9500 | 7600 | 6000 | 4800 | 3800 | 3000 | 2400 |

- When setting the spindle speed, take into consideration the maximum allowable revolutions of arbor or chuck.
- Use the specified set bolt when using the arbor type with internal coolant supply.

RAMPING AND HELICAL INTERPOLATION

Descida em rampa e interpolação helicoidal | Bajada en rampa e interpolación circular



Blind hole
Flat bottom

$$\text{Ødi} = \text{ØDH} - \text{ØDc}$$

| Cutter Type | ØDc | Ramping | | | Helical Interpolation | | |
|-------------|-----|-------------|--------|--------|---|------------|----------------|
| | | Max Ramp α° | Max ap | Min Lr | Diameter for Blind Hole, Flat Bottom Face (1) | | Max Pitch/Rev. |
| | | | | | ØDHmin | ØDHmax | |
| A | 32 | 19 | 21,5 | 62,4 | 60,0 - | - 62,4 | 30,3 32,9 |
| | 40 | 13 | 21,5 | 93,1 | 76,0 - | - 78,4 | 26,1 27,8 |
| | 50 | 9 | 21,5 | 135,7 | 96,0 - | - 98,4 | 22,9 24,1 |
| | 63 | 7 | 21,5 | 175,1 | 122,0 - | - 124,4 | 22,7 23,7 |
| | 80 | 5 | 21,5 | 245,7 | 156,0 - | - 158,4 | 20,9 21,5 |
| | 100 | 4 | 21,5 | 307,5 | 196,0 - | - 198,4 | 21,1 21,6 |
| | 125 | 3 | 21,5 | 410,2 | 246,0 - | - 248,4 | 19,9 20,3 |
| B | 32 | 18 | 21,0 | 64,6 | 60,0 - | - 62,4 | 28,6 31,0 |
| | 40 | 11 | 21,0 | 108,0 | 76,0 - | - 78,4 | 22,0 23,4 |
| | 50 | 8 | 21,0 | 149,4 | 96,0 - | - 98,4 | 20,3 21,4 |
| | 63 | 6 | 21,0 | 199,8 | 122,0 - | - 124,4 | 19,5 20,3 |
| | 80 | 4 | 21,0 | 300,3 | 156,0 - | - 158,4 | 16,7 17,2 |
| | 100 | 3 | 21,0 | 400,7 | 196,0 - | - 198,4 | 15,8 16,2 |
| | 125 | 2 | 21,0 | 601,4 | 246,0 - | - 248,4 | 13,3 13,5 |

(1) using insert radius 0,8 mm

Note: During helical interpolation do not exceed maximum pitch.

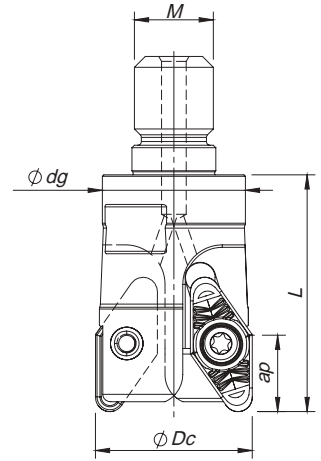
When using different insert radius to calculate the ØDHmin and ØDHmax use the equation below:

- Minimum Diameter: $\text{ØDHmin} = 2 \times (\text{ØDc} - (\text{R corner radius} + \text{F width of edge wiper}))$

- Maximum Diameter: $\text{ØDHmax} = 2 \times (\text{ØDc} - \text{R corner radius})$



ALUPRO 08390



Threaded Coupling

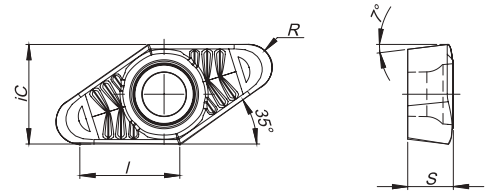
$$\kappa_r = 90^\circ \quad | \quad \gamma_p = 0^\circ$$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|------------|-----------|----|------|----------------|-------------------------------|-------|
| | | | ϕDc | $\phi d/M$ | ϕdg | L | | A_p max (mm) | | |
| 181019900 | 032R08390-02-M16048 | 2 | 32 | M16 | 29 | 48 | 0,19 | 15,00 | VCGX 22... | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire página A-8)

VCGX 220530 | Inserts | Pastilhas | Plaquetas



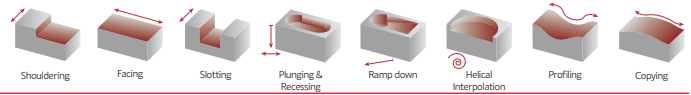
| (1) Geometry code | ISO Reference | N | | Dimensions Dimensões Dimensiones (mm) | | | |
|-------------------|----------------|-----|----|---|------|------|------|
| | | UNC | 10 | iC | S | L | R |
| 1121907 | VCGX 220530 LN | | | 12,70 | 5,60 | 12,7 | 3,00 |

First choice | Primeira opção | 1ª opción

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire página A-8)

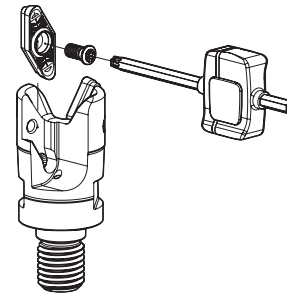
Insert order code = (1) Geometry Code + (2) Grade Code



SPARE PARTS | Complementos | Repuestos

| Cutter ØDc | Insert Screw | Key (Torx) | Order separately | |
|---------------|--------------|------------|------------------|--------------|
| | | | Key (Torx - Nm) | Torque Value |
| R08390 - 32 | P0451001 | XT20 | DT2050 | 5,00 |

Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
Check the procedures for the clamping screws on the page A-241.



RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | Feed fz (mm/t) |
|-----|-----|---------------------------|--------------|------------|----------------|
| | | | | PH0910 | VCGX 22... |
| N | 10 | Aluminium and Non Ferrous | 30-130 | 350-1400 | 0,20-0,50 |

| | |
|--------------------------|------|
| ØDc | Ø32 |
| RPM (min ⁻¹) | 9500 |

(Note 1) Cutting conditions $a_e/D_c=70\%$.

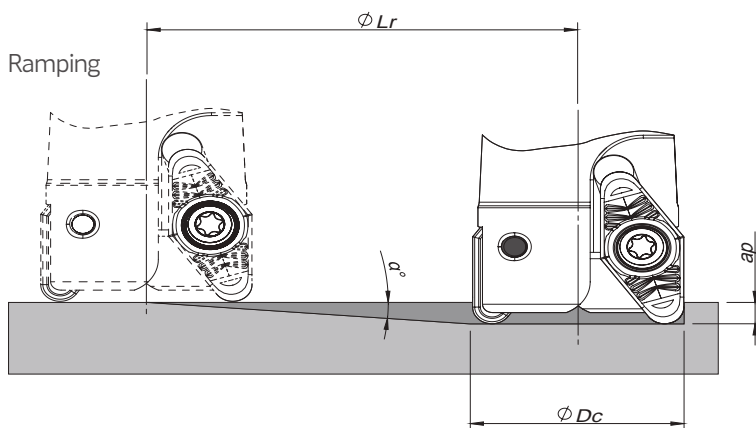
(Note 2) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

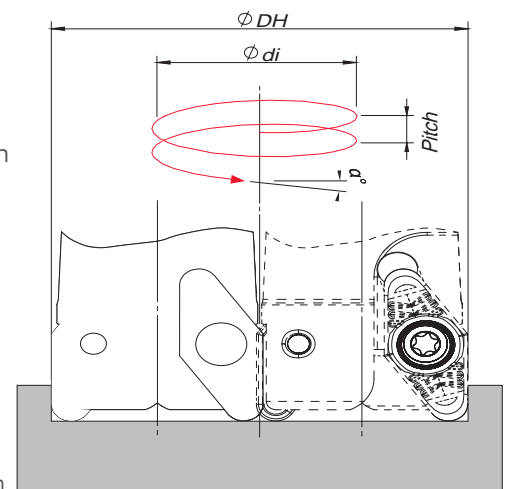
(Note 3) Use internal coolant supply

RAMPING AND HELICAL INTERPOLATION

Descida em rampa e interpolação helicoidal | Bajada en rampa e interpolación circular



Helical Interpolation



$$\text{Ødi} = \text{ØDH} - \text{ØDc}$$

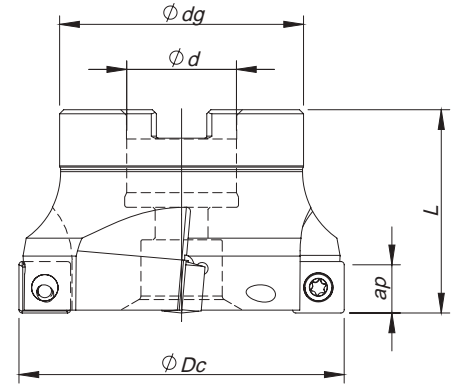
| ØDc | Ramping | | | Helical Interpolation | | |
|-----|-------------------------|-----------|--------|-----------------------|--------|----------------|
| | Max Ramp α° | Max a_p | Min Lr | ØDHmin | ØDHmax | Max Pitch/Rev. |
| 32 | 6,8 | 15,0 | 25,4 | 53,0 | - | 7,0 |
| | | | | - | 62,0 | 11,0 |

Note: During helical interpolation do not exceed max Pitch.



Arbor Mounting

$K_r=90^\circ$ | $\gamma_p=+6^\circ$



| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|--|---|----------|-----------|----|------|----------------|-------------|-------------------------------|-------|
| | | | ϕDc | ϕd | ϕdg | L | | Arbor Type | Ap max (mm) | | |
| 181167700 | 040A06290-03-06-016040 | | 40 | 16 | 39 | 40 | 0,2 | A | 11 | SP...1204 | |
| 181167800 | 050A06290-04-06-022040 | | 50 | 22 | 49 | 40 | 0,35 | A | 11 | SP...1204 | |
| 181167900 | 063A06290-05-06-027050 | | 63 | 27 | 60 | 50 | 0,7 | A | 11 | SP...1204 | |
| 181168000 | 080A06290-06-06-027050 | | 80 | 27 | 64 | 50 | 1,15 | A | 11 | SP...1204 | |
| 181168100 | 100A06290-08-06-032050 | | 100 | 32 | 78 | 50 | 1,75 | A | 11 | SP...1204 | |
| 181168200 | 125A06290-08-06-040063 | | 125 | 40 | 96 | 63 | 3,05 | B | 11 | SP...1204 | |
| 181065600 | 160A06290-10-06-U040063 | | 160 | 40 | 100 | 63 | 4,2 | C | 11 | SP...1204 | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

SP... 1204... || Inserts | Pastilhas | Plaquitas

SPMX - MP

NEW

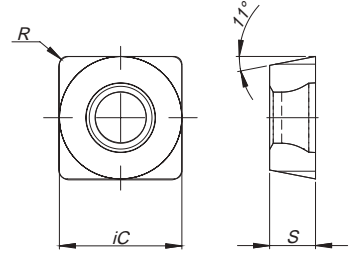


SPGX-MS

NEW



SPGX-MP | SPMW-MS



| Geometry code | ISO Reference | P | M | K | S | Dimensions Dimensões Dimensiones (mm) | | |
|---------------|---------------------|----------------|--------|--------|--------|---|-----|-----|
| | | PVD | PVD | PVD | PVD | iC | S | R |
| | | (2) Grade code | T1 | X9 | T1 | | | |
| (1) | | PHH920 | PHH930 | PHP920 | PHH930 | | | |
| 1113002 | SPGX 120408 PDSR-MP | | | | | 12,73 | 4,8 | 0,8 |
| 1113003 | SPGX 120408 PDSR-MS | | | | | 12,73 | 4,8 | 0,8 |
| 1112916 | SPMX 120408 PDSR-MP | | | | | 12,73 | 4,8 | 0,8 |
| 1112999 | SPMX 120408 PDSR-MS | | | | | 12,73 | 4,8 | 0,8 |

First choice | Primeira opção | 1ª opción

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

Insert order code = (1) Geometry Code + (2) Grade Code

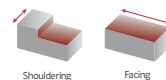
SPMT 120408-MP

SPMW 120408



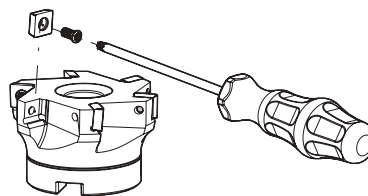
Page A - 50

Note: It is possible to use other inserts - Page A - 50



SPARE PARTS | Complementos | Repuestos

| Cutter ØDc | Insert Screw | Key (Torx) | Order separately | |
|-------------------|--------------|------------|--------------------|--------------|
| | | | Key (Torx - Nm) | Torque Value |
| A06290 – 40 - 160 | P0501100 | PT20 | DT2050 | 5,00 |



Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
Check the procedures for the clamping screws on the page A-241.

RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | Feed fz (mm/t) | |
|-----|-----|-----------------------------------|-----------------|-------------------|-------------|----------------|---------------|
| | | | | ← Wear Resistance | Toughness → | SPG(M)X...MP | SPM(M)X ...MS |
| | | | | PHP920 | PHH930 | | |
| P | 1 | Unalloyed Steel | 125-220 | 180-250 | - | 0,08-0,20 | - |
| | 2 | Low-Alloyed Steel | 220-280 | 170-210 | - | 0,08-0,20 | - |
| | 3 | High-Alloyed Steel | 280-380 | 160-200 | - | 0,08-0,20 | - |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | - | 120-180 | - | 0,08-0,20 |
| | 5 | SS - Austenitic | 200-330 | - | 100-160 | - | 0,08-0,20 |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | - | 70-140 | - | 0,08-0,20 |
| K | 7 | Malleable Cast Iron | 130-230 | 170-300 | - | 0,10-0,30 | - |
| | 8 | Grey Cast Iron | 180-245 | 150-250 | - | 0,10-0,30 | - |
| | 9 | Nodular Cast iron | 160-250 | 90-210 | - | 0,10-0,30 | - |
| S | 11 | Heat Resistant Super Alloys | 200-320 | - | 30-75 | - | 0,08-0,15 |

(Note 1) Cutting conditions ae/DC=70%

(Note 2) Cutting conditions should be adjusted according to the machine and work rigidity.

(Note 3) If chattering occurs, reduce ap and Vc by 30% and keep the same fz per tooth.

CHIP-BREAKER SELECTION GUIDE | Guia para aplicações do quebra- aparas | Guía para aplicación del rompevirutas

| ISO | PSM | Material | HB (Brinell) | Chip-Breaker Application | |
|-----|-----|-----------------------------------|-----------------|--------------------------|----------------------|
| | | | | 1st choice | Difficult Operations |
| P | 1 | Unalloyed Steel | 125-220 | ... MS | ... MP |
| | 2 | Low-Alloyed Steel | 220-280 | ... MS | ... MP |
| | 3 | High-Alloyed Steel | 280-380 | ... MP | ... MP |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | ... MS | ... MP |
| | 5 | SS - Austenitic | 200-330 | ... MS | ... MS |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | ... MS | ... MS |
| K | 7 | Malleable Cast Iron | 130-230 | ... MP | ... MP |
| | 8 | Grey Cast Iron | 180-245 | ... MP | ... MP |
| | 9 | Nodular Cast iron | 160-250 | ... MP | ... MP |
| S | 11 | Heat Resistant Super Alloys | 200-320 | ... MS | ... MS |

LINEPRO 17090

A

MILLING

Overview

Face milling

Hi-feed milling

Shoulder milling

Profile milling

Hardmill

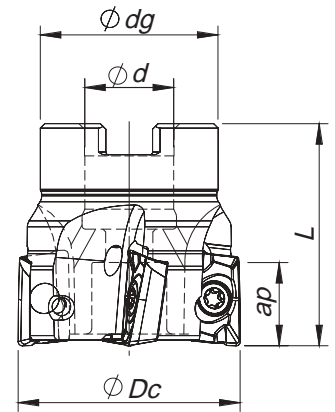
Center & Chamfer

Spot face

Spare Parts

Technical Data

End Mills



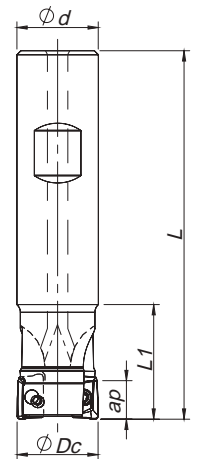
Arbor Mounting

$K_r=90^\circ$ | $\gamma_p=+9^\circ$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|----------|-----------|----|-------|----------------|-------------|-------------------------------|-------|
| | | | ϕDc | ϕd | ϕdg | L | | Arbor Type | Ap max (mm) | | |
| 181010200 | 040A17090-06-09-022040 | 6 | 40 | 22 | 39 | 40 | 0,210 | A | 9,0 | AP... 1003... | |
| 181010300 | 050A17090-07-09-022040 | 7 | 50 | 22 | 40 | 40 | 0,320 | A | 9,0 | AP... 1003... | |
| 181014300 | 063A17090-08-09-022040 | 8 | 63 | 22 | 48 | 40 | 0,560 | A | 9,0 | AP... 1003... | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)



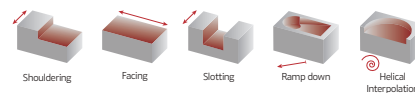
Weldon Shank

$K_r=90^\circ$ | $\gamma_p=+7^\circ \sim +9^\circ$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|----------|-----|----|-------|----------------|---------------|-------------------------------|-------|
| | | | ϕDc | ϕd | L | L1 | | Ap max (mm) | | | |
| 181041300 | 016W17090-02-07-016085 | 2 | 16 | 16 | 85 | 26 | 0,110 | 9,0 | AP... 1003... | | |
| 181031700 | 016W17090-02-07-016150 | 2 | 16 | 16 | 150 | 26 | 0,210 | 9,0 | AP... 1003... | | |
| 181041400 | 020W17090-03-09-020090 | 3 | 20 | 20 | 90 | 28 | 0,190 | 9,0 | AP... 1003... | | |
| 181041600 | 020W17090-03-09-020150 | 3 | 20 | 20 | 150 | 28 | 0,320 | 9,0 | AP... 1003... | | |
| 181041700 | 025W17090-04-09-020150 | 4 | 25 | 20 | 150 | 26 | 0,340 | 9,0 | AP... 1003... | | |
| 181041500 | 025W17090-04-09-025095 | 4 | 25 | 25 | 95 | 30 | 0,310 | 9,0 | AP... 1003... | | |

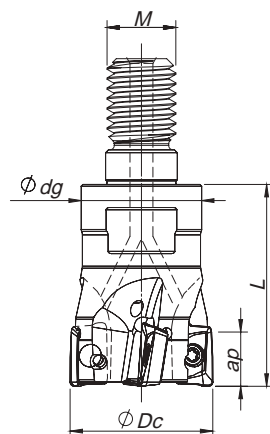
Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)



Threaded Coupling

$$K_r = 90^\circ \quad | \quad \gamma_p = +7^\circ \sim +9^\circ$$



| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|-----|-----|----|-------|----------------|---------------|-------------------------------|-------|
| | | | ØDc | ØM | Ødg | L | | Ap max (mm) | | | |
| 181015100 | 016R17090-02-07-M08025 | 2 | 16 | M8 | 13 | 25 | 0,030 | 9,0 | AP... 1003... | | |
| 181015200 | 020R17090-03-09-M10030 | 3 | 20 | M10 | 18 | 30 | 0,058 | 9,0 | AP... 1003... | | |
| 181015300 | 025R17090-04-09-M12035 | 4 | 25 | M12 | 21 | 35 | 0,110 | 9,0 | AP... 1003... | | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

AP... 1003... || Inserts | Pastilhas | Plaquetas

APET - LN



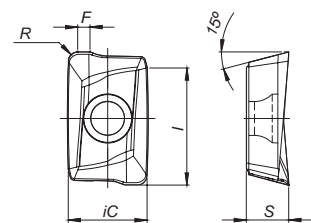
APKT - X



APKT - X1



APET-LN | APKT-X | APKT-X1



| Geometry code | ISO Reference | P | | M | K | | N | Dimensions Dimensões Dimensiones (mm) | | | | |
|----------------|---------------------|--------|--------|--------|--------|--------|--------|---|------|-------|------|------|
| | | PVD | | PVD | PVD | | UNC | iC | S | I | R | F |
| | | 68 | 66 | 66 | 68 | 66 | 10 | | | | | |
| ⁽¹⁾ | | PH6920 | PH6930 | PH6930 | PH6920 | PH6930 | PH0910 | | | | | |
| 1112043 | APET 100305 PDFR-LN | | | | | | | 6,70 | 3,50 | 10,00 | 0,50 | 1,20 |
| 1112168 | APKT 100305 PDER-X1 | | | | | | | 6,70 | 3,50 | 10,00 | 0,50 | 1,20 |
| 1112167 | APKT 100305 PDSR-X1 | | | | | | | 6,70 | 3,50 | 10,00 | 0,50 | 1,20 |
| 1111071 | APKT 100308 PDER-X | | | | | | | 6,70 | 3,50 | 10,00 | 0,80 | 0,90 |
| 1111044 | APKT 100308 PDSR-X | | | | | | | 6,70 | 3,50 | 10,00 | 0,80 | 0,90 |
| 1111042 | APKT 100308 PDTR-X | | | | | | | 6,70 | 3,50 | 10,00 | 0,80 | 0,90 |
| 1111072 | APKT 100312 PDER-X | | | | | | | 6,70 | 3,50 | 10,00 | 1,20 | - |
| 1110987 | APKT 100312 PDSR-X | | | | | | | 6,70 | 3,50 | 10,00 | 1,20 | - |
| 1111045 | APKT 100312 PDTR-X | | | | | | | 6,70 | 3,50 | 10,00 | 1,20 | - |

First choice | Primeira opção | 1ª opción

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

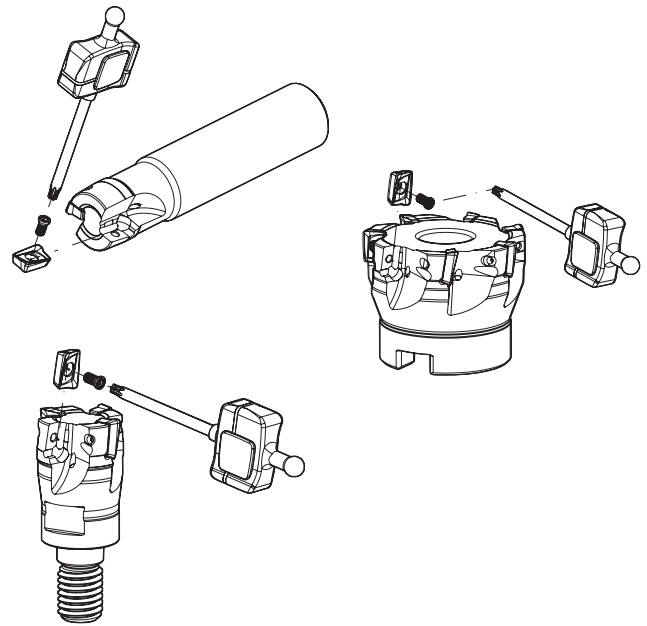
Insert order code = (1) Geometry Code + (2) Grade Code

LINEPRO 17090

SPARE PARTS | Complementos | Repuestos

| Cutter ØDc | Insert Screw | Key (Torx) | Order separately | |
|----------------|--------------|------------|------------------|--------------|
| | | | Key (Torx - Nm) | Torque Value |
| W17090 - 16-25 | P0250503 | XT08 | DT0812 | 1,2 |
| R17090 - 16-25 | P0250503 | XT08 | DT0812 | 1,2 |
| A17090 - 40-63 | P0250503 | XT08 | DT0812 | 1,2 |

Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241. Check the procedures for the clamping screws on the page A-241.



GRADES SELECTION GUIDE | Guia para selección de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | | |
|-----|-----|-----------------------------------|-----------------|-------------------|--------|-------------|
| | | | | ← Wear Resistance | | Toughness → |
| | | | | PH0910 | PH6920 | PH6930 |
| P | 1 | Unalloyed Steel | 125-220 | | ✓ | ✓ |
| | 2 | Low-Alloyed Steel | 220-280 | | ✓ | ✓ |
| | 3 | High-Alloyed Steel | 280-380 | | ✓ | ✓ |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | | | ✓ |
| | 5 | SS - Austenitic | 200-330 | | | ✓ |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | | | ✓ |
| K | 7 | Malleable Cast Iron | 130-230 | | ✓ | ✓ |
| | 8 | Grey Cast Iron | 180-245 | | ✓ | ✓ |
| | 9 | Nodular Cast iron | 160-250 | | ✓ | ✓ |
| N | 10 | Aluminium and Non Ferrous | 30-130 | ✓ | | |

- Good Conditions
- Average Conditions
- Difficult Conditions

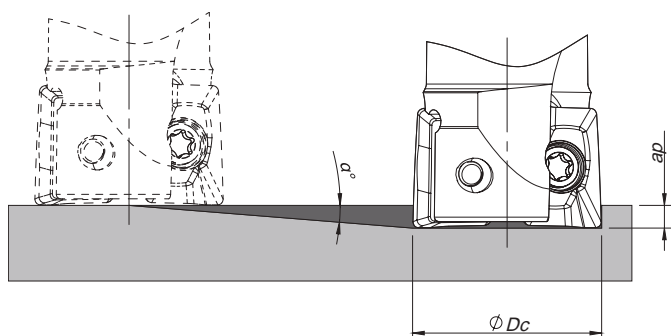
CHIP-BREAKER SELECTION GUIDE | Guia para aplicações do quebra- aparas | Guía para aplicación del rompevirutas

| ISO | PSM | Material | HB (Brinell) | Chip-Breaker Application | |
|-----|-----|-----------------------------------|--------------|--------------------------|----------------------|
| | | | | 1st choice | Difficult Operations |
| P | 1 | Unalloyed Steel | 125-220 | APKT 10... PDER-X | APKT 10... PDTR-X |
| | 2 | Low-Alloyed Steel | 220-280 | APKT 10... PDSR-X | APKT 10... PDSR-X |
| | 3 | High-Alloyed Steel | 280-380 | APKT 10... PDSR-X | - |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | APKT 10... PDER-X | - |
| | 5 | SS - Austenitic | 200-330 | APKT 10... PDER-X | - |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | APKT 10... PDER-X | - |
| K | 7 | Malleable Cast Iron | 130-230 | APKT 10... PDER-X | APKT 10... PDSR-X |
| | 8 | Grey Cast Iron | 180-245 | APKT 10... PDSR-X | - |
| | 9 | Nodular Cast iron | 160-250 | APKT 10... PDSR-X | - |
| N | 10 | Aluminium and Non Ferrous | 30-130 | APET 10... PDFR-LN | - |

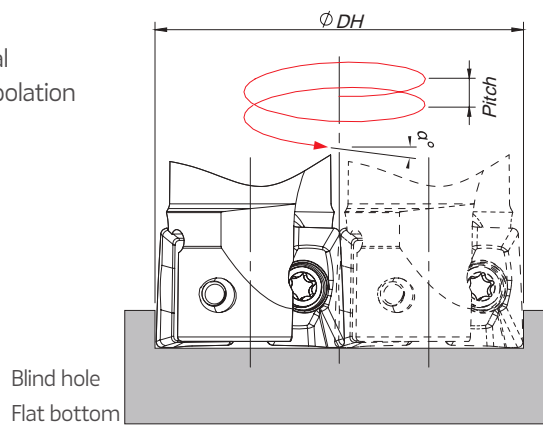
RAMPING AND HELICAL INTERPOLATION

Descida em rampa e interpolação helicoidal | Bajada en rampa e interpolación circular

Ramping



Helical Interpolation



$$\varnothing di = \varnothing DH - \varnothing Dc$$

| ØDc | Ramping | | | Helical Interpolation | | |
|-----|-------------|--------|--------|---|--------|----------------|
| | Max Ramp a° | Max ap | Min Lr | Diameter for Blind Hole, Flat Bottom Face (1) | | Max Pitch/Rev. |
| | | | | ØDHmin | ØDHmax | |
| 16 | 1,3 | 9,0 | 396,6 | 29,2 | - | 0,9 |
| | | | | - | 31,0 | 1,1 |
| 20 | 0,9 | 9,0 | 572,9 | 37,2 | - | 0,8 |
| | | | | - | 39,0 | 0,9 |
| 25 | 0,6 | 9,0 | 859,4 | 47,2 | - | 0,7 |
| | | | | - | 49,0 | 0,8 |
| 40 | 0,4 | 9,0 | 1289,1 | 77,2 | - | 0,8 |
| | | | | - | 79,0 | 0,9 |
| 50 | 0,25 | 9,0 | 2062,6 | 97,2 | - | 0,6 |
| | | | | - | 99,0 | 0,7 |
| 63 | 0,2 | 9,0 | 2578,3 | 123,2 | - | 0,7 |
| | | | | - | 125,0 | 0,7 |

(1) using LP insert with radius 0,8 mm

Note: During helical interpolation do not exceed maximum pitch

When using HF insert or other different insert radius to calculate the ØDHmin and ØDHmax use the equation below:

- Minimum Diameter: $\varnothing DH_{min} = 2 \times (\varnothing Dc - (R \text{ corner radius} + F \text{ width of edge wiper}))$

- Maximum Diameter: $\varnothing DH_{max} = 2 \times (\varnothing Dc - R \text{ corner radius})$

LINEPRO 17090

RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | |
|-----|-----|-----------------------------------|-----------------|-------------------|---------|-------------|
| | | | | ← Wear Resistance | | Toughness → |
| | | | | PH0910 | PH6920 | PH6930 |
| P | 1 | Unalloyed Steel | 125-220 | - | 180-240 | 160-220 |
| | 2 | Low-Alloyed Steel | 220-280 | - | 160-220 | 140-200 |
| | 3 | High-Alloyed Steel | 280-380 | - | 140-210 | 120-190 |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | - | 140-220 | 140-200 |
| | 5 | SS - Austenitic | 200-330 | - | 130-180 | 120-160 |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | - | 120-160 | 100-140 |
| K | 7 | Malleable Cast Iron | 130-230 | - | 160-260 | 150-240 |
| | 8 | Grey Cast Iron | 180-245 | - | 140-240 | 140-230 |
| | 9 | Nodular Cast iron | 160-250 | - | 120-200 | 100-190 |
| N | 10 | Aluminium and Non Ferrous | 30-130 | 100-2000 | - | - |

(Note 1) Cutting conditions $a_e/D_c=70\%$.

(Note 2) Cutting conditions for slotting and shouldering operations:

| Operation | a_e | Vc & fz | a_p (mm) |
|-------------|-------|---------|------------|
| Slotting | 100% | <20% | 3,0-4,0 |
| | <50% | >8% | 5,0-6,0 |
| Shouldering | ≤25% | >12% | 7,0-8,0 |

(Note 3) Cutting conditions should be adjusted according to the machine and work rigidity.

(Note 4) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

(Note 5) If chattering occurs, reduce a_p and Vc by 30% and keep the same fz per tooth.

| Feed fz (mm/t) | | |
|----------------------|-------------------------|--------------------|
| APKT 10... PDER-X/X1 | APKT 10... PDS(T)R-X/X1 | APET 10... PDFR-LN |
| 0,07-0,15 | 0,10-0,25 | - |
| 0,07-0,10 | 0,10-0,20 | - |
| 0,07-0,10 | 0,10-0,20 | - |
| 0,07-0,10 | - | - |
| 0,07-0,10 | - | - |
| 0,07-0,10 | - | - |
| 0,07-0,15 | 0,10-0,25 | - |
| 0,07-0,15 | 0,10-0,25 | - |
| - | 0,10-0,20 | - |
| - | - | 0,07-0,20 |

A

MILLING

Overview

Face milling

Hi-feed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

Spot face

Spare Parts

Technical Data

End Mills

LINEPRO 18090

A

MILLING

Overview

Face milling

Hi-feed milling

Shoulder milling

Profile milling

Hardmill

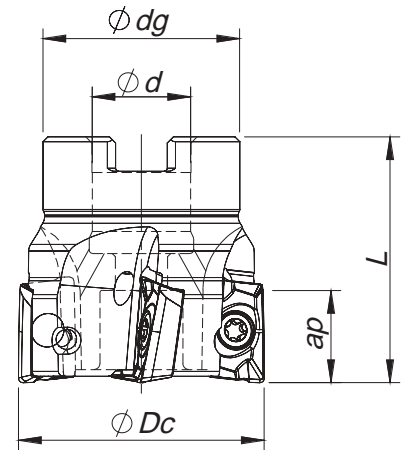
Center & Chamfer

Spot face

Spare Parts

Technical Data

End Mills



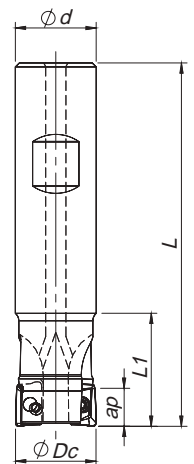
Arbor Mounting

$K_r=90^\circ$ | $\gamma_p=+8^\circ \sim +10^\circ$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|----------|-----------|----|-------|----------------|-------------|-------------------------------|-------|
| | | | ϕDc | ϕd | ϕdg | L | | Arbor Type | Ap max (mm) | | |
| 181031200 | 040A18090-04-08-016040 | 4 | 40 | 16 | 32 | 40 | 0,180 | A | 14,5 | AP.. 1604 | |
| 181030900 | 050A18090-05-08-022040 | 5 | 50 | 22 | 42 | 40 | 0,290 | A | 14,5 | AP.. 1604 | |
| 181031300 | 063A18090-06-09-022040 | 6 | 63 | 22 | 52 | 40 | 0,530 | A | 14,5 | AP.. 1604 | |
| 181031400 | 080A18090-07-10-027050 | 7 | 80 | 27 | 60 | 50 | 0,920 | B | 14,5 | AP.. 1604 | |
| 181031500 | 100A18090-08-10-032050 | 8 | 100 | 32 | 80 | 50 | 1,680 | B | 14,5 | AP.. 1604 | |
| 181031600 | 125A18090-09-10-040063 | 9 | 125 | 40 | 90 | 63 | 3,010 | B | 14,5 | AP.. 1604 | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire página A-8)



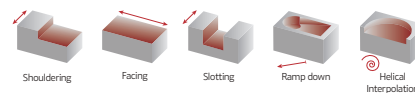
Weldon Shank

$K_r=90^\circ$ | $\gamma_p=+6^\circ \sim +8^\circ$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|----------|-----|----|-------|----------------|-----------|-------------------------------|-------|
| | | | ϕDc | ϕd | L | L1 | | Ap max (mm) | | | |
| 181041800 | 025W18090-02-06-025100 | 2 | 25 | 25 | 100 | 44 | 0,310 | 14,5 | AP.. 1604 | | |
| 181042100 | 025W18090-02-06-025200 | 2 | 25 | 25 | 200 | 60 | 0,670 | 14,5 | AP.. 1604 | | |
| 181041900 | 032W18090-03-07-032110 | 3 | 32 | 32 | 110 | 50 | 0,560 | 14,5 | AP.. 1604 | | |
| 181042200 | 032W18090-03-07-032200 | 3 | 32 | 32 | 200 | 60 | 1,100 | 14,5 | AP.. 1604 | | |
| 181042000 | 040W18090-04-08-032115 | 4 | 40 | 32 | 115 | 40 | 0,670 | 14,5 | AP.. 1604 | | |
| 181042300 | 040W18090-04-08-032200 | 4 | 40 | 32 | 200 | 40 | 1,190 | 14,5 | AP.. 1604 | | |

Stock item | Produto de stock | Itens de stock

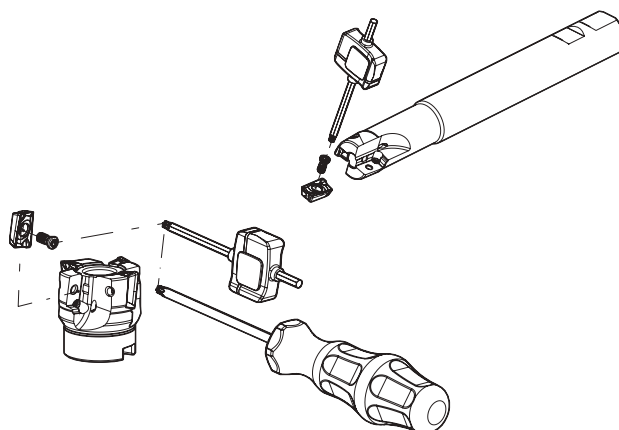
Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire página A-8)



SPARE PARTS | Complementos | Repuestos

| Cutter ØDc | Insert Screw | Key (Torx) | Order separately | |
|------------------|--------------|------------|------------------|--------------|
| | | | Key (Torx - Nm) | Torque Value |
| W18090 - 25-40 | P0400900 | XT15 | DT1530 | 3,0 |
| A18090 - 40-80 | P0400900 | XT15 | DT1530 | 3,0 |
| A18090 - 100-125 | P0400900 | PT15 | DT1530 | 3,0 |

Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241. Check the procedures for the clamping screws on the page A-241.



AP... 1604... | Inserts | Pastilhas | Plaquetas



| | | P | | | | M | | K | | | | N | Dimensions Dimensões Dimensiones (mm) | | | | |
|------------------------------|---------------------|---------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|------|-------|------|------|
| | | PVD | | | | PVD | | PVD | | | | UNC | | | | | |
| | | ⁽²⁾ Grade code | | 68 | G4 | 66 | P3 | 66 | P3 | 68 | G4 | 66 | | | | | |
| ⁽¹⁾ Geometry code | ISO Reference | PH6920 | PH7920 | PH6930 | PH7930 | PH6930 | PH7930 | PH6920 | PH7920 | PH6930 | PH7930 | PH0910 | iC | S | L | R | F |
| 1112159 | APKT 160408 PDER-X1 | ⊗ | | ⊗ | | ⊗ | | ⊗ | | ⊗ | | | 9,45 | 5,35 | 16,00 | 0,80 | 1,80 |
| 1112464 | APKT 160408 PDER-X2 | | ⊗ | | ⊗ | | ⊗ | | ⊗ | | ⊗ | | 9,45 | 5,35 | 16,00 | 0,80 | 1,80 |
| 1112158 | APKT 160408 PDSR-X1 | ⊗ | | ⊗ | | | | ⊗ | | ⊗ | | | 9,45 | 5,35 | 16,00 | 0,80 | 1,80 |
| 1112367 | APKT 160408 PDSR-X2 | | ⊗ | | ⊗ | | | | ⊗ | | ⊗ | | 9,45 | 5,35 | 16,00 | 0,80 | 1,80 |
| 1111923 | APKT 160408 PDFR-LN | | | | | | | | | | | ⊗ | 9,45 | 5,35 | 16,00 | 0,80 | 0,80 |
| 1111074 | APKT 160416 PDER-X | ⊗ | | | | | | ⊗ | | | | | 9,45 | 5,35 | 16,00 | 1,60 | 1,20 |
| 1111050 | APKT 160416 PDSR-X | ⊗ | | ⊗ | | | | ⊗ | | ⊗ | | | 9,45 | 5,35 | 16,00 | 1,60 | 1,20 |
| 1111075 | APKT 160432 PDER-X | ⊗ | | | | | | ⊗ | | | | | 9,45 | 5,35 | 16,00 | 3,20 | - |
| 1111052 | APKT 160432 PDSR-X | ⊗ | | | | | | ⊗ | | | | | 9,45 | 5,35 | 16,00 | 3,20 | - |
| 1111924 | APHT 1604 PDFR-LN | | | | | | | | | | | ⊗ | 9,45 | 5,35 | 16,00 | - | - |

⊗ First choice | Primeira opção | 1ª opción ⊗ Stock item | Produto de stock | Itens de stock

○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9)

Insert order code = (1) Geometry Code + (2) Grade Code

*For inserts with radius above 2.0 mm, the cutter must be adjusted

LINEPRO 18090

GRADES SELECTION GUIDE | Guia para selecção de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | | |
|-----|-----|-----------------------------------|--------------|-------------------|-----------|-------------|
| | | | | ← Wear Resistance | | Toughness → |
| | | | | PH0910 | PH7(6)920 | PH7(6)30 |
| P | 1 | Unalloyed Steel | 125-220 | | ✓ | ✓ |
| | 2 | Low-Alloyed Steel | 220-280 | | ✓ | ✓ |
| | 3 | High-Alloyed Steel | 280-380 | | ✓ | ✓ |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | | | ✓ |
| | 5 | SS - Austenitic | 200-330 | | | ✓ |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | | | ✓ |
| K | 7 | Malleable Cast Iron | 130-230 | | ✓ | ✓ |
| | 8 | Grey Cast Iron | 180-245 | | ✓ | ✓ |
| | 9 | Nodular Cast iron | 160-250 | | ✓ | ✓ |
| N | 10 | Aluminium and Non Ferrous | 30-130 | ✓ | | |



RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | |
|-----|-----|-----------------------------------|--------------|-------------------|-----------|-------------|
| | | | | ← Wear Resistance | | Toughness → |
| | | | | PH0910 | PH7(6)920 | PH7(6)930 |
| P | 1 | Unalloyed Steel | 125-220 | - | 180-240 | 160-220 |
| | 2 | Low-Alloyed Steel | 220-280 | - | 160-220 | 140-200 |
| | 3 | High-Alloyed Steel | 280-380 | - | 140-210 | 120-190 |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | - | - | 140-200 |
| | 5 | SS - Austenitic | 200-330 | - | - | 120-160 |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | - | - | 100-140 |
| K | 7 | Malleable Cast Iron | 130-230 | - | 160-260 | 150-240 |
| | 8 | Grey Cast Iron | 180-245 | - | 140-240 | 140-230 |
| | 9 | Nodular Cast iron | 160-250 | - | 120-200 | 100-190 |
| N | 10 | Aluminium and Non Ferrous | 30-130 | 100-2000 | - | - |

| ISO | PSM | Material | HB (Brinell) | Feed fz (mm/t) | | |
|-----|-----|-----------------------------------|--------------|----------------------|-------------------------|----------------------|
| | | | | APKT 16... PDER-X/X2 | | AP...T 16... PDFR-LN |
| | | | | APKT 16... PDER-X/X2 | APKT 16... PDS(T)R-X/X2 | AP...T 16... PDFR-LN |
| P | 1 | Unalloyed Steel | 125-220 | 0,07-0,15 | 0,10-0,25 | - |
| | 2 | Low-Alloyed Steel | 220-280 | 0,07-0,10 | 0,10-0,20 | - |
| | 3 | High-Alloyed Steel | 280-380 | 0,07-0,10 | 0,10-0,20 | - |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | 0,07-0,10 | - | - |
| | 5 | SS - Austenitic | 200-330 | 0,07-0,10 | - | - |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | 0,07-0,10 | - | - |
| K | 7 | Malleable Cast Iron | 130-230 | 0,07-0,15 | 0,10-0,25 | - |
| | 8 | Grey Cast Iron | 180-245 | 0,07-0,15 | 0,10-0,25 | - |
| | 9 | Nodular Cast iron | 160-250 | - | 0,10-0,20 | - |
| N | 10 | Aluminium and Non Ferrous | 30-130 | - | - | 0,07-0,20 |

(Note 1) Cutting conditions $a_e/D_c=70\%$.

(Note 2) Cutting conditions for slotting and shouldering operations:

| Operation | a_e | Vc & fz | a_p (mm) |
|-------------|-------|---------|------------|
| Slotting | 100% | <20% | 5,0-6,0 |
| Shouldering | <50% | >8% | 6,0-9,0 |
| | ≤25% | >12% | 10,0-12,5 |

(Note 3) Cutting conditions should be adjusted according to the machine and work rigidity.

(Note 4) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

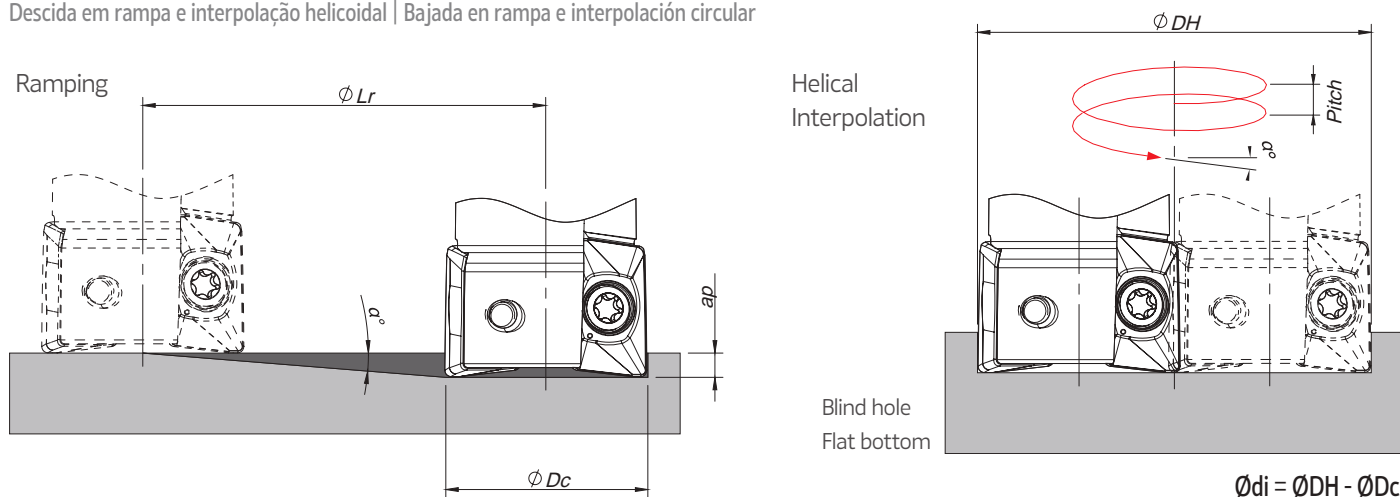
- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

CHIP-BREAKER SELECTION GUIDE | Guia para aplicações do quebra- aparas | Guía para aplicación del rompevirutas

| ISO | PSM | Material | HB (Brinell) | Chip-Breaker Application | |
|-----|-----|-----------------------------------|--------------|--------------------------|------------------------|
| | | | | 1st choice | Difficult Operations |
| P | 1 | Unalloyed Steel | 125-220 | APKT 16... PDER-X(X2) | APKT 16... PDSR-X(-X2) |
| | 2 | Low-Alloyed Steel | 220-280 | APKT 16... PDSR-X(X2) | - |
| | 3 | High-Alloyed Steel | 280-380 | APKT 16... PDSR-X(X2) | - |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | APKT 16... PDER-X(X2) | - |
| | 5 | SS - Austenitic | 200-330 | APKT 16... PDER-X(X2) | - |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | APKT 16... PDSR-X(X2) | - |
| K | 7 | Malleable Cast Iron | 130-230 | APKT 16... PDSR-X(X2) | APKT 16... PDSR-X(X2) |
| | 8 | Grey Cast Iron | 180-245 | APKT 16... PDSR-X(X2) | - |
| | 9 | Nodular Cast iron | 160-250 | APKT 16... PDSR-X(X2) | - |
| N | 10 | Aluminium and Non Ferrous | 30-130 | AP...T 16... PDFR-LN | APHT 16... PDFR-LN |

RAMPING AND HELICAL INTERPOLATION

Descida em rampa e interpolação helicoidal | Bajada en rampa e interpolación circular



| ϕ_{Dc} | Ramping | | | Helical Interpolation | | |
|-------------|--------------------|-----------|-----------|---|----------------|----------------|
| | Max Ramp a° | Max a_p | Min L_r | Diameter for Blind Hole, Flat Bottom Face (1) | | Max Pitch/Rev. |
| | | | | ϕ_{DHmin} | ϕ_{DHmax} | |
| 25 | 3 | 14,5 | 276,7 | 46,1 - | - 48,4 | 3,5 3,9 |
| 32 | 2 | 14,5 | 415,2 | 60,1 - | - 62,4 | 3,1 3,3 |
| 40 | 1,5 | 14,5 | 553,7 | 76,1 - | - 78,4 | 3,0 3,2 |
| 50 | 1,1 | 14,5 | 755,2 | 96,1 - | - 98,4 | 2,8 2,9 |
| 63 | 0,85 | 14,5 | 977,3 | 122,1 - | - 124,4 | 2,8 2,9 |
| 80 | 0,64 | 14,5 | 1298,1 | 156,1 - | - 158,4 | 2,7 2,7 |
| 100 | 0,5 | 14,5 | 1661,5 | 196,1 - | - 198,4 | 2,6 2,7 |
| 125 | 0,38 | 14,5 | 2186,3 | 246,1 - | - 248,4 | 2,5 2,6 |

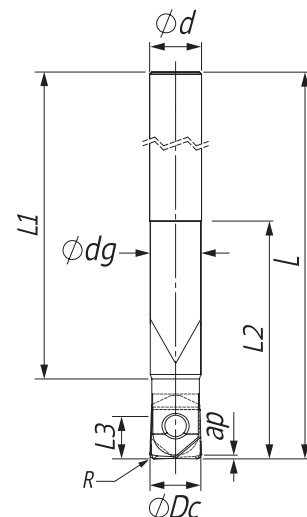
(1) Using insert radius 0,8 mm

Note: During helical interpolation do not exceed maximum pitch

When using different insert radius to calculate the ϕ_{DHmin} and ϕ_{DHmax} use the equation below:

- Minimum Diameter: $\phi_{DHmin} = 2 \times (\phi_{Dc} - (R \text{ corner radius} + F \text{ width of edge wiper}))$

- Maximum Diameter: $\phi_{DHmax} = 2 \times (\phi_{Dc} - R \text{ corner radius})$



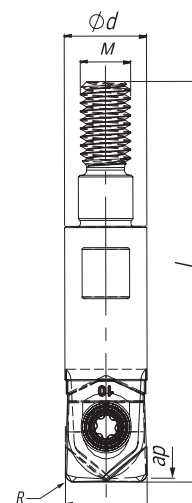
Cylindrical Carbide Shank

| Tolerance R | Runout Tolerance |
|-------------|------------------|
| ± 0,015 | R 0,02 |

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | | | Kg | Specifications | | | | Insert | Stock |
|----------------------|---------------------------------------|--|---|----|------|-----|-----|----|------|----------------|-----|-------------|-----|--------------------|-------|
| | | | ØDc | Ød | Ødg | L | L1 | L2 | | Ap max (mm) | | Ae max (mm) | | | |
| 181156600 | 008E62090-02-U008140 | | 8 | 8 | 7,7 | 140 | 128 | 35 | 0,09 | 4,0 | 2,5 | 0,8 | 0,8 | WCR 08../WCL 08... | |
| 181156700 | 010E62090-02-U010150 | | 10 | 10 | 9,7 | 150 | 136 | 45 | 0,15 | 5,0 | 3,0 | 1,0 | 1,0 | WCR 10../WCL 10... | |
| 181156800 | 010E62090-02-U010180 | | 10 | 10 | 9,7 | 180 | 166 | 45 | 0,18 | 5,0 | 3,0 | 1,0 | 1,0 | WCR 10../WCL 10... | |
| 181155700 | 012E62090-02-U012165 | | 12 | 12 | 11,7 | 165 | 147 | 55 | 0,24 | 6,0 | 4,0 | 1,2 | 1,2 | WCR 12../WCL 12... | |
| 181156900 | 012E62090-02-U012200 | | 12 | 12 | 11,7 | 200 | 182 | 55 | 0,29 | 6,0 | 4,0 | 1,2 | 1,2 | WCR 12../WCL 12... | |
| 181157000 | 016E62090-02-U016200 | | 16 | 16 | 15,7 | 200 | 180 | 65 | 0,51 | 8,0 | 5,0 | 1,6 | 1,6 | WCR 16../WCL 16... | |
| 181157100 | 016E62090-02-U016250 | | 16 | 16 | 15,7 | 250 | 230 | 65 | 0,67 | 8,0 | 5,0 | 1,6 | 1,6 | WCR 16../WCL 16... | |
| 181157200 | 020E62090-02-U020220 | | 20 | 20 | 19,7 | 220 | 193 | 70 | 0,87 | 10,0 | 6,0 | 2,0 | 2,0 | WCR 20../WCL 20... | |
| 181157300 | 020E62090-02-U020250 | | 20 | 20 | 19,7 | 250 | 223 | 70 | 1,00 | 10,0 | 6,0 | 2,0 | 2,0 | WCR 20../WCL 20... | |
| 181157400 | 020E62090-02-U020300 | | 20 | 20 | 19,7 | 300 | 273 | 70 | 1,23 | 10,0 | 6,0 | 2,0 | 2,0 | WCR 20../WCL 20... | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)



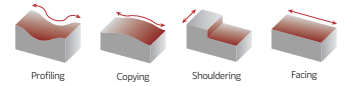
Cylindrical Carbide Shank

| Tolerance R | Runout Tolerance |
|-------------|------------------|
| ± 0,015 | R 0,02 |

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | | Kg | Specifications | | | | Insert | Stock |
|----------------------|---------------------------------------|--|---|----|------|----|-----|-------|----------------|-----|-------------|-----|--------------------|-------|
| | | | ØDc | R | Ød | L | M | | Ap max (mm) | | Ae max (mm) | | | |
| 181167000 | 010R62090-02-UM06030 | | 10 | 5 | 6,5 | 30 | M6 | 0,011 | 5 | 3,0 | 1,0 | 1,0 | WCR 10../WCL 10... | |
| 181167100 | 012R62090-02-UM06030 | | 12 | 6 | 6,5 | 30 | M6 | 0,016 | 6 | 4,0 | 1,2 | 1,2 | WCR 10../WCL 10... | |
| 181167200 | 016R62090-02-UM08030 | | 16 | 8 | 8,5 | 30 | M8 | 0,028 | 8 | 5,0 | 1,6 | 1,6 | WCR 12../WCL 12... | |
| 181167300 | 020R62090-02-UM10035 | | 20 | 10 | 10,5 | 35 | M10 | 0,058 | 10 | 6,0 | 2,0 | 2,0 | WCR 12../WCL 12... | |

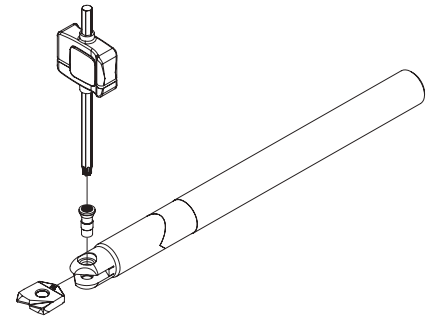
Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

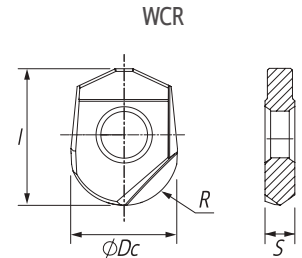


SPARE PARTS Complementos | Repuestos

| Cutter ØDc | Insert Screw | Key (Torx) | Order separately | |
|---------------|--------------|------------|------------------|--------------|
| | | | Key (Torx - Nm) | Torque Value |
| 8 | P0300726 | XT08 | DT0812 | 1,2 |
| 10 | P0350825 | XT10 | DT1020 | 2,0 |
| 12 | P0501025 | XT20 | DT2050 | 5,0 |
| 16 | P0501326 | XT20 | DT2050 | 5,0 |
| 20 | P0601725 | XT25 | - | 6,9 |



WCR | Inserts | Pastilhas | Plaquetas



| Geometry code | ISO Reference | P | | M | | K | | H | | Dimensions / Dimensões / Dimensiones (mm) | | | |
|---------------|---------------|-----|----|-----|----|-----|----|-----|----|---|------|-----|------|
| | | PVD | | PVD | | PVD | | PVD | | I | R | S | Dc |
| | | X4 | X6 | X4 | X6 | X4 | X6 | X4 | X6 | | | | |
| 1112900 | WCR 08 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 9,7 | 4,0 | 2,1 | 8,0 |
| 1111914 | WCR 10 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 12,0 | 5,0 | 2,7 | 10,0 |
| 1112099 | WCR 12 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 14,6 | 6,0 | 3,2 | 12,0 |
| 1112100 | WCR 16 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 16,6 | 8,0 | 4,2 | 16,0 |
| 1112101 | WCR 20 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 20,0 | 10,0 | 5,2 | 20,0 |

⊗ First choice | Primeira opção | 1ª opción
 ⊗ Stock item | Produto de stock | Itens de stock
 ○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)
 Insert order code = (1) Geometry Code + (2) Grade Code

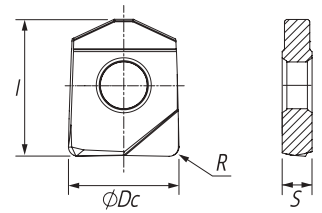
WCL | Inserts | Pastilhas | Plaquetas

WCL

NEW



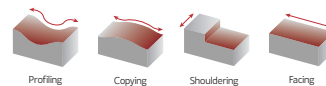
WCL



| | | P | | M | | K | | H | | Dimensions Dimensões Dimensiones (mm) | | | |
|---------------|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--|-----|-----|----|
| | | PVD | | PVD | | PVD | | PVD | | l | R | S | Dc |
| | | X4 | X6 | X4 | X6 | X4 | X6 | X4 | X6 | | | | |
| (1) | ISO Reference | PHH603 | PHH910 | PHH603 | PHH910 | PHH603 | PHH910 | PHH603 | PHH910 | | | | |
| Geometry code | ISO Reference | PHH603 | PHH910 | PHH603 | PHH910 | PHH603 | PHH910 | PHH603 | PHH910 | | | | |
| 1112879 | WCL-08 R0.3 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 9,7 | 0,3 | 2,1 | 8 |
| 1112880 | WCL-08 R0.5 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 9,7 | 0,5 | 2,1 | 08 |
| 1112853 | WCL-08 R1.0 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 9,7 | 1,0 | 2,1 | 08 |
| 1112881 | WCL-10 R0.3 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 12,0 | 0,3 | 2,7 | 10 |
| 1112882 | WCL-10 R0.5 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 12,0 | 0,5 | 2,7 | 10 |
| 1112848 | WCL-10 R1.0 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 12,0 | 1,0 | 2,7 | 10 |
| 1112883 | WCL-10 R1.5 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 12,0 | 1,5 | 2,7 | 10 |
| 1112884 | WCL-10 R2.0 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 12,0 | 2,0 | 2,7 | 10 |
| 1112885 | WCL-12 R0.3 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 14,6 | 0,3 | 3,2 | 12 |
| 1112886 | WCL-12 R0.5 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 14,6 | 0,5 | 3,2 | 12 |
| 1112096 | WCL-12 R1.0 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 14,6 | 1,0 | 3,2 | 12 |
| 1112887 | WCL-12 R1.5 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 14,6 | 1,5 | 3,2 | 12 |
| 1112888 | WCL-12 R2.0 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 14,6 | 2,0 | 3,2 | 12 |
| 1112889 | WCL-12 R3.0 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 14,6 | 3,0 | 3,2 | 12 |
| 1112890 | WCL-16 R0.3 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 16,6 | 0,3 | 4,2 | 16 |
| 1112891 | WCL-16 R0.5 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 16,6 | 0,5 | 4,2 | 16 |
| 1112097 | WCL-16 R1.0 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 16,6 | 1,0 | 4,2 | 16 |
| 1112892 | WCL-16 R1.5 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 16,6 | 1,5 | 4,2 | 16 |
| 1112893 | WCL-16 R2.0 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 16,6 | 2,0 | 4,2 | 16 |
| 1112894 | WCL-16 R3.0 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 16,6 | 3,0 | 4,2 | 16 |
| 1112895 | WCL-20 R0.3 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 20,0 | 0,3 | 5,2 | 20 |
| 1112896 | WCL-20 R0.5 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 20,0 | 0,5 | 5,2 | 20 |
| 1112098 | WCL-20 R1.0 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 20,0 | 1,0 | 5,2 | 20 |
| 1112897 | WCL-20 R1.5 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 20,0 | 1,5 | 5,2 | 20 |
| 1112898 | WCL-20 R2.0 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 20,0 | 2,0 | 5,2 | 20 |
| 1112899 | WCL-20 R3.0 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 20,0 | 3,0 | 5,2 | 20 |

⊗ First choice | Primeira opção | 1ª opción
 ⊗ Stock item | Produto de stock | Itens de stock
 ○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9)

Insert order code = (1) Geometry Code + (2) Grade Code



GRADES SELECTION GUIDE | Guia para selecção de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | | |
|-----|-----|-----------------------------------|--------------|-------------------|--------|-------------|
| | | | | ← Wear Resistance | | Toughness → |
| | | | | PHH603 | PHH910 | |
| P | 1 | Unalloyed Steel | 125-220 | ✓ | ✓ | |
| | 2 | Low-Alloyed Steel | 220-280 | ✓ | ✓ | |
| | 3 | High-Alloyed Steel | 280-380 | ✓ | ✓ | |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | ✓ | ✓ | |
| | 5 | SS - Austenitic | 200-330 | ✓ | ✓ | |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | ✓ | ✓ | |
| K | 7 | Malleable Cast Iron | 130-230 | ✓ | ✓ | |
| | 8 | Grey Cast Iron | 180-245 | ✓ | ✓ | |
| | 9 | Nodular Cast iron | 160-250 | ✓ | ✓ | |
| H | 12 | Hardened Steels | 40-55 HRC | ✓ | ✓ | |

Good Conditions
 Average Conditions
 Difficult Conditions

RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | Feed fz (mm/t) | |
|-----|-----|-----------------------------------|--------------|-------------------|---------|----------------|-----------|
| | | | | ← Wear Resistance | | Toughness → | |
| | | | | PHH603 | PHH910 | WCR | WCL |
| P | 1 | Unalloyed Steel | 125-220 | 180-310 | 140-270 | 0,15-0,45 | 0,10-0,30 |
| | 2 | Low-Alloyed Steel | 220-280 | 180-300 | 140-260 | 0,15-0,40 | 0,10-0,25 |
| | 3 | High-Alloyed Steel | 280-380 | 180-280 | 140-220 | 0,10-0,40 | 0,10-0,25 |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | 170-300 | 130-260 | 0,15-0,35 | 0,10-0,25 |
| | 5 | SS - Austenitic | 200-330 | 160-290 | 120-250 | 0,15-0,35 | 0,10-0,25 |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | 150-270 | 110-230 | 0,15-0,30 | 0,08-0,20 |
| K | 7 | Malleable Cast Iron | 130-230 | 200-380 | 180-370 | 0,10-0,50 | 0,10-0,35 |
| | 8 | Grey Cast Iron | 180-245 | 180-360 | 180-350 | 0,10-0,45 | 0,10-0,30 |
| | 9 | Nodular Cast iron | 160-250 | 160-310 | 160-290 | 0,10-0,40 | 0,10-0,30 |
| H | 12 | Hardened Steels | 46-54 HRC | 90-270 | 80-260 | 0,05-0,20 | 0,05-0,15 |
| | 13 | Hardened Steels | 55-62 HRC | 80-200 | 70-180 | 0,05-0,15 | 0,04-0,12 |
| | 14 | Hardened Steels | 63-70 HRC | 70-180 | 70-160 | 0,04-0,12 | 0,04-0,10 |

A

MILLING

Overview

Face milling

Hi-feed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

Spot face

Spare Parts

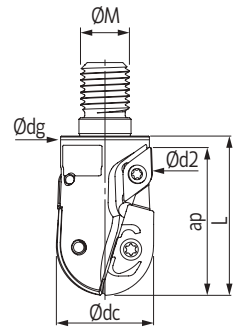
Technical Data

End Mills

BALLPRO 93090

NEW

BALLPRO 63090



Threaded Coupling

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | | Specifications Ap max (mm) | Kg | Insert | Insert 2 | Stock |
|----------------------|---------------------------------------|---|---|------|------|-----|----|-------------------------------|-------|-----------|-----------|-------|
| | | | ØDc | ØDc2 | Ød/M | Ødg | L | | | | | |
| 181125000 | 032R63090-02-M16052 | 2 | 32 | 31,9 | M16 | 29 | 52 | 48 | 0,168 | XPGT 3206 | DCMW 11T3 | |

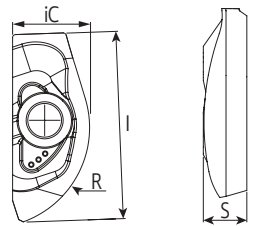
Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

XPGT 3206

XPGT

NEW



| (1) Geometry code | (2) Grade code | P | | | | | M | | | | | K | | | | | S | | | | | Dimensions (mm) | | | |
|-------------------|----------------|----|----|----|----|----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---|------|----|-----------------|--|--|--|
| | | G4 | G6 | G6 | G4 | G6 | PH7920 | PH7740 | PH7740 | PH7920 | PH7740 | PH7920 | PH7740 | PH7920 | PH7740 | PH7920 | PH7740 | iC | S | I | R | | | | |
| 1112485 | XPGT 3206-MP | | | | | | | | | | | | | | | | | 12,576 | 7 | 30,6 | 16 | | | | |

First choice | Primeira opção | 1ª opción

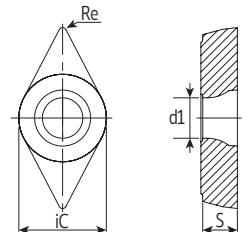
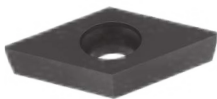
Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

Insert order code = (1) Geometry Code + (2) Grade Code

DCMW 11T3

DCMW



| (1) Geometry code | (2) Grade code | PH5705 | Dimensions (mm) | | | |
|-------------------|----------------|--------|-----------------|------|-----|-----|
| | | | iC | S | Re | d1 |
| 1120305 | DCMW 11T304 | | 9,525 | 3,97 | 0,4 | 4,4 |

First choice | Primeira opção | 1ª opción

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

Insert order code = (1) Geometry Code + (2) Grade Code



GRADES SELECTION GUIDE || Guia para selecção de graus | Tabla para selección de calidades

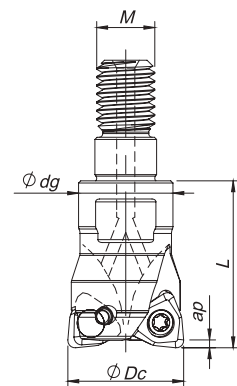
| ISO | PSM | Material | HB (Brinell) | Grades | | |
|-----|-----|-----------------------------------|--------------|-------------------|--------|-------------|
| | | | | ← Wear Resistance | | Toughness → |
| | | | | PH7920 | PH7740 | |
| P | 1 | Unalloyed Steel | 125-220 | ✓ | ✓ | |
| | 2 | Low-Alloyed Steel | 220-280 | ✓ | ✓ | |
| | 3 | High-Alloyed Steel | 280-380 | ✓ | ✓ | |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | | ✓ | |
| | 5 | SS - Austenitic | 200-330 | | ✓ | |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | | ✓ | |
| K | 7 | Malleable Cast Iron | 130-230 | ✓ | | |
| | 8 | Grey Cast Iron | 180-245 | ✓ | | |
| | 9 | Nodular Cast iron | 160-250 | ✓ | | |
| S | 11 | Heat Resistant Super Alloys | 200-320 | | ✓ | |

RECOMMENDED CUTTING CONDITIONS || Condições de corte recomendadas | Condiciones de corte recomendadas

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | Feed fz (mm/t) | |
|-----|-----|-----------------------------------|--------------|-------------------|---------|----------------|-------------|
| | | | | ← Wear Resistance | | | Toughness → |
| | | | | PH7920 | PH7740 | | |
| P | 1 | Unalloyed Steel | 125-220 | 190-350 | 140-300 | 0,10-0,90 | |
| | 2 | Low-Alloyed Steel | 220-280 | 180-280 | 130-230 | 0,10-0,85 | |
| | 3 | High-Alloyed Steel | 280-380 | 150-220 | 100-180 | 0,05-0,80 | |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | - | 120-260 | 0,05-0,80 | |
| | 5 | SS - Austenitic | 200-330 | - | 100-200 | 0,05-0,80 | |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | - | 60-120 | 0,05-0,60 | |
| K | 7 | Malleable Cast Iron | 130-230 | 240-380 | - | 0,15-0,90 | |
| | 8 | Grey Cast Iron | 180-245 | 220-320 | - | 0,15-0,90 | |
| | 9 | Nodular Cast iron | 160-250 | 180-280 | - | 0,10-0,80 | |
| S | 11 | Heat Resistant Super Alloys | 200-320 | - | 30-110 | 0,10-0,80 | |

SPARE PARTS || Complementos | Repuestos

| Insert | Insert Screw | Key (Torx) | Key (Torx - Nm) | Torque Value |
|--------|--------------|------------|-----------------|--------------|
| XPGT | P0501302 | PT20 | DT2050 | 5.0 Nm |
| DCMW | P0400900 | XT15 | DT1530 | 3.0 Nm |



Threaded Coupling

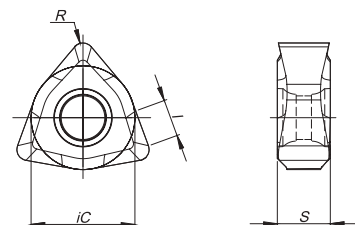
$\kappa_r = 95^\circ$ | $\gamma_p = -7^\circ$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|-----|-----|----|-------|----------------|-------------------------------|-------|
| | | | ØDc | M | Ødg | L | | Ap max (mm) | | |
| 181030400 | 016R49095-02-07-M08023 | 2 | 16 | M8 | 13 | 23 | 0,024 | 0,30 | WNHU 04T310 | |
| 181028600 | 020R49095-03-07-M10028 | 3 | 20 | M10 | 18 | 28 | 0,052 | 0,30 | WNHU 04T310 | |
| 181030500 | 025R49095-04-07-M12030 | 4 | 25 | M12 | 21 | 30 | 0,082 | 0,30 | WNHU 04T310 | |
| 181030600 | 035R49095-05-07-M16035 | 5 | 35 | M16 | 29 | 35 | 0,190 | 0,30 | WNHU 04T310 | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

WNHU 04T310 | Inserts | Pastilhas | Plaquetas



| | | P | | K | | H | | Dimensions Dimensões Dimensiones (mm) | | | |
|-------------------|---------------|--------|--------|--------|--------|--------|--------|---|------|------|------|
| | | PVD | | PVD | | PVD | | iC | S | I | R |
| (2) Grade code | | X5 | G4 | X5 | G4 | X4 | X5 | | | | |
| (1) Geometry code | ISO Reference | PHP910 | PH7920 | PHP910 | PH7920 | PHH603 | PHP910 | | | | |
| 1110783 | WNHU 04T310 | | | | | | | 6,35 | 3,50 | 2,80 | 1,00 |

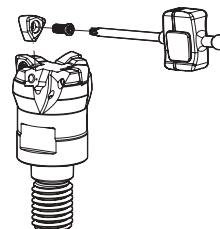
First choice | Primeira opção | 1ª opción Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

Insert order code = (1) Geometry Code + (2) Grade Code

SPARE PARTS | Complementos | Repuestos

| Cutter ØDc | Order separately | | | |
|----------------|------------------|------------|-----------------|--------------|
| | Insert Screw | Key (Torx) | Key (Torx - Nm) | Torque Value |
| R49095 - 16-35 | P0250704 | XT08 | DT0812 | 1,2 |



Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241. Check the procedures for the clamping screws on the page A-241.



GRADES SELECTION GUIDE | Guia para selecção de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | | |
|-----|-----|---------------------|--------------|-------------------|--------|-------------|
| | | | | ← Wear Resistance | | Toughness → |
| | | | | PHH603 | PHP910 | PH7920 |
| P | 1 | Unalloyed Steel | 125-220 | ● | ✓ | ✓ |
| | 2 | Low-Alloyed Steel | 220-280 | | ✓ | ✓ |
| | 3 | High-Alloyed Steel | 280-380 | ✓ | ✓ | ✓ |
| K | 7 | Malleable Cast Iron | 130-230 | | ✓ | ✓ |
| | 8 | Grey Cast Iron | 180-245 | | ✓ | ✓ |
| | 9 | Nodular Cast iron | 160-250 | | ✓ | ✓ |
| H | 12 | Hardened Steels | 40-55 HRC | ✓ | | |

- Good conditions
- Average Conditions
- Difficult Conditions

(Note 1) Grade PHH603 must be used only on finishing operations.

RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | |
|-----|-----|---------------------|--------------|-------------------|---------|-------------|
| | | | | ← Wear Resistance | | Toughness → |
| | | | | PHH603 | PHP910 | PH7920 |
| P | 1 | Unalloyed Steel | 125-220 | - | 180-250 | 180-240 |
| | 2 | Low-Alloyed Steel | 220-280 | - | 160-240 | 160-220 |
| | 3 | High-Alloyed Steel | 280-380 | 180-310 | 140-230 | 140-210 |
| K | 7 | Malleable Cast Iron | 130-230 | - | 180-300 | 160-260 |
| | 8 | Grey Cast Iron | 180-245 | - | 160-250 | 140-240 |
| | 9 | Nodular Cast iron | 160-250 | - | 150-210 | 120-200 |
| H | 12 | Hardened Steels | 40-55 HRC | 70-270 | - | - |

(Note 1) Grade PHH603 must be used only on finishing operations.

| Insert | Feed f_z (mm/t) | | a_p Rec. |
|-------------|-------------------|-----------|------------|
| | Roughing | Finishing | |
| WNHU 04T310 | 0.15-0.25 | 0.10-0.20 | 0.10-0.50 |

(Note 1) Cutting conditions should be adjusted according to the machine and work rigidity.

(Note 2) If chattering occurs, reduce a_p and V_c by 30% and keep the same f_z per tooth.

A

MILLING

Overview

Face milling

Hi-feed milling

Shoulder milling

Profile milling

Hardmill

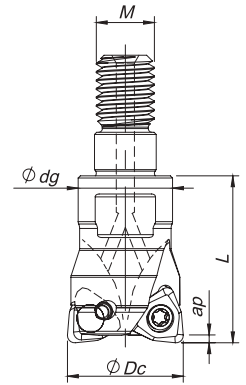
Center & Chamfer

Spot face

Spare Parts

Technical Data

End Mills



Threaded Coupling

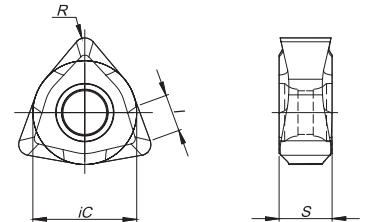
$K_r = 95^\circ$ | $\gamma_p = -6^\circ$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|-----|-----------|----|-------|----------------|-------------------------------|-------|
| | | | ϕDc | M | ϕdg | L | | A_p max (mm) | | |
| 181037500 | 025R45095-02-06-M12030 | 2 | 25 | M12 | 21 | 30 | 0,079 | 0,50 | WNHU 060410 | |
| 181037600 | 035R45095-03-06-M16035 | 3 | 35 | M16 | 29 | 35 | 0,185 | 0,50 | WNHU 060410 | |
| 181037700 | 042R45095-04-06-M16035 | 4 | 42 | M16 | 29 | 35 | 0,219 | 0,50 | WNHU 060410 | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

WNHU 060410 | Inserts | Pastilhas | Plaquetas



| | ⁽²⁾ Grade code | P | K | H | | Dimensions Dimensões Dimensiones (mm) | | | |
|------------------------------|---------------------------|--------|--------|--------|--------|---|------|------|------|
| | | PVD | PVD | PVD | | iC | S | I | R |
| ⁽¹⁾ Geometry code | ISO Reference | PHP910 | PHP910 | PHH603 | PHP910 | | | | |
| 1111424 | WNHU 060410 | | | | | 9,53 | 4,76 | 3,40 | 1,00 |

First choice | Primeira opção | 1ª opción

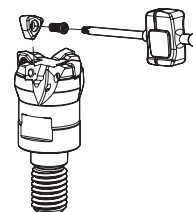
Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

Insert order code = (1) Geometry Code + (2) Grade Code

SPARE PARTS | Complementos | Repuestos

| Cutter ϕDc | Order separately | | | |
|---------------------|------------------|------------|-----------------|--------------|
| | Insert Screw | Key (Torx) | Key (Torx - Nm) | Torque Value |
| R45095 - 25-42 | P0350902 | XT10 | DT1020 | 2,0 |



Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
Check the procedures for the clamping screws on the page A-241.



GRADES SELECTION GUIDE | Guia para selecção de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | |
|-----|-----|---------------------|--------------|-------------------|-------------|
| | | | | ← Wear Resistance | Toughness → |
| | | | | PHH603 | PHP910 |
| P | 1 | Unalloyed Steel | 125-220 | ● | ✓ |
| | 2 | Low-Alloyed Steel | 220-280 | ● | ✓ |
| | 3 | High-Alloyed Steel | 280-380 | ✓ | ✓ |
| K | 7 | Malleable Cast Iron | 130-230 | ● | ✓ |
| | 8 | Grey Cast Iron | 180-245 | ● | ✓ |
| | 9 | Nodular Cast iron | 160-250 | ● | ✓ |
| H | 12 | Hardened Steels | 40-55 HRC | ✓ | ✓ |

- Good Conditions
- Average Conditions
- Difficult Conditions

(Note 1) Grade PHH603 must be used only on finishing operations.

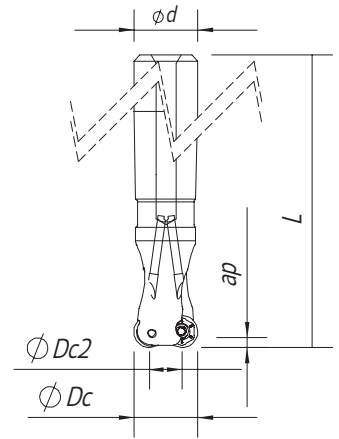
RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | V _c (m/min) | |
|-----|-----|---------------------|--------------|------------------------|-------------|
| | | | | ← Wear Resistance | Toughness → |
| | | | | PHH603 | PHP910 |
| P | 1 | Unalloyed Steel | 125-220 | - | 180-250 |
| | 2 | Low-Alloyed Steel | 220-280 | - | 160-240 |
| | 3 | High-Alloyed Steel | 280-380 | 180-310 | 140-230 |
| K | 7 | Malleable Cast Iron | 130-230 | - | 180-300 |
| | 8 | Grey Cast Iron | 180-245 | - | 160-250 |
| | 9 | Nodular Cast iron | 160-250 | - | 150-210 |
| H | 12 | Hardened Steels | 40-55 HRC | 70-270 | 60-250 |

(Note 1) Grade PHH603 must be used only on finishing operations.

| Insert | Feed f _z (mm/t) | | a _p Rec. |
|-------------|----------------------------|-----------|---------------------|
| | Roughing | Finishing | |
| WNHU 060410 | 0.15-0.30 | 0.10-0.25 | 0.10-0.50 |

(Note 1) Cutting conditions should be adjusted according to the machine and work rigidity.
(Note 2) If chattering occurs, reduce a_p and V_c by 30% and keep the same f_z per tooth.



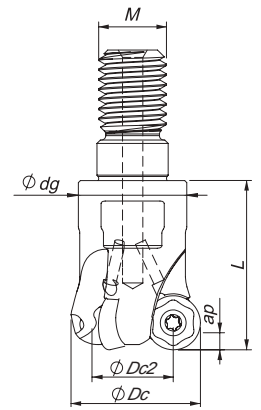
Cylindrical Shank

$\gamma_p = +5^\circ$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | | Kg | Specifications | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|------------|----------|-----|----|------|----------------|-------------------------------|-------|
| | | | ϕDc | $\phi Dc2$ | ϕd | L | L1 | | Ap max (mm) | | |
| 33590 | | | | | | | | | | | |
| 181122500 | 016E33590-02-04-016160 | 2 | 16 | 8 | 16 | 160 | 59 | 0,23 | 4,0 | RD...0802 MOE | |
| 181122600 | 020E33590-03-05-020180 | 3 | 20 | 12 | 20 | 180 | 59 | 0,36 | 4,0 | RD...0802 MOE | |
| 181122700 | 025E33590-04-05-025200 | 4 | 25 | 17 | 25 | 200 | 59 | 0,65 | 4,0 | RD...0802 MOE | |
| 33690 | | | | | | | | | | | |
| 181123400 | 020E33690-02-05-020180 | 2 | 20 | 10 | 20 | 180 | 50 | 0,40 | 5,0 | RP...10T3 MOE | |
| 181123500 | 025E33690-03-05-025200 | 3 | 25 | 15 | 25 | 200 | 60 | 0,76 | 5,0 | RP...10T3 MOE | |
| 181123600 | 032E33690-04-05-032200 | 4 | 32 | 22 | 32 | 200 | 60 | 0,98 | 5,0 | RP...10T3 MOE | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

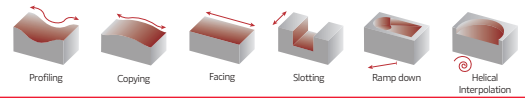


Threaded Coupling

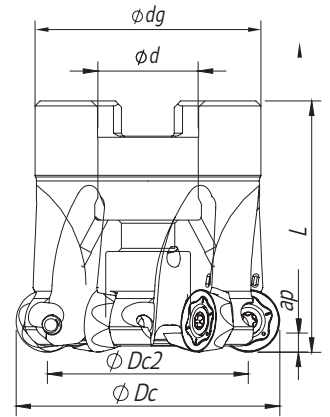
$\gamma_p = +5^\circ$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | | Kg | Specifications | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|------------|----------|-----------|----|------|----------------|-------------------------------|-------|
| | | | ϕDc | $\phi Dc2$ | ϕM | ϕdg | L | | Ap max (mm) | | |
| 33590 | | | | | | | | | | | |
| 181098600 | 016R33590-02-04-M08020 | 2 | 16 | 8 | M8 | 13 | 20 | 0,03 | 4,0 | RD...0802 MOE | |
| 181122800 | 020R33590-03-05-M10025 | 3 | 20 | 12 | M10 | 16 | 25 | 0,07 | 4,0 | RD...0802 MOE | |
| 181122900 | 025R33590-04-05-M12030 | 4 | 25 | 17 | M12 | 21 | 30 | 0,14 | 4,0 | RD...0802 MOE | |
| 181123000 | 032R33590-05-05-M16043 | 5 | 32 | 24 | M16 | 29 | 43 | 0,25 | 4,0 | RD...0802 MOE | |
| 33690 | | | | | | | | | | | |
| 181110600 | 020R33690-02-05-M10032 | 2 | 20 | 10 | M10 | 16 | 32 | 0,10 | 5,0 | RP...10T3 MOE | |
| 181110700 | 025R33690-03-05-M12035 | 3 | 25 | 15 | M12 | 21 | 35 | 0,19 | 5,0 | RP...10T3 MOE | |
| 181110800 | 032R33690-04-05-M16035 | 4 | 32 | 22 | M16 | 29 | 35 | 0,31 | 5,0 | RP...10T3 MOE | |
| 181120700 | 035R33690-05-05-M16045 | 5 | 35 | 25 | M16 | 29 | 45 | 0,40 | 5,0 | RP...10T3 MOE | |

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)



Arbor Mounting
 $\gamma_p = +5^\circ$



| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|--|---|------------|------------|-----------|----|------|----------------|----------------|-------------------------------|-------|
| | | | ϕDc | $\phi Dc2$ | $\phi d/M$ | ϕdg | L | | Arbor Type | Ap max (mm) | | |
| 33690 | | | | | | | | | | | | |
| 181123700 | 042A33690-06-05-016040 | | 42 | 32 | 16 | 36 | 40 | 0,16 | A | 5,0 | RP...10T3 MOE | |
| 181123800 | 050A33690-06-05-022040 | | 50 | 40 | 22 | 42 | 40 | 0,26 | A | 5,0 | RP...10T3 MOE | |
| 181123900 | 052A33690-07-05-022040 | | 52 | 42 | 22 | 42 | 40 | 0,30 | A | 5,0 | RP...10T3 MOE | |
| 33790 | | | | | | | | | | | | |
| 181098700 | 040A33790-04-05-016040 | | 40 | 28 | 26 | 36 | 40 | 0,15 | A | 6,0 | RP...1204 MOE | |
| 181111500 | 050A33790-04-05-022040 | | 50 | 38 | 22 | 42 | 40 | 0,20 | A | 6,0 | RP...1204 MOE | |
| 181124200 | 052A33790-05-05-022040 | | 52 | 40 | 22 | 42 | 40 | 0,25 | A | 6,0 | RP...1204 MOE | |
| 181122100 | 063A33790-06-05-022040 | | 63 | 51 | 22 | 48 | 40 | 0,36 | A | 6,0 | RP...1204 MOE | |
| 181124300 | 066A33790-06-05-027050 | | 66 | 54 | 27 | 48 | 50 | 0,40 | A | 6,0 | RP...1204 MOE | |
| 181124400 | 080A33790-07-05-027050 | | 80 | 68 | 27 | 60 | 50 | 0,68 | A | 6,0 | RP...1204 MOE | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

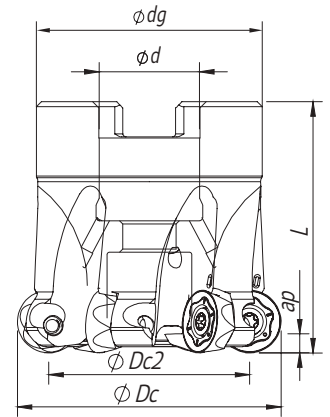
TOROMILL 33590 | 33690 | 33790 | 33890 | 33990

Proprietary milling line



Arbor Mounting

$$\gamma_p = 5^\circ$$

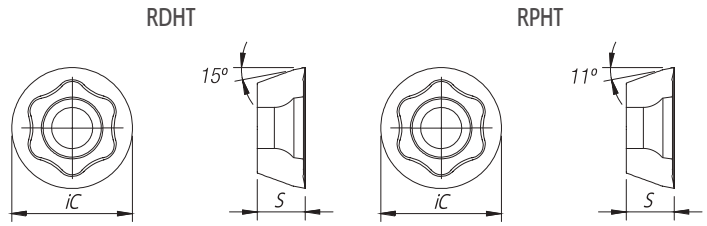


| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|------------|----------|-----------|----|------|----------------|-------------|-------------------------------|-------|
| | | | ϕDc | $\phi Dc2$ | ϕd | ϕdg | L | | Arbor Type | Ap max (mm) | | |
| 33890 | | | | | | | | | | | | |
| 181124500 | 050A33890-04-05-022040 | 4 | 50 | 34 | 22 | 42 | 40 | 0,21 | A | 8,0 | RP...1605 MOE | ○ |
| 181124600 | 052A33890-04-05-022040 | 4 | 52 | 36 | 22 | 42 | 40 | 0,25 | A | 8,0 | RP...1605 MOE | ○ |
| 181114900 | 063A33890-05-05-022040 | 5 | 63 | 47 | 22 | 48 | 40 | 0,37 | A | 8,0 | RP...1605 MOE | ⊗ |
| 181124700 | 066A33890-05-05-027050 | 5 | 66 | 54 | 27 | 48 | 50 | 0,46 | A | 8,0 | RP...1605 MOE | ⊗ |
| 181124800 | 080A33890-06-05-027052 | 6 | 80 | 64 | 27 | 60 | 52 | 0,85 | A | 8,0 | RP...1605 MOE | ⊗ |
| 181124900 | 100A33890-07-05-032052 | 7 | 100 | 84 | 32 | 80 | 52 | 1,57 | A | 8,0 | RP...1605 MOE | ⊗ |
| 181122200 | 125A33890-08-05-040052 | 8 | 125 | 109 | 40 | 90 | 52 | 2,12 | A | 8,0 | RP...1605 MOE | ⊗ |
| 33990 | | | | | | | | | | | | |
| 181112200 | 080A33990-05-05-027050 | 5 | 80 | 60 | 27 | 60 | 50 | 0,73 | A | 10,0 | RP...2006 MOE | ⊗ |
| 181099800 | 100A33990-06-05-032063 | 6 | 100 | 80 | 32 | 80 | 63 | 1,62 | A | 10,0 | RP...2006 MOE | ⊗ |
| 181099900 | 125A33990-06-05-040063 | 6 | 125 | 105 | 40 | 90 | 63 | 2,53 | A | 10,0 | RP...2006 MOE | ⊗ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

RDHT | RPHT | Inserts | Pastilhas | Plaquetas



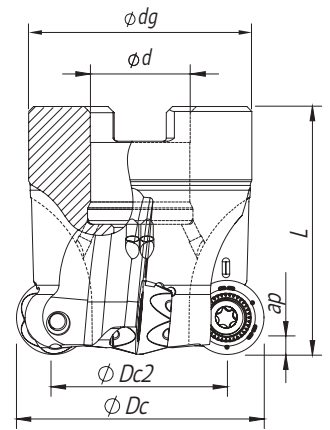
| (1) Geometry code | (2) Grade code ISO Reference | P | | | | M | | | | S | | | Dimensions Dimensões Dimensiones (mm) | |
|-------------------------|------------------------------------|-----|-----|----|----|-----|----|----|----|-----|----|----|--|------|
| | | CVD | PVD | | | PVD | | | | PVD | | | | |
| | | T9 | T1 | Z1 | Z2 | X9 | Y2 | Z2 | Z3 | X9 | Y2 | Z3 | iC | S |
| 1112152 | RDHT 0802 M0E-LS | | | | ⊗ | | | ⊗ | ⊗ | | | ⊗ | 8,00 | 2,38 |
| 1112253 | RPHT 10T3 M0E-MS | | ⊗ | | | ⊗ | | | | ⊗ | | | 10,00 | 3,97 |
| 1112772 | RPHT 10T3 M0E-LS | ⊗ | | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | | ⊗ | ⊗ | 10,00 | 3,97 |
| 1112186 | RPHT 1204 M0E-MS | | ⊗ | | | ⊗ | | | | ⊗ | | | 12,00 | 4,76 |
| 1112766 | RPHT 1204 M0E-LS | ⊗ | | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | | ⊗ | ⊗ | 12,00 | 4,76 |
| 1112254 | RPHT 1605 M0E-MS | | ⊗ | | | ⊗ | | | | ⊗ | | | 16,00 | 5,56 |
| 1112951 | RPHT 1605 M0E-LS | | | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | | ⊗ | ⊗ | 16,00 | 5,56 |
| 1112958 | RPHT 2006 M0E-LS | | | | ⊗ | | ⊗ | ⊗ | ⊗ | | ⊗ | ⊗ | 20,00 | 6,35 |

⊗ First choice | Primeira opção | 1ª opción ⊗ Stock item | Produto de stock | Itens de stock ○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9) Insert order code = (1) Geometry Code + (2) Grade Code

TURBOMILL 34190

NEW

Proprietary milling line



Arbor Mounting

$$\gamma_p = 5^\circ$$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | | Kg | Specifications | | Insert | Stock |
|----------------------|---------------------------------------|--|---|------------|----------|-----------|----|------|----------------|----------------|--------------------|-------|
| | | | ϕDc | $\phi Dc2$ | ϕd | ϕdg | L | | Arbor Type | A_p max (mm) | | |
| 181160100 | 042A34190-06-05-016040 | | 42 | 32 | 16 | 36 | 40 | 0,16 | A | 5 | RPHT 10T3M0E-LS(4) | |
| 181160200 | 050A34190-06-05-022039 | | 50 | 40 | 22 | 42 | 40 | 0,26 | A | 5 | RPHT 10T3M0E-LS(4) | |
| 181160700 | 052 A34190-07-05-022040 | | 52 | 42 | 22 | 42 | 40 | 0,30 | A | 5 | RPHT 10T3M0E-LS(4) | |

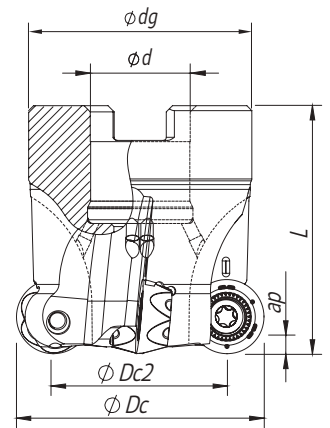
Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

TURBOMILL 34290

NEW

Proprietary milling line



Arbor Mounting

$$\gamma_p = 5^\circ$$

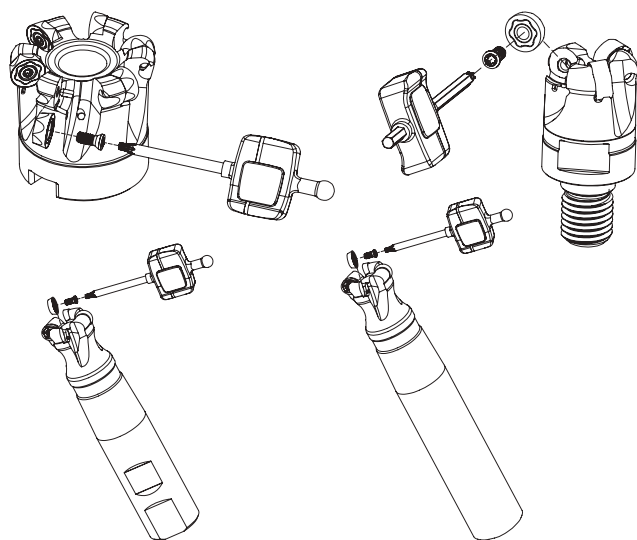
| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | | Kg | Specifications | | Insert | Stock |
|----------------------|---------------------------------------|--|---|------------|----------|-----------|----|------|----------------|----------------|---------------------|-------|
| | | | ϕDc | $\phi Dc2$ | ϕd | ϕdg | L | | Arbor Type | A_p max (mm) | | |
| 181159600 | 040A34290-04-05-016040 | | 40 | 28 | 16 | 36 | 40 | 0,15 | A | 6 | RPHT 1204 M0E-LS(4) | |
| 181159500 | 052A34290-05-05-022040 | | 52 | 40 | 22 | 42 | 40 | 0,25 | A | 6 | RPHT 1204 M0E-LS(4) | |
| 181160400 | 063A34290-06-05-022040 | | 63 | 51 | 22 | 48 | 40 | 0,36 | A | 6 | RPHT 1204 M0E-LS(4) | |
| 181160500 | 066A34290-06-05-027050 | | 66 | 54 | 27 | 48 | 50 | 0,40 | A | 6 | RPHT 1204 M0E-LS(4) | |
| 181160600 | 080A34290-07-05-027050 | | 80 | 68 | 27 | 60 | 50 | 0,68 | A | 6 | RPHT 1204 M0E-LS(4) | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

SPARE PARTS | Complementos | Repuestos

| Cutter ØDc | Insert Screw | Key (Torx) | Order separately | |
|---------------|--------------|------------|------------------|--------------|
| | | | Key (Torx - Nm) | Torque Value |
| 33590 | P0250503 | XT08 | DT0812 | 1,20 |
| 33690 | P0300800 | XT09 | DT0914 | 1,40 |
| 33790 | P0350800 | XT15 | DT1530 | 3,00 |
| 33890 | P0451100 | XT20 | DT2050 | 5,00 |
| 33990 | P0501302 | PT20 | DT2050 | 5,00 |



Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
Check the procedures for the clamping screws on the page A-241.

RPHT-LS | Inserts | Pastilhas | Plaquitas

RPHT-LS4

NEW

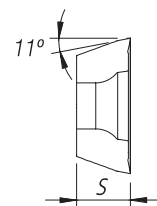
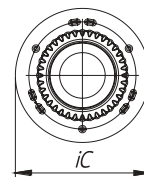


RPHT-LS

NEW



RPHT-LS | LS4



| Geometry code | ISO Reference | P | | | M | | | S | | Dimensions Dimensões Dimensiones (mm) | |
|---------------|-------------------|-----|-----|----|-----|----|----|-----|----|--|------|
| | | CVD | PVD | | PVD | | | PVD | | iC | S |
| (1) | (2) Grade code | T9 | Z1 | Z2 | Y2 | Z2 | Z3 | Y2 | Z3 | | |
| 1112772 | RPHT 10T3M0E-LS | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 10,00 | 3,97 |
| 1113021 | RPHT 10T3 M0E-LS4 | | | ⊗ | | ⊗ | ⊗ | | ⊗ | 12,00 | 4,76 |
| 1112766 | RPHT 1204 M0E-LS | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 10,00 | 3,97 |
| 1113020 | RPHT 1204 M0E-LS4 | | | ⊗ | | ⊗ | ⊗ | | ⊗ | 12,00 | 4,76 |

⊗ First choice | Primeira opção | 1ª opción ⊗ Stock item | Produto de stock | Itens de stock

○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9)

Insert order code = (1) Geometry Code + (2) Grade Code

GRADES SELECTION GUIDE | Guia para selecção de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | | | | | | |
|-----|-----|-----------------------------------|--------------|-------------------|--------|--------|--------|-------------|--------|--------|
| | | | | ← Wear Resistance | | | | Toughness → | | |
| | | | | PHP920 | PHH930 | PHP530 | PHH530 | PHP808 | PHH808 | PHS740 |
| P | 1 | Unalloyed Steel | 125-220 | ✓ | | ✓ | | ✓ | | ✓ |
| | 2 | Low-Alloyed Steel | 220-280 | ✓ | | ✓ | | ✓ | | ✓ |
| | 3 | High-Alloyed Steel | 280-380 | ✓ | | ✓ | | ✓ | | ✓ |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | | ✓ | ✓ | ✓ | | ✓ | |
| | 5 | SS - Austenitic | 200-330 | | ✓ | | ✓ | | ✓ | |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | | ✓ | | ✓ | | ✓ | |
| S | 11 | Heat Resistant Super Alloys | 200-320 | | ✓ | | ✓ | | ✓ | |

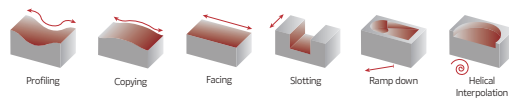
Good Conditions
 Average Conditions
 Difficult Conditions

RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | | | | | |
|-----|-----|-----------------------------------|--------------|-------------------|---------|---------|---------|-------------|---------|---------|
| | | | | ← Wear Resistance | | | | Toughness → | | |
| | | | | PHP920 | PHH930 | PHP530 | PHH530 | PHP808 | PHH808 | PHS740 |
| P | 1 | Unalloyed Steel | 125-220 | 180-250 | - | 180-340 | - | 180-340 | - | 180-350 |
| | 2 | Low-Alloyed Steel | 220-280 | 160-230 | - | 180-340 | - | 180-340 | - | 180-340 |
| | 3 | High-Alloyed Steel | 280-380 | 140-220 | - | 180-330 | - | 180-330 | - | 180-340 |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | - | 140-210 | 150-270 | 170-280 | - | 160-270 | - |
| | 5 | SS - Austenitic | 200-330 | - | 120-170 | - | 160-280 | - | 160-270 | - |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | - | 100-150 | - | 150-260 | - | 150-250 | - |
| S | 11 | Heat Resistant Super Alloys | 200-320 | - | 30-110 | - | 30-150 | - | 30-140 | - |

| ISO | PSM | Material | HB (Brinell) | Feed fz (mm/t) | | | | |
|-----|-----|-----------------------------------|--------------|----------------|------------|------------|------------|------------|
| | | | | RDHT 08.. | RPHT 10... | RPHT 12... | RPHT 16... | RPHT 20... |
| P | 1 | Unalloyed Steel | 125-220 | 0,05-0,35 | 0,05-0,40 | 0,05-0,45 | 0,08-0,55 | 0,10-0,55 |
| | 2 | Low-Alloyed Steel | 220-280 | 0,05-0,35 | 0,05-0,40 | 0,05-0,45 | 0,08-0,55 | 0,10-0,55 |
| | 3 | High-Alloyed Steel | 280-380 | 0,05-0,30 | 0,05-0,35 | 0,05-0,40 | 0,08-0,50 | 0,10-0,55 |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | 0,05-0,25 | 0,05-0,30 | 0,05-0,35 | 0,08-0,45 | 0,10-0,50 |
| | 5 | SS - Austenitic | 200-330 | 0,05-0,25 | 0,05-0,30 | 0,05-0,35 | 0,08-0,45 | 0,10-0,50 |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | 0,05-0,25 | 0,05-0,30 | 0,05-0,35 | 0,08-0,45 | 0,10-0,45 |
| S | 11 | Heat Resistant Super Alloys | 200-320 | 0,05-0,20 | 0,05-0,25 | 0,05-0,30 | 0,08-0,35 | 0,10-0,40 |

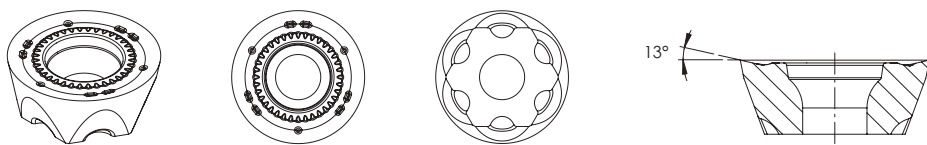
(Note 1) Cutting conditions $a_e/D_c=70\%$.



INSERT INFORMATION | Informação de pastilha | Información del inserto

RPHT-LS

RPHT-LS



6 cutting edges insert

- Insert with 6 cutting edges for a higher productivity.

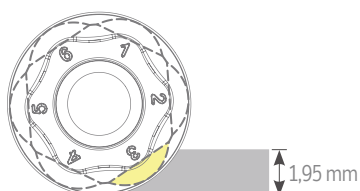
Insert Geometry

- Improved geometry for low cutting force;
- Positive insert with a brand new edge positioning system.

The maximum depth of cut using 6 cutting edges (LS)

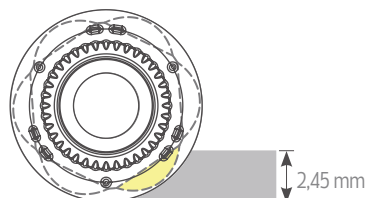
TOROMILL 33590

RDHT 0802...



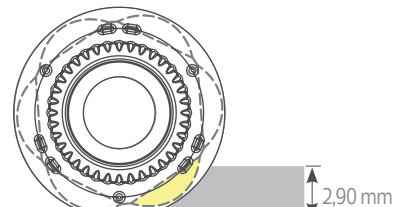
TURBOMILL 34190

RPHT 10T3M0E-LS



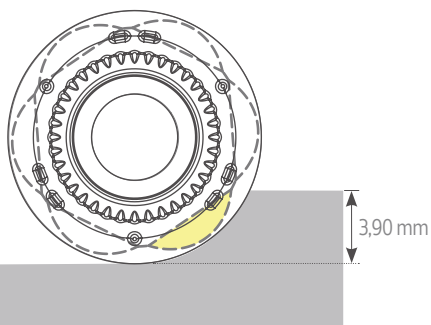
TURBOMILL 34290

RPHT 1204 M0E-LS



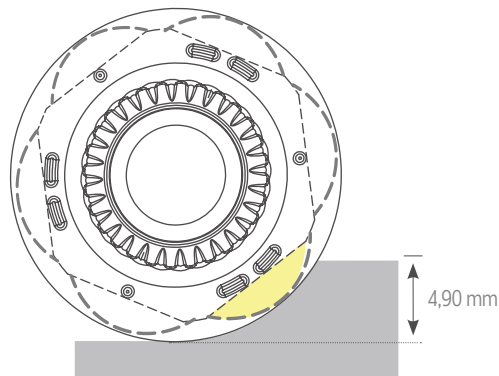
TOROMILL 33890

RPHT 1605 M0E-LS



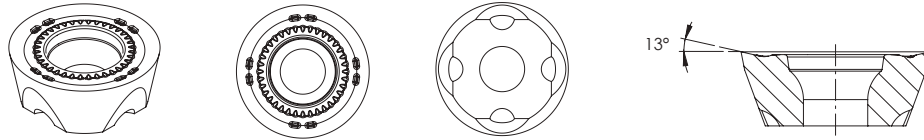
TOROMILL 33990

RPHT 2006...



RPHT-LS4

RPHT-LS4



4 cutting edges insert

- Insert with 4 cutting edges for higher depth of cut.

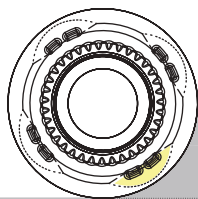
Insert Geometry

- Improved geometry for low cutting force;
- Positive insert with a brand new edge positioning system.

The maximum depth of cut using 4 cutting edges

TURBOMILL 34190

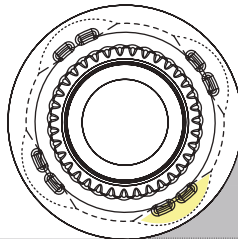
RPHT 10T3M0E-LS4



4,90 mm

TURBOMILL 34290

RPHT 1204 M0E-LS4

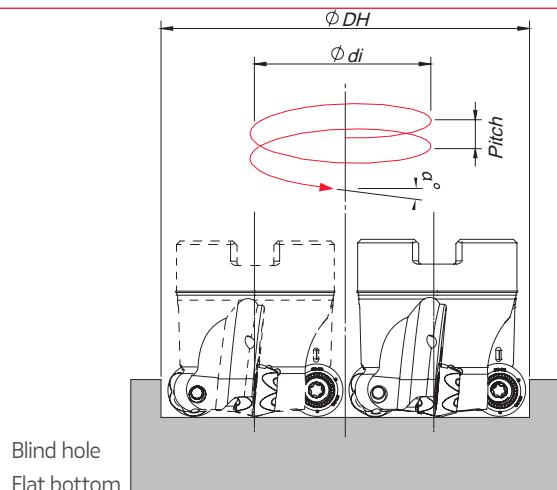
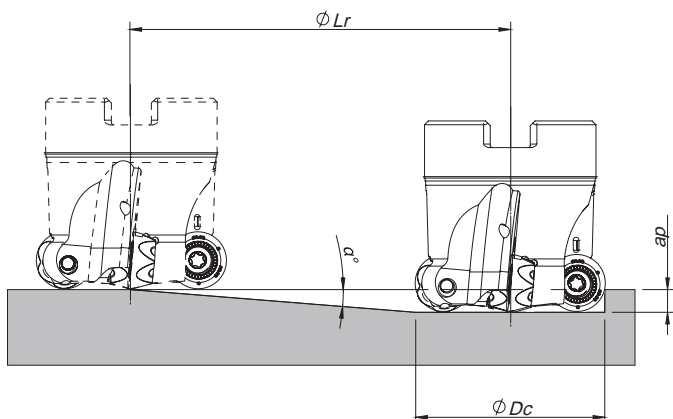


5,90 mm

GEOMETRY FEATURES | Características geométricas | Características geométricas

| Geometry | Features Características Características |
|--|---|
| Geometry LS General machining | Optimized geometry for stainless steel and HRSA. Suitable for alloy steel machining. |
| Geometry LS4 General machining | Optimized geometry for stainless steel and HRSA. Suitable for alloy steel machining. 4 Cutting edges version. |

RAMPING AND HELICAL INTERPOLATION



$$\varnothing di = \varnothing DH - \varnothing Dc$$

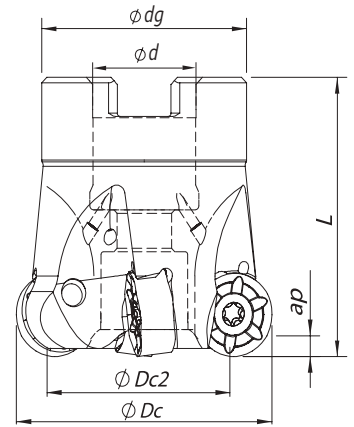
| Insert | $\varnothing Dc$ | Ramping | | | Helical Interpolation | | |
|----------------------|------------------|-------------------------|----------|----------|------------------------|------------------------|----------------|
| | | Max Ramp α° | Max ap | Min Lr | $\varnothing DH_{min}$ | $\varnothing DH_{max}$ | Max Pitch/Rev. |
| 33590 | | | | | | | |
| RD... 08 | 16 | 10,0 | 4,0 | 22,7 | 24 | - | 4 |
| | 20 | 8,0 | 4,0 | 28,5 | 32 | 32 | 8 |
| | 25 | 10,0 | 4,0 | 22,7 | 42 | 40 | 5 |
| | 32 | 8,0 | 4,0 | 28,5 | 56 | 50 | 8 |
| 33690 34190 | | | | | | | |
| RP... 10 | 20 | 7,0 | 5,0 | 40,7 | 30 | 40 | 3 |
| | 25 | 6,0 | 5,0 | 47,6 | 40 | 50 | 4 |
| | 32 | 6,0 | 5,0 | 47,6 | 54 | 64 | 7 |
| | 35 | 5,0 | 5,0 | 57,2 | 60 | 70 | 6 |
| | 42 | 5,0 | 5,0 | 57,2 | 74 | 84 | 8 |
| | 50 | 4,0 | 5,0 | 71,5 | 90 | 100 | 8 |
| | 52 | 3,0 | 5,0 | 95,4 | 94 | 104 | 6 |
| 34290 | | | | | | | |
| RP... 12 | 40 | 8,0 | 6,0 | 42,7 | 68 | 80 | 12 |
| | 50 | 3,5 | 6,0 | 98,1 | 88 | 100 | 7 |
| | 52 | 3,0 | 6,0 | 114,5 | 92 | 104 | 6 |
| | 63 | 2,5 | 6,0 | 137,4 | 114 | 126 | 6 |
| | 66 | 2,5 | 6,0 | 137,4 | 120 | 132 | 7 |
| | 80 | 2,0 | 6,0 | 171,8 | 148 | 160 | 7 |
| 33890 | | | | | | | |
| RP... 16 | 50 | 7,0 | 8,0 | 65,2 | 84 | 100 | 13 |
| | 52 | 7,0 | 8,0 | 65,2 | 88 | 104 | 13 |
| | 63 | 7,0 | 8,0 | 65,2 | 110 | 126 | 18 |
| | 66 | 3,0 | 8,0 | 152,6 | 116 | 132 | 8 |
| | 80 | 3,0 | 8,0 | 152,6 | 144 | 160 | 10 |
| | 100 | 3,0 | 8,0 | 152,6 | 184 | 200 | 13 |
| | 125 | 2,5 | 8,0 | 183,2 | 234 | 250 | 14 |
| 33990 | | | | | | | |
| RP... 20 | 80 | 4,0 | 10,0 | 143,0 | 140 | 160 | 13 |
| | 100 | 3,0 | 10,0 | 190,8 | 180 | 200 | 13 |
| | 125 | 2,5 | 10,0 | 229,0 | 230 | 250 | 14 |

Note: During helical interpolation do not exceed max Pitch.



Arbor Mounting

$$\gamma_p = -7^\circ$$



| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|------------|----------|-----------|----|------|----------------|-------------|-------------------------------|-------|
| | | | ϕDc | $\phi Dc2$ | ϕd | ϕdg | L | | Arbor Type | Ap max (mm) | | |
| 181111600 | 040A35190-04-07-016040 | 4 | 40 | 32 | 16 | 32 | 40 | 0,20 | A | 3,0 | RNHX 1204 MOE... | |
| 181100200 | 050A35190-05-07-022040 | 5 | 50 | 42 | 22 | 40 | 40 | 0,24 | A | 3,0 | RNHX 1204 MOE... | |
| 181128800 | 063A35190-06-07-022050 | 6 | 63 | 49 | 22 | 48 | 50 | 0,55 | A | 3,0 | RNHX 1204 MOE... | |
| 181128900 | 080A35190-07-07-027050 | 7 | 80 | 60 | 27 | 60 | 50 | 0,78 | A | 3,0 | RNHX 1204 MOE... | |
| 181175600 | 100A35190-09-07-032050 | 9 | 100 | 80 | 32 | 70 | 50 | 1,00 | B | 3,0 | RNHX 1204 MOE... | |

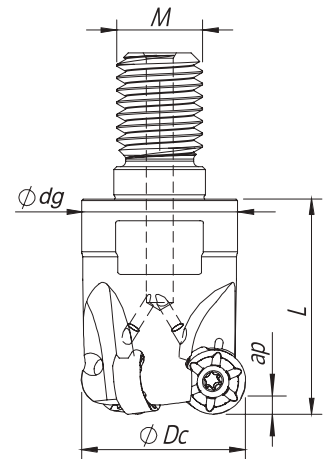
Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)



Threaded Coupling

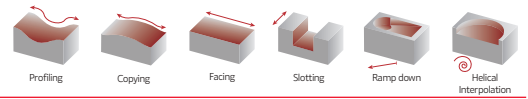
$$\gamma_p = -7^\circ$$



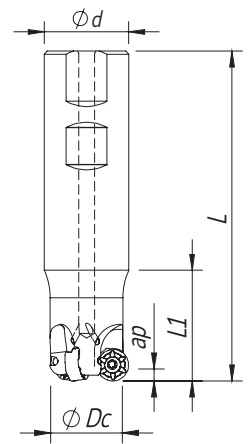
| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|----------|-----------|----|------|----------------|------------------|-------------------------------|-------|
| | | | ϕDc | ϕM | ϕdg | L | | Ap max (mm) | | | |
| 181128500 | 032R35190-03-07-M16040 | 3 | 32 | M16 | 29 | 40 | 0,16 | 3,0 | RNHX 1204 MOE... | | |
| 181128700 | 042R35190-04-07-M16040 | 4 | 42 | M16 | 29 | 40 | 0,20 | 3,0 | RNHX 1204 MOE... | | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)



Weldon Shank
 $\gamma_p = -7^\circ$



| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|------------|-----|----|------|----------------|-------------------------------|-------|
| | | | ϕDc | $\phi d/M$ | L | L1 | | A_p max (mm) | | |
| 181087000 | 032W35190-03-07-032125 | 3 | 32 | 32 | 125 | 42 | 0,98 | 3,0 | RNHX 1204 MOE... | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

RNHX 1204... | Inserts | Pastilhas | Plaquetas

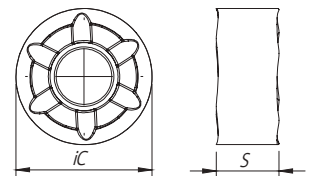
RNHX-LP



RNHX-MP



RNHX-LP | MP



| Geometry code | ISO Reference | P | | | M | | | K | | S | | Dimensions Dimensões Dimensiones (mm) | |
|---------------|------------------|-----|----|----|-----|----|----|-----|----|-----|----|---|------|
| | | PVD | | | PVD | | | PVD | | PVD | | IC | S |
| | | T1 | P4 | Z2 | X9 | Z2 | Z3 | T1 | P4 | X9 | Z3 | | |
| 1112030 | RNHX 1204 MOE-LP | | | | | | | | | | | 12,00 | 4,76 |
| 1112052 | RNHX 1204 MOE-MP | | | | | | | | | | | 12,00 | 4,76 |

First choice | Primeira opção | 1ª opción

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

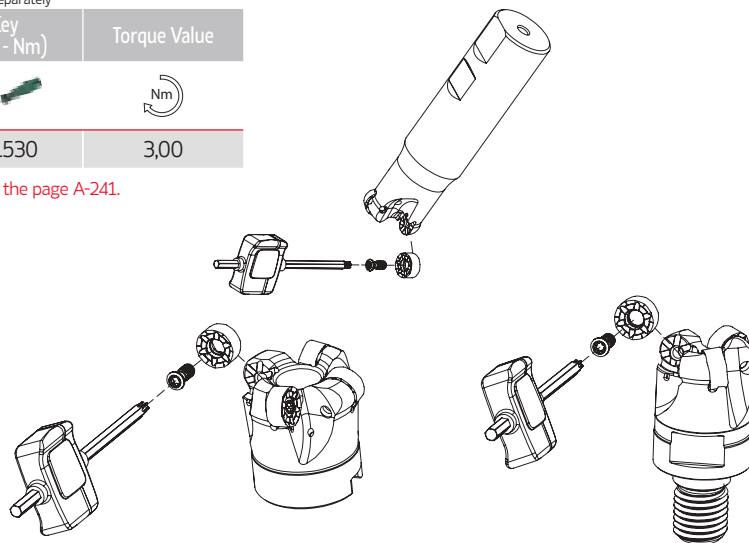
Insert order code = (1) Geometry Code + (2) Grade Code

TOROMILL X2 35190

SPARE PARTS | Complementos | Repuestos

| Cutter ØDc | Insert Screw | Key (Torx) | Order separately | |
|---------------|--------------|------------|--------------------|--------------|
| | | | Key (Torx - Nm) | Torque Value |
| 35190 | P0401065 | XT15 | DT1530 | 3,00 |

Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
Check the procedures for the clamping screws on the page A-241.



GRADES SELECTION GUIDE | Guia para selecção de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | | | | |
|-----|-----|-----------------------------------|-----------------|-------------------|--------|--------|-------------|--------|
| | | | | ← Wear Resistance | | | Toughness → | |
| | | | | PHP920 | PHP930 | PHH930 | PHP530 | PHH530 |
| P | 1 | Unalloyed Steel | 125-220 | ✓ | ✓ | | ✓ | |
| | 2 | Low-Alloyed Steel | 220-280 | ✓ | ✓ | | ✓ | |
| | 3 | High-Alloyed Steel | 280-380 | ✓ | ✓ | | ✓ | |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | | | ✓ | ✓ | ✓ |
| | 5 | SS - Austenitic | 200-330 | | | ✓ | | ✓ |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | | | ✓ | | ✓ |
| K | 7 | Malleable Cast Iron | 130-230 | ✓ | ✓ | | | |
| | 8 | Grey Cast Iron | 180-245 | ✓ | ✓ | | | |
| | 9 | Nodular Cast iron | 160-250 | ✓ | ✓ | | | |
| S | 11 | Heat Resistant Super Alloys | 200-320 | | | ✓ | | ✓ |

Good Conditions
 Average Conditions
 Difficult Conditions

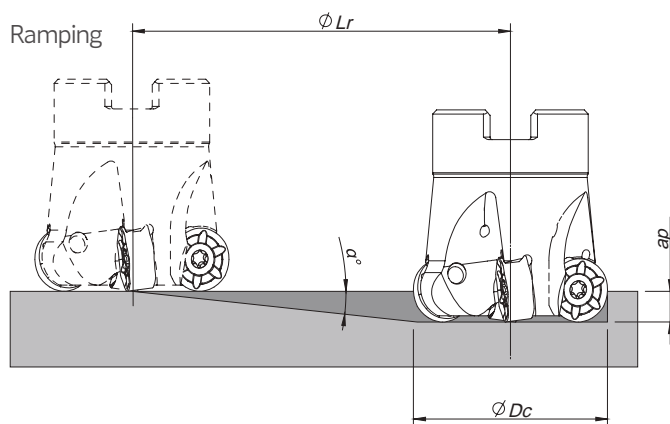
RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | | | | RNHX... 12 | |
|-----|-----|-----------------------------------|-----------------|-------------------|---------|---------|-------------|---------|------------|-----------|
| | | | | ← Wear Resistance | | | Toughness → | | LP | MP |
| | | | | PHP920 | PHP930 | PHH930 | PHP530 | PHH530 | | |
| P | 1 | Unalloyed Steel | 125-220 | 180-250 | 160-230 | - | 180-340 | - | 0,15-0,45 | 0,15-0,50 |
| | 2 | Low-Alloyed Steel | 220-280 | 160-230 | 140-210 | - | 180-340 | - | 0,15-0,45 | 0,15-0,50 |
| | 3 | High-Alloyed Steel | 280-380 | 140-220 | 120-200 | - | 180-330 | - | 0,15-0,45 | 0,15-0,45 |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | - | - | 140-210 | 150-270 | 170-280 | 0,10-0,35 | - |
| | 5 | SS - Austenitic | 200-330 | - | - | 120-170 | - | 160-280 | 0,10-0,35 | - |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | - | - | 100-150 | - | 150-260 | 0,10-0,35 | - |
| K | 7 | Malleable Cast Iron | 130-230 | - | 150-280 | - | - | - | - | 0,15-0,55 |
| | 8 | Grey Cast Iron | 180-245 | - | 130-230 | - | - | - | - | 0,15-0,55 |
| | 9 | Nodular Cast iron | 160-250 | - | 80-190 | - | - | - | - | 0,15-0,50 |
| S | 11 | Heat Resistant Super Alloys | 200-320 | - | - | 30-110 | - | 30-150 | 0,05-0,30 | - |

CHIP-BREAKER SELECTION GUIDE | Guia para aplicações do quebra-afaras | Guía para aplicación del rompevirutas

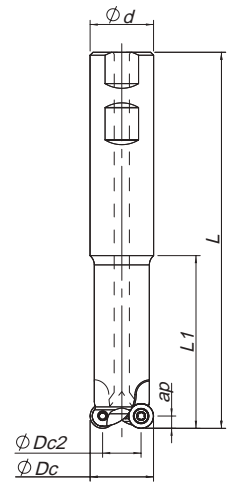
| ISO | PSM | Material | HB (Brinell) | Chip-Breaker Application | |
|-----|-----|-----------------------------------|--------------|--------------------------|----------------------|
| | | | | 1st choice | Difficult Operations |
| P | 1 | Unalloyed Steel | 125-220 | LP | MP |
| | 2 | Low-Alloyed Steel | 220-280 | LP | MP |
| | 3 | High-Alloyed Steel | 280-380 | MP | - |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | LP | - |
| | 5 | SS - Austenitic | 200-330 | LP | - |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | LP | - |
| K | 7 | Malleable Cast Iron | 130-230 | MP | - |
| | 8 | Grey Cast Iron | 180-245 | MP | - |
| | 9 | Nodular Cast iron | 160-250 | MP | - |
| S | 11 | Heat Resistant Super Alloys | 200-320 | LP | - |

RAMPING | Descida em rampa | Bajada en rampa



| Insert | ϕDc | Ramping | | |
|-----------|-----------|--------------------|----------|----------|
| | | Max Ramp a° | Max ap | Min Lr |
| RNHX 1204 | 32 | 1 | 3 | 171,9 |
| | 40 | 0,8 | 3 | 214,8 |
| | 42 | 0,8 | 3 | 214,8 |
| | 50 | 0,8 | 3 | 214,8 |
| | 63 | 0,6 | 3 | 286,5 |
| | 80 | 0,5 | 3 | 343,8 |

TOROMILL 24590 | 25090 | 25190



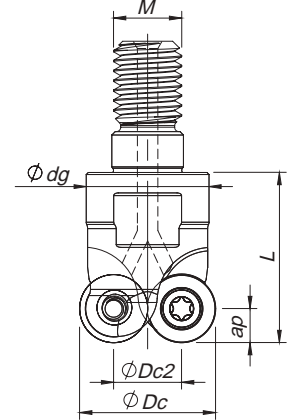
Weldon Shank

$$\gamma_p = 0^\circ$$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | | | | Kg | Specifications Ap max (mm) | Insert Pastilha Inserto | Stock | |
|----------------------|---------------------------------------|--|---|------------|----------|-----------|---|-----|-----|----|-------------------------------|-------------------------------|---------------|--|
| | | | ϕDc | $\phi Dc2$ | ϕd | ϕdg | L | L1 | L2 | | | | | |
| 24590 | | | | | | | | | | | | | | |
| 181047000 | 015W24590-02-U016160 | | 2 | 15 | 8 | 16 | - | 160 | 60 | 40 | 0,220 | 3,5 | RD... 0702... | |
| 181047100 | 015W24590-02-U025220 | | 2 | 15 | 8 | 25 | - | 220 | 120 | 40 | 0,600 | 3,5 | RD... 0702... | |
| 25090 | | | | | | | | | | | | | | |
| 181047200 | 020W25090-02-020160 | | 2 | 20 | 10 | 20 | - | 160 | 60 | - | 0,322 | 5,0 | RD... 1003... | |
| 181047300 | 020W25090-02-025220 | | 2 | 20 | 10 | 25 | - | 220 | 120 | 60 | 0,610 | 5,0 | RD... 1003... | |
| 25190 | | | | | | | | | | | | | | |
| 181047400 | 025W25190-02-025220 | | 2 | 25 | 13 | 25 | - | 220 | 120 | - | 0,678 | 6,0 | RD... 12T3... | |
| 181047500 | 025W25190-02-032230 | | 2 | 25 | 13 | 32 | - | 230 | 130 | 80 | 1,015 | 6,0 | RD... 12T3... | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire página A-8)



Threaded Coupling

$$\gamma_p = 0^\circ$$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | | Kg | Specifications Ap max (mm) | Insert Pastilha Inserto | Stock | |
|----------------------|---------------------------------------|--|---|------------|----------|-----------|----|----|-------------------------------|-------------------------------|---------------|--|
| | | | ϕDc | $\phi Dc2$ | ϕM | ϕdg | L | | | | | |
| 24590 | | | | | | | | | | | | |
| 181015400 | 015R24590-03-M08020 | | 3 | 15 | 8 | M8 | 13 | 20 | 0,019 | 3,5 | RD... 0702... | |
| 181019100 | 016R24590-02-M08020 | | 2 | 16 | 9 | M8 | 13 | 20 | 0,019 | 3,5 | RD... 0702... | |
| 181037900 | 016R24590-03-M08020 | | 3 | 16 | 9 | M8 | 13 | 20 | 0,019 | 3,5 | RD... 0702... | |
| 181011400 | 020R24590-04-M10025 | | 4 | 20 | 13 | M10 | 18 | 25 | 0,047 | 3,5 | RD... 0702... | |
| 25090 | | | | | | | | | | | | |
| 181011500 | 020R25090-02-M10025 | | 2 | 20 | 10 | M10 | 18 | 25 | 0,041 | 5,0 | RD... 1003... | |
| 181011600 | 025R25090-03-M12030 | | 3 | 25 | 15 | M12 | 21 | 30 | 0,075 | 5,0 | RD... 1003... | |
| 181011700 | 030R25090-04-M16035 | | 4 | 30 | 20 | M16 | 29 | 35 | 0,190 | 5,0 | RD... 1003... | |
| 181015500 | 035R25090-05-M16043 | | 5 | 35 | 25 | M16 | 29 | 43 | 0,240 | 5,0 | RD... 1003... | |
| 181049900 | 042R25090-05-M16040 | | 5 | 42 | 32 | M16 | 29 | 40 | 0,243 | 5,0 | RD... 1003... | |
| 25190 | | | | | | | | | | | | |
| 181011800 | 024R25190-02-M12032 | | 2 | 24 | 12 | M12 | 21 | 32 | 0,072 | 6,0 | RD... 12T3... | |
| 181011900 | 035R25190-03-M16042 | | 3 | 35 | 23 | M16 | 29 | 42 | 0,205 | 6,0 | RD... 12T3... | |
| 181012000 | 042R25190-04-M16042 | | 4 | 42 | 30 | M16 | 29 | 42 | 0,232 | 6,0 | RD... 12T3... | |

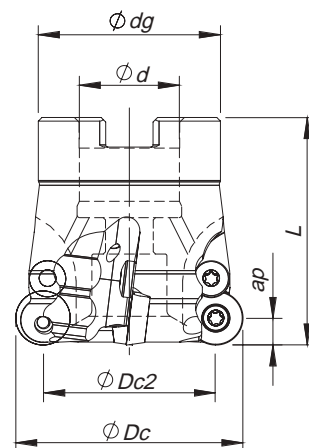
Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire página A-8)



Arbor Mounting

$$\gamma_p = 0^\circ (*+7^\circ)$$



| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|------------|----------|-----------|------|-------|----------------|-------------|-------------------------------|-------|
| | | | ϕDc | $\phi Dc2$ | ϕd | ϕdg | L | | Arbor Type | Ap max (mm) | | |
| 25090 | | | | | | | | | | | | |
| 181010600 | 042A25090-06-016044 | 6 | 42 | 32 | 16 | 36 | 44 | 0,254 | A | 5,0 | RD... 1003... | |
| 181017500 | 052A25090-07-022050 | 7 | 52 | 42 | 22 | 40 | 50 | 0,395 | A | 5,0 | RD... 1003... | |
| 25190 | | | | | | | | | | | | |
| 181051900 | 050C25190-05-07-022050* | 5 | 50 | 38 | 22 | 40 | 50 | 0,312 | A | 6,0 | RD... 12T3... | |
| 181010700 | 052C25190-05-022050 | 5 | 52 | 40 | 22 | 40 | 50 | 0,337 | A | 6,0 | RD... 12T3... | |
| 181010800 | 052C25190-05-07-022050* | 5 | 52 | 40 | 22 | 40 | 50 | 0,335 | A | 6,0 | RD... 12T3... | |
| 181016100 | 066C25190-06-027050 | 6 | 66 | 54 | 27 | 48 | 50 | 0,550 | A | 6,0 | RD... 12T3... | |
| 181010900 | 066C25190-06-07-027050* | 6 | 66 | 54 | 27 | 48 | 50 | 0,600 | A | 6,0 | RD... 12T3... | |
| 181016500 | 080C25190-07-027050 | 7 | 80 | 68 | 27 | 60 | 50 | 1,000 | A | 6,0 | RD... 12T3... | |
| 181016600 | 080C25190-07-07-027052* | 7 | 80 | 68 | 27 | 60 | 52,5 | 1,000 | A | 6,0 | RD... 12T3... | |

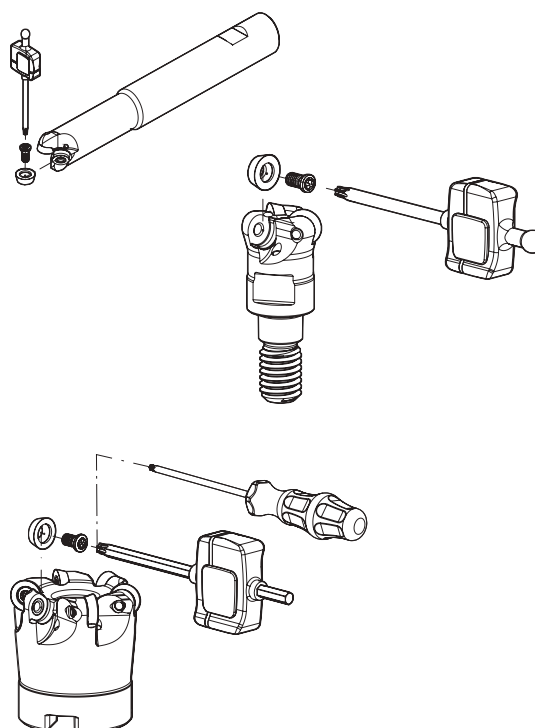
Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

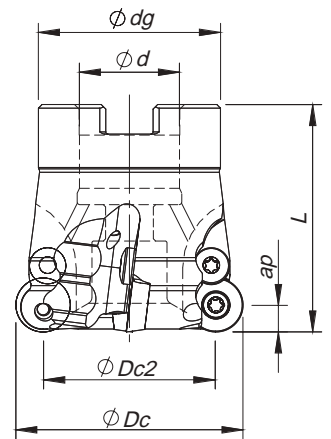
SPARE PARTS | Complementos | Repuestos

| Cutter ϕDc | Insert Screw | Key (Torx) | Order separately | | Screw Clamp |
|---------------------|--------------|------------|------------------|--------------|-------------|
| | | | Key (Torx - Nm) | Torque Value | |
| W24590 - 15 | P0250503 | XT08 | DT0812 | 1,2 | - |
| R24590 - 15-20 | P0250503 | XT08 | DT0812 | 1,2 | - |
| W25090 - 20 | P0350800 | XT15 | DT1530 | 3,0 | - |
| R25090 - 20-42 | P0350800 | XT15 | DT1530 | 3,0 | - |
| A25090 - 42-52 | P0350800 | XT15 | DT1530 | 3,0 | - |
| W25190 - 25 | P0350800 | XT15 | DT1530 | 3,0 | - |
| R25190 - 24-42 | P0350800 | XT15 | DT1530 | 3,0 | - |
| C25190 - 50-80 | P0350800 | XT15 | DT1530 | 3,0 | P0350750 |

Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
Check the procedures for the clamping screws on the page A-241.



TOROMILL 25290 | 25390



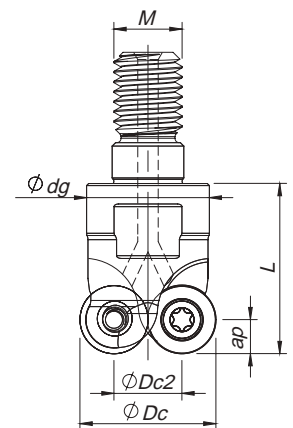
Arbor Mounting

$$\gamma_p = 0^\circ (*+7^\circ)$$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|------------|----------|-----------|----|-------|----------------|-------------|-------------------------------|-------|
| | | | ϕDc | $\phi Dc2$ | ϕd | ϕdg | L | | Arbor Type | Ap max (mm) | | |
| 25290 | | | | | | | | | | | | |
| 181017900 | 052C25290-04-022050 | 4 | 52 | 36 | 22 | 40 | 50 | 0,305 | A | 8,0 | RD... 1604... | |
| 181018000 | 052C25290-04-07-022050* | 4 | 52 | 36 | 22 | 40 | 50 | 0,324 | A | 8,0 | RD... 1604... | |
| 181011000 | 066C25290-05-027050 | 5 | 66 | 50 | 27 | 48 | 50 | 0,550 | A | 8,0 | RD... 1604... | |
| 181016700 | 066C25290-05-07-027050* | 5 | 66 | 50 | 27 | 48 | 50 | 0,550 | A | 8,0 | RD... 1604... | |
| 181016200 | 080C25290-06-027052 | 6 | 80 | 64 | 27 | 60 | 52 | 0,910 | A | 8,0 | RD... 1604... | |
| 181011100 | 080C25290-06-07-027052* | 6 | 80 | 64 | 27 | 60 | 52 | 0,934 | A | 8,0 | RD... 1604... | |
| 181017300 | 125C25290-08-07-U040052* | 8 | 125 | 109 | 40 | 90 | 52 | 2,340 | B | 8,0 | RD... 1604... | |
| 181017400 | 160C25290-09-07-U040052* | 9 | 160 | 144 | 40 | 120 | 52 | 4,750 | B | 8,0 | RD... 1604... | |
| 25390 | | | | | | | | | | | | |
| 181026400 | 080C25390-05-07-027050* | 5 | 80 | 60 | 27 | 60 | 50 | 0,840 | A | 10,0 | RD... 2006... | |
| 181016800 | 100C25390-06-07-U032052* | 6 | 100 | 80 | 32 | 70 | 52 | 1,180 | B | 10,0 | RD... 2006... | |
| 181020500 | 125C25390-07-07-U040052* | 7 | 125 | 105 | 40 | 90 | 52 | 2,030 | B | 10,0 | RD... 2006... | |
| 181020600 | 160C25390-08-07-U040052* | 8 | 160 | 140 | 40 | 120 | 52 | 4,320 | B | 10,0 | RD... 2006... | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)



Threaded Coupling

$$\gamma_p = 0^\circ$$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|------------|----------|-----------|----|-------|----------------|---------------|-------------------------------|-------|
| | | | ϕDc | $\phi Dc2$ | ϕM | ϕdg | L | | Ap max (mm) | | | |
| 25290 | | | | | | | | | | | | |
| 181002600 | 032R25290-02-M16040 | 2 | 32 | 16 | M16 | 29 | 40 | 0,162 | 8,0 | RD... 1604... | | |
| 181034800 | 032R25290-03-M16042 | 3 | 35 | 19 | M16 | 29 | 42 | 0,230 | 8,0 | RD... 1604... | | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)



RD... || Inserts | Pastilhas | Plaquetas

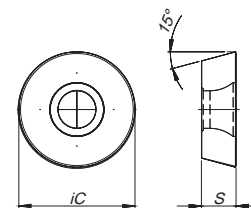
RDHT

RDHW

RDMT

RDMW

RDHT | RDHW | RDMT | RDMW



| (1) Geometry code | (2) Grade code | P | | | | | | K | | | H | Dimensions Dimensões Dimensiones (mm) | |
|-------------------------|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|----|-----|--|------|
| | | PVD | | | | | | PVD | | | PVD | | |
| | | M6 | 54 | 68 | 78 | 86 | I5 | 54 | 68 | I5 | M6 | | |
| PH6103 | PH6910 | PH6920 | PH6125 | PH6135 | PH6740 | PH6910 | PH6920 | PH6740 | PH6103 | iC | S | | |
| 1110548 | RDHW 0702 M0T | ⊗ | ⊗ | ⊗ | | | | ⊗ | ⊗ | | ⊗ | 7,00 | 2,38 |
| 1110087 | RDHW 1003 M0T | ⊗ | ⊗ | ⊗ | | ⊗ | | ⊗ | ⊗ | | ⊗ | 7,00 | 2,38 |
| 1110082 | RDHT 1003 M0T | | | | ⊗ | ⊗ | | | | | | 10,00 | 3,18 |
| 1110583 | RDMT 1003 M0T | | | | ⊗ | ⊗ | | | | | | 10,00 | 3,18 |
| 1110549 | RDMW 1003 M0T | | | ⊗ | ⊗ | ⊗ | | | | | | 10,00 | 3,18 |
| 1110090 | RDHW 12T3 M0T | ⊗ | ⊗ | ⊗ | | ⊗ | | ⊗ | ⊗ | | ⊗ | 10,00 | 3,18 |
| 1112040 | RDHT 12T3 M0S-MP | | | ⊗ | | | ⊗ | | ⊗ | ⊗ | | 10,00 | 3,18 |
| 1110083 | RDHT 12T3 M0T | | | | ⊗ | ⊗ | | | | | | 12,00 | 3,97 |
| 1110558 | RDMT 12T3 M0T | | | | ⊗ | ⊗ | | | | | | 12,00 | 3,97 |
| 1110096 | RDMW 12T3 M0T | | | ⊗ | ⊗ | ⊗ | | | ⊗ | | | 12,00 | 3,97 |
| 1110092 | RDHW 1604 M0T | ⊗ | ⊗ | ⊗ | | ⊗ | | ⊗ | ⊗ | | ⊗ | 12,00 | 3,97 |
| 1112039 | RDHT 1604 M0S-MP | | | ⊗ | | | ⊗ | | ⊗ | ⊗ | | 12,00 | 3,97 |
| 1110084 | RDHT 1604 M0T | | | | ⊗ | ⊗ | | | | | | 16,00 | 4,76 |
| 1110556 | RDMT 1604 M0T | | | | ⊗ | ⊗ | | | | | | 16,00 | 4,76 |
| 1110097 | RDMW 1604 M0T | | | ⊗ | ⊗ | ⊗ | | | ⊗ | | | 16,00 | 4,76 |
| 1110869 | RDMW 2006 M0T | | | | ⊗ | | | | | | | 20,00 | 6,35 |

⊗ First choice | Primeira opção | 1ª opción ⊗ Stock item | Produto de stock | Itens de stock ○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9) Insert order code = (1) Geometry Code + (2) Grade Code

A

MILLING

Overview

Face milling

Hi-feed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

Spot face

Spare Parts

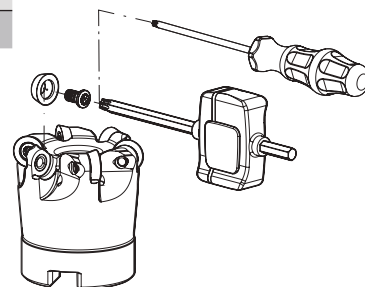
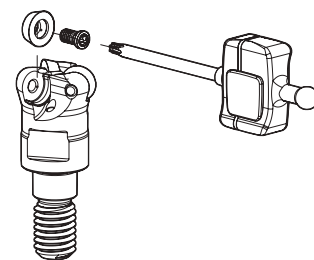
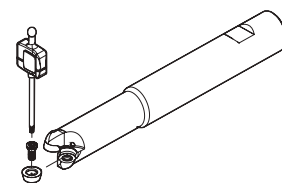
Technical Data

End Mills

TOROMILL 24590 | 25090 | 25190 | 25290 | 25390

SPARE PARTS | Complementos | Repuestos

| Cutter ØDc | Insert Screw | Key (Torx) | Order separately | | Order separately | | |
|------------------|--------------|------------|------------------|--------------|------------------|---------|--------------|
| | | | Key (Torx - Nm) | Torque Value | Screw Clamp | Washer | Washer Screw |
| W24590 - 15 | P0250503 | XT08 | DT0812 | 1,2 | - | - | - |
| R24590 - 15-20 | P0250503 | XT08 | DT0812 | 1,2 | - | - | - |
| W25090 - 20 | P0350800 | XT15 | DT1530 | 3,0 | - | - | - |
| R25090 - 20-42 | P0350800 | XT15 | DT1530 | 3,0 | - | - | - |
| A25090 - 42-52 | P0350800 | XT15 | DT1530 | 3,0 | - | - | - |
| W25190 - 25 | P0350800 | XT15 | DT1530 | 3,0 | - | - | - |
| R25190 - 24-42 | P0350800 | XT15 | DT1530 | 3,0 | - | - | - |
| C25190 - 50-80 | P0350800 | XT15 | DT1530 | 3,0 | P0350750 | - | - |
| R25290 - 32-35 | P0451001 | XT20 | DT2050 | 5,0 | - | - | - |
| C25290 - 52-80 | P0451001 | XT20 | DT2050 | 5,0 | - | HC01200 | P0451001 |
| C25290 - 125-160 | P0451001 | XT20 | DT2050 | 5,0 | - | HC01200 | P0451001 |
| C25390 - 80-160 | P0601402 | TT20 | - | 10,0 | - | HC01200 | P0451001 |



Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
Check the procedures for the clamping screws on the page A-241.

GRADES SELECTION GUIDE | Guia para selección de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | | | | | |
|-----|-----|---------------------|-----------------|-------------------|--------|--------|-------------|--------|--------|
| | | | | ← Wear Resistance | | | Toughness → | | |
| | | | | PH6103 | PH6910 | PH6920 | PH6125 | PH6135 | PH6740 |
| P | 1 | Unalloyed Steel | 125-220 | ● | ● | ● | ● | ● | ● |
| | 2 | Low-Alloyed Steel | 220-280 | ● | ● | ● | ● | ● | ● |
| | 3 | High-Alloyed Steel | 280-380 | ● | ● | ● | ● | ● | ● |
| K | 7 | Malleable Cast Iron | 130-230 | ● | ● | ● | ● | ● | ● |
| | 8 | Grey Cast Iron | 180-245 | ● | ● | ● | ● | ● | ● |
| | 9 | Nodular Cast iron | 160-250 | ● | ● | ● | ● | ● | ● |
| H | 12 | Hardened Steels | 40-55 HRC | ● | ● | ● | ● | ● | ● |

- Good Conditions
- Average Conditions
- Difficult Conditions

CHIP-BREAKER SELECTION GUIDE | Guia para aplicações do quebra- aparas | Guía para aplicación del rompevirutas

| ISO | PSM | Material | HB (Brinell) | Chip-Breaker Application | |
|-----|-----|---------------------|-----------------|--------------------------|---------------------|
| | | | | 1st choise | Dificult Operations |
| P | 1 | Unalloyed Steel | 125-220 | RD...T ... | RD...W ... |
| | 2 | Low-Alloyed Steel | 220-280 | RD...T ... | - |
| | 3 | High-Alloyed Steel | 280-380 | RD...W ... | - |
| K | 7 | Malleable Cast Iron | 130-230 | RD...T ... | RD...W ... |
| | 8 | Grey Cast Iron | 180-245 | RD...W ... | - |
| | 9 | Nodular Cast iron | 160-250 | RD...W ... | - |
| H | 12 | Hardened Steels | 40-55 HRC | RD...W ... | - |

A

MILLING

Overview

Face milling

Hifeed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

Spot face

Spare Parts

Technical Data

End Mills

TOROMILL 24590 | 25090 | 25190 | 25290 | 25390

RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | | | | |
|-----|-----|---------------------|-----------------|-------------------|---------|---------|---------|-------------|---------|
| | | | | ← Wear Resistance | | | | Toughness → | |
| | | | | PH6103 | PH6910 | PH6920 | PH6125 | PH6135 | PH6740 |
| P | 1 | Unalloyed Steel | 125-220 | 180-300 | 180-250 | 150-230 | 160-190 | 150-180 | 130-160 |
| | 2 | Low-Alloyed Steel | 220-280 | 180-250 | 170-210 | 140-220 | 140-180 | 140-170 | 120-150 |
| | 3 | High-Alloyed Steel | 280-380 | 180-230 | 160-200 | 130-180 | 130-160 | 120-150 | 100-130 |
| K | 7 | Malleable Cast Iron | 130-230 | - | 170-300 | 150-280 | - | - | 130-250 |
| | 8 | Grey Cast Iron | 180-245 | - | 150-250 | 130-230 | - | - | 110-220 |
| | 9 | Nodular Cast iron | 160-250 | - | 90-210 | 80-190 | - | - | 80-170 |
| H | 12 | Hardened Steels | 40-55 HRC | 120-240 | - | - | - | - | - |

| ISO | PSM | Material | HB (Brinell) | RD... 07 | | RD... 10 | | RD... 12 | |
|-----|-----|---------------------|-----------------|-----------|---------|-----------|---------|-----------|---------|
| | | | | fz (mm/t) | ap (mm) | fz (mm/t) | ap (mm) | fz (mm/t) | ap (mm) |
| P | 1 | Unalloyed Steel | 125-220 | ≤0,18 | ≤1,50 | ≤0,24 | ≤2,50 | ≤0,27 | ≤2,50 |
| | 2 | Low-Alloyed Steel | 220-280 | ≤0,18 | ≤1,50 | ≤0,24 | ≤2,50 | ≤0,25 | ≤2,50 |
| | 3 | High-Alloyed Steel | 280-380 | ≤0,15 | ≤1,50 | ≤0,21 | ≤2,50 | ≤0,20 | ≤2,50 |
| K | 7 | Malleable Cast Iron | 130-230 | ≤0,20 | ≤1,50 | ≤0,25 | ≤2,50 | ≤0,24 | ≤2,50 |
| | 8 | Grey Cast Iron | 180-245 | ≤0,20 | ≤1,50 | ≤0,25 | ≤2,50 | ≤0,24 | ≤2,50 |
| | 9 | Nodular Cast iron | 160-250 | ≤0,18 | ≤1,50 | ≤0,22 | ≤2,50 | ≤0,22 | ≤2,50 |
| H | 12 | Hardened Steels | 40-55 HRC | ≤0,12 | ≤1,50 | ≤0,18 | ≤2,50 | ≤0,18 | ≤2,50 |

| ISO | PSM | Material | HB (Brinell) | RD... 16 | | RD... 20 | |
|-----|-----|---------------------|-----------------|-----------|---------|-----------|---------|
| | | | | fz (mm/t) | ap (mm) | fz (mm/t) | ap (mm) |
| P | 1 | Unalloyed Steel | 125-220 | ≤0,33 | ≤3,50 | ≤0,33 | ≤5,00 |
| | 2 | Low-Alloyed Steel | 220-280 | ≤0,33 | ≤3,50 | ≤0,33 | ≤5,00 |
| | 3 | High-Alloyed Steel | 280-380 | ≤0,27 | ≤3,50 | ≤0,27 | ≤5,00 |
| K | 7 | Malleable Cast Iron | 130-230 | ≤0,35 | ≤3,50 | ≤0,35 | ≤5,00 |
| | 8 | Grey Cast Iron | 180-245 | ≤0,35 | ≤3,50 | ≤0,35 | ≤5,00 |
| | 9 | Nodular Cast iron | 160-250 | ≤0,32 | ≤3,50 | ≤0,32 | ≤5,00 |
| H | 12 | Hardened Steels | 40-55 HRC | ≤0,25 | ≤3,50 | ≤0,20 | ≤5,00 |

(Note 1) Cutting conditions $a_e/D_c=70\%$.

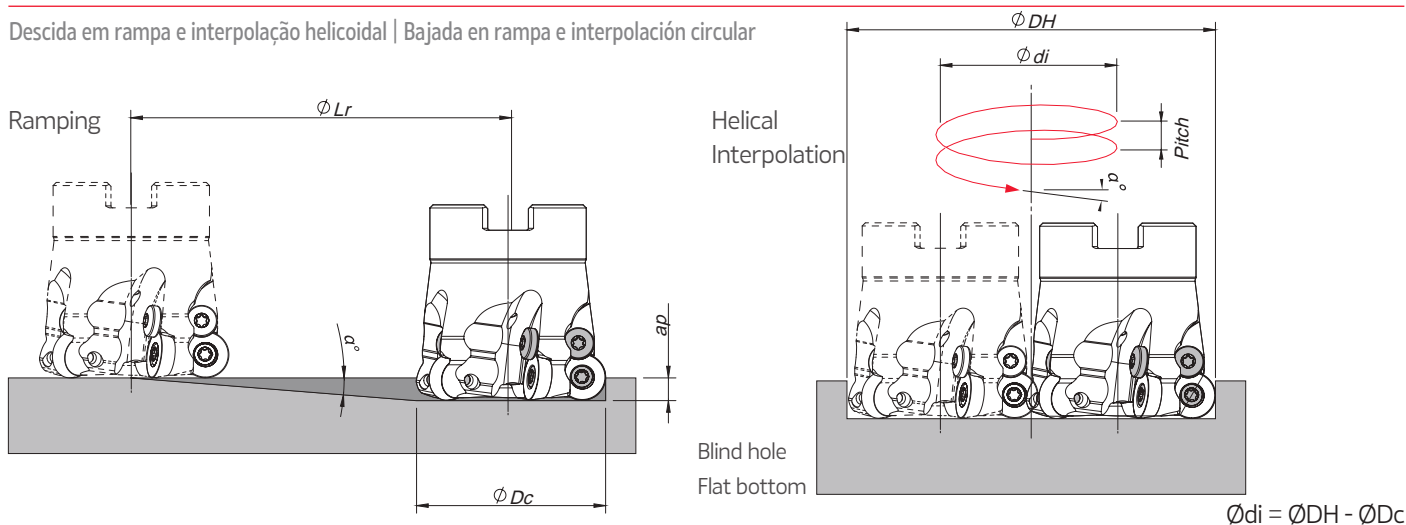
(Note 2) Cutting conditions should be adjusted according to the machine and work rigidity.

(Note 3) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

RAMPING AND HELICAL INTERPOLATION

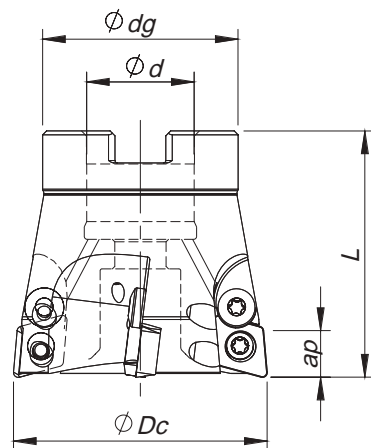
Descida em rampa e interpolação helicoidal | Bajada en rampa e interpolación circular



| Insert | ϕ_{Dc} | Ramping | | | Helical Interpolation | | |
|----------|-------------|-------------------------|-----------|--------|-----------------------|----------------|----------------|
| | | Max Ramp α° | Max a_p | Min Lr | ϕ_{DHmin} | ϕ_{DHmax} | Max Pitch/Rev. |
| RD... 07 | 15 | 9,4 | 3,5 | 21,1 | 23,0 | - | 4,0 |
| | 16 | 8 | 3,5 | 24,9 | 25,0 | 30,0 | 7,0 |
| | 20 | 6 | 3,5 | 33,3 | - | - | 3,0 |
| RD... 10 | 20 | 25,0 | 5,0 | 10,7 | 33,0 | 40,0 | 7,0 |
| | 25 | 22,0 | 5,0 | 12,4 | - | - | 4,0 |
| | 30 | 13,5 | 5,0 | 20,8 | - | 30,0 | 6,0 |
| | 35 | 12,0 | 5,0 | 23,5 | 40,0 | 50,0 | 14,0 |
| | 42 | 10,0 | 5,0 | 28,4 | 50,0 | 60,0 | 29,0 |
| | 52 | 7,0 | 5,0 | 40,7 | 60,0 | 70,0 | 19,0 |
| RD... 12 | 24 | 17,0 | 6,0 | 19,6 | - | - | 15,0 |
| | 25 | 16,2 | 6,0 | 20,7 | 60,0 | 70,0 | 23,0 |
| | 35 | 12,0 | 6,0 | 28,2 | 74,0 | 84,0 | 11,0 |
| | 42 | 10,3 | 6,0 | 33,0 | - | - | 22,0 |
| | 50 | 6,4 | 6,0 | 53,5 | 94,0 | 104,0 | 15,0 |
| | 52 | 6,0 | 6,0 | 57,1 | - | - | 23,0 |
| | 66 | 3,5 | 6,0 | 79,8 | 88,0 | 100,0 | 17,0 |
| | 80 | 2,5 | 6,0 | 104,1 | - | - | 23,0 |
| RD... 16 | 32 | 20,0 | 8,0 | 22,0 | 120,0 | 132,0 | 13,0 |
| | 35 | 18,0 | 8,0 | 24,6 | - | - | 17,0 |
| | 52 | 13,0 | 8,0 | 34,7 | 148,0 | 160,0 | 13,0 |
| | 66 | 8,5 | 8,0 | 53,5 | - | - | 17,0 |
| | 80 | 6,0 | 8,0 | 76,1 | 180,0 | 200,0 | 13,0 |
| | 125 | 3,5 | 8,0 | 130,8 | - | - | 17,0 |
| | 160 | 2,5 | 8,0 | 183,2 | 230,0 | 250,0 | 12,0 |
| RD... 20 | 80 | 6,0 | 10,0 | 76,1 | 304,0 | 320,0 | 12,0 |
| | 100 | 5,0 | 10,0 | 91,4 | - | - | 14,0 |
| | 125 | 4,5 | 10,0 | 101,6 | 140,0 | 160,0 | 18,0 |
| | 160 | 3,0 | 10,0 | 152,6 | 180,0 | 200,0 | 36,0 |

Note: During helical interpolation do not exceed max Pitch.

LINEPRO 40095 | 40595 | 41095



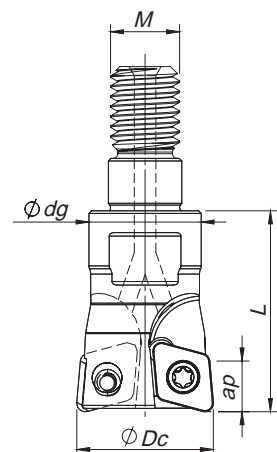
Arbor Mouting

$K_r=95^\circ$ | $\gamma_p=+7^\circ$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|----------|-----------|----|-------|----------------|----------------|-------------------------------|-------|
| | | | ϕDc | ϕd | ϕdg | L | | Arbor Type | Ap max (mm) | | |
| 40595 | | | | | | | | | | | |
| 181027700 | 052C40595-05-07-022050 | 5 | 52 | 22 | 40 | 50 | 0,342 | A | 1,0 | XD... 10T3... | |
| 181027800 | 066C40595-06-07-027050 | 6 | 66 | 27 | 48 | 50 | 0,565 | A | 1,0 | XD... 10T3... | |
| 181027900 | 080C40595-07-07-027050 | 7 | 80 | 27 | 60 | 50 | 0,972 | A | 1,0 | XD... 10T3... | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)



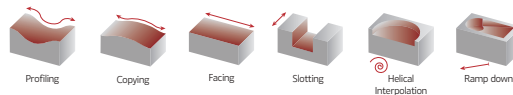
Threaded Coupling

$K_r=95^\circ$ | $\gamma_p=+7^\circ$ (*+9)

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|----------|-----------|----|-------|----------------|---------------|-------------------------------|-------|
| | | | ϕDc | ϕM | ϕdg | L | | Ap max (mm) | | | |
| 41095 | | | | | | | | | | | |
| 181012400 | 010R41095-02-09-M06020* | 2 | 10 | M6 | 9,8 | 20 | 0,010 | 0,8 | XD... 0401... | | |
| 181016300 | 012R41095-02-09-M06020* | 2 | 12 | M6 | 9,8 | 20 | 0,012 | 0,8 | XD... 0401... | | |
| 40095 | | | | | | | | | | | |
| 181012100 | 016R40095-02-07-M08023 | 2 | 16 | M8 | 13 | 23 | 0,022 | 1,0 | XD... 0602... | | |
| 181012200 | 020R40095-03-07-M10028 | 3 | 20 | M10 | 18 | 28 | 0,050 | 1,0 | XD... 0602... | | |
| 181015600 | 025R40095-03-07-M12030 | 3 | 25 | M12 | 21 | 30 | 0,081 | 1,0 | XD... 0602... | | |
| 181034000 | 025R40095-04-07-M12030 | 4 | 25 | M12 | 21 | 30 | 0,078 | 1,0 | XD... 0602... | | |
| 40595 | | | | | | | | | | | |
| 181015700 | 025R40595-02-07-M12035 | 2 | 25 | M12 | 21 | 35 | 0,077 | 1,0 | XD... 10T3... | | |
| 181012300 | 035R40595-03-07-M16043 | 3 | 35 | M16 | 29 | 43 | 0,200 | 1,0 | XD... 10T3... | | |
| 181016900 | 042R40595-04-07-M16043 | 4 | 42 | M16 | 29 | 43 | 0,230 | 1,0 | XD... 10T3... | | |

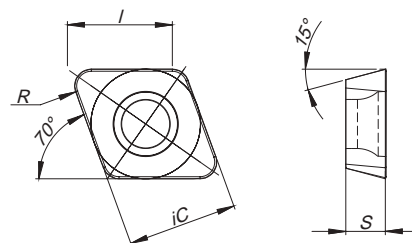
Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

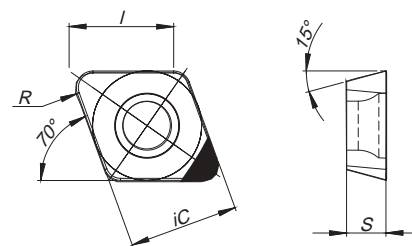


XDHW | Inserts | Pastilhas | Plaquetas

XDHW



XDHW - PCD & PCBN
(HARDMILL)



| (1) Geometry code | (2) Grade code ISO Reference | P | | | | K | | N | | H | | Dimensions Dimensões Dimensiones (mm) | | | |
|-------------------------|---------------------------------|-----|----|----|----|-----|----|-----|-----|-----|------|--|------|------|------|
| | | PVD | | | | PVD | | CVD | PCD | PVD | PCBN | iC | S | I | R |
| | | M6 | 54 | 78 | 86 | 54 | 78 | P2 | D6 | M6 | S4 | | | | |
| 1110905 | XDHW 040105 | ○ | ○ | ○ | | ○ | | ⊗ | | ○ | | 4,00 | 1,59 | 4,00 | 0,50 |
| 1110573 | XDHW 040110 | ⊗ | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | | ⊗ | | 4,00 | 1,59 | 4,00 | 1,00 |
| 1112316 | XDHW 040110 FN | | | | | | | | ⊗ | | | 4,00 | 1,59 | 4,00 | 1,00 |
| 1112317 | XDHW 040110 SN | | | | | | | | | | ⊗ | 4,00 | 1,59 | 4,00 | 1,00 |
| 1110532 | XDHW 060210 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | ⊗ | | 6,50 | 2,38 | 6,20 | 1,00 |
| 1112318 | XDHW 060210 FN | | | | | | | | ⊗ | | | 6,50 | 2,38 | 6,20 | 1,00 |
| 1111875 | XDHW 060210 SN | | | | | | | | | | ⊗ | 6,50 | 2,38 | 6,20 | 1,00 |
| 1110565 | XDHW 10T310 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ○ | | ⊗ | | 10,00 | 3,97 | 9,90 | 1,00 |
| 1112320 | XDHW 10T310 FN | | | | | | | | ⊗ | | | 10,00 | 3,97 | 9,90 | 1,00 |
| 1112321 | XDHW 10T310 SN | | | | | | | | | | ⊗ | 10,00 | 3,97 | 9,90 | 1,00 |

⊗ First choice | Primeira opção | 1ª opción
 ⊗ Stock item | Produto de stock | Itens de stock
 ○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9)
 Insert order code = (1) Geometry Code + (2) Grade Code

A

MILLING

Overview

Face milling

Hi-feed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

Spot face

Spare Parts

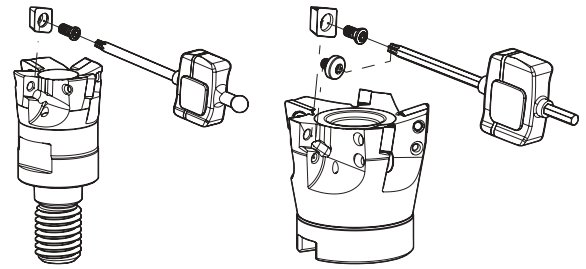
Technical Data

End Mills

LINEPRO 40095 | 40595 | 41095

SPARE PARTS | Complementos | Repuestos

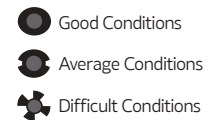
| Cutter ØDc | Insert Screw | Key (Torx) | Order separately | | Order separately |
|------------------|--------------|------------|------------------|--------------|------------------|
| | | | Key (Torx - Nm) | Torque Value | Screw Clamp |
| R41095 - 10 - 12 | P0180401 | XT06 | DT0606 | 0,6 | - |
| R40095 - 16 - 25 | P0250503 | XT08 | DT0812 | 1,2 | - |
| R40595 - 25 - 42 | P0350800 | XT15 | DT1530 | 3,0 | - |
| C40595 - 52 - 80 | P0350800 | XT15 | DT1530 | 3,0 | P0350750 |



Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
Check the procedures for the clamping screws on the page A-241.

GRADES SELECTION GUIDE | Guia para seleção de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | | | | | PCD PDP410 | PCBN PBH920 |
|-----|-----|---------------------------|-----------------|-------------------|--------|--------|-------------|--------|---------------|----------------|
| | | | | ← Wear Resistance | | | Toughness → | | | |
| | | | | PHD103 | PH6103 | PH6910 | PH6125 | PH6135 | | |
| P | 1 | Unalloyed Steel | 125-220 | | ✓ | ✓ | ✓ | ✓ | | |
| | 2 | Low-Alloyed Steel | 220-280 | | ✓ | ✓ | ✓ | ✓ | | |
| | 3 | High-Alloyed Steel | 280-380 | | ✓ | ✓ | ✓ | ✓ | | |
| K | 7 | Malleable Cast Iron | 130-230 | | | | ✓ | | | |
| | 8 | Grey Cast Iron | 180-245 | | | | ✓ | | | |
| | 9 | Nodular Cast iron | 160-250 | | | | ✓ | | | |
| N | 10 | Aluminium and Non Ferrous | 30-130 | ✓ | | | | | ✓ | |
| H | 12 | Hardened Steels | 40-55 HRC | | ✓ | | | | | ✓ |



RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

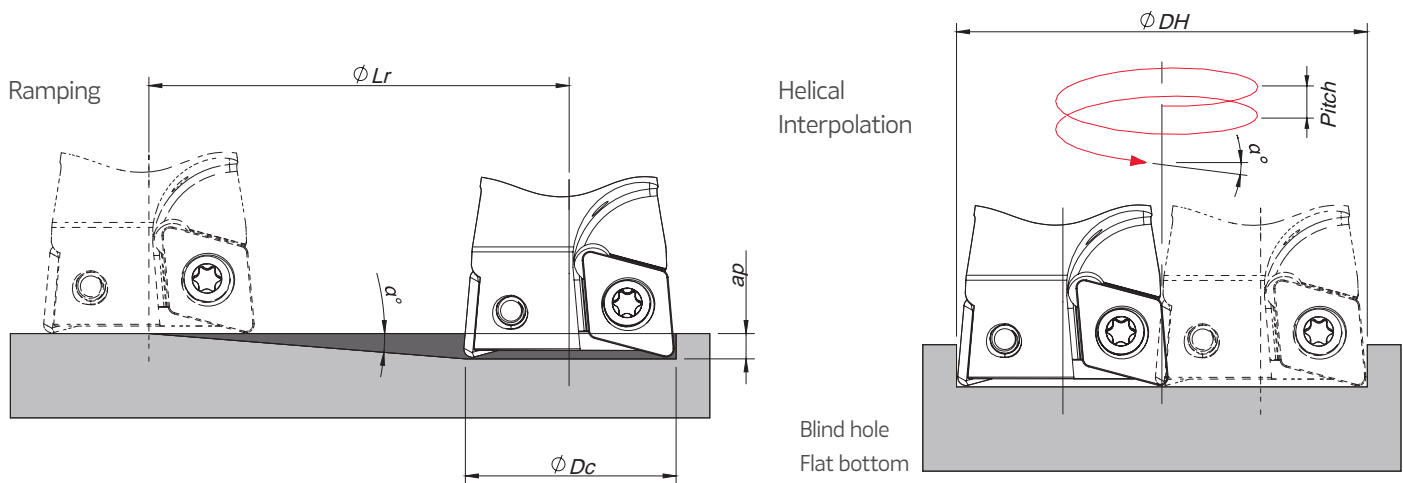
| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | | | | PCD PDP410 | PCBN PBH920 |
|-----|-----|---------------------------|-----------------|-------------------|---------|---------|-------------|---------|---------------|----------------|
| | | | | ← Wear Resistance | | | Toughness → | | | |
| | | | | PHD103 | PH6103 | PH6910 | PH6125 | PH6135 | | |
| P | 1 | Unalloyed Steel | 125-220 | - | 180-300 | 180-250 | 160-190 | 150-180 | - | - |
| | 2 | Low-Alloyed Steel | 220-280 | - | 180-250 | 170-210 | 140-180 | 140-170 | - | - |
| | 3 | High-Alloyed Steel | 280-380 | - | 180-230 | 160-200 | 130-160 | 120-150 | - | - |
| K | 7 | Malleable Cast Iron | 130-230 | - | - | 170-300 | 160-290 | - | - | - |
| | 8 | Grey Cast Iron | 180-245 | - | - | 150-250 | 140-240 | - | - | - |
| | 9 | Nodular Cast iron | 160-250 | - | - | 90-210 | 80-200 | - | - | - |
| N | 10 | Aluminium and Non Ferrous | 30-130 | 300-1000 | - | - | - | - | 800-3000 | - |
| H | 12 | Hardened Steels | 40-55 HRC | - | 120-260 | - | - | - | - | 200-600 |

| Insert | Feed fz (mm/t) | | ap Rec. |
|---------|----------------|-----------|---------|
| | Roughing | Finishing | |
| XD...04 | 0.10-0.20 | 0.10-0.15 | 0.1-0.5 |
| XD...06 | 0.15-0.30 | 0.10-0.25 | 0.2-0.8 |
| XD...10 | 0.15-0.35 | 0.10-0.30 | 0.2-0.8 |

(Note 1) Cutting conditions should be adjusted according to the machine and work rigidity.
(Note 2) If chattering occurs, reduce ap and Vc by 30% and keep the same fz per tooth.

RAMPING AND HELICAL INTERPOLATION

Descida em rampa e interpolação helicoidal | Bajada en rampa e interpolación circular



$$\text{Ødi} = \text{ØDH} - \text{ØDc}$$

| Insert | ØDc | Ramping | | | Helical Interpolation | | |
|------------|-----|-------------|--------|--------|-----------------------|------------|----------------|
| | | Max Ramp a° | Max ap | Min Lr | ØDHmin | ØDHmax | Max Pitch/Rev. |
| XDHW 04... | 10 | 7,3 | 0,8 | 6,2 | 18,0 - | - 20,0 | 3,2 4,0 |
| | 12 | 5,3 | 0,8 | 8,6 | 22,0 - | - 24,0 | 2,9 3,5 |
| XDHW 06... | 16 | 8 | 1,0 | 7,1 | 30,0 - | - 32,0 | 6,2 7,1 |
| | 20 | 5,7 | 1,0 | 10,0 | 38,0 - | - 40,0 | 5,6 6,3 |
| | 25 | 4 | 1,0 | 14,3 | 48,0 - | - 50,0 | 5,1 5,5 |
| XDHW 10... | 25 | 8,7 | 1,0 | 6,5 | 48,0 - | - 50,0 | 11,1 12,0 |
| | 35 | 5,2 | 1,0 | 11,0 | 68,0 - | - 70,0 | 9,4 10,0 |
| | 42 | 4 | 1,0 | 14,3 | 82,0 - | - 84,0 | 8,8 9,2 |
| | 52 | 3 | 1,0 | 19,1 | 102,0 - | - 104,0 | 8,2 8,6 |
| | 66 | 2,3 | 1,0 | 24,9 | 130,0 - | - 132,0 | 8,1 8,3 |
| | 80 | 1,8 | 1,0 | 31,8 | 158,0 - | - 160,0 | 7,7 7,9 |

Note: During helical interpolation do not exceed max Pitch.

HARDMILL 72090

A

INSERTS CODIFICATION SYSTEM | Sistema de codificação de pastilhas | Sistema de codificación de insertos

MILLING

| ISO CODE | Insert size | Insert thickness | Insert radius | Cutting edge position angle | Cutting edge relief angle | Cutting edge conditions | Cut direction | Wiper edge length | Máx. Ap |
|----------|-------------|------------------|---------------|-----------------------------|---------------------------|-------------------------|---------------|-------------------|------------|
| XNHW | 12 | 05 | 04 | P | Z | F | R | - | 015 030 |

Overview

Face milling

Hifeed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

Spot face

Spare Parts

Technical Data

End Mills



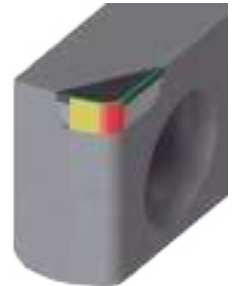
XNHW 120504 PZFR-0150045



XNHW 120504 PZFR-000080



XNHW 120508 PZFR-015045



XNHW 120508 PZTR-015045



XNHW 120508 PZTR-000080



XNHW 1205 PZFR-020120




XNHW 1205 PZFR-030045



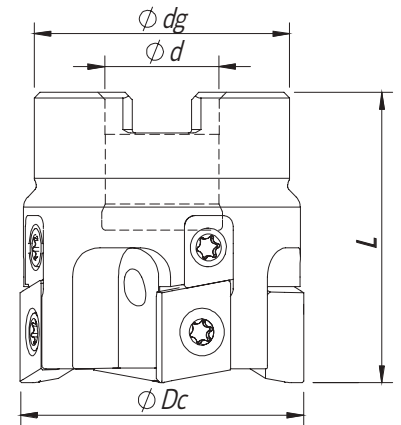
XNHW 1205 PZTR-030045

 Cutting edge Type (radius, chamfer)

 Whipper cutting edge

 Edge Preparation (F, T)

HARDMILL 72090



Arbor Mounting

$K_r=90^\circ$ | $\gamma_p=0^\circ$

| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Specifications | | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|----|---|----------|-----------|----|------|----------------|------------|-------------------------------|-------|
| | | | ϕDc | ϕd | ϕdg | L | | Arbor Type | N max (mm) | | |
| 181129700 | 040A72090-04-016040 | 4 | 40 | 16 | 36 | 40 | 0,32 | A | 32 000 | XNHW 1205... | |
| 181129800 | 050A72090-04-022040 | 4 | 50 | 22 | 46 | 40 | 0,38 | A | 32 000 | XNHW 1205... | |
| 181129900 | 050A72090-05-022040 | 5 | 50 | 22 | 46 | 40 | 0,37 | A | 32 000 | XNHW 1205... | |
| 181130000 | 063A72090-04-022040 | 4 | 63 | 22 | 49 | 40 | 0,65 | A | 29 000 | XNHW 1205... | |
| 181130100 | 063A72090-07-022040 | 7 | 63 | 22 | 49 | 40 | 0,62 | A | 29 000 | XNHW 1205... | |
| 181130200 | 080A72090-05-027050 | 5 | 80 | 27 | 60 | 50 | 1,25 | A | 26 000 | XNHW 1205... | |
| 181130300 | 080A72090-09-027050 | 9 | 80 | 27 | 60 | 50 | 1,17 | A | 26 000 | XNHW 1205... | |
| 181130400 | 100A72090-06-032050 | 6 | 100 | 32 | 70 | 50 | 1,93 | A | 24 000 | XNHW 1205... | |
| 181130500 | 100A72090-12-032050 | 12 | 100 | 32 | 70 | 50 | 1,80 | A | 24 000 | XNHW 1205... | |
| 181130600 | 125A72090-08-040063 | 8 | 125 | 40 | 72 | 63 | 2,88 | A | 22 000 | XNHW 1205... | |
| 181130700 | 125A72090-14-040063 | 14 | 125 | 40 | 72 | 63 | 2,60 | A | 22 000 | XNHW 1205... | |
| 181135500 | 160A72090-10-040063 | 10 | 160 | 40 | 72 | 63 | 3,30 | A | 18 000 | XNHW 1205... | |
| 181135600 | 160A72090-16-040063 | 16 | 160 | 40 | 118 | 63 | 5,45 | A | 18 000 | XNHW 1205... | |

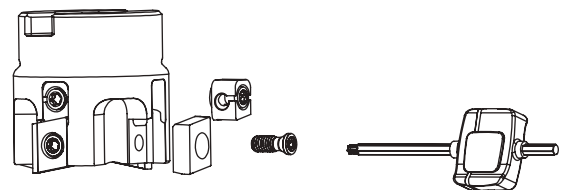
Stock item | Produto de stock | Itens de stock

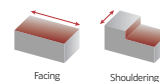
Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

SPARE PARTS | Complementos | Repuestos

| Cutter ϕDc | Order separately | | | | |
|---------------------|------------------|------------|-----------------|--------------|-----------------|
| | Insert Screw | Key (Torx) | Key (Torx - Nm) | Torque Value | Wedge |
| A72090 - 40-160 | P0401100 | XT15 | DT1530 | 3,00 | SETDEV AS 04 00 |

Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
Check the procedures for the clamping screws on the page A-241.





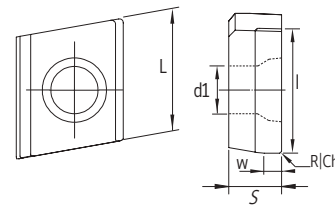
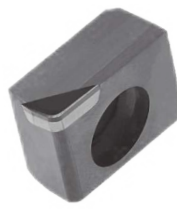
XNHW 1205... | Inserts | Pastilhas | Plaquetas

XNHW 1205 PZFR-020120

XNHW 120508 PZTR-000080

XNHW 120508 PZTR-015045

XNHW



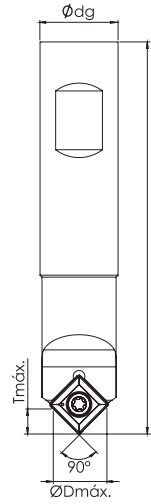
| (1) Geometry code | (2) Grade code ISO Reference | N | | Dimensions Dimensões Dimensiones (mm) | | | | | |
|-------------------------|------------------------------------|--------------|--------------|--|------|-------|------|------|------|
| | | PCD | | L | S | l | d1 | r | W |
| | | I3 PDP403 | D6 PDP410 | | | | | | |
| 1112564 | XNHW 120504 PZFR-015045 | ○ | ○ | 12,25 | 5,40 | 4,50 | 4,80 | 0,40 | 1,50 |
| 1112565 | XNHW 120504 PZFR-000080 | ○ | ○ | 12,25 | 5,40 | 8,00 | 4,80 | 0,40 | - |
| 1112566 | XNHW 120508 PZFR-015045 | ⊗ | ○ | 12,25 | 5,40 | 4,50 | 4,80 | 0,80 | 1,50 |
| 1112551 | XNHW 120508 PZTR-015045 | ⊗ | ○ | 12,25 | 5,40 | 4,50 | 4,80 | 0,80 | 1,50 |
| 1112552 | XNHW 120508 PZTR-000080 | ⊗ | ○ | 12,25 | 5,40 | 8,00 | 4,80 | 0,80 | - |
| 1112553 | XNHW 1205 PZFR-020120 | ⊗ | ○ | 12,25 | 5,40 | 12,00 | 4,80 | - | 2,00 |
| 1112567 | XNHW 1205 PZFR-030045 | ○ | ○ | 12,25 | 5,40 | 4,50 | 4,80 | - | 3,00 |
| 1112568 | XNHW 1205 PZTR-030045 | ○ | ○ | 12,25 | 5,40 | 4,50 | 4,80 | - | 3,00 |

⊗ First choice | Primeira opção | 1ª opción
 ⊗ Stock item | Produto de stock | Itens de stock
 ○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9)
 Insert order code = (1) Geometry Code + (2) Grade Code

RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | Material | | HB (Brinell) | Vc (m/min) | Feed fz (mm/t) |
|-----|--------------------------|--|-----------------|------------|----------------|
| | Work piece material | Type of treatment / alloy | | PDP403 | XNHW 12... |
| N | Aluminium wrought alloys | | 80 | 300 - 4000 | 0,05 - 0,40 |
| | | | 90 | 300 - 1500 | |
| | Aluminium cast alloys | < 12% Si | 130 | 300 - 5000 | |
| | | < 12% Si | 90 | 300 - 3000 | |
| | | > 12% Si | 100 | 300 - 1000 | |
| | Non-metallic materials | brass, red bronze | 100 | 100 - 700 | |
| | | bronze | - | 100 - 1500 | |
| | | lead-free copper and electrolytic copper | - | 300 - 3000 | |
| | | thermosetting plastics | - | 80 - 300 | |
| | | fibre-reinforced plastics | 200-320 | 80 - 300 | |
| | hard rubber | | 80 - 300 | | |

CENTER & CHAMFER



| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | | | Kg | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|-------|-------|-----|-----|---------|-------|-------------------------------|-------|
| | | | ØDmax. | Tmax. | Tmix. | Ødg | L | Angle ° | | | |
| 181147400 | CHT S16H N11-45 | 1 | 13 | 6,5 | 1,0 | 16 | 100 | 45 | 0,146 | SO..T 11T3.. | |
| 181147500 | CHT S16M N11-45 | 1 | 13 | 6,5 | 1,0 | 16 | 150 | 45 | 0,180 | SO..T 11T3.. | |

| Order code Código | Designation Designação Designación | Nº Toolholder | Holder designation | Nº inserts | Insert Pastilha Inserto | Stock |
|----------------------|--|------------------|--------------------|---------------|-------------------------------|-------|
| 1410286G4 | PK SOMT 11T308 CHTS16H | 1 | CHT S16H N11-45 | 10 | SOMT 11T308 | |
| 1410287G4 | PK SOMT 11T308 CHTS16M | 1 | CHT S16M N11-45 | 10 | SOMT 11T308 | |

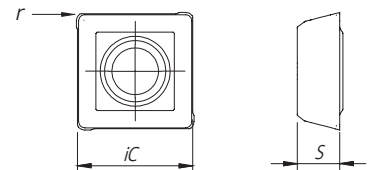
Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

SO...T 11T... || Inserts | Pastilhas | Plaquetas

SOMT

SOGT NEW



| | | P | M | K | Dimensions Dimensões Dimensiones (mm) | | | |
|------------------------------|---------------|--------|--------|--------|--|------|-------|--------|
| | | PVD | PVD | PVD | iC | S | l | r |
| ⁽²⁾ Grade code | | G4 | G4 | G4 | | | | |
| ⁽¹⁾ Geometry code | ISO Reference | PH7920 | PH7920 | PH7920 | | | | |
| 1112425 | SOMT 11T308 | | | | 10,87 | 3,97 | 11,00 | 0,80 |
| 1112973 | SOGT 11T303 | | | | 10,87 | 3,97 | 11,00 | (0,30) |

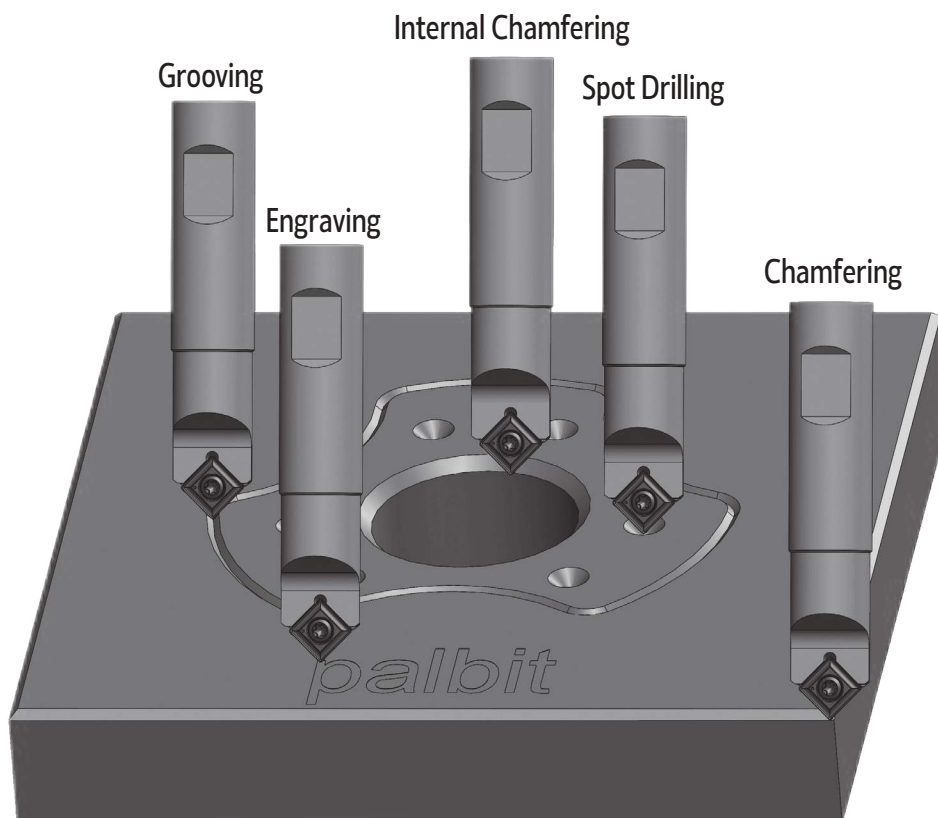
First choice | Primeira opção | 1ª opción

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

Insert order code = (1) Geometry Code + (2) Grade Code

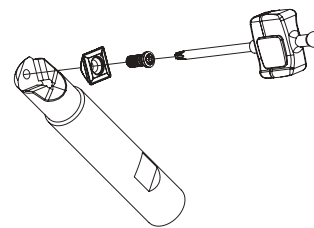
TOOL SELECTION | Selecção de ferramenta | Selección de herramienta



SPARE PARTS | Complementos | Repuestos

| Cutter ØDc | Order separately | | | |
|---------------|------------------|------------|-----------------|--------------|
| | Insert Screw | Key (Torx) | Key (Torx - Nm) | Torque Value |
| CHT S16... | P0350800 | XT15 | DT1530 | 3,0 |

Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
Check the procedures for the clamping screws on the page A-241.



RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Cutting Conditions | |
|-----|-----|-----------------------------------|-----------------|--------------------|----------------|
| | | | | Vc (m/min) | Feed fz (mm/t) |
| | | | | PH7920 | SOMT 11T308 |
| P | 1 | Unalloyed Steel | 125-220 | 120-150 | 0,04-0,08 |
| | 2 | Low-Alloyed Steel | 220-280 | 100-120 | 0,03-0,07 |
| | 3 | High-Alloyed Steel | 280-380 | 60-100 | 0,03-0,06 |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | 100-150 | 0,04-0,07 |
| | 5 | SS - Austenitic | 200-330 | 80-120 | 0,03-0,06 |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | 50-90 | 0,03-0,06 |
| K | 7 | Malleable Cast Iron | 130-230 | 90-150 | 0,05-0,10 |
| | 8 | Grey Cast Iron | 180-245 | 80-120 | 0,05-0,08 |
| | 9 | Nodular Cast iron | 160-250 | 70-110 | 0,04-0,08 |

SPOT FACE

A

MILLING

Overview

Face milling

Hifeed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

Spot face

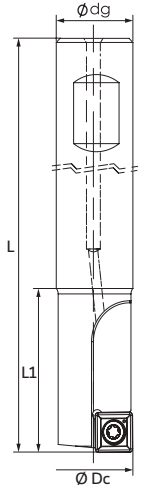
Spare Parts

Technical Data

End Mills



Note: Hole previously drilled



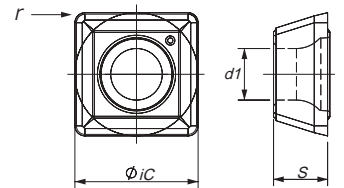
| Order code Código | Reference Referência Referencia | | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Insert Pastilha Inserto | Stock |
|----------------------|---------------------------------------|---|---|-----------|-----|----|-------|-------------------------------|-------|
| | | | ϕDc | ϕdg | L | L1 | | | |
| 181150100 | SP91 D10-W10/100-01-05 | 1 | 10 | 10 | 100 | 30 | 0,048 | SPKX 05T104 | |
| 181150200 | SP91 D11-W12/100-01-05 | 1 | 11 | 12 | 100 | 30 | 0,070 | SPKX 05T104 | |
| 181150300 | SP91 D13-W16/100-01-06 | 1 | 13 | 16 | 100 | 30 | 0,116 | SPKX 060204 | |
| 181150400 | SP91 D14-W16/120-01-06 | 1 | 14 | 16 | 120 | 30 | 0,123 | SPKX 060204 | |
| 181150500 | SP91 D17-W20/120-01-07 | 1 | 17 | 20 | 120 | 35 | 0,224 | SPKX 070308 | |
| 181150600 | SP91 D18-W20/140-01-07 | 1 | 18 | 20 | 140 | 35 | 0,272 | SPKX 070308 | |
| 181150700 | SP91 D20-W20/140-01-09 | 1 | 20 | 20 | 140 | 40 | 0,303 | SPKX 090308 | |
| 181150800 | SP91 D21-W25/150-01-09 | 1 | 21 | 25 | 150 | 40 | 0,449 | SPKX 090308 | |
| 181150900 | SP91 D25-W25/150-01-11 | 1 | 25 | 25 | 150 | 40 | 0,473 | SPKX 110408 | |

Stock item | Produto de stock | Itens de stock

Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

SPKX || Inserts | Pastilhas | Plaquitas

(PHC grade)



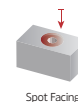
| Geometry code | ISO Reference | P | | | M | | | K | | | Dimensions Dimensões Dimensiones (mm) | | | |
|---------------|---------------|-----|----|----|-----|----|----|-----|----|----|---|------|------|------|
| | | PVD | | | PVD | | | PVD | | | IC | S | d1 | r |
| | | 68 | 66 | J3 | 68 | 66 | J3 | 68 | 66 | J3 | | | | |
| 1111635 | SPKX 05T104 | | | | | | | | | | 5,00 | 1,98 | 2,20 | 0,40 |
| 1111282 | SPKX 060204 | | | | | | | | | | 6,00 | 2,38 | 2,55 | 0,80 |
| 1111636 | SPKX 070308 | | | | | | | | | | 7,94 | 3,18 | 2,85 | 0,80 |
| 1111637 | SPKX 090308 | | | | | | | | | | 9,80 | 3,18 | 4,10 | 0,80 |
| 1111285 | SPKX 110408 | | | | | | | | | | 11,50 | 4,80 | 4,40 | 0,80 |

First choice | Primeira opção | 1ª opción

Stock item | Produto de stock | Itens de stock

Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

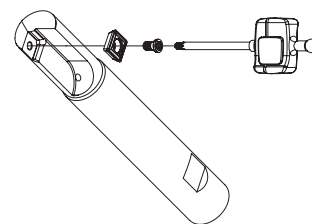
Insert order code = (1) Geometry Code + (2) Grade Code



SPARE PARTS | Complementos | Repuestos

Order separately

| Cutter ØDc | Insert Screw | Key (Torx) | Key (Torx - Nm) | Torque Value |
|---------------|--------------|------------|--------------------|--------------|
| | | | | |
| 10-11 | P0200400 | XT06 | DT0606 | 0,6 |
| 13-14 | P0220500 | XT07 | DT0709 | 0,9 |
| 17-18 | P0250704 | XT08 | DT0812 | 1,2 |
| 20-21 | P0350702 | XT15 | DT1530 | 3,0 |
| 25 | P0400900 | XT15 | DT1530 | 3,0 |



Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
Check the procedures for the clamping screws on the page A-241.

GRADES SELECTION GUIDE | Guia para selecção de graus | Tabla para selección de calidades

| ISO | PSM | Material | HB (Brinell) | Grades | | |
|-----|-----|-----------------------------------|-----------------|-------------------|--------|-------------|
| | | | | ← Wear Resistance | | Toughness → |
| | | | | PH6920 | PH6930 | PHC930 |
| P | 1 | Unalloyed Steel | 125-220 | ✓ | ✓ | ✓ |
| | 2 | Low-Alloyed Steel | 220-280 | ✓ | ✓ | ✓ |
| | 3 | High-Alloyed Steel | 280-380 | ✓ | ✓ | ✓ |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | ✓ | ✓ | ✓ |
| | 5 | SS - Austenitic | 200-330 | ✓ | ✓ | ✓ |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | ✓ | ✓ | ✓ |
| K | 8 | Grey Cast Iron | 180-245 | ✓ | ✓ | ✓ |
| | 9 | Nodular Cast iron | 160-250 | ✓ | ✓ | ✓ |

Good Conditions
 Average Conditions
 Difficult Conditions

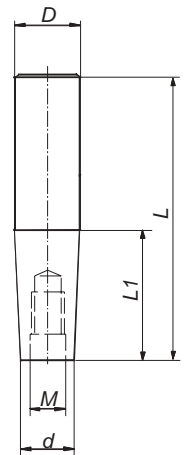
RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | PSM | Material | HB (Brinell) | Vc (m/min) | | |
|-----|-----|-----------------------------------|-----------------|-------------------|---------|-------------|
| | | | | ← Wear Resistance | | Toughness → |
| | | | | PH6920 | PH6930 | PHC930 |
| P | 1 | Unalloyed Steel | 125-220 | 180-250 | 160-240 | 160-240 |
| | 2 | Low-Alloyed Steel | 220-280 | 160-220 | 140-200 | 140-200 |
| | 3 | High-Alloyed Steel | 280-380 | 130-180 | 110-160 | 110-160 |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | 170-230 | 140-210 | 140-210 |
| | 5 | SS - Austenitic | 200-330 | 160-200 | 130-200 | 130-200 |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | 140-180 | 120-190 | 120-190 |
| K | 8 | Grey Cast Iron | 180-245 | 180-250 | 150-220 | 150-220 |
| | 9 | Nodular Cast iron | 160-250 | 130-200 | 110-180 | 110-180 |

| ISO | PSM | Material | HB (Brinell) | Feed fz (mm/t) | | | | |
|-----|--------------------|-----------------------------------|-----------------|----------------|------------|-----------------|------------|------------|
| | | | | SPKX 05... | SPKX 06... | SPKX 07... | SPKX 09... | SPKX 11... |
| | | | | P | 1 | Unalloyed Steel | 125-220 | 0,05-0,08 |
| 2 | Low-Alloyed Steel | 220-280 | 0,06-0,12 | | 0,08-0,15 | 0,10-0,18 | 0,12-0,22 | 0,12-0,25 |
| 3 | High-Alloyed Steel | 280-380 | 0,06-0,10 | | 0,08-0,15 | 0,10-0,20 | 0,12-0,23 | 0,12-0,26 |
| M | 4 | SS - Ferritic / Martensitic | 200-330 | 0,05-0,10 | 0,06-0,12 | 0,08-0,15 | 0,09-0,16 | 0,10-0,20 |
| | 5 | SS - Austenitic | 200-330 | 0,04-0,08 | 0,05-0,10 | 0,06-0,12 | 0,07-0,13 | 0,08-0,18 |
| | 6 | SS - Austenitic-ferritic (Duplex) | 230-260 | 0,04-0,08 | 0,05-0,11 | 0,06-0,13 | 0,07-0,14 | 0,08-0,19 |
| K | 8 | Grey Cast Iron | 180-245 | 0,06-0,12 | 0,08-0,16 | 0,12-0,20 | 0,15-0,25 | 0,15-0,30 |
| | 9 | Nodular Cast iron | 160-250 | 0,06-0,10 | 0,08-0,15 | 0,10-0,18 | 0,12-0,20 | 0,15-0,25 |

SPARE PARTS

MULTIFIT DENSIMET ANTI-VIBRATION | Shank | Adaptador | Fijación

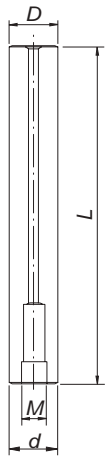


| order code | Reference | Dimensions (mm) | | | | | Stock |
|------------|-----------------------------|-----------------|-----|-----|------|-----|-------|
| | | D | L1 | L | d | M | |
| 1191008A0 | AC-RI-D12-M06-L040-AV | 12 | 40 | 90 | 9,8 | M6 | ⊗ |
| 1191009A0 | AC-RI-D12-M06-L060-AV | 12 | 60 | 110 | 9,8 | M6 | ⊗ |
| 1191021A0 | AC-RI-D12-M06-L080-AV | 12 | 80 | 130 | 9,8 | M6 | ⊗ |
| 1191010A0 | AC-RI-D16-M08-L040-AV | 16 | 40 | 95 | 12,8 | M8 | ⊗ |
| 1191011A0 | AC-RI-D16-M08-L060-AV | 16 | 60 | 115 | 12,8 | M8 | ⊗ |
| 1191012A0 | AC-RI-D16-M08-L080-AV | 16 | 80 | 135 | 12,8 | M8 | ⊗ |
| 1191013A0 | AC-RI-D16-M08-L100-AV | 16 | 100 | 155 | 12,8 | M8 | ⊗ |
| 1191022A0 | AC-RI-D16-M08-L120-AV | 16 | 120 | 175 | 12,8 | M8 | ⊗ |
| 1191014A0 | AC-RI-D20-M10-L040-AV | 20 | 40 | 100 | 15,8 | M10 | ⊗ |
| 1191015A0 | AC-RI-D20-M10-L060-AV | 20 | 60 | 120 | 15,8 | M10 | ⊗ |
| 1191016A0 | AC-RI-D20-M10-L080-AV | 20 | 80 | 140 | 15,8 | M10 | ○ |
| 1191017A0 | AC-RI-D20-M10-L100-AV | 20 | 100 | 160 | 15,8 | M10 | ○ |
| 1191018A0 | AC-RI-D20-M10-L120-AV | 20 | 120 | 180 | 15,8 | M10 | ○ |
| 1191026A0 | AC-RI-D20-M10-L080-D17,8-AV | 20 | 80 | 140 | 17,8 | M10 | ⊗ |
| 1191027A0 | AC-RI-D20-M10-L100-D17,8-AV | 20 | 100 | 160 | 17,8 | M10 | ⊗ |
| 1191028A0 | AC-RI-D20-M10-L120-D17,8-AV | 20 | 120 | 180 | 17,8 | M10 | ⊗ |
| 1191023A0 | AC-RI-D25-M12-L060-AV | 25 | 60 | 125 | 20,8 | M12 | ⊗ |
| 1191024A0 | AC-RI-D25-M12-L080-AV | 25 | 80 | 145 | 20,8 | M12 | ⊗ |
| 1191025A0 | AC-RI-D25-M12-L100-AV | 25 | 100 | 165 | 20,8 | M12 | ⊗ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

MULTIFIT CARBIDE ANTI-VIBRATION | Shank | Adaptador | Fijación



| order code | Reference | Dimensions (mm) | | | | Stock |
|------------|-----------------------|-----------------|-----|----|-----|-------|
| | | D | L | d | M | |
| 219102600 | AC-RI-D12-M06-L100-HW | 12 | 100 | 12 | M6 | ☉ |
| 219102700 | AC-RI-D12-M06-L150-HW | 12 | 150 | 12 | M6 | ☉ |
| 219102800 | AC-RI-D16-M08-L100-HW | 16 | 100 | 16 | M8 | ☉ |
| 219102900 | AC-RI-D16-M08-L150-HW | 16 | 150 | 16 | M8 | ☉ |
| 219103000 | AC-RI-D20-M10-L150-HW | 20 | 150 | 20 | M10 | ☉ |
| 219103100 | AC-RI-D20-M10-L200-HW | 20 | 200 | 20 | M10 | ☉ |
| 219103200 | AC-RI-D25-M12-L150-HW | 25 | 150 | 25 | M12 | ☉ |
| 219103300 | AC-RI-D25-M12-L200-HW | 25 | 200 | 25 | M12 | ☉ |
| 219103400 | AC-RI-D32-M16-L250-HW | 32 | 250 | 32 | M16 | ☉ |

☉ Stock item | Producto de stock | Itens de stock

○ Available under request | Disponible sobre consulta | Disponible bajo consulta

A

MILLING

Overview

Face milling

Hifeed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

Spot face

Spare Parts

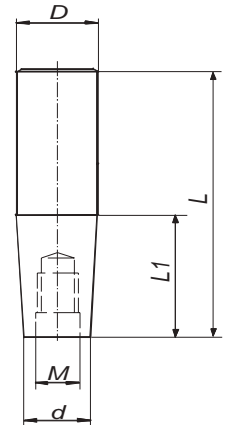
Technical Data

End Mills

SPARE PARTS

A

MULTIFIT CYLINDRICAL IN STEEL | Shank | Adaptador | Fijación



| order code | Reference | Dimensions (mm) | | | | | Stock |
|------------|--------------------|-----------------|----|-----|------|-----|-------|
| | | D | L1 | L | d | M | |
| 229000500 | AC-RI-D12-M06-L020 | 12 | 20 | 65 | 9,8 | M6 | ☼ |
| 229000600 | AC-RI-D16-M08-L040 | 16 | 40 | 88 | 12,8 | M8 | ☼ |
| 229000700 | AC-RI-D20-M10-L045 | 20 | 45 | 95 | 17,8 | M10 | ☼ |
| 229000800 | AC-RI-D25-M12-L050 | 25 | 50 | 106 | 20,8 | M12 | ☼ |
| 229000900 | AC-RI-D32-M16-L050 | 32 | 50 | 110 | 28,8 | M16 | ☼ |

☼ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

MILLING

Overview

Face milling

Hi-feed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

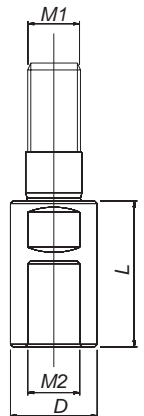
Spot face

Spare Parts

Technical Data

End Mills

MULTIFIT EXTENSIONS FOR THREADED TYPE CUTTER | Shank | Adaptador | Fijación

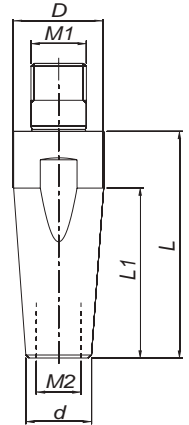


| order code | Reference | Dimensions (mm) | | | | Stock |
|------------|-----------------|-----------------|-----|-----|----|-------|
| | | D | M1 | M2 | L | |
| 229003200 | AL-M08-L040-M08 | 13,8 | M8 | M8 | 40 | ☼ |
| 229003600 | AL-M10-L060-M10 | 18,0 | M10 | M10 | 60 | ☼ |
| 229003700 | AL-M12-L060-M12 | 21,0 | M12 | M12 | 60 | ☼ |
| 229003100 | AL-M16-L060-M16 | 29,0 | M16 | M16 | 60 | ☼ |

☼ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

MULTIFIT REDUCERS FOR THREADED TYPE CUTTER || Shank | Adaptador | Fijación



| order code | Reference | Dimensions (mm) | | | | | | Stock |
|------------|-----------------|-----------------|-----|------|------|----|----|-------|
| | | M1 | M2 | D | d | L | L1 | |
| 229012100 | AL-M08-L040-M06 | M8 | M6 | 13,8 | 10,0 | 40 | 25 | ⊗ |
| 229012200 | AL-M10-L040-M08 | M10 | M8 | 18,0 | 13,8 | 40 | 25 | ⊗ |
| 229012300 | AL-M12-L040-M10 | M12 | M10 | 21,0 | 18,0 | 40 | 15 | ⊗ |
| 229012400 | AL-M16-L040-M12 | M16 | M12 | 29,0 | 21,0 | 40 | 19 | ⊗ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

A

MILLING

Overview

Face milling

Hi-feed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

Spot face

Spare Parts

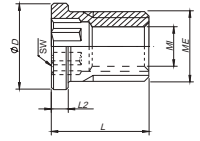
Technical Data

End Mills

SPARE PARTS

A

SHIM SCREW

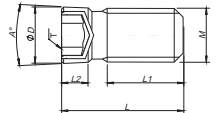


| order code | Screw | Dimensions (mm) | | | | | |
|------------|----------|-----------------|------------|------------|-----|---|-----|
| | | SW | MI | ME | ØD | L | L2 |
| 290030400 | T0503509 | 3,5 | M3,5 x 0,6 | M5,0 x 0,5 | 6,3 | 7 | 1,2 |

Overview

Face milling

ADJUSTMENT SCREW



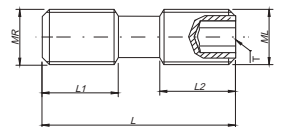
| order code | Screw | T (torx) | Dimensions (mm) | | | | | |
|------------|----------|----------|-----------------|-----|----|------|-----|-----|
| | | | M | ØD | A° | L | L1 | L2 |
| 290051500 | F0601441 | T-20 | M6 x 1,0 | 6,3 | 5° | 13,6 | 8,5 | 3,2 |

Hi-feed milling

Shoulder milling

Profile milling

DIFFERENTIAL SCREW



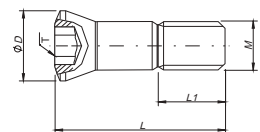
| order code | Screw | T (torx) | Dimensions (mm) | | | | |
|------------|----------|----------|-----------------|-----------|----|-----|-----|
| | | | MR | ML | L | L1 | L2 |
| 290016300 | F0701800 | T-20 | M7 x 0,75 | M7 x 0,75 | 18 | 7,5 | 7,5 |

Hardmill

Center & Chamfer

Spot face

INSERT SCREW



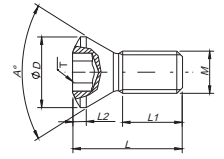
| order code | Screw | T (torx) | Dimensions (mm) | | | |
|------------|----------|----------|-----------------|------|------|-----|
| | | | M | ØD | L | L1 |
| 290013900 | P0400925 | T-15 | M4 x 0,5 | 5,80 | 8,6 | 3,5 |
| 290010600 | P0500925 | T-20 | M5 x 0,5 | 6,70 | 9,5 | 3,4 |
| 290014400 | P0501325 | T-20 | M5 x 0,5 | 7,50 | 12,8 | 4,5 |
| 290014000 | P0501525 | T-20 | M5 x 0,5 | 7,50 | 15,5 | 4,5 |

Spare Parts

Technical Data

End Mills

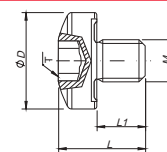
INSERT SCREW



| order code | Screw | T (torx) | Dimensions (mm) | | | | | |
|------------|----------|----------|-----------------|------|-----|------|-----|-----|
| | | | M | ØD | A° | L | L1 | L2 |
| 290078800 | P0180300 | T-GIP | M1,8 x 0,35 | 2,45 | 60° | 3,4 | 1,5 | 0,5 |
| 290058400 | P0180400 | T-GIP | M1,8 x 0,35 | 2,45 | 60° | 3,7 | 1,8 | 0,5 |
| 290011300 | P0180401 | T-6 | M1,8 x 0,35 | 2,75 | 55° | 3,6 | 1,9 | 0,4 |
| 290031400 | P0200500 | T-6 | M2 x 0,4 | 2,80 | 60° | 4,7 | 2,9 | 0,6 |
| 290030600 | P0220500 | T-7 | M2,2 x 0,45 | 3,20 | 60° | 5,0 | 3,0 | 0,6 |
| 290033100 | P0250503 | T-8 | M2,5 x 0,45 | 3,45 | 60° | 5,5 | 2,8 | 0,7 |
| 290048900 | P0250601 | T-8 | M2,5 x 0,45 | 3,45 | 60° | 6,0 | 3,5 | 0,8 |
| 290013400 | P0250700 | T-8 | M2,5 x 0,45 | 3,3 | 55 | 7 | 4 | 0,8 |
| 290031300 | P0250704 | T-8 | M2,5 x 0,45 | 3,45 | 60° | 6,5 | 4,0 | 0,7 |
| 290009100 | P0300800 | T-9 | M3 x 0,5 | 4,4 | 60° | 7,4 | 4,2 | 0,8 |
| 290081700 | P0350702 | T-15 | M3,5 | 5,3 | 55 | 7 | 3,1 | 2 |
| 290019900 | P0350800 | T-15 | M3,5 x 0,6 | 5,5 | 60° | 7,7 | 3,7 | 1 |
| 290027100 | P0350902 | T-10 | M3,5 x 0,6 | 4,7 | 60° | 9 | 5,5 | 0,4 |
| 290030900 | P0350903 | T-15 | M3,5 x 0,6 | 5,45 | 60° | 9 | 6 | 0,6 |
| 290075200 | P0350904 | T-15 | M3,5 x 0,6 | 4,8 | 60° | 9 | 5 | 0,8 |
| 290005800 | P0351200 | T-15 | M3,5 x 0,6 | 5,30 | 60° | 12 | 8 | 1,4 |
| 119198800 | P0400803 | T-15 | M4 x 0,7 | 5,5 | 60° | 8 | 5,5 | 1 |
| 290048200 | P0400900 | T-15 | M4 x 0,7 | 5,5 | 60° | 9 | 5,5 | 1 |
| 290075600 | P0401065 | T-15 | M4 x 0,6 | 5,7 | 60 | 10 | 6 | 1 |
| 290007000 | P0401100 | T-15 | M4 x 0,7 | 5,3 | 55 | 11 | 8 | 2 |
| 290047500 | P0401200 | T-15 | M4 x 0,7 | 5,5 | 60° | 11 | 6 | 1,2 |
| 290026900 | P0451001 | T-20 | M4,5 x 0,75 | 6,6 | 55° | 10,5 | 5,5 | 1 |
| 290006700 | P0451400 | T-20 | M4,5 x 0,75 | 7,2 | 60° | 14 | 9 | 1 |
| 290017500 | P0501100 | T-20 | M5 x 0,8 | 6,4 | 43° | 11 | 5,9 | 0,5 |
| 290031700 | P0501300 | T-20 | M5 x 0,8 | 7 | 60° | 12,8 | 8 | 1,3 |
| 290078900 | P0501302 | T-20 | M5 x 0,5 | 7 | 60° | 13 | 8,2 | 0,8 |
| 290048300 | P0601402 | T-20 | M6 x 1,0 | 8,4 | 60° | 14 | 9 | 0,9 |

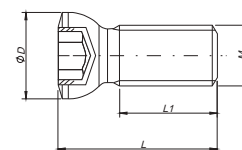
SPARE PARTS

ADJUSTMENT SCREW



| order code | Screw | T (torx) | Dimensions (mm) | | | |
|------------|----------|----------|-----------------|------|-----|-----|
| | | | M | ØD | L | L1 |
| 290014200 | P0350750 | T-15 | M3,5 x 0,6 | 8,00 | 7,2 | 4,0 |

WASHER SCREW



| order code | Screw | Dimensions (mm) | | | |
|------------|----------|-----------------|------|------|------|
| | | M | ØD | L | L1 |
| 290075600 | P0401065 | M4 x 0,6 | 5,7 | 10,0 | 6,0 |
| 290018500 | P0601265 | M6 x 1,0 | 9,00 | 12,4 | 6,5 |
| 290011000 | P0601765 | M6 x 1,0 | 9,00 | 17,0 | 11,0 |
| 290028400 | P0802265 | M8 x 1,25 | 11,0 | 22,0 | 15,0 |

OTHERS

| Washer | Order Code | Reference |
|--------|------------|-----------|
| | 119200900 | HC01200 |
| | 290060200 | HC01400 |
| | 290002900 | HC01800 |

| Cartridge Screw | Order Code | Reference |
|-----------------|------------|-----------|
| | 119169600 | D0602096 |

| Torx Keys | Order Code | Reference |
|-----------|------------|-----------|
| | 290058600 | XT 06IP |
| | 290011400 | XT 06 |
| | 290012900 | XT07 |
| | 290011700 | XT 08 |
| | 290025700 | XT 09 |
| | 290013100 | XT 10 |
| | 290012400 | XT 15 |
| | 290013200 | XT 20 |
| | 290014800 | PT 15 |
| | 290014900 | PT 20 |
| | 290056000 | TT 20 |
| | 290059500 | LT 30 |

| Shim | Order Code | Reference |
|------|------------|-----------|
| | 160022218 | CS130300 |
| | 290060400 | CT160300 |
| | 290060300 | CT220300 |

| Spring Pin | Order Code | Reference |
|------------|------------|-----------|
| | 290060600 | BE02500 |
| | 290060500 | BE04000 |

| Wedge (Insert) | Order Code | Reference |
|----------------|------------|-----------------|
| | 290060900 | WA7001 |
| | 290061100 | WA7003 |
| | 119200100 | SETDEV AS 04 00 |

| Wedge (Cartridge) | Order Code | Reference |
|-------------------|------------|-----------|
| | 290061000 | WA7002 |
| | 290061200 | WA7004 |

| Hex Key | Order Code | Reference |
|------------------|------------|-----------|
| SS TS | 290021200 | SS40 |
| | 290021300 | SS50 |
| | 290058700 | TS40 |

| Screw for Coolant Supply | Order Code | Reference | M | Ø Ext. |
|--------------------------|------------|-----------|----|--------|
| | 119163000 | J0123510 | 12 | 37,9 |
| | 119163100 | J0164110 | 16 | 45,0 |
| | 119163200 | J0204610 | 20 | 54,8 |

| Tork Keys | Order Code | Reference | Torx | Nm |
|-----------|------------|-----------|------|-----|
| | 290078300 | DT0606IP | 6IP | 0,6 |
| | 290059600 | DT0606 | 6 | 0,6 |
| | 290059700 | DT0709 | 7 | 0,9 |
| | 290059800 | DT0812 | 8 | 1,2 |
| | 290059900 | DT0914 | 9 | 1,4 |
| | 290060000 | DT1020 | 10 | 2,0 |
| | 290047800 | DT1530 | 15 | 3,0 |
| | 290078400 | DT2050 | 20 | 5,0 |

| DIN 6368 Wrench | Order Code | Reference |
|-----------------|------------|-----------|
| | 290058000 | SD6368-12 |
| | 290058100 | SD6368-16 |
| | 290058200 | SD6368-20 |

| Retaining Screw | Order Code | Reference |
|-----------------|------------|-----------|
| | 290087700 | D1603500 |
| | 290087800 | D2004000 |

PROCEDURES FOR CLAMPING SCREWS

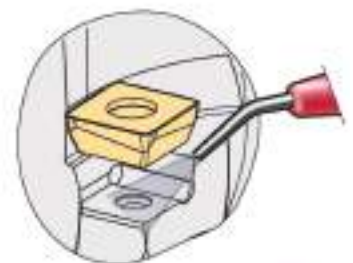
1. Always use a torque wrench to ensure that screws are correctly tightened (please confirm torques data on catalogue). Torque that is too high will negatively affect the performance of the tool and can cause screw and insert breakage. Torque that is too low will cause insert movement, vibration and degrade the cutting result. Dedicated adjustable torque wrench can be ordered separately (please see above).

2. Clean the insert seat.
Make sure that the insert seat is free from dust or chips from the machining. If necessary, clean the insert seat with compressed air.

3. Check the insert seat.
Before assembly cutter it is important to ensure that the insert seat has not been damaged during machining or handling.

4. Apply sufficient screw lubrication to prevent seizure. Lubricant should be applied to the screw threads as well as to the screw head face.

5. Replace worn or damaged screws.



MILLING GRADES

| A | 1 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | | | | |
|------------------|-------------------------|---|--------|--------|----|--------|--------|--------|----|----|----|-----|-----|--|--|
| MILLING | P STEEL | | PHP910 | | | | | | | | | PVD | | | |
| | | | PH7910 | | | | | | | | | | CVD | | |
| | | | | PHP920 | | | | | | | | | | | |
| | | | | PH7920 | | | | | | | | | | | |
| | | | | | | PHP930 | | | | | | | | | |
| | | | | | | PH7930 | | | | | | | | | |
| | | | | | | | PHP530 | | | | | | | | |
| | | | | | | | | PHP808 | | | | | | | |
| | | | | | | | | PH7740 | | | | | | | |
| | | | | | | | | PHS740 | | | | | | | |
| Overview | M STAINLESS STEEL | | | | | | | | | | | PVD | | | |
| | | | | | | PHH930 | | | | | | | | | |
| | | | | | | PH7930 | | | | | | | | | |
| | | | | | | PHH530 | | | | | | | | | |
| | | | | | | PHP530 | | | | | | | | | |
| | | | | | | | PHH808 | | | | | | | | |
| Face milling | K CAST IRON | | | | | | | | | | | PVD | | | |
| | | | | | | | | PH7740 | | | | | | | |
| Hi-feed milling | K CAST IRON | | PHP910 | | | | | | | | | PVD | | | |
| | | | PH7910 | | | | | | | | | | | | |
| Shoulder milling | K CAST IRON | | | PHP920 | | | | | | | | | PVD | | |
| | | | | PH7920 | | | | | | | | | | | |
| Profile milling | K CAST IRON | | | | | PHP930 | | | | | | PVD | | | |
| | | | | | | PH7930 | | | | | | | | | |
| Hardmill | K CAST IRON | | | | | | | PH7740 | | | | | | | |
| | | | | | | | | | | | | | | | |
| Center & Chamfer | K CAST IRON | | | | | | | | | | | PVD | | | |
| | | | | | | | | | | | | | | | |
| Spot face | K CAST IRON | | | | | | | | | | | PVD | | | |
| | | | | | | | | | | | | | | | |
| Spare Parts | K CAST IRON | | | | | | | | | | | PVD | | | |
| | | | | | | | | | | | | | | | |
| Technical Data | K CAST IRON | | | | | | | | | | | CVD | | | |
| | | | | | | | | | | | | | | | |
| End Mills | K CAST IRON | | | | | | | | | | | CVD | | | |
| | | | | | | | | | | | | | | | |

| | 1 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | | |
|---|--------|--------|--------|--------|--------|----|--------|--------|----|----|----|--|---------|
| N ALUMINIUM & NFM | PH0910 | | | | | | | | | | | | UNCOTED |
| | | PHD103 | | | | | | | | | | | CVD |
| | | PDP403 | | | | | | | | | | | PCD |
| | | PDP410 | | | | | | | | | | | |
| S HEAT RESISTENT / TITANIUM ALLOYS | | | | | | | PHH930 | | | | | | PVD |
| | | | | | | | PH7930 | | | | | | |
| | | | | | | | PHH530 | | | | | | |
| | | | | | | | | PHH808 | | | | | |
| | | | | | | | | PH7740 | | | | | |
| H HARDENED MATERIALS | | | PHH603 | | | | | | | | | | PVD |
| | | | | PH7603 | | | | | | | | | |
| | | | | | PHH910 | | | | | | | | |
| | | PBH920 | | | | | | | | | | | PCBN |

A

MILLING

Overview

Face milling

Hifeed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

Spot face

Spare Parts

Technical Data

End Mills

MILLING GRADES

A

PVD GRADES

PHP...

Product of the latest coating technology, the new PHP coating comes to revolutionize the milling of Steel and Cast Iron. PHP is a balanced PVD coating that combines high hardness and high cracking resistance.

It's composition and structure ensure an optimal adhesion which results in a very smooth surface preventing built-up edge, coating worn-out and keeps the insert in a lubricated-like condition.



WEAR RESISTANCE

TOUGHNESS

PHP910 NEW
P05-P10
K05-K10

Recommended for light operations in steels.

PHP920 NEW
P10-P35
K10-K30

Recommended for General Steel & Cast Iron Milling.

PHP930 NEW
P20-P40
K20-K40

Recommended for medium to roughing operations in steels and cast irons.

PHP530 NEW
P25-P40
M25-M40

Extremely heat resistant grade. First choice in cold-section turbine blade milling.

PHP808 NEW
P30-P40

High heat resistance grade. Economic choice for cold-section turbine blade milling.

PHH...

Product of the latest coating technology, the new PHH coating comes to revolutionize the milling of stainless steel, HRSA as well and hardened steel.

PHH is a stable PVD coating that merges both high hardness and an unmatched heat resistance.

It's structure contains refractory materials which allows it to work at the highest temperature and the hardest conditions.



WEAR RESISTANCE

TOUGHNESS

PHH603 NEW
H05-H15
P01-P05

Recommended for finishing operations in steels and hardened steels. First choice in mold and die finishing applications.

PHH910 NEW
P05-P10
H15-H30

Recommended for finishing operations in steels and hardened steels in unstable conditions.

PHH930 NEW
M20-M40
S20-S30

Recommended for general purpose milling of stainless steels and HRSA.

PHH530 NEW
M25-M40
S25-S35

Extremely heat resistant grade. First choice in hot-section turbine blade milling.

PHH808 NEW
M30-M40
S30-S40

High heat resistance grade. Economic choice in hot-section turbine blade milling.

PH7... | PH6...

A medium thickness PVD coating with good compatibility with steels, stainless steels, cast irons and HRSA.

WEAR RESISTANCE

TOUGHNESS

PH7603
 (PH6103)
 H01-H20

PH7910
 (PH6910)
P05-P10
K05-K10

PH7920
 (PH6920)
P10-P35
K10-K30

PH7930
 (PH6930)
P20-P40
M20-M30
K20-K40
S25-S35

PH7740
 (PH6740)
P30-P50
M30-M50
K30-K40
S30-S40

Note: PH6... grades are very similar to PH7... The difference being that PH7 is mostly used in proprietary milling lines while PH6... is used on interchangeable inserts.

MILLING

Overview

Face milling

Hi-feed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

Spot face

Spare Parts

Technical Data

End Mills

CVD GRADES

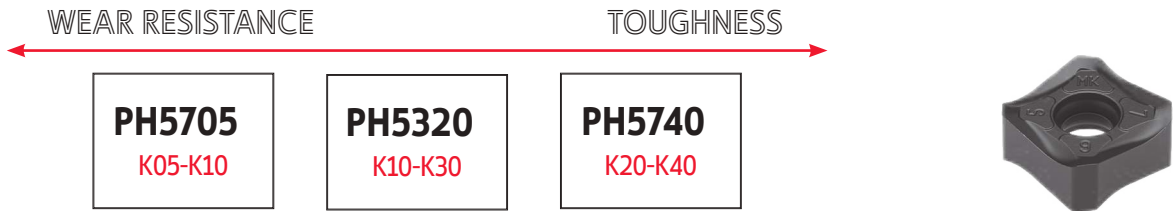
PHS740...

A tough substrate combined with a thin CVD coating with excellent thermal resistance and hardness at high temperature. 1st choice solution for removal of oxide layer from workpiece surface and for unstable conditions where a lot of heat is generated (ex: heavy duty applications).



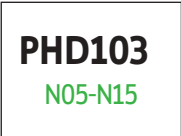
PH5...

A thick CVD coating with very smooth surface. Can be used wet or dry. Ideal for machining cast irons.



PHD103

A carbide substrate with high abrasion resistance coated with crystalline diamond CVD coating. Ideal for graphite machining.



PH0910

Uncoated carbide micro-grain grade combining a good abrasive wear resistance and toughness. Suitable for rough to finish operations of aluminum alloys.



PCBN

PBH920

Carbide insert with Polycrystalline Cubic Boron Nitride tip for finishing operations on hardened steels.



PCD

PDP4...

Carbide insert with Polycrystalline Diamond tip for finishing operations on aluminums and non-ferrous metallic materials.



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COMPARATIVE GRADES CHART

PVD COATED GRADES | GRAUS REVESTIDOS A PVD | GRADOS CON RECUBRIMIENTO PVD

| ISO | Material | Palbit | Sandvik | Kennametal | Iscar | Seco | Mitsubishi | Sumitomo | Hitachi | Walter | Kyocera | Taegutec | Dijet | Ceratizit | |
|-----------|--|---|--|--|--|---|---|----------------------------|--|-------------------------------------|-------------------------------------|--|--------------------------------------|--------------------------------------|--------------------|
| | | | | | | | | | | | | | | | |
| STEEL | P01 | PH7603 PH6103 | GC1010 | KC505M KC510M KC515M | IC903 | | | | ATH80D JP4105 | | | TT2510 TT5505 | JC8003 | | |
| | P10 | PH7910 PH6910 PH9P910 | GC1010 GC1025 | KC505M KC510M KC515M KC610M KC715M | IC903 IC907 IC950 IC908 IC910 IC380 IC380 IC900 | CP200 TS2001 | MP6120 VP15TF | ACP200 | ATH80D PN08M ATH10E PN15M JP4105 JP4115 JP4120 | WHH15 WXM15 | PR830 PR1225 PR1230 PR1525 | TT2510 TT5505 TT5515 TT7080 | JC8003 JC8015 JC5015 JC5118 | | |
| | P20 | PH7920 PH6920 PH6125 PH9P920 | GC1025 GC1030 GC2030 | KC522M KC525M KC527M KC530M KC610M KC620M KC635M KC715M KC720M KC730M | IC907 IC950 IC908 IC910 IC380 IC900 IC830 IC928 IC1008 | CP250 TS2500 | MP6120 VP15TF MP6130 UP20M VP20RT | ACP200 ACP300 | JP4120 JS4045 CY250 | WHH15 WXM15 | PR830 PR1225 PR1230 PR1525 | TT2510 TT5505 TT5525 TT7080 TT9030 TT9080 | JC8015 JC5015 JC5118 JC5040 | CTP1235 CTP1625 | |
| | P30 | PH808 PH530 PH7930 PH6930 PH6135 PH9P930 | GC1025 GC1125 | KC525M KC527M KC530M KC537M KC610M KC620M KC720M KC725M KC730M KC735M | IC907 IC950 IC908 IC910 IC380 IC900 IC830 IC928 IC1008 | MP3000 F25M F30M F40M | MP6120 VP15TF MP6130 UP20M VP20RT VP30RT | ACP200 ACP300 | JS4045 CY250 JM4160 | WSP45 WSP46 | PR830 PR1225 PR1230 PR1525 | TT5525 TT7080 TT8020 TT8080 TT9030 TT9080 | JC5118 JC5040 JC8050 JC7560 | CTP1235 CTP1625 CTP2235 | |
| | P40 | PH7740 PH6740 | | KC537M KC720M KC725M KC735M | IC830 IC928 IC1008 | MP3000 F40M T60M | VP30RT | ACP300 | JM4160 | WSP45 WSP46 | | | TT8020 | JC5118 JC5040 JC8050 JC7560 | CTP1235 CTP2235 |
| | M01 | | GC1010 | | | IC907 IC903 | | | ACM100 ACK300 | PCS08M | | | | | |
| M10 | PH7910 PH6910 | GC1010 GC1025 GC1030 GC2030 | KC515M KC610M KC635M KC720M | IC907 IC903 | | VP15TF | | ACM100 ACK300 ACP300 | PCS08M CY150 | WXM15 | PR830 PR1225 PR1525 PR1535 | | | | |
| M20 | PH7920 PH6920 | GC1025 GC1030 GC1040 GC2030 | KC522M KC525M KC530M KC610M KC635M KC720M KC730M | IC380 IC900 IC908 IC928 IC1008 | MP3000 MS2050 F25M F30M | VP15TF MP7130 MP7030 UP20M VP20RT | ACM300 ACP300 | CY150 CY250 | WXM15 WSM35 WSM36 | PR830 PR1225 PR1525 PR1535 | TT8020 TT8080 | JC8015 JC5015 JC5118 | CTP1235 CTP1625 | | |
| M30 | PH7930 PH6930 PH6135 PHH530 PHH930 | GC1040 GC2030 | KC522M KC525M KC530M KC537M KC725M KC730M KC735M | IC380 IC900 IC908 IC928 IC1008 IC328 IC330 | MP3000 MS2050 F30M F40M | VP15TF MP7130 MP7030 UP20M VP20RT MP7140 VP30RT | ACM300 | CY250 JM4160 | WSM35 WSM36 WSP45 WSP46 | PR830 PR1225 PR1525 PR1535 | TT8020 TT8080 | JC8015 JC5015 JC5118 JC8050 JC7560 | CTP1235 CTP2235 | | |
| M40 | PH7740 PH6740 PHH808 | GC1040 | KC725M | IC1008 IC328 IC330 | MS2050 F40M | MP7140 VP30RT | ACM300 | JM4160 | WSM35 WSM36 WSP45 WSP46 | PR1225 PR1525 PR1535 | TT8020 | JC5015 JC5118 JC8050 JC7560 | CTP2235 | | |
| CAST IRON | K01 | | GC1010 | | IC380 IC900 | | MP8010 | | ATH80D JP4105 | | PR1510 | TT6080 | JC8003 | AMZ | |
| | K10 | PH7910 PH6910 PH9P910 | GC1010 GC1020 | KC514M KC515M KC520M KC620M | IC380 IC900 IC810 IC910 | MK2050 | MP8010 VP15TF | | ATH80D JP4105 JP4120 CY150 | WHH15 WXM15 WKK25 | PR1210 PR1510 | TT6080 | JC8015 | AMZ CTP3220 CTP6215 | |
| | K20 | PH9P920 PH7920 PH6920 | GC1020 | KC514M KC520M KC522M KC524M KC527M KC610M KC620M KC635M | IC810 IC910 IC950 IC350 IC830 IC928 | MK2050 | MP8010 VP15TF VP20RT | ACK300 | JP4120 CY150 CY250 | WHH15 WXM15 WKK25 | PR1210 PR1510 | | JC8015 JC5015 | CTP3220 CTP1625 | |
| | K30 | PH7740 PH6740 | | KC522M KC524M KC527M KC537M KC610M KC620M KC635M | IC830 IC928 IC1008 IC537M IC808 IC908 | MK2050 | VP15TF VP20RT | ACK300 | CY250 | WKK25 | PR1510 | | JC8015 JC5015 | | |

PVD COATED GRADES | GRAUS REVESTIDOS A PVD | GRADOS CON RECUBRIMIENTO PVD

| ISO | Material | Palbit | Sandvik | Kennametal | Iscar | Seco | Mitsubishi | Sumitomo | Hitachi | Walter | Kyocera | Taegutec | Dijet | Ceratzit |
|----------------------------------|----------|--|--------------------------------------|--------------------------------------|---|----------------|--------------------------------------|------------------|------------------|----------------------------------|---------------------------|----------------------------|--|--------------------|
| | | | | | | | | | | | | | | |
| ALUMINIUM | N01 | | | KC410M KC510M KC5410 | | | | | | | | TT6080 | | AMZ |
| | N10 | | GC1025 GC1030 | KC410M KC510M KC5410 KC620M | | | | DL1000 | SD5010 HD7010 | WXN15 | | TT6080 TT8020 | | AMZ |
| | N20 | | GC1025 GC1030 | KC422M KC620M | | F15M | LC15TF | DL1000 | SD5010 HD7010 | WXN15 | | TT8020 | | |
| HEAT RESISTENT / TITANIUM ALLOYS | S01 | | GC1010 | KC510M | IC808 IC907 IC908 | | | ACM100 ACK300 | | | PR905 PR1210 PR1535 | | JC8003 JC8015 | AMZ |
| | S10 | PH7910 PH6910 | GC1010 GC1030 GC2030 | KC510M KC610M | IC808 IC907 IC908 IC903 | MS2050 | MP9120 VP15TF MP9130 MP9030 | ACM100 ACK300 | PTH135 JS1025 | | PR905 PR1210 PR1535 | TT9030 TT9080 TT8080 | JC8003 JC8015 JC5015 JC5118 | AMZ CTP1625 |
| | S20 | PH7920 PH6920 | GC1030 GC1040 GC2030 GC2040 | KC522M KC525M KC610M | IC300 IC900 IC830 IC928 | MS2050 F40M | MP9120 VP15TF MP9130 MP9030 | ACM300 | PTH135 JS1025 | WSM35 WSM36 | PR905 PR1210 PR1535 | TT8080 TT8020 | JC8015 JC5015 JC5118 JC8050 JC7560 | CTP1235 CTP1625 |
| | S30 | PH7930 PH6930 PHH930 PHH530 | S30T GC1040 GC2040 | KC522M KC525M KC725M | IC830 IC928 | MS2050 F40M | MP9130 MP9030 | ACM300 | | WSM35 WSM36 WSP45 WSP46 | PR1535 | TT8020 | JC5118 JC8050 JC7560 | CTP1235 CTP2235 |
| | S40 | PH7740 PH6740 PHH808 | GC2040 GC1040 | KC725M | IC830 IC928 | MS2050 F40M | | | | WSP45 WSP46 | | | JC5118 JC8050 JC7560 | |
| HARDENED MATERIAL | H01 | PH7603 PH6103 PHH603 | GC1010 | KC510M | IC903 | | MP8010 | | | | | TT2510 TT5505 | DH102 JC6102 JC8003 JC8008 | |
| | H10 | PHH603 PH7603 PH6103 PH7910 PHH910 | GC1010 GC1025 GC1030 | KC505M KC510M KC635M | IC903 IC808 IC907 IC908 | MH1000 F15M | MP8010 VP15TF | | PTH08M JP4105 | WHH15 | | TT5515 TT6080 | JC6102 JC8003 JC8015 JC5118 | CTP6215 |
| | H20 | | GC1025 GC1030 | KC635M | IC808 IC907 IC908 IC380 IC900 | F15M | VP15TF | | JP4105 | WHH15 | | TT5515 TT6080 | JC8015 JC5118 | CTP6215 |
| | K10 | | | | IC380 IC900 IC1008 | MP3000 F30M | | | | | | | | |

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COMPARATIVE GRADES CHART

CVD COATED GRADES | GRAUS REVESTIDOS A CVD | GRADOS CON RECUBRIMIENTO CVD

| ISO | Material | Palbit | Sandvik | Kennametal | Iscar | Seco | Mitsubishi | Sumitomo | Hitachi | Walter | Kyocera | Taegutec | Dijet | Ceratzit |
|-----------------|----------|--------|--|---|--|-------------------------|------------|----------|------------------|-----------------------------------|---------|----------|--|----------------------------|
| | | | | | | | | | | | | | | |
| STEEL | P40 | PH5740 | | | | MP2500 | | | | WKP355 | | | | |
| | M10 | | GC2015 | KCPM20 | IC9250 IC520M IC9350 | | | ACM200 | | | | | JC730U | |
| STAINLESS STEEL | M20 | | GC4230 | KCPM20 KCPM30 KC927M | IC9250 IC520M IC9350 IC4050 IC635 | MP2500 T350M T25M | F7030 | ACM200 | | CA6535 | TT7800 | JC730U | CTC5235 GM226+ | |
| | M30 | | GC2040 GC4230 GC4240 S40T | KCPM30 KC927M | IC9350 IC4050 IC635 | MP2500 T350M T25M | F7030 | ACM200 | GX2160 | CA6535 | TT7800 | JC730U | CTC5235 CTC5240 GM226+ GM246 GM43+ | |
| | M40 | | GC2040 GC4240 S40T | | IC635 | In4500 T350M | | | GX2160 | CA6535 | | | CTC5235 CTC5240 GM246 GM43+ | |
| | K01 | PH5705 | | KC907M | IC8080 IC4100 IC5100 IC9150 | | MC5020 | ACK200 | | WKP15 | CA420M | | JC605W | CTC3215 |
| CAST IRON | K10 | PH5705 | GC3220 | KC907M KC914M KC917M KC924M KCK15 | IC8080 IC4100 IC5100 IC9150 IC9080 IC520M | MK1500 | MC5020 | ACK200 | GX2120 | WKP15 WKP25 | CA420M | TT6800 | JC605W JC608X JC610 | CTC3215 SR216 SR226+ |
| | K20 | PH5320 | GC3220 GC3330 GC3040 GC4220 GC4230 | KC917M KC924M KCK15 KCPM20 KCPK30 KC927M | IC5100 IC9150 IC9080 IC520M IC4050 | MK1500 MP1500 | MC5020 | ACK200 | GX2120 GX2140 | WKP15 WKP25 WKP35 WKP355 | CA420M | TT6800 | JC605W JC608X JC610 | SR216 SR226+ |
| | K30 | PH5740 | GC3330 GC3040 GC4220 GC4230 GC4240 | KCPM20 KCPK30 KC927M | IC520M IC4050 | MK1500 MP1500 | MC5020 | | GX2140 | WKP25 WKP35 WKP355 | | | JC610 | |
| | | | | | | | | | | | | | | |

UNCOATED GRADES | GRAUS NÃO REVESTIDOS | GRADOS SÍN RECUBRIMIENTO

| ISO | | Palbit | Sandvik | Kennametal | Iscar | Seco | Mitsubishi | Sumitomo | Hitachi | Walter | Kyocera | Taegutec | Dijet | Ceratzit |
|-----------|-----|--------|--------------|----------------|--------------|------------------|------------|------------|---------------------------|--------|---------------------------|-------------|-------|----------|
| Material | | | | | | | | | | | | | | |
| ALUMINIUM | N01 | PH0910 | H10 | K115M KC313 | IC20 | | HTi 10 | H1 G10E | PCS08M CY100H | | PCS08M CY100H | | | H210T |
| | N10 | PH0910 | H13A H10F | K115M KC313 | IC08 | H15 | HTi 10 | H1 G10E | PCS08M CY100H CY10H | WK10 | PCS08M CY100H CY10H | K10 UF10 | | H210T |
| | N20 | PH0910 | H13A H10F | K125M | IC08 IC28 | HX H15 H25 | HTi 10 | | | | | K10 | | H216T |

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CUTTING DATA CALCULATION

Cálculo de condições de corte | Cálculo de datos de corte

Formulas

Spindle Speed (rev/min)

$$n = \frac{v_c \cdot 1000}{\pi \cdot D_c}$$

Cutting Speed (m/min)

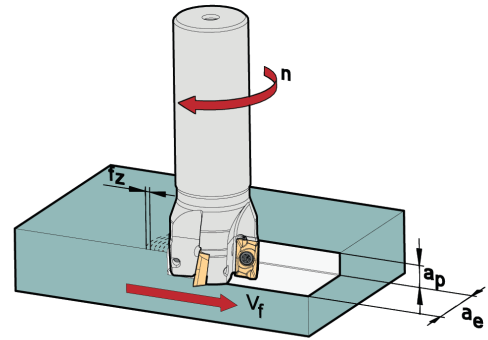
$$v_c = \frac{n \cdot \pi \cdot D_c}{1000}$$

Feed Speed (mm/min)

$$v_f = n \cdot Z_n \cdot f_z$$

Feed per Tooth (mm/tooth)

$$f_z = \frac{v_f}{n \cdot Z_n}$$



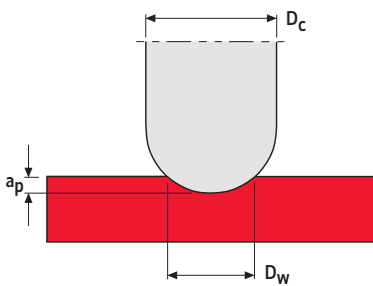
Feed per Revolution (mm/rev)

$$f = Z_n \cdot f_z$$

Metal removal Rate (cm³/min)

$$Q = \frac{a_e \cdot a_p \cdot v_f}{1000}$$

Cutting Speed and Spindle Speed for Copying



$$v_c = \frac{n \cdot \pi \cdot D_w}{1000} \quad (\text{m/min})$$

$$n = \frac{v_c \cdot 1000}{\pi \cdot D_w} \quad (\text{RPM})$$

$$D_w = 2 \cdot \sqrt{a_p (D_c - a_p)} \quad (\text{mm})$$

Nomenclature

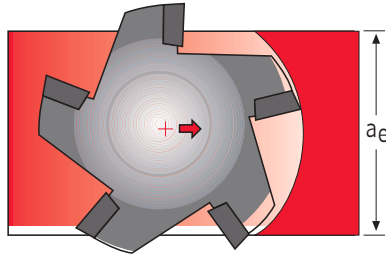
- a_e - Width of cut mm/radial depth of cut (mm)
- a_p - Depth of cut mm/radial depth of cut (mm)
- D_c - Cutter diameter (mm)
- D_w - Effective diameter in cut (mm)
- f - Feed per Revolution (mm/rev)
- f_z - Feed per Tooth (mm/tooth)
- n - Spindle Speed (rev/min)
- Q - Material removal Rate (cm³/min)
- v_c - Cutting Speed (m/min)
- v_f - Feed Speed (mm/min)
- Z_n - N° of teeth

POWER REQUIREMENT CALCULATION

Cálculo de potência requerida | Cálculo del requerimiento de potencia

Calculating the power demand

$$P_C = \frac{a_p \times a_e \times v_f}{6000000 \times \eta} \times k_C$$



- P_C - Power (kW)
- a_p - Depth of cut (mm)
- a_e - Width of cut (mm)
- v_f - Feed speed (mm/min)
- η - Efficiency
- k_C - Cutting force per mm²

Calculating average chip thickness (h_m) and cutting force per mm² (k_C)

$$h_m = \frac{360 \times f_z \times a_e}{\pi \times D_C \times \omega_e} \times \sin k_r$$

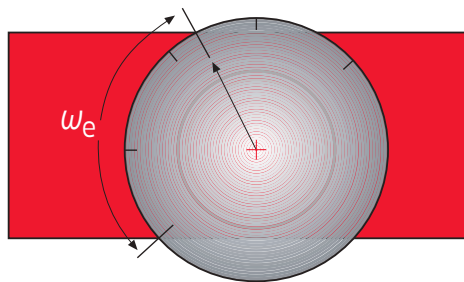
- h_m - Average chip thickness (mm)
- f_z - Feed per tooth (mm/tooth)
- D_C - Cutter diameter (mm)
- ω_e - Engagement angle
- k_r - Lead angle

$$k_C = \frac{1}{h_m^{m_C^*}} \times k_{C^*}$$

- m_C^* - Exponent
- k_{C^*} - Cutting force for 1 mm chip thickness (N/mm²)

* Please see these values on page 797.

Engagement angle



| Engagement a_e / D_C | Engagement angle ω_e |
|---------------------------|--------------------------------|
| 70% | 89° |
| 100% | 180° |

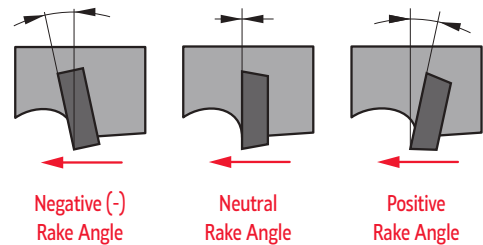
| Engagement a_e / D_C | Engagement angle ω_e |
|---------------------------|--------------------------------|
| 5% | 26° |
| 10% | 37° |
| 75% | 60° |

| Coarse Pitch Type | Normal Pitch Type | Fine Pitch Type |
|---|---|---|
| <p>First choice for cutting aluminium (long-chipping material - ISO N). First choice for unstable operations due to lowest cutting forces. Smooth cutting allows longer overhang applications. First choice for deep cutting and high feed rates.</p> | <p>First choice for roughing in stable conditions. Good productivity. Good chip space for roughing in steels, stainless steel and super alloys. First choice for shallow cutting with low feed rates.</p> | <p>First choice for cast iron. First choice for high productivity with low width of cut (A_e). Roughing in super alloys materials in combination with round inserts. For cutting operations where chip discharge volume is small and high table feed is desired.</p> |
| | | |

Standard inserts

Positive and Negative Rake Angle

- Insert shape whose cutting edge precedes is a positive rake angle.
- Insert shape whose cutting edge follows is a negative rake angle.



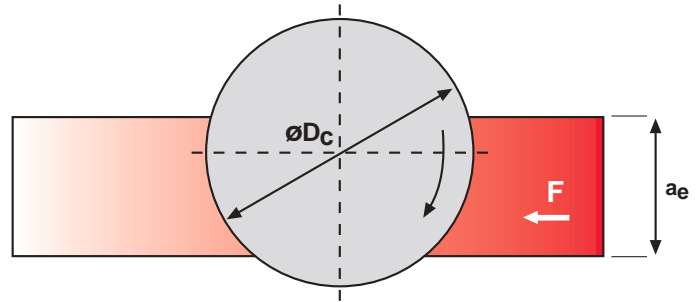
Standard Cutting Edge Shape

| Standard Cutting Edge Combinations | (+) Axial Rake Angle | (-) Axial Rake Angle | (+) Axial Rake Angle |
|------------------------------------|---------------------------------|------------------------------------|------------------------------------|
| | | | |
| | | | |
| | Double Positive (DP Edge Type) | Double Negative (DN Edge Type) | Negative / Positive (NP Edge Type) |
| Axial Rake Angle γ_p | Positive (+) | Negative (-) | Positive (+) |
| Radial Rake Angle γ_f | Positive (+) | Negative (-) | Negative (-) |
| Insert Used | Positive Insert (One Sided Use) | Negative Insert (Double Sided Use) | Positive Insert (One Sided Use) |
| Work Material | Steel | | |
| | Cast Iron | - | |
| | Aluminium Alloy | | - |
| | Hardened Materials | | - |

Choosing Cutter Diameter

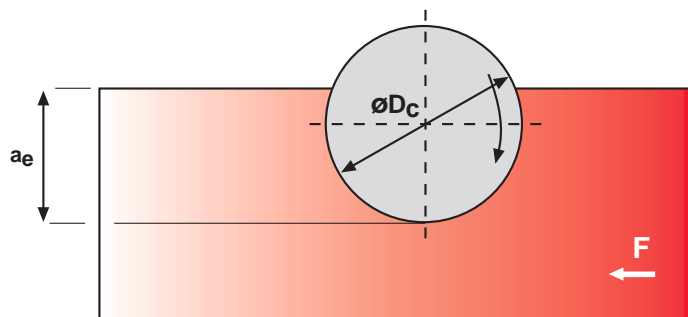
The Best Cutter Diameter ($\varnothing D_c$) should be selected upon the workpiece dimensions

$$D_c = 1,3 - 1,5 a_e$$



If the machine power is limited or the workpiece is too wide, select a cutter diameter that takes more than two passes or that matches the power of machine. When the appropriate cutter diameter is not available, proper cutter position will give good results.

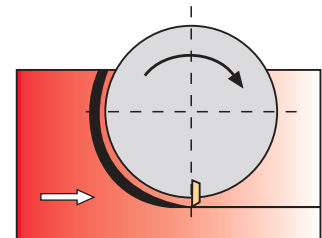
$$a_e = 3/4 D_c$$



Cutter Position

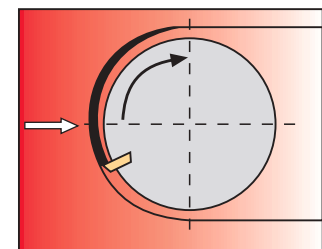
Conventional Milling (Up Milling)

The feed direction of the workpiece is opposite to that of cutter rotation. The chip thickness starts at zero and increases to the maximum at the end of cut. In Up Milling, the insert wear is severe with excessive friction and high temperature caused by the rubbing or burnishing effect in the insert.



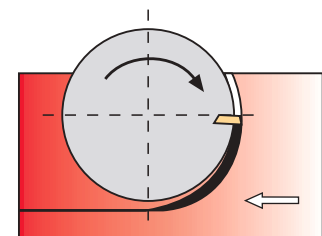
Channel Milling (Up and Down Milling)

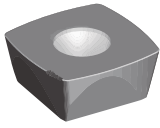
The cutter position is in the middle of the workpiece and the cutting force is alternately changed in the radial direction. It causes vibration when the spindle structure is weak. Channel Milling is a combination of conventional and climb milling. When Channel Milling is necessary use positive geometry cutters at reduced speeds and feeds with coolant.



Climb Milling (Down Milling)

Climb Milling is normally recommended. The feed direction of workpiece is the same as that of cutter rotation. So the chip thickness starts from the maximum and decreases to zero at the end of cut. The tool life is long with less heat and minimum work hardening of workpiece.





EDGE WEAR

Corrective action:

- Increase feed rate
- Reduce cutting speed
- Use more wear resistant grade
- Apply coated grade

DESGASTE DA ARESTA

Possível solução:

- Aumentar o avanço
- Reduzir a Vc
- Usar grau mais resistente ao desgaste
- Aplicar grau revestido

DESGASTE DEL FLANCO

Solución posible:

- Aumentar el avance
- Reduzca la velocidad de corte
- Seleccione una calidade más resistente al desgaste
- Utilice metales duros recubiertos



HEAT DEFORMATION (UPSET)

Corrective action:

- Reduce cutting speed
- Reduce feed
- Reduce depth of cut
- Use grade with higher hot hardness

DEFORMAÇÃO ARESTA

Possível solução:

- Reduzir a Vc
- Reduzir o avanço
- Reduzir a profundidade corte
- Usar grau com maior dureza a quente

DEFORMACIÓN PLÁSTICA

Solución posible:

- Reduzca la velocidad de corte
- Seleccione una calidade más resistente al desgaste
- Reduzca el ap



THERMAL CRACKING

Corrective action:

- Properly apply coolant
- Reduce cutting speed
- Reduce feed
- Apply coated grade

FENDAS TÉRMICAS

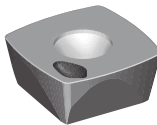
Possível solução:

- Aplicação correcta do fluido de corte
- Reduzir a Vc
- Reduzir o avanço
- Aplicar grau revestido

FISSURAS TÉRMICAS

Solución posible:

- Preste atención al uso del refrigerante
- Reduzca la velocidad de corte
- Reduzca el avance
- Utilice metales duros recubiertos



CRATER

Corrective action:

- Reduce feed rate
- Reduce speed
- Apply coated grades
- Apply coolant

CRATERA FACE ATAQUE

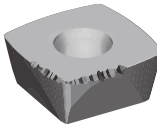
Possível solução:

- Reduzir o avanço
- Reduzir a Vc
- Aplicar grau revestido
- Usar fluido de corte

DESGASTE DE CRÁTER

Solución posible:

- Reduzca el avance
- Reduzca la velocidad de corte
- Utilice metales duros recubiertos
- Preste atención al uso del refrigerante



CHIPPING

Corrective action:

- Use a tougher grade
- Consider edge preparation
- Check rigidity of system
- Increase lead angle

ESMILHAMENTO

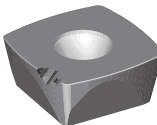
Possível solução:

- Usar um grau mais tenaz
- Considerar a preparação da aresta
- Verificar a rigidez do sistema
- Aumentar o ângulo de ataque

FILOS ASTILLADOS

Solución posible:

- Seleccione una calidade más resistente al desgaste
- Utilice un inserto con una geometria de filo de corte más estable
- Modifique el ángulo de posicion
- Modifique la geometria de rompevirutas



DEPTH-OF-CUT NOTCHING

Corrective action:

- Change lead angle
- Consider edge preparation
- Apply different grade
- Adjust feed

FRACTURA

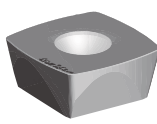
Possível solução:

- Alterar o ângulo de ataque
- Considerar a preparação da aresta
- Aplicar outro grau
- Ajustar o avanço

DESGASTE POR ENTALLA

Solución posible:

- Escoja un ángulo de posición mas pequeño
- Ajuste el avance
- Cambie de calidad
- Utilice un inserto con una geometria de filo de corte más estable



BUILT-UP EDGE

Corrective action:

- Increase cutting speed
- Increase feed rate
- Apply PVD coated grades
- Use coolant
- Edge preparation (smaller hone)

ARESTA POSTIÇA CORTE

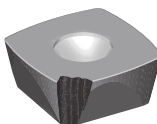
Possível solução:

- Aumentar a Vc
- Aumentar o avanço
- Aplicar grau revestido
- Usar fluido de corte
- Reduzir boleamento

FILOS RECRECIDOS

Solución posible:

- Aumentar la velocidad de corte
- Aumentar el avance
- Utilice metales duros recubiertos
- Aplique refrigerante con mayor concentración de aceite
- Seleccione una geometria de corte positiva



CATASTROPHIC BREAKAGE

Corrective action:

- Utilize stronger grade / geometry
- Reduce feed rate
- Reduce depth of cut
- Check rigidity of system
- Examine edge prep / nose radius

FRACTURA CATASTRÓFICA

Possível solução:

- Aplicar grau / geometria mais resistente
- Reduzir o avanço
- Reduzir a profundidade de corte
- Aplicar grau revestido
- Usar fluido de corte

ROTURA DE INSERTO

Solución posible:

- Seleccione un material más tenaz
- Utilice insertos más robustos con ángulos de arista más grandes
- Seleccione una geometria de rompe virutas para secciones de corte más amplias
- Reduzca en avance

| | | Possible causes and areas of investigation | cutting speed velocidade de corte velocidad corte | feed avanço avance | depth-of-cut profundidade de corte profundidad de corte | grate grau da pastilha calidad inserto | coolant óleo de corte refrigerante | rake angle ângulo de ataque ángulo de posición | edge preparation preparação da aresta preparación del filo | material (type / condition) material (tipo / condições) material | center height altura do centro altura al centro | geometry (insert) geometria da pastilha geometria del inserto | insert finish acabamento na pastilha acabado del inserto | insert thickness espessura da pastilha espesura inserto | nose radius raio de canto radio punta | lead angle ângulo da aresta de ataque ángulo filo corte | holder (type / condition) suporte (tipo / condições) soporte (condiciones) | machine condition estado do equipamento - torno condición de maquina | chip flow direction direcção de fluxo da aparã dirección de la viruta | horsepower potência fuerza | excessive overhang excesso comprimento livre da ferramenta sobreenduentamiento excesivo | spindle bearings rolamentos do eixo cojinetes del husillo | turret torreta torreta | machine anchored fundações da máquina anclada de la maquina | workholding fixação da peça sujeción pieza | rigidity rigidez / estabilidad | chatter vibração vibraciones | |
|----------------------------------|---|---|---|------------------------|---|--|--|--|--|--|---|---|--|---|---|---|--|--|---|--------------------------------|---|---|----------------------------|---|--|----------------------------------|----------------------------------|---|
| PROBLEMS PROBLEMAS PROBLEMAS | <ul style="list-style-type: none"> UNACCEPTABLE CHIPS APARA DESADEQUADA VIRUTA INACEPTABLE | <ul style="list-style-type: none"> stringer / ribbons (light silver color) demasiado longas (cor de prata suave) mucho larga (color plata suave) | P↑ | P↑ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | P | ⊗ | ⊗ | | | | | ⊗ | | | | | | | | | |
| | | <ul style="list-style-type: none"> scorrugated / tight (dark blue or black color) ondulado / firme (cor azul escuro ou preto) corrugado / firme (azul / negra) | ⊗ | P↓ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | P | ⊗ | ⊗ | | | | | | | | | | | | | | |
| | | <ul style="list-style-type: none"> finish / rms tolerance tolerância e rugosidades tolerancia y rugosidades | P | P | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | ⊗ | | P | | | | ⊗ | ⊗ | | | | | | | | |
| | | <ul style="list-style-type: none"> interrupted cuts corte interrompido corte interrumpido | P↑ | P↓ | P↓ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | ▲ | | | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ |
| | | <ul style="list-style-type: none"> areas of investigation áreas de intervenção áreas de intervención | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | | | ⊗ | | | | | | | | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | P | |
| | | <ul style="list-style-type: none"> edge wear desgaste da aresta desgaste de flanco | P | P | ⊗ | P | ⊗ | | | | ⊗ | | | | | | | | | | | | | | | | | |
| | | <ul style="list-style-type: none"> heat deformation (upset) deformação plástica deformación plástica | P↓ | P↓ | P↓ | ⊗ | ⊗ | ⊗ | | | | | | ⊗ | ⊗ | | | | | | | | | | | | | |
| | | <ul style="list-style-type: none"> thermal cracking fendas térmicas fissuras térmicas | ⊗ | ⊗ | ⊗ | P | P | ⊗ | | | | | | ⊗ | | | | | | | | | | | | | | |
| | | <ul style="list-style-type: none"> crater cratera na face de ataque cráter en la pared de ataque | P↓ | P↓ | | ⊗ | ⊗ | ⊗ | | | | ⊗ | | | | | | | | ⊗ | | | | | | | | |
| | | <ul style="list-style-type: none"> chipping esmialhamento filos astillados | ⊗ | ⊗ | | P | ⊗ | ⊗ | P | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | ⊗ | ⊗ | ⊗ | | |
| | | <ul style="list-style-type: none"> depth-of-cut notching fractura desgaste por entalla | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | P | ⊗ | P | | ⊗ | P | | | | | | | | | | | | | | |
| | | <ul style="list-style-type: none"> built-up edge aresta postiça de corte filos recrescidos | P↑ | P↑ | | PVD | ⊗ | ⊗ | P | P | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | |
| | <ul style="list-style-type: none"> catastrophic breakage fractura catastrófica rotura de inserto | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | ⊗ | | | ⊗ | P | P | | | |

↑ ↓ Arrows indicate direction of adjustment | As setas indicam a direção do ajustamento | Las flechas indican la dirección de ajuste
 P Indicate areas of primary investigation | Indica as áreas de primeira intervenção | Indica las áreas de intervención primaria

CODIFICATION SYSTEM FOR SOLID CARBIDE END MILLS

Sistema de codificação para fresas de metal duro para acabamento | Sistema de codificación para fresas de carburo para acabado

Straight Flute example:

| | | | | | | | | |
|----------|----------|----------|----------|----------|------------|------------|------------|------------|
| D | S | N | S | 2 | 050 | 080 | 010 | 060 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

1 - Tool type

D - Diamond (PCD tipped)

2 - Design

B - Ball nose
S - Straight

4 - Application

N - Non-ferrous materials

5 - Length of Shank

S - Short length
L - Long length
XL - Extra long length

6 - Flutes number (Z)

Example: Z = 1 ; Z = 2 ; Z = 3

7 - Cutting diameter ($\varnothing D_c$)

Example: 120 = 12,0 mm ; 008 = 0,8 mm

8 - Max cutting depth
(L2 - on straight flute solid carbide)

060 = 6 mm ; 080 = 8 mm

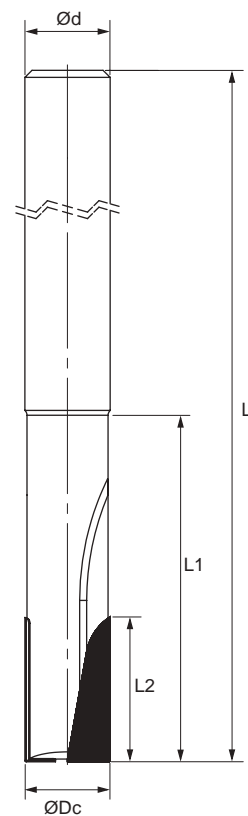
9 - Corner radius (Suppressed when it doesn't exist)

R... Example: R150 = 1,5 mm ; R015 = 0,15 mm

10 - Shank diameter (only on straight flute solid carbide)

Example: 060 = 6 mm

Straight Flute
technical drawing example



| | |
|-------------------|---------------------------------|
| $\varnothing D_c$ | Tool diameter |
| $\varnothing d$ | Shank diameter |
| L | Overall length |
| L2 | Tip length |
| r | Corner form (radius or chamfer) |

PCD TIPPED END MILLS

Fresas de metal duro com pontas de PCD | Fresas de carburo com puntas de PCD



A

MILLING

Overview

Face milling

Hi-feed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

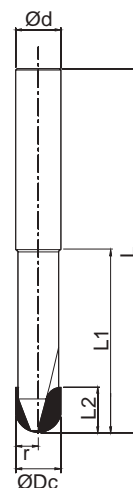
Spot face

Spare Parts

Technical Data

End Mills

HARDMILL BALL NOSE



| (1) Geometry code | (2) Grade code | Reference Referência Referencia | N PCD D6 | Dimensions Dimensões Dimensiones (mm) | | | | | |
|-------------------|------------------------|---------------------------------------|----------------|---|----|-----|----|----|------|
| | | | | ØDc | Ød | L | L1 | L2 | r |
| 1180079 | DBNS 1 030 050 150 060 | 1 | ⊗ | 3 | 3 | 60 | 30 | 5 | 1,50 |
| 1180080 | DBNS 1 040 100 200 040 | 1 | ⊗ | 4 | 4 | 60 | 30 | 10 | 2,00 |
| 1180081 | DBNS 2 060 100 300 060 | 2 | ⊗ | 6 | 6 | 80 | 40 | 10 | 3,00 |
| 1180082 | DBNS 2 080 100 400 080 | 2 | ⊗ | 8 | 8 | 80 | 40 | 10 | 4,00 |
| 1180083 | DBNS 2 100 100 500 100 | 2 | ⊗ | 10 | 10 | 80 | 40 | 10 | 5,00 |
| 1180084 | DBNS 2 120 100 600 120 | 2 | ○ | 12 | 12 | 100 | 60 | 10 | 6,00 |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

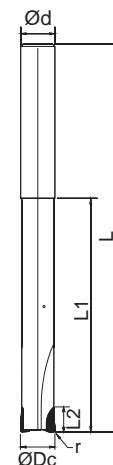
Order code = (1) Geometry Code + (2) Grade Code

| Material Group | Correction factor | V _c (m/min) |
|-------------------------------------|-------------------|------------------------|
| Aluminium cast alloys 5% < Si ≤ 12% | 1,6 | 790-1000 |
| Aluminium cast alloys 12% < Si | 1,5 | 790-1000 |
| Fibre-reinforced synthetics | 1,0 | 400-500 |
| Graphite | 1,0 | 700-850 |

| ØD | | | | |
|----|-----------------------|-----------------------|-----------------------|-----------------------|
| | f _z (mm/t) | f _z (mm/t) | f _z (mm/t) | f _z (mm/t) |
| 3 | 0,020 | 0,022 | 0,020 | 0,022 |
| 4 | 0,025 | 0,028 | 0,025 | 0,028 |
| 6 | 0,035 | 0,040 | 0,035 | 0,040 |
| 8 | 0,050 | 0,055 | 0,050 | 0,055 |
| 10 | 0,060 | 0,070 | 0,060 | 0,070 |
| 12 | 0,075 | 0,078 | 0,075 | 0,078 |

Please note that the value fz from the table above must be multiplied with the corresponding correction factor.

HARDMILL BULL NOSE



| (1) Geometry code | (2) Grade code | Reference Referência Referencia | N PCD D6 | Dimensions Dimensões Dimensiones (mm) | | | | | |
|-------------------|------------------------|---------------------------------------|----------------|---|----|-----|-----|----|------|
| | | | | ØDc | Ød | L | L1 | L2 | r |
| 1180073 | DSNS 1 030 050 030 040 | 1 | ⊗ | 3 | 4 | 60 | 30 | 5 | 0,30 |
| 1180075 | DSNL 2 040 050 030 040 | 2 | ⊗ | 4 | 4 | 75 | 45 | 5 | 0,30 |
| 1180076 | DSNL 2 060 060 030 060 | 2 | ⊗ | 6 | 6 | 100 | 60 | 6 | 0,30 |
| 1180077 | DSNL 2 080 060 030 080 | 2 | ⊗ | 8 | 8 | 125 | 80 | 6 | 0,30 |
| 1180074 | DSNL 2 100 060 050 100 | 2 | ⊗ | 10 | 10 | 150 | 100 | 6 | 0,30 |
| 1180078 | DSNL 2 120 070 050 120 | 2 | ⊗ | 12 | 12 | 150 | 100 | 7 | 0,30 |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Order code = (1) Geometry Code + (2) Grade Code

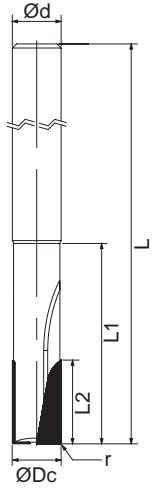
| Material Group | Correction factor | V _c (m/min) |
|-------------------------------------|-------------------|------------------------|
| Aluminium cast alloys 5% < Si ≤ 12% | 1,6 | 790-1000 |
| Aluminium cast alloys 12% < Si | 1,5 | 790-1000 |
| Fibre-reinforced synthetics | 1,0 | 400-500 |
| Graphite | 1,0 | 700-850 |

| ØD | | | | |
|----|-----------------------|-----------------------|-----------------------|-----------------------|
| | f _z (mm/t) | f _z (mm/t) | f _z (mm/t) | f _z (mm/t) |
| 3 | 0,020 | 0,022 | 0,022 | 0,022 |
| 4 | 0,025 | 0,028 | 0,028 | 0,028 |
| 6 | 0,035 | 0,040 | 0,040 | 0,040 |
| 8 | 0,050 | 0,055 | 0,055 | 0,055 |
| 10 | 0,060 | 0,070 | 0,070 | 0,070 |
| 12 | 0,075 | 0,078 | 0,078 | 0,078 |

Please note that the value f_z from the table above must be multiplied with the corresponding correction factor.

HARDMILL STRAIGHT EDGE

NEW



| (1) Geometry code | Reference Referência Referencia | ⊕ | N PCD D6 PDP410 | Dimensions Dimensões Dimensiones (mm) | | | | | |
|-------------------|---------------------------------------|---|--------------------------|---|----|-----|------|----|------|
| | | | | ØDc | Ød | L | L1 | L2 | r |
| 1180011 | DSNS 2 040 060 010 060 | 2 | ⊕ | 4 | 6 | 51 | 6,40 | 6 | 0,10 |
| 1180012 | DSNS 2 050 080 010 060 | 2 | ⊕ | 5 | 6 | 51 | 8,40 | 8 | 0,10 |
| 1180006 | DSNS 2 060 080 010 060 | 2 | ⊕ | 6 | 6 | 63 | 21 | 8 | 0,10 |
| 1180013 | DSNS 2 080 080 010 080 | 2 | ⊕ | 8 | 8 | 63 | 27 | 8 | 0,10 |
| 1180014 | DSNS 2 080 120 010 080 | 2 | ⊕ | 8 | 8 | 63 | 27 | 12 | 0,10 |
| 1180015 | DSNS 2 100 080 010 100 | 2 | ⊕ | 10 | 10 | 72 | 32 | 8 | 0,10 |
| 1180016 | DSNS 2 100 160 010 100 | 2 | ⊕ | 10 | 10 | 72 | 32 | 16 | 0,10 |
| 1180017 | DSNS 2 120 080 010 120 | 2 | ⊕ | 12 | 12 | 83 | 38 | 8 | 0,10 |
| 1180018 | DSNS 2 120 160 010 120 | 2 | ⊕ | 12 | 12 | 83 | 38 | 16 | 0,10 |
| 1180019 | DSNS 3 140 080 010 140 | 3 | ⊕ | 14 | 14 | 83 | 38 | 8 | 0,10 |
| 1180020 | DSNS 3 140 160 010 140 | 3 | ⊕ | 14 | 14 | 83 | 38 | 16 | 0,10 |
| 1180021 | DSNS 3 160 120 010 160 | 3 | ⊕ | 16 | 16 | 100 | 52 | 12 | 0,10 |
| 1180022 | DSNS 3 160 200 010 160 | 3 | ⊕ | 16 | 16 | 100 | 52 | 20 | 0,10 |

⊕ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta order code = (1) Geometry Code + (2) Grade Code

NON-FERROUS MATERIALS | Materiais não ferrosos | Materiales no ferrosos

| ISO | Workpiece Material | Vc (m/min) | | fz (mm/t) | | Coolant |
|-----|----------------------|------------|------|-----------|------|----------------|
| | | min | max | min | max | |
| N | Aluminium <6%Si | 200 | 6000 | 0,05 | 0,30 | Emulsion / MQL |
| | Aluminium <12%Si | 200 | 4000 | 0,05 | 0,25 | |
| | Aluminium >12%Si | 200 | 2000 | 0,05 | 0,20 | |
| | Cooper/Cooper Alloys | 250 | 3000 | 0,03 | 0,30 | |

SYNTHETICS MATERIALS | Materiais sintéticos | Materiales sintéticos

| ISO | Workpiece Material | Vc (m/min) | | fz (mm/t) | | Coolant |
|-----|----------------------------|------------|------|-----------|------|---------------|
| | | min | max | min | max | |
| N | Graphit | 150 | 2500 | 0,05 | 0,40 | Dry/ Air |
| | GFRP, CFRP | 200 | 3000 | 0,05 | 0,40 | Dry/ Air |
| | Plastics (Termo/Duroplast) | 100 | 2500 | 0,05 | 0,30 | Emulsion/MQL |
| | Acrylic (PMMA) | 100 | 1200 | 0,01 | 0,25 | Emulsion /MQL |
| | Laminate | 100 | 1200 | 0,02 | 0,50 | Dry/Air |

These recommended parameters are only approximate values. It can be necessary to adjust them regarding to the specific machining operation.

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CODIFICATION SYSTEM FOR SOLID CARBIDE END MILLS

Sistema de codificação para fresas de metal duro para acabamento | Sistema de codificación para fresas de carburo para acabado

Straight Flute example:

| | | | | | | | | | | |
|----------|----------|-----------|----------|----------|----------|------------|-----------|-------------|----------|-----------|
| H | F | 30 | G | S | 4 | 120 | 32 | R050 | - | W |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | - | 10 |

Integral Solid Carbide example:

| | | | | | | | | | | |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | - | 10 |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|

Overview

1 - Tool type

H - Solid carbide end mill (Hard metal)

Face milling

2 - Design

F - Square form (Flat top)
 R - Square form with corner radius
 C - Square form with corner chamfer
 B - Ball nose
 CH - Conical Top
 XC - Conical Segment
 XT - Tangential Segment
 RO - Rougher

Hi-feed milling

Shoulder milling

3 - Helix Angle (Suppressed when it is 90°)

... - Degree of helix rounded to nearest 5 degree

Profile milling

4 - Application

A - Aluminium
 G - General application
 F - Finishing
 M - Steel
 S - Stainless steel
 H - Hard materials
 TSP - Trochoidal milling
 MIN - Micro milling

Hardmill

5 - Length of Shank

S - Short length
 L - Long length
 XL - Extra long length

Center & Chamfer

6 - Flutes number (Z)

Example: Z = 1 ; Z = 2 ; Z = 3 ;

Spot face

7 - Cutting diameter (ØDc)

Example: 120 = 12,0 mm ; 008 = 0,8 mm

Spare Parts

8 - Max cutting depth (ap)

Example: 04 = 4 mm ; 06 = 6 mm

Technical Data

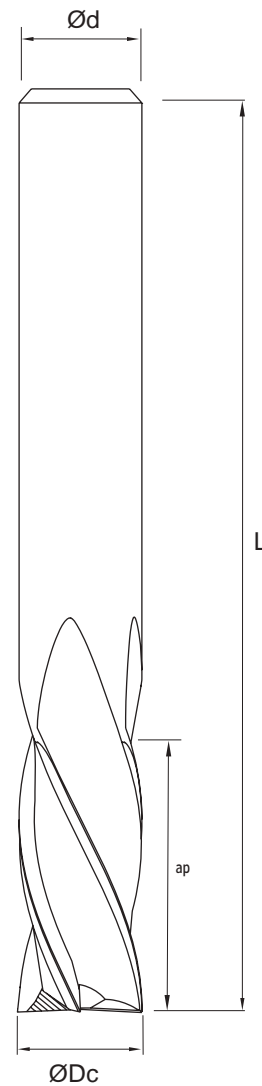
9 - Shank diameter (only on straight flute solid carbide)

Example for corner radius: R150 = 1,5 mm ; R015 = 0,15 mm
 Example for conical segment: 18RM120 - $\alpha/2 = 18^\circ$, RM = 1200 mm
 Example for tangential segment: RM090 - RM = 90 mm

End Mills

10 - Weldon (Suppressed when it doesn't exist)

Integral Solid Carbide technical drawing example



SOLID CARBIDE END MILLS

Fresas de metal duro inteeral | Fresas de carburo monobloque



A

MILLING

Overview

Face milling

Hi-feed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

Spot face

Spare Parts

Technical Data

End Mills

SELECTION GUIDE FOR SOLID CARBIDE ENDMILLS

A

MILLING

Overview

Face milling

Hi-feed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

Spotface

Spare Parts

Technical Data

End Mills

INTEG

General Purpose Endmills



HF30GS 2

HF30GS 4

HF30GXL 4

HR30GS 4

HB30GS 2

HB30GL 2

ØDc

2 - 20

2 - 20

2 - 12

3 - 20

2 - 12

4 - 12



2

4

4

4

2

2

Helix angle

30

30

30

30

30

30

Geometry



Square



Square



Square



Corner radius



Ball nose



Ball nose

Grade

PHP920

PHP920

PHP920

PHP920

PHP920

PHP920

Finishing



Roughing



P



K



M



N

S

H

Page

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A - 272

| INTEG | | | FIN-INTEG | MIN-INTEG | CHAMF INTEG |
|---|---|---|---|---|---|
| General Purpose Endmills | | | Finishing Endmills | Endmills for Micro Machining | Endmills for Chamferings |
|  |  |  |  |  |  |
| HB30GS 4 | HB30GL 4 | HRO45GS | HC45FL | HB30MINS | HCHGS |
| 2 - 12 | 2 - 20 | 3 - 20 | 6 - 12 | 0,2 - 3,0 | 3 - 20 |
| 4 | 4 | 3 - 6 | 6 | 2 | 4 |
| 30 | 30 | 45 | 43 - 45 | 30 | - |
|  |  |  |  |  |  |
| Ball nose | Ball nose | Rougher | Corner Chamfer | Ball nose | Conical Top |
| PHP920 | PHP920 | PHU920 | PHU920 | PHH603 | PHU920 |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| | | | |  | |
| | | |  |  | |
| A - 273 | A - 273 | A - 275 | A - 276 | A - 278 | A - 281 |

A
MILLING
Overview
Face milling
Hifed milling
Shoulder milling
Profile milling
Hardmill
Center & Chamfer
Spot face
Spare Parts
Technical Data
End Mills

SELECTION GUIDE FOR SOLID CARBIDE ENDMILLS

A

MILLING

Overview

Face milling

Hi-feed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

Spotface

Spare Parts

Technical Data

End Mills

| | RAD-INTEG | | DYN-INTEG | STEEL-INTEG | |
|---|---|---|---|---|--|
| | Radial Segment Endmills | | Trochoidal Milling | Steel Specialized Endmills | |
| |  |  |  |  |  |
| | HXC30GL | HXT30GL | HC40TSPL | HC35ML | HR35GL |
| ØDc | 8 - 16 | 6 - 16 | 6 - 20 | 1 - 20 | 12 - 20 |
|  | 4 | 4 | 5 | 4 | 4 |
| Helix angle | 30 | 30 | 40 - 42 | 35 - 38 | 35 - 38 |
| Geometry |  Radial Segment |  Radial Segment |  Corner Chamfer |  Corner Chamfer |  Corner radius |
| Grade | PHP920 - PHH920 | PHP920 - PHH920 | PHP920 | PHP920 | PHP920 |
| Finishing |  |  |  |  |  |
| Roughing |  |  |  |  |  |
| P |  |  |  |  |  |
| K |  |  |  |  |  |
| M |  |  | | | |
| N | | | | | |
| S |  |  | | | |
| H | | | | | |
| Page | A - 282 | A - 282 | A - 284 | A - 285 | A - 286 |

| INOX-INTEG | | AL-INTEG | | HARD-INTEG | |
|---|---|---|--|---|---|
| Stainless Steel Specialized Endmills | | Aluminium Specialized Endmills | | We Make It Hard | |
|  |  |  |  |  |  |
| HC40SS | HRO40SS | HC38AS | HF30AS | HF30HL | HB30HL |
| 1 - 20 | 3 - 20 | 3 - 20 | 2 - 12 | 4 - 12 | 2 - 12 |
| 4 | 4 | 3 | 1 | 4 | 2 |
| 39 - 41 | 39 - 41 | 38 | 30 | 30 | 30 |
|  |  |  |  |  |  |
| Corner Chamfer | Rougher | Corner Chamfer | Square | Square | Ball nose |
| PHU920 | PHU920 | PH0920 | PH0920 | PHH603 | PHH603 |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| | | | | | |
| | | | | | |
|  |  | | | | |
| | |  |  | | |
|  |  | | | | |
| | | | |  |  |
| A - 287 | A - 288 | A - 289 | A - 290 | A - 291 | A - 292 |

A

MILLING

Overview

Face milling

Hi-feed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

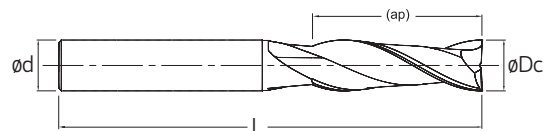
Spot face

Spare Parts

Technical Data

End Mills

HF30GS 2 Flat top endmill



| ⁽¹⁾ Order code | | Reference Referência Referencia | | PHP920 | Dimensions Dimensões Dimensiones (mm) | | | |
|---------------------------|-------------|---------------------------------------|--|--------|---|---------|-------------------|-----|
| HA (Cylindrical) | HB (Weldon) | | | | ØDc | Ød (h6) | ap _{max} | L |
| 1180587T1 | - | HF30GS 2 020 06 | | | 2 | 4 | 6 | 38 |
| 1180588T1 | - | HF30GS 2 030 12 | | | 3 | 4 | 12 | 38 |
| 1180589T1 | - | HF30GS 2 040 14 | | | 4 | 4 | 14 | 50 |
| 1180590T1 | - | HF30GS 2 050 16 | | | 5 | 6 | 16 | 50 |
| 1180591T1 | - | HF30GS 2 060 19 | | | 6 | 6 | 19 | 50 |
| 1180592T1 | 1180532T1 | HF30GS 2 080 20 | | | 8 | 8 | 20 | 63 |
| 1180593T1 | 1180533T1 | HF30GS 2 100 22 | | | 10 | 10 | 22 | 75 |
| 1180594T1 | 1180534T1 | HF30GS 2 120 25 | | | 12 | 12 | 25 | 75 |
| 1180595T1 | 1180535T1 | HF30GS 2 140 26 | | | 14 | 14 | 26 | 83 |
| 1180596T1 | 1180536T1 | HF30GS 2 160 32 | | | 16 | 16 | 32 | 89 |
| 1180597T1 | 1180537T1 | HF30GS 2 180 32 | | | 18 | 18 | 32 | 92 |
| 1180598T1 | 1180538T1 | HF30GS 2 200 38 | | | 20 | 20 | 38 | 104 |

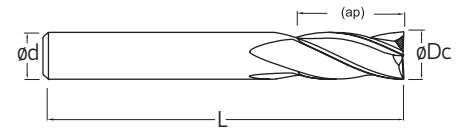
Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta
Disponível bajo consulta

HF30GS 4 Flat top endmill



P M K



| ⁽¹⁾ Order code | | Reference Referência Referencia | | PHP920 | Dimensions Dimensões Dimensiones (mm) | | | |
|---------------------------|-------------|---------------------------------------|---|--------|---|---------|-------------------|-----|
| HA (Cylindrical) | HB (Weldon) | | | | ØDc | Ød (h6) | ap _{max} | L |
| 1180262T1 | - | HF30GS 4 020 06 | 4 | | 2 | 4 | 6 | 38 |
| 1180219T1 | - | HF30GS 4 030 12 | 4 | | 3 | 4 | 12 | 38 |
| 1180215T1 | - | HF30GS 4 040 14 | 4 | | 4 | 4 | 14 | 50 |
| 1180195T1 | - | HF30GS 4 050 16 | 4 | | 5 | 6 | 16 | 50 |
| 1180263T1 | - | HF30GS 4 060 19 | 4 | | 6 | 6 | 19 | 50 |
| 1180223T1 | 1180605T1 | HF30GS 4 070 19 | 4 | | 7 | 8 | 19 | 63 |
| 1180202T1 | 1180544T1 | HF30GS 4 080 20 | 4 | | 8 | 8 | 20 | 63 |
| 1180224T1 | 1180606T1 | HF30GS 4 090 22 | 4 | | 9 | 10 | 22 | 75 |
| 1180216T1 | 1180545T1 | HF30GS 4 100 22 | 4 | | 10 | 10 | 22 | 75 |
| 1180264T1 | 1180546T1 | HF30GS 4 120 25 | 4 | | 12 | 12 | 25 | 75 |
| 1180220T1 | 1180547T1 | HF30GS 4 140 26 | 4 | | 14 | 14 | 26 | 83 |
| 1180129T1 | 1180548T1 | HF30GS 4 160 32 | 4 | | 16 | 16 | 32 | 89 |
| 1180221T1 | 1180549T1 | HF30GS 4 180 32 | 4 | | 18 | 18 | 32 | 92 |
| 1180222T1 | 1180550T1 | HF30GS 4 200 38 | 4 | | 20 | 20 | 38 | 104 |

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta
Disponível bajo consulta

HF30GXL 4 Flat top endmill



All order codes are cylindrical shank.
Weldon shank available under request.

| (1) Geometry code | (2) Grade code Reference Referência Referencia | Flutes 4 | T1 | | \Dimensions Dimensões Dimensiones (mm) | | | |
|----------------------|---|-------------|--------|----|--|---------|-------------------|-----|
| | | | PHP920 | G4 | ØDc | Ød (h6) | ap _{max} | L |
| 1180708 | HF30GXL 4 020 09 | 4 | ○ | △ | 2 | 4 | 9 | 100 |
| 1180265 | HF30GXL 4 030 12 | 4 | ○ | △ | 3 | 6 | 12 | 100 |
| 1180266 | HF30GXL 4 040 16 | 4 | ○ | △ | 4 | 6 | 16 | 100 |
| 1180267 | HF30GXL 4 050 20 | 4 | ⊗ | | 5 | 6 | 20 | 100 |
| 1180268 | HF30GXL 4 060 20 | 4 | ○ | △ | 6 | 6 | 20 | 100 |
| 1180269 | HF30GXL 4 080 20 | 4 | ⊗ | | 8 | 8 | 20 | 120 |
| 1180270 | HF30GXL 4 100 25 | 4 | ○ | △ | 10 | 10 | 25 | 120 |
| 1180057 | HF30GXL 4 120 30 | 4 | ⊗ | | 12 | 12 | 30 | 120 |

⊗ Stock item | Produto de stock
Itens de stock

△ Stock available until sold out | Stock disponível até acabar o stock
Stock disponible hasta acabar el stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta

Endmill order code = (1) Geometry Code + (2) Grade Code

HR30GS 4 Round corner endmill



Short



4



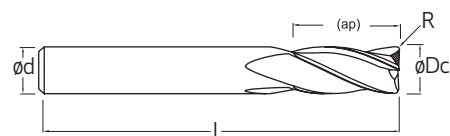
30°



Corner radius



< 45 HRC



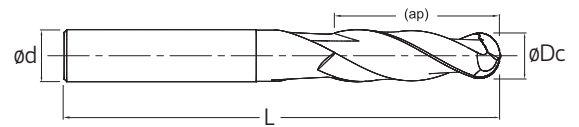
All order codes are cylindrical shank.
Weldon shank available under request.

| (1) Order code | Reference Referência Referencia | | PHP920 | Dimensions Dimensões Dimensiones (mm) | | | | |
|-------------------|---------------------------------------|---|--------|---|---------|-------------------|------|-----|
| | | | | ØDc | Ød (h6) | ap _{max} | R | L |
| 1180231T1 | HR30GS 4 030 12 R025 | 4 | ○ | 3 | 4 | 12 | 0,25 | 50 |
| 1180232T1 | HR30GS 4 030 12 R050 | 4 | ○ | 3 | 4 | 12 | 0,5 | 50 |
| 1180233T1 | HR30GS 4 040 14 R025 | 4 | ○ | 4 | 4 | 14 | 0,25 | 50 |
| 1180234T1 | HR30GS 4 040 14 R050 | 4 | ○ | 4 | 4 | 14 | 0,5 | 50 |
| 1180235T1 | HR30GS 4 050 16 R025 | 4 | ○ | 5 | 6 | 16 | 0,25 | 50 |
| 1180236T1 | HR30GS 4 050 16 R050 | 4 | ○ | 5 | 6 | 16 | 0,5 | 50 |
| 1180237T1 | HR30GS 4 060 19 R050 | 4 | ⊗ | 6 | 6 | 19 | 0,5 | 50 |
| 1180238T1 | HR30GS 4 060 19 R100 | 4 | ⊗ | 6 | 6 | 19 | 1 | 50 |
| 1180239T1 | HR30GS 4 070 19 R050 | 4 | ○ | 7 | 8 | 19 | 0,5 | 63 |
| 1180240T1 | HR30GS 4 070 19 R100 | 4 | ○ | 7 | 8 | 19 | 1 | 63 |
| 1180241T1 | HR30GS 4 080 20 R050 | 4 | ⊗ | 8 | 8 | 20 | 0,5 | 63 |
| 1180242T1 | HR30GS 4 080 20 R100 | 4 | ⊗ | 8 | 8 | 20 | 1 | 63 |
| 1180243T1 | HR30GS 4 090 22 R050 | 4 | ○ | 9 | 10 | 22 | 0,5 | 75 |
| 1180244T1 | HR30GS 4 090 22 R100 | 4 | ○ | 9 | 10 | 22 | 1 | 75 |
| 1180245T1 | HR30GS 4 100 22 R100 | 4 | ⊗ | 10 | 10 | 22 | 1 | 75 |
| 1180246T1 | HR30GS 4 100 22 R200 | 4 | ⊗ | 10 | 10 | 22 | 2 | 75 |
| 1180247T1 | HR30GS 4 120 25 R100 | 4 | ⊗ | 12 | 12 | 25 | 1 | 75 |
| 1180248T1 | HR30GS 4 120 25 R200 | 4 | ⊗ | 12 | 12 | 25 | 2 | 75 |
| 1180249T1 | HR30GS 4 140 26 R100 | 4 | ○ | 14 | 14 | 26 | 1 | 83 |
| 1180250T1 | HR30GS 4 140 26 R200 | 4 | ○ | 14 | 14 | 26 | 2 | 83 |
| 1180251T1 | HR30GS 4 160 32 R100 | 4 | ⊗ | 16 | 16 | 32 | 1 | 89 |
| 1180252T1 | HR30GS 4 160 32 R200 | 4 | ⊗ | 16 | 16 | 32 | 2 | 89 |
| 1180253T1 | HR30GS 4 180 32 R100 | 4 | ○ | 18 | 18 | 32 | 1 | 92 |
| 1180254T1 | HR30GS 4 180 32 R200 | 4 | ○ | 18 | 18 | 32 | 2 | 92 |
| 1180255T1 | HR30GS 4 200 38 R100 | 4 | ⊗ | 20 | 20 | 38 | 1 | 104 |
| 1180256T1 | HR30GS 4 200 38 R200 | 4 | ⊗ | 20 | 20 | 38 | 2 | 104 |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta

HB30GS 2 Ball nose endmill

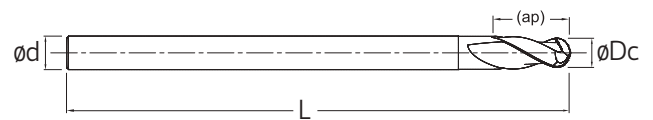


All order codes are cylindrical shank.
Weldon shank available under request.

| (1) Geometry code | (2) Grade code Reference Referência Referencia | ⊕ | T1 PHP920 | G4 PH7920 | Dimensions Dimensões Dimensiones (mm) | | | |
|----------------------|---|---|--------------|--------------|---|---------|-------------------|----|
| | | | | | ØDc | Ød (h6) | ap _{max} | L |
| 1180278 | HB30GS 2 020 06 | 2 | ⊕ | ⊕ | 2 | 3 | 6 | 38 |
| 1180279 | HB30GS 2 030 12 | 2 | ○ | ⊕ | 3 | 3 | 12 | 38 |
| 1180280 | HB30GS 2 040 14 | 2 | ○ | ⊕ | 4 | 4 | 14 | 50 |
| 1180281 | HB30GS 2 050 16 | 2 | ⊕ | | 5 | 6 | 16 | 50 |
| 1180282 | HB30GS 2 060 19 | 2 | ○ | ⊕ | 6 | 6 | 19 | 50 |
| 1180283 | HB30GS 2 080 20 | 2 | ⊕ | | 8 | 8 | 20 | 63 |
| 1180284 | HB30GS 2 100 22 | 2 | ⊕ | | 10 | 10 | 22 | 75 |
| 1180285 | HB30GS 2 120 25 | 2 | ⊕ | | 12 | 12 | 25 | 75 |

⊕ Stock item | Produto de stock | Itens de stock
 ⊕ Stock available until sold out | Stock disponível até acabar o stock
 Stock disponível hasta acabar el stock
 ○ Available under request | Disponível sobre consulta
 Disponível bajo consulta
 Endmill order code = (1) Geometry Code + (2) Grade Code

HB30GL 2 Ball nose endmill

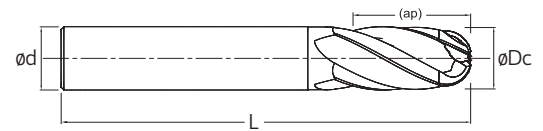


All order codes are cylindrical shank.
Weldon shank available under request.

| (1) Order code | Reference Referência Referencia | ⊕ | PHP920 | Dimensions Dimensões Dimensiones (mm) | | | |
|-------------------|---------------------------------------|---|--------|---|---------|-------------------|-----|
| | | | | ØDc | Ød (h6) | ap _{max} | L |
| 1180286T1 | HB30GL 2 040 08 | 2 | ⊕ | 4 | 6 | 8 | 75 |
| 1180128T1 | HB30GL 2 060 12 | 2 | ⊕ | 6 | 6 | 12 | 75 |
| 1180029T1 | HB30GL 2 080 14 | 2 | ⊕ | 8 | 8 | 14 | 100 |
| 1180030T1 | HB30GL 2 100 18 | 2 | ⊕ | 10 | 10 | 18 | 100 |
| 1180031T1 | HB30GL 2 120 22 | 2 | ⊕ | 12 | 12 | 22 | 120 |

⊕ Stock item | Produto de stock | Itens de stock
 ⊕ Stock available until sold out | Stock disponível até acabar o stock
 Stock disponível hasta acabar el stock
 ○ Available under request | Disponível sobre consulta
 Disponível bajo consulta

HB30GS 4 Ball nose endmill



All order codes are cylindrical shank.
Weldon shank available under request.

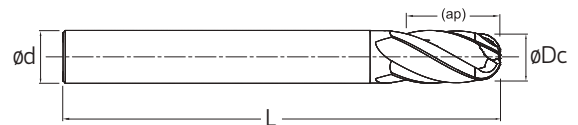
| (1) Order code | Reference Referência Referencia | | PHP920 | Dimensions Dimensões Dimensiones (mm) | | | |
|-------------------|---------------------------------------|---|--------|---|---------|-------------------|----|
| | | | | ØDc | Ød (h6) | ap _{max} | L |
| 1180156T1 | HB30GS 4 020 03 | 4 | | 2 | 4 | 3 | 50 |
| 1180157T1 | HB30GS 4 030 05 | 4 | | 3 | 4 | 5 | 50 |
| 1180068T1 | HB30GS 4 040 06 | 4 | | 4 | 6 | 6 | 60 |
| 1180272T1 | HB30GS 4 060 09 | 4 | | 6 | 6 | 9 | 60 |
| 1180066T1 | HB30GS 4 080 16 | 4 | | 8 | 8 | 16 | 63 |
| 1180432T1 | HB30GS 4 100 20 | 4 | | 10 | 10 | 20 | 75 |
| 1180287T1 | HB30GS 4 120 25 | 4 | | 12 | 12 | 25 | 75 |

Stock item | Produto de stock
Itens de stock

Stock available until sold out | Stock disponível até acabar o stock
Stock disponible hasta acabar el stock

Available under request | Disponível sobre consulta
Disponível bajo consulta

HB30GL 4 Ball nose endmill



All order codes are cylindrical shank.
Weldon shank available under request.

| (1) Order code | Reference Referência Referencia | | PHP920 | Dimensions Dimensões Dimensiones (mm) | | | |
|-------------------|---------------------------------------|---|--------|---|---------|-------------------|-----|
| | | | | ØDc | Ød (h6) | ap _{max} | L |
| 1180273T1 | HB30GL 4 020 04 | 4 | | 2 | 4 | 4 | 75 |
| 1180274T1 | HB30GL 4 030 08 | 4 | | 3 | 4 | 8 | 75 |
| 1180275T1 | HB30GL 4 040 11 | 4 | | 4 | 4 | 11 | 75 |
| 1180150T1 | HB30GL 4 050 13 | 4 | | 5 | 6 | 13 | 75 |
| 1180032T1 | HB30GL 4 060 13 | 4 | | 6 | 6 | 13 | 75 |
| 1180064T1 | HB30GL 4 080 16 | 4 | | 8 | 8 | 16 | 100 |
| 1180065T1 | HB30GL 4 100 16 | 4 | | 10 | 10 | 16 | 100 |
| 1180071T1 | HB30GL 4 120 25 | 4 | | 12 | 12 | 25 | 100 |
| 1180276T1 | HB30GL 4 160 32 | 4 | | 16 | 16 | 32 | 120 |
| 1180277T1 | HB30GL 4 200 38 | 4 | | 20 | 20 | 38 | 120 |

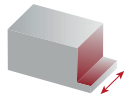
Stock item | Produto de stock
Itens de stock

Stock available until sold out | Stock disponível até acabar o stock
Stock disponible hasta acabar el stock

Available under request | Disponível sobre consulta
Disponível bajo consulta

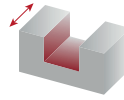
CUTTING PARAMETERS || Parâmetros de corte | Parámetros de corte

Side Milling



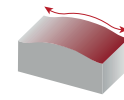
Finishing: $a_e < 0,15 \times D_c$
 Semi-finishing: $0,15 \times D_c < a_e < 0,3 \times D_c$
 Roughing: $a_e > 0,3 \times D_c$

Slotting



$a_e = 100\% \times D_c$

Copying



Finishing: $a_e < 0,20 \times D_c$
 $a_p < 0,03 \times D_c$
 Semi-finishing: $0,20 \times D_c < a_e < 0,40 \times D_c$
 $0,03 \times D_c < a_p < 0,10 \times D_c$
 Roughing: $a_e > 0,40 \times D_c$
 $a_p > 0,10 \times D_c$

α : Surface inclination angle.

| ISO | Material | fz (mm/t) | | | | | |
|-----|--|--------------------|--------------------|--------------------|--------------------|---------------------|---------------------|
| | | Side Milling | | | Slotting | Copying | |
| | | $a_e = 12,5\%$ | $a_e = 25\%$ | $a_e = 50\%$ | $a_e = 100\%$ | $\alpha < 15^\circ$ | $\alpha > 15^\circ$ |
| P | Unalloyed Steel | $0,009 \times D_c$ | $0,008 \times D_c$ | $0,005 \times D_c$ | $0,004 \times D_c$ | $0,012 \times D_c$ | $0,004 \times D_c$ |
| | Low-Alloyed Steel | $0,008 \times D_c$ | $0,007 \times D_c$ | $0,004 \times D_c$ | $0,003 \times D_c$ | $0,010 \times D_c$ | $0,003 \times D_c$ |
| | High-Alloyed Steel | $0,007 \times D_c$ | $0,006 \times D_c$ | $0,004 \times D_c$ | $0,003 \times D_c$ | $0,009 \times D_c$ | $0,003 \times D_c$ |
| M | Stainless Steel (Ferritic / Martensitic) | $0,007 \times D_c$ | $0,006 \times D_c$ | $0,004 \times D_c$ | $0,003 \times D_c$ | $0,009 \times D_c$ | $0,003 \times D_c$ |
| | Stainless Steel (Austenitic) | $0,005 \times D_c$ | $0,005 \times D_c$ | $0,003 \times D_c$ | $0,002 \times D_c$ | $0,007 \times D_c$ | $0,002 \times D_c$ |
| | Stainless Steel (Austenitic/Ferritic/Duplex) | $0,004 \times D_c$ | $0,004 \times D_c$ | $0,002 \times D_c$ | $0,002 \times D_c$ | $0,006 \times D_c$ | $0,002 \times D_c$ |
| K | Malleable Cast Iron | $0,009 \times D_c$ | $0,008 \times D_c$ | $0,005 \times D_c$ | $0,004 \times D_c$ | $0,012 \times D_c$ | $0,004 \times D_c$ |
| | Grey Cast Iron | $0,009 \times D_c$ | $0,008 \times D_c$ | $0,005 \times D_c$ | $0,004 \times D_c$ | $0,012 \times D_c$ | $0,004 \times D_c$ |
| | Nodular Cast Iron | $0,008 \times D_c$ | $0,008 \times D_c$ | $0,004 \times D_c$ | $0,004 \times D_c$ | $0,011 \times D_c$ | $0,004 \times D_c$ |

(Note 1) Side milling and slotting feed valid for when the endmill works with its whole a_p , for when the endmill is working with lower depths of cut consider increasing the feed up to 25%.

(Note 2) Copying feed valid for low a_p ($a_p / D < 0,1$), for higher a_p consider decreasing the feed by 50%.

| ISO | Material | Vc (m/min) | | | | | | | |
|-----|--|----------------|--------------|--------------|---------------|---|---|---|---|
| | | Side Milling | | | Slotting | Copying | | | |
| | | $a_e = 12,5\%$ | $a_e = 25\%$ | $a_e = 50\%$ | $a_e = 100\%$ | $a_p = 0,05\phi D_c$ $\alpha < 15^\circ$ | $a_p = 0,25\phi D$ $\alpha < 15^\circ$ | $a_p = 0,05\phi D_c$ $\alpha > 15^\circ$ | $a_p = 0,25\phi D_c$ $\alpha > 15^\circ$ |
| P | Unalloyed Steel | 200 | 190 | 180 | 150 | 480 | 240 | 320 | 160 |
| | Low-Alloyed Steel | 190 | 180 | 160 | 130 | 440 | 220 | 290 | 150 |
| | High-Alloyed Steel | 170 | 160 | 150 | 120 | 400 | 200 | 260 | 130 |
| M | Stainless Steel (Ferritic / Martensitic) | 150 | 140 | 130 | 110 | 360 | 180 | 240 | 120 |
| | Stainless Steel (Austenitic) | 120 | 110 | 100 | 80 | 290 | 140 | 190 | 100 |
| | Stainless Steel (Austenitic/Ferritic/Duplex) | 100 | 100 | 80 | 70 | 250 | 120 | 160 | 80 |
| K | Malleable Cast Iron | 240 | 230 | 220 | 170 | 580 | 290 | 380 | 190 |
| | Grey Cast Iron | 230 | 230 | 210 | 170 | 560 | 280 | 380 | 190 |
| | Nodular Cast Iron | 220 | 210 | 190 | 160 | 520 | 260 | 350 | 170 |

(Note 3) Table valid for PHP920 grade, for PH7920 consider reducing the cutting velocity by 10 m/min.

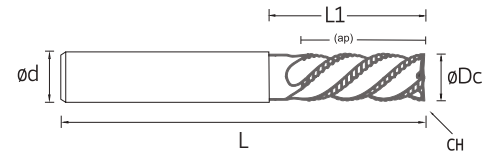
(Note 4) Cutting speeds selected for an economic use of the tool, for higher productivity consider increasing up to 70%.

(Note 5) For copying, spindle speed is calculated as follows: $n = \frac{V_c \times 1000}{\pi \times 2 \sqrt{a_p(D_c - a_p)}}$

HRO45GS Rougher endmill



P M K



| ⁽¹⁾ Order code | | Reference Referência Referencia | Flutes | PHU920 | Dimensions Dimensões Dimensiones (mm) | | | | | |
|---------------------------|-------------|---------------------------------------|--------|--------|---|----|--------|------------|----|-----|
| HA (Cylindrical) | HB (Weldon) | | | | ØDc | Ød | ap max | CH | L1 | L |
| 1180557Z9 | 1180558Z9 | HRO45GS 3 030 08 | 3 | ○ | 3 | 6 | 8 | 0,15 x 45° | 15 | 57 |
| 1180559Z9 | 1180560Z9 | HRO45GS 4 040 11 | 4 | ○ | 4 | 6 | 11 | 0,15 x 45° | 17 | 57 |
| 1180561Z9 | 1180562Z9 | HRO45GS 4 050 13 | 4 | ○ | 5 | 6 | 13 | 0,15 x 45° | 19 | 57 |
| 1180439Z9 | 1180563Z9 | HRO45GS 4 060 13 | 4 | ⊗ | 6 | 6 | 13 | 0,15 x 45° | 21 | 57 |
| 1180440Z9 | 1180564Z9 | HRO45GS 4 080 19 | 4 | ⊗ | 8 | 8 | 19 | 0,15 x 45° | 27 | 63 |
| 1180441Z9 | 1180565Z9 | HRO45GS 4 100 22 | 4 | ⊗ | 10 | 10 | 22 | 0,20 x 45° | 32 | 72 |
| 1180374Z9 | 1180465Z9 | HRO45GS 4 120 26 | 4 | ⊗ | 12 | 12 | 26 | 0,20 x 45° | 38 | 83 |
| 1180566Z9 | 1180567Z9 | HRO45GS 5 160 32 | 5 | ⊗ | 16 | 16 | 32 | 0,35 x 45° | 44 | 92 |
| 1180568Z9 | 1180569Z9 | HRO45GS 6 200 38 | 6 | ⊗ | 20 | 20 | 38 | 0,60 x 45° | 54 | 104 |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta

CUTTING CONDITIONS | Condições de corte | Condiciones de corte

| ISO | Material | fz (mm/t) | | | Vc (m/min) | | |
|-----|--|-------------|-------------|-------------|------------|----------|-----------|
| | | ae = 25% | ae = 50% | ae = 100% | ae = 25% | ae = 50% | ae = 100% |
| P | Unalloyed Steel | 0,008 x ØDc | 0,007 x ØDc | 0,005 x ØDc | 170 | 160 | 140 |
| | Low-Alloyed Steel | 0,007 x ØDc | 0,006 x ØDc | 0,004 x ØDc | 150 | 140 | 120 |
| | High-Alloyed Steel | 0,006 x ØDc | 0,005 x ØDc | 0,004 x ØDc | 130 | 120 | 100 |
| M | Stainless Steel (Ferritic / Martensitic) | 0,006 x ØDc | 0,005 x ØDc | 0,004 x ØDc | 110 | 110 | 90 |
| | Stainless Steel (Austenitic) | 0,005 x ØDc | 0,004 x ØDc | 0,003 x ØDc | 100 | 90 | 80 |
| | Stainless Steel (Austenitic/Ferritic/Duplex) | 0,004 x ØDc | 0,003 x ØDc | 0,002 x ØDc | 80 | 80 | 70 |
| K | Malleable Cast Iron | 0,008 x ØDc | 0,007 x ØDc | 0,005 x ØDc | 200 | 190 | 170 |
| | Grey Cast Iron | 0,008 x ØDc | 0,007 x ØDc | 0,005 x ØDc | 200 | 190 | 160 |
| | Nodular Cast Iron | 0,008 x ØDc | 0,007 x ØDc | 0,004 x ØDc | 180 | 170 | 150 |

HC45FL Corner chamfer finishing endmills

P M K H



Long



6



Variable Helix
43° - 45°



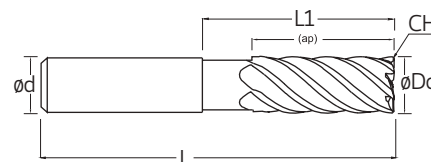
Reduced Neck Ø



Corner Chamfer



< 60 HRC



All order codes are cylindrical shank.
Weldon shank available under request.

| (1) Geometry code | (2) Grade code | | X7 | T1 | Dimensions Dimensões Dimensiones (mm) | | | | | | | |
|----------------------|---------------------------------------|---|----|----|---|--------|-----|------------|-------------------|-----|----|---|
| | Reference Referência Referencia | ⊕ | | | PHP603 | PHP920 | ØDc | Ød (h6) | ap _{max} | CH | L1 | L |
| | | | | | | | | | | | | |
| 1180845 | HC45FL 6 030 08 | 6 | ⊕ | ○ | 3 | 6 | 8 | 0,15 × 45° | 15 | 57 | | |
| 1180846 | HC45FL 6 040 11 | 6 | ⊕ | ○ | 4 | 6 | 11 | 0,15 × 45° | 17 | 57 | | |
| 1180847 | HC45FL 6 050 13 | 6 | ⊕ | ○ | 5 | 6 | 13 | 0,15 × 45° | 19 | 57 | | |
| 1180342 | HC45FL 6 060 13 | 6 | ⊕ | ⊕ | 6 | 6 | 13 | 0,15 × 45° | 21 | 57 | | |
| 1180062 | HC45FL 6 080 19 | 6 | ⊕ | ⊕ | 8 | 8 | 19 | 0,15 × 45° | 28 | 63 | | |
| 1180344 | HC45FL 6 100 22 | 6 | ⊕ | ⊕ | 10 | 10 | 22 | 0,20 × 45° | 30 | 72 | | |
| 1180343 | HC45FL 6 120 26 | 6 | ⊕ | ⊕ | 12 | 12 | 26 | 0,20 × 45° | 34 | 83 | | |
| 1180848 | HC45FL 6 160 32 | 6 | ○ | ○ | 16 | 16 | 32 | 0,35 × 45° | 44 | 92 | | |
| 1180849 | HC45FL 6 200 38 | 6 | ○ | ○ | 20 | 20 | 38 | 0,60 × 45° | 54 | 104 | | |

⊕ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta

Endmill order code = (1) Geometry Code + (2) Grade Code

GRADES SELECTION GUIDE | Guia para selecção de graus | Tabla para selección de calidades

| ISO | Material | Grades | |
|-----|--|--------|--------|
| | | PHP603 | PHP920 |
| P | Unalloyed Steel | ☹ | ☹ |
| | Low-Alloyed Steel | ☹ | ☹ |
| | High-Alloyed Steel | ☹ | ☹ |
| M | Stainless Steel (Ferritic / Martensitic) | ☹ | ☹ |
| | Stainless Steel (Austenitic) | ☹ | ☹ |
| | Stainless Steel (Austenitic/Ferritic/Duplex) | ☹ | ☹ |
| K | Malleable Cast Iron | ☹ | ☹ |
| | Grey Cast Iron | ☹ | ☹ |
| | Nodular Cast Iron | ☹ | ☹ |
| H | Hardened Steels | ☹ | — |

☹ First choice | 1ª Escolha | 1ª Opción

☹ Suitable | Adequado | Adecuado

CUTTING PARAMETERS | Parâmetros de corte | Parámetros de corte

| ISO | Material | Vc (m/min) | | fz (mm/t) |
|-----|--|------------|--------|-------------|
| | | PHP603 | PHP920 | |
| P | Unalloyed Steel | 200 | 190 | 0,009 x ØDc |
| | Low-Alloyed Steel | 170 | 160 | 0,007 x ØDc |
| | High-Alloyed Steel | 140 | 130 | 0,005 x ØDc |
| M | Stainless Steel (Ferritic / Martensitic) | 130 | 120 | 0,006 x ØDc |
| | Stainless Steel (Austenitic) | 120 | 110 | 0,005 x ØDc |
| | Stainless Steel (Austenitic/Ferritic/Duplex) | 90 | 90 | 0,004 x ØDc |
| K | Malleable Cast Iron | 240 | 230 | 0,009 x ØDc |
| | Grey Cast Iron | 240 | 230 | 0,009 x ØDc |
| | Nodular Cast Iron | 200 | 190 | 0,008 x ØDc |
| H | Hardened Steels | 80 | — | 0,004 x ØDc |

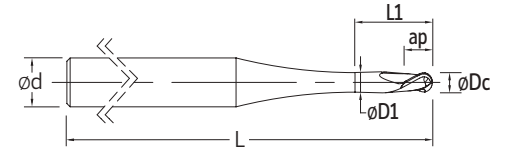
Note¹: Feed valid for when the endmill works with its whole ap, for when the endmill is working with lower depths of cut consider increasing the feed up to 25%.

Note²: Cutting speeds selected for an economic use of the tool, for higher productivity consider increasing up to 70%.

HB30MINS Short neck endmills for micro machining



All order codes are cylindrical shank.
Weldon shank available under request.

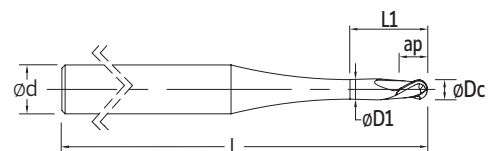


| (1) Order code | Reference Referência Referencia | ⊕ | PHH603 | Dimensions Dimensões Dimensiones (mm) | | | | | |
|-------------------|---------------------------------------|---|--------|---|---------|------|-----|-----|----|
| | | | | ØDc | Ød (h6) | D1 | ap | L1 | L |
| 1180297X4 | HB30MINS 2 005 01 015 | 2 | ⊕ | 0,5 | 4 | 0,45 | 0,6 | 1,5 | 50 |
| 1180288X4 | HB30MINS 2 006 01 020 | 2 | ⊕ | 0,6 | 4 | 0,58 | 0,6 | 2 | 50 |
| 1180289X4 | HB30MINS 2 008 01 020 | 2 | ⊕ | 0,8 | 4 | 0,78 | 0,8 | 2 | 50 |
| 1180298X4 | HB30MINS 2 010 02 025 | 2 | ⊕ | 1 | 4 | 0,95 | 1,3 | 2,5 | 50 |
| 1180290X4 | HB30MINS 2 010 01 030 | 2 | ⊕ | 1 | 4 | 0,95 | 1 | 3 | 50 |
| 1180291X4 | HB30MINS 2 012 02 030 | 2 | ⊕ | 1,2 | 4 | 1,15 | 1,2 | 3 | 50 |
| 1180292X4 | HB30MINS 2 016 02 040 | 2 | ⊕ | 1,6 | 4 | 1,55 | 1,6 | 4 | 50 |
| 1180293X4 | HB30MINS 2 020 02 040 | 2 | ⊕ | 2 | 4 | 1,94 | 2 | 4 | 50 |
| 1180307X4 | HB30MINS 2 020 03 050 | 2 | ⊕ | 2 | 4 | 1,95 | 2,5 | 5 | 50 |
| 1180299X4 | HB30MINS 2 025 03 060 | 2 | ⊕ | 2,5 | 6 | 2,45 | 3 | 6 | 60 |
| 1180309X4 | HB30MINS 2 030 04 075 | 2 | ⊕ | 3 | 6 | 2,95 | 4 | 7,5 | 60 |

⊕ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta

HB30MINS Medium neck endmills for micro machining



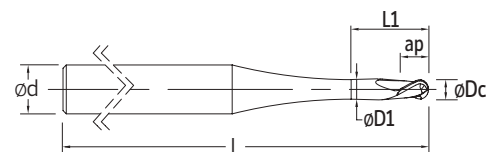
All order codes are cylindrical shank.
Weldon shank available under request.

| (1) Order code | Reference Referência Referencia | | PHH603 | Dimensions Dimensões Dimensiones (mm) | | | | | |
|-------------------|---------------------------------------|---|--------|---|---------|------|-----|------|----|
| | | | | ØDc | Ød (h6) | D1 | ap | L1 | L |
| 1180305X4 | HB30MINS 2 005 01 025 | 2 | | 0,5 | 4 | 0,45 | 0,4 | 2,5 | 50 |
| 1180308X4 | HB30MINS 2 010 02 050 | 2 | | 1 | 4 | 0,95 | 1,3 | 5 | 50 |
| 1180336X4 | HB30MINS 2 016 02 080 | 2 | | 1,6 | 4 | 1,55 | 1,6 | 8 | 50 |
| 1180310X4 | HB30MINS 2 020 03 100 | 2 | | 2 | 4 | 1,95 | 2,5 | 10 | 50 |
| 1180311X4 | HB30MINS 2 025 03 125 | 2 | | 2,5 | 6 | 2,45 | 3 | 12,5 | 60 |
| 1180301X4 | HB30MINS 2 030 04 150 | 2 | | 3 | 6 | 2,95 | 4 | 15 | 60 |

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta
Disponível bajo consulta

HB30MINS Long neck endmills for micro machining



All order codes are cylindrical shank.
Weldon shank available under request.

| (1) Order code | Reference Referência Referencia | | PHH603 | Dimensions Dimensões Dimensiones (mm) | | | | | |
|-------------------|---------------------------------------|---|--------|---|---------|------|-----|------|----|
| | | | | ØDc | Ød (h6) | D1 | ap | L1 | L |
| 1180306X4 | HB30MINS 2 005 01 040 | 2 | | 0,5 | 4 | 0,45 | 0,6 | 4 | 50 |
| 1180300X4 | HB30MINS 2 010 02 080 | 2 | | 1 | 4 | 0,95 | 1,3 | 8 | 50 |
| 1180337X4 | HB30MINS 2 016 02 128 | 2 | | 1,6 | 4 | 1,55 | 1,6 | 12,8 | 50 |
| 1180302X4 | HB30MINS 2 020 03 160 | 2 | | 2 | 4 | 1,95 | 2,5 | 16 | 50 |
| 1180312X4 | HB30MINS 2 025 03 200 | 2 | | 2,5 | 6 | 2,45 | 3 | 20 | 60 |
| 1180313X4 | HB30MINS 2 030 04 240 | 2 | | 3 | 6 | 2,95 | 4 | 24 | 60 |

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta
Disponível bajo consulta

CUTTING PARAMETERS || Parâmetros de corte | Parámetros de corte

| ISO | Material | Copying | | | | | |
|-----|--|---------------------------|---------------------------|--|--|--|--|
| | | fz (mm/t) | | Vc (m/min) | | | |
| | | $\alpha < 15^\circ$ | $\alpha > 15^\circ$ | $a_p = 0,05 \text{ } \varnothing D_c$ $\alpha < 15^\circ$ | $a_p = 0,25 \text{ } \varnothing D$ $\alpha < 15^\circ$ | $a_p = 0,05 \text{ } \varnothing D_c$ $\alpha > 15^\circ$ | $a_p = 0,25 \text{ } \varnothing D$ $\alpha > 15^\circ$ |
| P | Unalloyed Steel | 0,01 x $\varnothing D_c$ | 0,003 x $\varnothing D_c$ | 700 | 340 | 460 | 220 |
| | Low-Alloyed Steel | 0,009 x $\varnothing D_c$ | 0,003 x $\varnothing D_c$ | 650 | 320 | 430 | 210 |
| | High-Alloyed Steel | 0,008 x $\varnothing D_c$ | 0,003 x $\varnothing D_c$ | 590 | 290 | 390 | 190 |
| M | Stainless Steel (Ferritic / Martensitic) | 0,009 x $\varnothing D_c$ | 0,003 x $\varnothing D_c$ | 600 | 300 | 400 | 200 |
| | Stainless Steel (Austenitic) | 0,008 x $\varnothing D_c$ | 0,003 x $\varnothing D_c$ | 560 | 280 | 370 | 190 |
| | Stainless Steel (Austenitic/Ferritic/Duplex) | 0,007 x $\varnothing D_c$ | 0,002 x $\varnothing D_c$ | 540 | 270 | 360 | 180 |
| K | Malleable Cast Iron | 0,008 x $\varnothing D_c$ | 0,003 x $\varnothing D_c$ | 650 | 320 | 430 | 210 |
| | Grey Cast Iron | 0,008 x $\varnothing D_c$ | 0,003 x $\varnothing D_c$ | 640 | 310 | 420 | 200 |
| | Nodular Cast Iron | 0,007 x $\varnothing D_c$ | 0,002 x $\varnothing D_c$ | 600 | 300 | 400 | 190 |
| S | Heat Resistant Super Alloys | 0,007 x $\varnothing D_c$ | 0,002 x $\varnothing D_c$ | 230 | 110 | 150 | 80 |
| H | Hardened Steels | 0,008 x $\varnothing D_c$ | 0,003 x $\varnothing D_c$ | 460 | 230 | 310 | 150 |

Note: Since some of the endmills have low $\varnothing D_c$ the above Vc cannot be achieved by any conventional machining center. The endmills still work at much lower Vc.

A

MILLING

Overview

Face milling

Hi-feed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

Spot face

Spare Parts

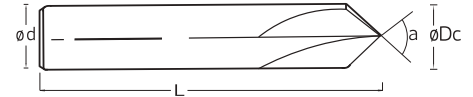
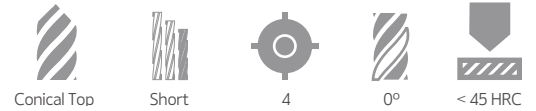
Technical Data

End Mills

HCHGS Chamfering endmill



P M K



| ⁽¹⁾ Order code | | Reference Referência Referencia | 4 | PHU920 | Dimensions Dimensões Dimensiones (mm) | | | |
|---------------------------|-------------|---------------------------------------|---|--------|---|---------|----|-----|
| HA (Cylindrical) | HB (Weldon) | | | | ØDc | Ød (h6) | a | L |
| 1180366Z9 | - | HCHGS 4 030 02 90 | 4 | ⊗ | 3 | 3 | 90 | 38 |
| 1180367Z9 | - | HCHGS 4 040 02 90 | 4 | ⊗ | 4 | 4 | 90 | 50 |
| 1180368Z9 | 1180496Z9 | HCHGS 4 060 03 90 | 4 | ⊗ | 6 | 6 | 90 | 57 |
| 1180369Z9 | 1180497Z9 | HCHGS 4 080 04 90 | 4 | ⊗ | 8 | 8 | 90 | 63 |
| 1180370Z9 | 1180498Z9 | HCHGS 4 100 05 90 | 4 | ⊗ | 10 | 10 | 90 | 72 |
| 1180371Z9 | 1180499Z9 | HCHGS 4 120 06 90 | 4 | ⊗ | 12 | 12 | 90 | 83 |
| 1180372Z9 | 1180500Z9 | HCHGS 4 160 08 90 | 4 | ⊗ | 16 | 16 | 90 | 92 |
| 1180373Z9 | 1180553Z9 | HCHGS 4 200 10 90 | 4 | ⊗ | 20 | 20 | 90 | 104 |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta

Endmill order code = (1) Geometry Code + (2) Grade Code

Note: For HB (weldon) endmills, the reference ends with "-W"

CUTTING PARAMETERS || Parâmetros de corte | Parámetros de corte

| ISO | Material | Chamfering | |
|-----|--|-------------|------------|
| | | fz (mm/t) | Vc (m/min) |
| P | Unalloyed Steel | 0,008 x ØDc | 180 |
| | Low-Alloyed Steel | 0,007 x ØDc | 160 |
| | High-Alloyed Steel | 0,006 x ØDc | 140 |
| M | Stainless Steel (Ferritic / Martensitic) | 0,007 x ØDc | 150 |
| | Stainless Steel (Austenitic) | 0,006 x ØDc | 130 |
| | Stainless Steel (Austenitic/Ferritic/Duplex) | 0,004 x ØDc | 110 |
| K | Malleable Cast Iron | 0,008 x ØDc | 210 |
| | Grey Cast Iron | 0,008 x ØDc | 210 |
| | Nodular Cast Iron | 0,008 x ØDc | 190 |

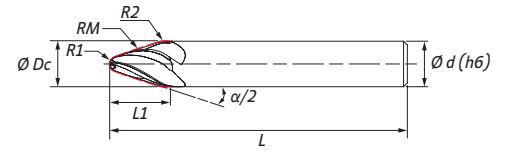
RAD-INTEG = Conical and Tangential Segment Endmills

NEW

A

HXC30GL = CONICAL

MILLING



All order codes are cylindrical shank.
Weldon shank available under request.

Overview

Face milling

Hi-feed milling

Shoulder milling

| (1) Geometry code | (2) Grade code Reference Referência Referencia | ⊕ | T1 | | Y3 | | Dimensions Dimensões Dimensiones (mm) | | | | | | | |
|----------------------|---|---|--------|--------|----|---|---|---------|-----|------|----|----|----|-----|
| | | | PHP920 | PHH920 | ⊕ | ⊕ | ∅Dc | ∅d (h6) | α/2 | RM | R1 | R2 | L1 | L |
| 1180046 | HXC30GL 4 080 10 18RM030 | 4 | ⊕ | ⊕ | ⊕ | ⊕ | 8 | 8 | 18 | 300 | 1 | 1 | 10 | 75 |
| 1180047 | HXC30GL 4 120 14 18RM045 | 4 | ⊕ | ⊕ | ⊕ | ⊕ | 12 | 12 | 18 | 450 | 2 | 2 | 14 | 83 |
| 1180048 | HXC30GL 4 160 18 18RM120 | 4 | ⊕ | ⊕ | ⊕ | ⊕ | 16 | 16 | 18 | 1200 | 3 | 3 | 18 | 95 |
| 1180049 | HXC30GL 4 160 12 28RM080 | 4 | ⊕ | ⊕ | ⊕ | ⊕ | 16 | 16 | 28 | 800 | 3 | 3 | 12 | 95 |
| 1180050 | HXC30GL 4 160 16 18RM120 | 4 | ⊕ | ⊕ | ⊕ | ⊕ | 16 | 16 | 18 | 1200 | 4 | 4 | 16 | 110 |
| 1180051 | HXC30GL 4 160 11 28RM080 | 4 | ⊕ | ⊕ | ⊕ | ⊕ | 16 | 16 | 28 | 800 | 4 | 4 | 11 | 110 |

⊕ Stock item | Produto de stock | Itens de stock

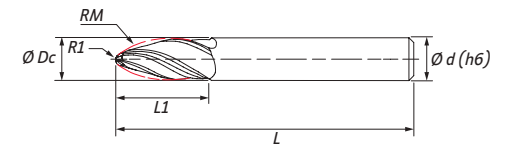
○ Available under request | Disponível sobre consulta
Disponível bajo consulta

Endmill order code = (1) Geometry Code + (2) Grade Code

Profile milling

HXT30GL = TANGENTIAL

Hardmill



All order codes are cylindrical shank.
Weldon shank available under request.

Center & Chamfer

Spot face

| (1) Geometry code | (2) Grade code Reference Referência Referencia | ⊕ | T1 | | Y3 | | Dimensions Dimensões Dimensiones (mm) | | | | | |
|----------------------|---|---|--------|--------|----|---|---|---------|----|----|----|-----|
| | | | PHP920 | PHH920 | ⊕ | ⊕ | ∅Dc | ∅d (h6) | RM | R1 | L1 | L |
| 1180045 | HXT30GL 3 060 22 RM095 | 4 | ⊕ | ⊕ | ⊕ | ⊕ | 6 | 6 | 95 | 1 | 22 | 63 |
| 1180037 | HXT30GL 4 080 24 RM095 | 4 | ⊕ | ⊕ | ⊕ | ⊕ | 8 | 8 | 95 | 1 | 24 | 70 |
| 1180038 | HXT30GL 4 100 28 RM085 | 4 | ⊕ | ⊕ | ⊕ | ⊕ | 10 | 10 | 85 | 2 | 28 | 72 |
| 1180039 | HXT30GL 4 120 28 RM090 | 4 | ⊕ | ⊕ | ⊕ | ⊕ | 12 | 12 | 90 | 2 | 28 | 83 |
| 1180691 | HXT30GL 4 160 30 RM080 | 4 | ⊕ | ⊕ | ⊕ | ⊕ | 16 | 16 | 80 | 3 | 30 | 110 |

⊕ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta

Endmill order code = (1) Geometry Code + (2) Grade Code

Spare Parts

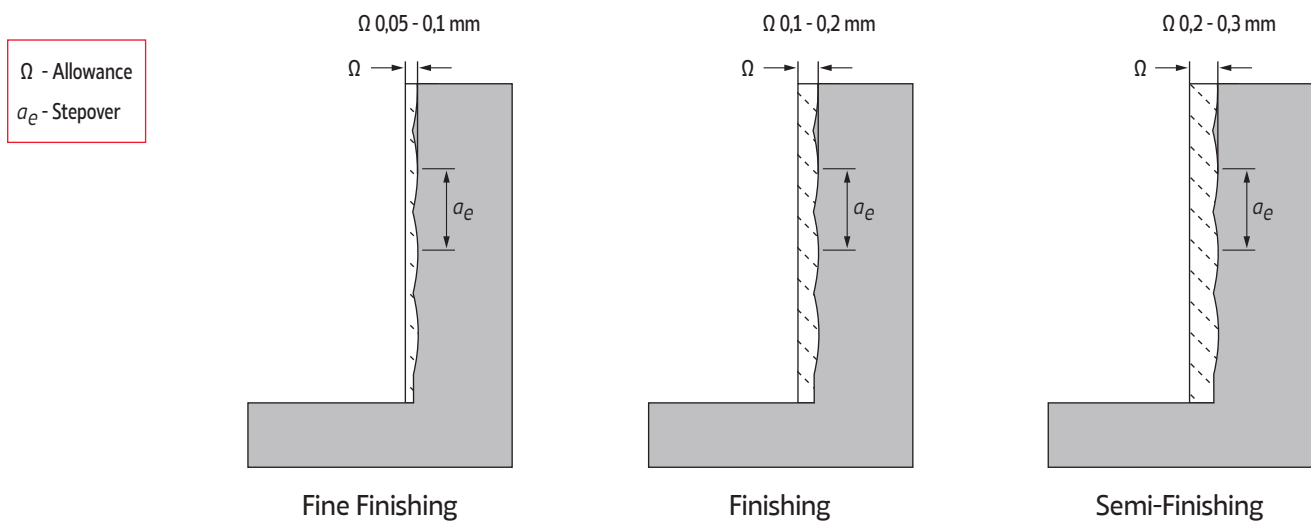
Technical Data

End Mills

GRADES SELECTION GUIDE | Guia para seleção de graus | Tabla para selección de calidades

| ISO | Material | Grades | |
|-----|--|--------|--------|
| | | PHP920 | PHH920 |
| P | Unalloyed Steel | ⊗ | |
| | Low-Alloyed Steel | ⊗ | |
| | High-Alloyed Steel | ⊗ | |
| M | Stainless Steel (Ferritic / Martensitic) | | ⊗ |
| | Stainless Steel (Austenitic) | | ⊗ |
| | Stainless Steel (Austenitic/Ferritic/Duplex) | | ⊗ |
| K | Malleable Cast Iron | ⊗ | |
| | Grey Cast Iron | ⊗ | |
| | Nodular Cast Iron | ⊗ | |
| S | Heat Resistant Super Alloys | | ⊗ |

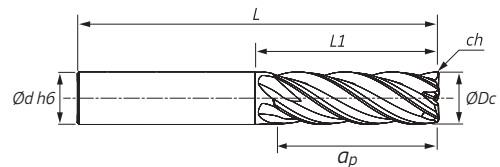
RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables



| ISO | Workpiece Material | Vc (m/min) | fz (mm/t) | | | | |
|-----|--|------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | | | HXC30GL - Conical | | HXT30GL - Tangential | | |
| | | | Ω 0,05 - 0,1 mm | Ω 0,1 - 0,2 mm | Ω 0,05 - 0,1 mm | Ω 0,1 - 0,2 mm | Ω 0,2 - 0,3 mm |
| P | Unalloyed Steel | 180 | 0,007 x \varnothing Dc | 0,006 x \varnothing Dc | 0,007 x \varnothing Dc | 0,006 x \varnothing Dc | 0,005 x \varnothing Dc |
| | Low-Alloyed Steel | 160 | 0,006 x \varnothing Dc | 0,005 x \varnothing Dc | 0,006 x \varnothing Dc | 0,005 x \varnothing Dc | 0,004 x \varnothing Dc |
| | High-Alloyed Steel | 150 | 0,005 x \varnothing Dc | 0,004 x \varnothing Dc | 0,005 x \varnothing Dc | 0,004 x \varnothing Dc | 0,004 x \varnothing Dc |
| M | Stainless Steel (Ferritic / Martensitic) | 120 | 0,005 x \varnothing Dc | 0,004 x \varnothing Dc | 0,005 x \varnothing Dc | 0,004 x \varnothing Dc | 0,004 x \varnothing Dc |
| | Stainless Steel (Austenitic) | 120 | 0,004 x \varnothing Dc | 0,003 x \varnothing Dc | 0,004 x \varnothing Dc | 0,003 x \varnothing Dc | 0,003 x \varnothing Dc |
| | Stainless Steel (Austenitic/Ferritic/Duplex) | 110 | 0,003 x \varnothing Dc | 0,003 x \varnothing Dc | 0,003 x \varnothing Dc | 0,003 x \varnothing Dc | 0,002 x \varnothing Dc |
| K | Malleable Cast Iron | 220 | 0,007 x \varnothing Dc | 0,006 x \varnothing Dc | 0,007 x \varnothing Dc | 0,006 x \varnothing Dc | 0,005 x \varnothing Dc |
| | Grey Cast Iron | 210 | 0,007 x \varnothing Dc | 0,006 x \varnothing Dc | 0,007 x \varnothing Dc | 0,006 x \varnothing Dc | 0,005 x \varnothing Dc |
| | Nodular Cast Iron | 190 | 0,006 x \varnothing Dc | 0,005 x \varnothing Dc | 0,006 x \varnothing Dc | 0,005 x \varnothing Dc | 0,005 x \varnothing Dc |
| S | Heat Resistant Super Alloys | 60 | 0,003 x \varnothing Dc | 0,003 x \varnothing Dc | 0,003 x \varnothing Dc | 0,003 x \varnothing Dc | 0,002 x \varnothing Dc |

HC40TSP = Corner chamfer, variable helix 40°-42° || Trochoidal Speed Cutting

P K



| Order code | | Reference Referência Referencia | 5 | PHP920 | Dimensions Dimensões Dimensiones (mm) | | | | | |
|------------------|-------------|---------------------------------------|---|--------|---|---------|--------|------------|----|-----|
| HA (Cylindrical) | HB (Weldon) | | | | ØDc | Ød (h6) | ap max | CH | L1 | L |
| 1180118T1 | 1180456T1 | HC40TSPL 5 060 20 | 5 | ⊗ | 6 | 6 | 20 | 0,15 x 45° | 26 | 60 |
| 1180119T1 | 1180457T1 | HC40TSPL 5 080 25 | 5 | ⊗ | 8 | 8 | 25 | 0,15 x 45° | 32 | 63 |
| 1180225T1 | 1180458T1 | HC40TSPL 5 100 32 | 5 | ⊗ | 10 | 10 | 32 | 0,20 x 45° | 38 | 79 |
| 1180690T1 | 1180689T1 | HC40TSPL 5 120 41 | 5 | ⊗ | 12 | 12 | 41 | 0,20 x 45° | 48 | 100 |
| 1180226T1 | 1180460T1 | HC40TSPL 5 160 50 | 5 | ⊗ | 16 | 16 | 50 | 0,25 x 45° | 56 | 110 |
| 1180123T1 | 1180461T1 | HC40TSPL 5 180 60 | 5 | ⊗ | 18 | 18 | 60 | 0,30 x 45° | 66 | 130 |
| 1180462T1 | 1180463T1 | HC40TSPL 5 200 64 | 5 | ⊗ | 20 | 20 | 64 | 0,35 x 45° | 70 | 130 |

⊗ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta
Disponível bajo consulta

Note: For HB (weldon) endmills, the reference ends with "-W"

RECOMMENDED CUTTING CONDITIONS || Condições de corte recomendadas | Condiciones de corte recomendables

| ISO | Workpiece Material | fz (mm/t) | | | Vc (m/min) | | |
|-----|---------------------|-------------|-------------|-------------|------------|-----|-----|
| | | ae (mm) | | | ae (mm) | | |
| | | 5,0% | 15% | 30% | 5,0% | 15% | 30% |
| P | Unalloyed Steel | 0,009 x ØDc | 0,009 x ØDc | 0,008 x ØDc | 180 | 170 | 170 |
| | Low-Alloyed Steel | 0,008 x ØDc | 0,007 x ØDc | 0,007 x ØDc | 160 | 160 | 150 |
| | High-Alloyed Steel | 0,007 x ØDc | 0,007 x ØDc | 0,006 x ØDc | 140 | 140 | 140 |
| K | Malleable Cast Iron | 0,009 x ØDc | 0,009 x ØDc | 0,008 x ØDc | 210 | 210 | 200 |
| | Grey Cast Iron | 0,009 x ØDc | 0,009 x ØDc | 0,008 x ØDc | 210 | 200 | 200 |
| | Nodular Cast Iron | 0,009 x ØDc | 0,008 x ØDc | 0,007 x ØDc | 190 | 190 | 180 |

HC35ML Corner chamfer steel specialized endmills



Long



Variable Pitch
4



Variable Helix
35°/38°



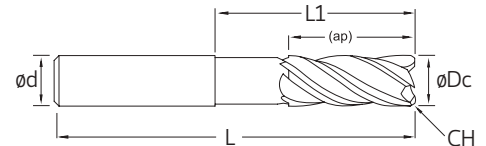
Reduced
Neck Ø



45°
Corner chamfer



< 48 HRC



| ⁽¹⁾ Order code | | Reference Referência Referencia | | PHP920 | Dimensions Dimensões Dimensiones (mm) | | | | | |
|---------------------------|-------------|---------------------------------------|---|--------|---|---------|-------------------|------------|----|-----|
| HA (Cylindrical) | HB (Weldon) | | | | ØDc | Ød (h6) | ap _{max} | CH | L1 | L |
| 1180480T1 | - | HF35ML 4 010 03 | 4 | | 1 | 6 | 2,5 | - | 5 | 57 |
| 1180482T1 | 1180483T1 | HC35ML 4 020 05 | 4 | | 2 | 6 | 5 | 0,07 x 45° | 10 | 57 |
| 1180466T1 | 1180467T1 | HC35ML 4 030 08 | 4 | | 3 | 6 | 8 | 0,15 x 45° | 15 | 57 |
| 1180137T1 | 1180468T1 | HC35ML 4 040 11 | 4 | | 4 | 6 | 11 | 0,15 x 45° | 17 | 57 |
| 1180469T1 | 1180521T1 | HC35ML 4 050 13 | 4 | | 5 | 6 | 13 | 0,15 x 45° | 19 | 57 |
| 1180138T1 | 1180470T1 | HC35ML 4 060 13 | 4 | | 6 | 6 | 13 | 0,15 x 45° | 21 | 57 |
| 1180052T1 | 1180471T1 | HC35ML 4 080 19 | 4 | | 8 | 8 | 19 | 0,15 x 45° | 27 | 63 |
| 1180053T1 | 1180472T1 | HC35ML 4 100 22 | 4 | | 10 | 10 | 22 | 0,20 x 45° | 32 | 72 |
| 1180139T1 | 1180473T1 | HC35ML 4 120 26 | 4 | | 12 | 12 | 26 | 0,20 x 45° | 38 | 83 |
| 1180474T1 | 1180475T1 | HC35ML 4 140 26 | 4 | | 14 | 14 | 26 | 0,25 x 45° | 38 | 83 |
| 1180153T1 | 1180476T1 | HC35ML 4 160 32 | 4 | | 16 | 16 | 32 | 0,35 x 45° | 44 | 92 |
| 1180477T1 | 1180478T1 | HC35ML 4 180 32 | 4 | | 18 | 18 | 32 | 0,45 x 45° | 44 | 92 |
| 1180140T1 | 1180479T1 | HC35ML 4 200 38 | 4 | | 20 | 20 | 38 | 0,60 x 45° | 54 | 104 |

Stock item | Produto de stock | Itens de stock

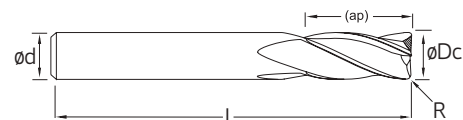
Available under request | Disponível sobre consulta
Disponível bajo consulta

Order code = (1) Geometry Code + (2) Grade Code

Note: For HB (Weldon) endmills, the reference ends with "-W"

Example: "HC35ML 4 030 08-W"

HR35GL Corner radius steel specialized endmills



| (1) Order code | Reference Referência Referencia | | PHP920 | Dimensions Dimensões Dimensiones (mm) | | | | |
|-------------------|---------------------------------------|---|--------|---|---------|-------------------|---|-----|
| | | | | ØDc | Ød (h6) | ap _{max} | R | L |
| 1180042T1 | HR35GL 4 120 26 R100 | 4 | | 12 | 12 | 26 | 1 | 81 |
| 1180043T1 | HR35GL 4 120 26 R200 | 4 | | 12 | 12 | 26 | 2 | 81 |
| 1180044T1 | HR35GL 4 120 26 R300 | 4 | | 12 | 12 | 26 | 3 | 81 |
| 1180187T1 | HR35GL 4 160 24 R100 | 4 | | 16 | 16 | 24 | 1 | 100 |
| 1180188T1 | HR35GL 4 160 24 R200 | 4 | | 16 | 16 | 24 | 2 | 100 |
| 1180189T1 | HR35GL 4 200 40 R100 | 4 | | 20 | 20 | 40 | 1 | 100 |
| 1180190T1 | HR35GL 4 200 40 R200 | 4 | | 20 | 20 | 40 | 2 | 100 |

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta
Disponível bajo consulta

Order code = (1) Geometry Code + (2) Grade Code

CUTTING CONDITIONS | Condições de corte | Condiciones de corte

| ISO | Material | fz (mm/t) | | | Vc (m/min) | | |
|-----|---------------------|----------------------|----------------------|-----------------------|----------------------|----------------------|-----------------------|
| | | a _e = 25% | a _e = 50% | a _e = 100% | a _e = 25% | a _e = 50% | a _e = 100% |
| P | Unalloyed Steel | 0,008 x ØDc | 0,005 x ØDc | 0,004 x ØDc | 190 | 180 | 150 |
| | Low-Alloyed Steel | 0,007 x ØDc | 0,004 x ØDc | 0,003 x ØDc | 180 | 160 | 130 |
| | High-Alloyed Steel | 0,006 x ØDc | 0,004 x ØDc | 0,003 x ØDc | 160 | 150 | 120 |
| K | Malleable Cast Iron | 0,008 x ØDc | 0,005 x ØDc | 0,004 x ØDc | 230 | 210 | 180 |
| | Grey Cast Iron | 0,008 x ØDc | 0,005 x ØDc | 0,004 x ØDc | 230 | 210 | 170 |
| | Nodular Cast Iron | 0,008 x ØDc | 0,004 x ØDc | 0,004 x ØDc | 210 | 190 | 160 |

Note¹: Recommended feed values for maximum ap. For reduced ap, consider increasing Fz up to 25%.

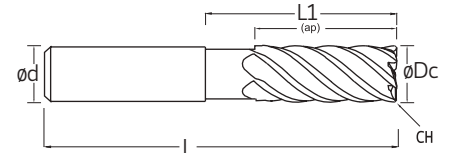
Note²: Cutting speeds selected for an economic use of the tool, for higher productivity consider increasing up to 70%.

HC40SS Corner chamfer stainless steel specialized endmills



M

< 42 HRC



| ⁽¹⁾ Order code | | Reference Referência Referencia | 4 | PHU920 | Dimensions Dimensões Dimensiones (mm) | | | | | |
|---------------------------|-------------|---------------------------------------|---|--------|---|---------|-------------------|------------|----|-----|
| HA (Cylindrical) | HB (Weldon) | | | | ØDc | Ød (h6) | ap _{max} | CH | L1 | L |
| 1180484Z9 | 1180485Z9 | HF40SS 4 010 03 | 4 | ○ | 1 | 6 | 2,5 | - | 5 | 57 |
| 1180380Z9 | 1180487Z9 | HF40SS 4 020 05 | 4 | ○ | 2 | 6 | 5 | - | 10 | 57 |
| 1180381Z9 | 1180488Z9 | HC40SS 4 030 08 | 4 | ⊗ | 3 | 6 | 8 | 0,15 x 45° | 15 | 57 |
| 1180382Z9 | 1180489Z9 | HC40SS 4 040 11 | 4 | ⊗ | 4 | 6 | 11 | 0,15 x 45° | 17 | 57 |
| 1180383Z9 | 1180490Z9 | HC40SS 4 050 13 | 4 | ⊗ | 5 | 6 | 13 | 0,15 x 45° | 19 | 57 |
| 1180384Z9 | 1180389Z9 | HC40SS 4 060 13 | 4 | ⊗ | 6 | 6 | 13 | 0,15 x 45° | 21 | 57 |
| 1180329Z9 | 1180491Z9 | HC40SS 4 080 19 | 4 | ⊗ | 8 | 8 | 19 | 0,15 x 45° | 27 | 63 |
| 1180385Z9 | 1180492Z9 | HC40SS 4 100 22 | 4 | ⊗ | 10 | 10 | 22 | 0,20 x 45° | 32 | 72 |
| 1180386Z9 | 1180493Z9 | HC40SS 4 120 26 | 4 | ⊗ | 12 | 12 | 26 | 0,20 x 45° | 38 | 83 |
| 1180436Z9 | 1180494Z9 | HC40SS 4 140 26 | 4 | ⊗ | 14 | 14 | 26 | 0,25 x 45° | 38 | 83 |
| 1180387Z9 | 1180390Z9 | HC40SS 4 160 32 | 4 | ⊗ | 16 | 16 | 32 | 0,35 x 45° | 44 | 92 |
| 1180555Z9 | 1180556Z9 | HC40SS 4 180 32 | 4 | ⊗ | 18 | 18 | 32 | 0,45 x 45° | 44 | 92 |
| 1180388Z9 | 1180455Z9 | HC40SS 4 200 38 | 4 | ⊗ | 20 | 20 | 38 | 0,60 x 45° | 54 | 104 |

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta
Disponível bajo consulta

Order code = (1) Geometry Code + (2) Grade Code

CUTTING PARAMETERS || Parâmetros de corte | Parámetros de corte

| ISO | Material | fz (mm/t) | | | Vc (m/min) | | |
|-----|-----------------------------------|-------------|-------------|-------------|------------|-----|------|
| | | ae | | | ae | | |
| | | 25% | 50% | 100% | 25% | 50% | 100% |
| M | SS - Ferritic / Martensitic | 0,007 x ØDc | 0,004 x ØDc | 0,003 x ØDc | 160 | 150 | 120 |
| | SS - Austenitic | 0,006 x ØDc | 0,004 x ØDc | 0,003 x ØDc | 140 | 130 | 100 |
| | SS - Austenitic-ferritic (Duplex) | 0,006 x ØDc | 0,003 x ØDc | 0,003 x ØDc | 130 | 120 | 100 |

Note¹: Feed valid for when the endmill works with its whole ap, for when the endmill is working with lower depths of cut consider increasing the feed up to 25%.

Note²: Cutting speeds selected for an economic use of the tool, for higher productivity consider increasing up to 70%.

HRO40SS Rougher stainless steel specialized endmills



Short



4



Variable Helix
39°/41°



Reduced
Neck Ø



Rougher

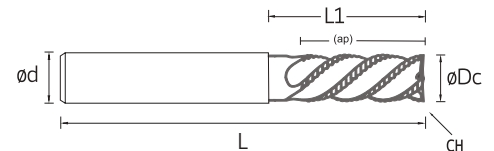


45°
Corner chamfer

M



< 38 HRC



| ⁽¹⁾ Order code | | Reference Referência Referencia | | PHU920 | Dimensions Dimensões Dimensiones (mm) | | | | | |
|---------------------------|-------------|---------------------------------------|---|--------|---|---------|-------------------|------------|----|-----|
| HA (Cylindrical) | HB (Weldon) | | | | ØDc | Ød (h6) | ap _{max} | CH | L1 | L |
| 1180445Z9 | 1180392Z9 | HRO40SS 4 040 11 | 4 | | 4 | 6 | 11 | 0,15 x 45° | 17 | 57 |
| 1180446Z9 | 1180393Z9 | HRO40SS 4 050 13 | 4 | | 5 | 6 | 13 | 0,15 x 45° | 19 | 57 |
| 1180447Z9 | 1180394Z9 | HRO40SS 4 060 13 | 4 | | 6 | 6 | 13 | 0,15 x 45° | 21 | 57 |
| 1180448Z9 | 1180395Z9 | HRO40SS 4 080 19 | 4 | | 8 | 8 | 19 | 0,15 x 45° | 27 | 63 |
| 1180391Z9 | 1180396Z9 | HRO40SS 4 100 22 | 4 | | 10 | 10 | 22 | 0,20 x 45° | 32 | 72 |
| 1180449Z9 | 1180397Z9 | HRO40SS 4 120 26 | 4 | | 12 | 12 | 26 | 0,20 x 45° | 38 | 83 |
| 1180450Z9 | 1180398Z9 | HRO40SS 4 140 26 | 4 | | 14 | 14 | 26 | 0,25 x 45° | 38 | 83 |
| 1180451Z9 | 1180399Z9 | HRO40SS 4 160 32 | 4 | | 16 | 16 | 32 | 0,35 x 45° | 44 | 92 |
| 1180452Z9 | 1180400Z9 | HRO40SS 4 180 32 | 4 | | 18 | 18 | 32 | 0,45 x 45° | 44 | 92 |
| 1180453Z9 | 1180454Z9 | HRO40SS 4 200 38 | 4 | | 20 | 20 | 38 | 0,60 x 45° | 54 | 104 |

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta
Disponível bajo consulta

Order code = (1) Geometry Code + (2) Grade Code

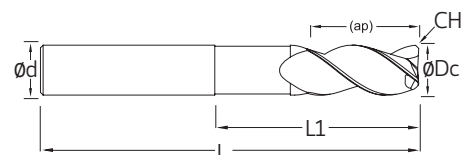
CUTTING PARAMETERS || Parâmetros de corte | Parámetros de corte

| ISO | Material | Fz | | | Vc | | |
|-----|-----------------------------------|-------------|-------------|-------------|-----|-----|------|
| | | ae | | | ae | | |
| | | 25% | 50% | 100% | 25% | 50% | 100% |
| M | SS - Ferritic / Martensitic | 0,006 x ØDc | 0,005 x ØDc | 0,004 x ØDc | 140 | 130 | 110 |
| | SS - Austenitic | 0,006 x ØDc | 0,005 x ØDc | 0,003 x ØDc | 130 | 120 | 110 |
| | SS - Austenitic-ferritic (Duplex) | 0,005 x ØDc | 0,004 x ØDc | 0,003 x ØDc | 120 | 110 | 100 |

Note¹: Feed valid for when the endmill works with its whole ap, for when the endmill is working with lower depths of cut consider increasing the feed up to 25%.

Note²: Cutting speeds selected for an economic use of the tool, for higher productivity consider increasing up to 70%.

HC38AS 3 Corner chamfer aluminium specialized endmills



| ⁽¹⁾ Order code | | Reference Referência Referencia | | PH0920 | Dimensions Dimensões Dimensiones (mm) | | | | | |
|---------------------------|-------------|---------------------------------------|---|--------|---|---------|-------------------|------------|----|-----|
| HA (Cylindrical) | HB (Weldon) | | | | ØDc | Ød (h6) | ap _{max} | CH | L1 | L |
| 1180401T2 | 1180410T2 | HC38AS 3 030 07 | 3 | | 3 | 6 | 7 | 0,15 x 45° | 15 | 57 |
| 1180402T2 | 1180411T2 | HC38AS 3 040 08 | 3 | | 4 | 6 | 8 | 0,15 x 45° | 17 | 57 |
| 1180403T2 | 1180412T2 | HC38AS 3 050 10 | 3 | | 5 | 6 | 10 | 0,15 x 45° | 19 | 57 |
| 1180404T2 | 1180413T2 | HC38AS 3 060 10 | 3 | | 6 | 6 | 10 | 0,15 x 45° | 21 | 57 |
| 1180405T2 | 1180414T2 | HC38AS 3 080 16 | 3 | | 8 | 8 | 16 | 0,15 x 45° | 27 | 63 |
| 1180406T2 | 1180415T2 | HC38AS 3 100 19 | 3 | | 10 | 10 | 19 | 0,20 x 45° | 32 | 72 |
| 1180407T2 | 1180416T2 | HC38AS 3 120 22 | 3 | | 12 | 12 | 22 | 0,20 x 45° | 38 | 83 |
| 1180408T2 | 1180417T2 | HC38AS 3 160 26 | 3 | | 16 | 16 | 26 | 0,35 x 45° | 44 | 92 |
| 1180409T2 | 1180418T2 | HC38AS 3 200 32 | 3 | | 20 | 20 | 32 | 0,60 x 45° | 54 | 104 |

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta
Disponível bajo consulta

Order code = (1) Geometry Code + (2) Grade Code

Note: For HB (Weldon) endmills, the reference ends with "-W"
Example: "HC38AS 3 030 07-W PH0920"

CUTTING CONDITIONS | Condições de corte | Condiciones de corte

| ISO | Material | f _z (mm/t) | | | V _c (m/min) | | |
|-----|-------------------|-----------------------|----------------------|-----------------------|------------------------|----------------------|-----------------------|
| | | a _e = 25% | a _e = 50% | a _e = 100% | a _e = 25% | a _e = 50% | a _e = 100% |
| N | Alluminium <6%Si | 0,011 x ØDc | 0,009 x ØDc | 0,006 x ØDc | 230 | 220 | 190 |
| | Alluminium <12%Si | 0,009 x ØDc | 0,008 x ØDc | 0,005 x ØDc | 210 | 200 | 180 |
| | Alluminium >12%Si | 0,008 x ØDc | 0,007 x ØDc | 0,005 x ØDc | 200 | 190 | 170 |

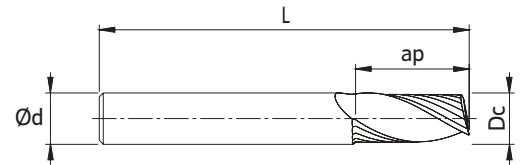
Note¹: Recommended feed values for maximum a_p. For reduced a_p, consider increasing f_z up to 25%.

Note²: Cutting speeds selected for an economic use of the tool, for higher productivity consider increasing up to 70%.

HF30AS Single edge aluminium endmills



N



| (1) Order code | Reference Referência Referencia | | PH0920 | | | | |
|----------------|---------------------------------------|---|--------|-----|---------|-------------------|----|
| | | | | ØDc | Ød (h6) | ap _{max} | L |
| 118075112 | HF30AS 1 020 05 | 1 | | 2 | 6 | 5 | 57 |
| 118075212 | HF30AS 1 030 08 | 1 | | 3 | 6 | 8 | 57 |
| 118075312 | HF30AS 1 040 11 | 1 | | 4 | 6 | 11 | 57 |
| 118075412 | HF30AS 1 050 13 | 1 | | 5 | 6 | 13 | 57 |
| 118075512 | HF30AS 1 060 13 | 1 | | 6 | 6 | 13 | 57 |
| 118075612 | HF30AS 1 080 19 | 1 | | 8 | 8 | 19 | 63 |
| 118075712 | HF30AS 1 100 25 | 1 | | 10 | 10 | 22 | 72 |
| 118075812 | HF30AS 1 120 26 | 1 | | 12 | 12 | 26 | 83 |

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta
Disponível bajo consulta

Order code = (1) Geometry Code + (2) Grade Code

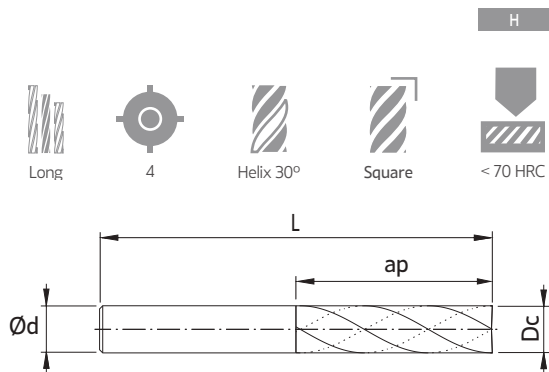
CUTTING CONDITIONS | Condições de corte | Condiciones de corte

| ISO | Material | f _z (mm/t) | | | V _c (m/min) | | |
|-----|-------------------|-----------------------|----------------------|-----------------------|------------------------|----------------------|-----------------------|
| | | a _e = 25% | a _e = 50% | a _e = 100% | a _e = 25% | a _e = 50% | a _e = 100% |
| N | Alluminium <6%Si | 0,011 x ØDc | 0,009 x ØDc | 0,006 x ØDc | 230 | 220 | 190 |
| | Alluminium <12%Si | 0,009 x ØDc | 0,008 x ØDc | 0,005 x ØDc | 210 | 200 | 180 |
| | Alluminium >12%Si | 0,008 x ØDc | 0,007 x ØDc | 0,005 x ØDc | 200 | 190 | 170 |

Note¹: Recommended feed values for maximum ap. For reduced ap, consider increasing f_z up to 25%.

Note²: Cutting speeds selected for an economic use of the tool, for higher productivity consider increasing up to 70%.

HF30HL Flat top endmill for hard materials



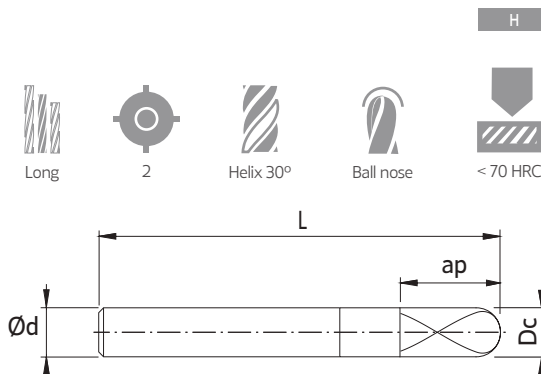
| (1) Order code | Reference Referência Referencia | | PHH603 | | | | |
|----------------|---------------------------------------|---|--------|-------------------|----------------------|-----------|-----|
| | | | | $\varnothing D_c$ | $\varnothing d$ (h6) | a_p max | L |
| 1180112X4 | HF30HL 4 040 20 | 4 | | 4 | 6 | 20 | 75 |
| 1180358X4 | HF30HL 4 050 20 | 4 | | 5 | 6 | 20 | 75 |
| 1180196X4 | HF30HL 4 060 30 | 4 | | 6 | 6 | 30 | 75 |
| 1180113X4 | HF30HL 4 080 35 | 4 | | 8 | 8 | 35 | 100 |
| 1180359X4 | HF30HL 4 100 40 | 4 | | 10 | 10 | 40 | 100 |
| 1180111X4 | HF30HL 4 120 50 | 4 | | 12 | 12 | 50 | 100 |

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta
Disponível bajo consulta

Order code = (1) Geometry Code + (2) Grade Code

HB30HL Ball nose endmill for hard materials



| (1) Order code | Reference Referência Referencia | | PHH603 | | | | |
|----------------|---------------------------------------|---|--------|-------------------|----------------------|--------------|-----|
| | | | | $\varnothing d_c$ | $\varnothing d$ (h6) | $a_{p \max}$ | L |
| 1180356X4 | HB30HL 2 020 04 | 2 | | 2 | 6 | 4 | 75 |
| 1180357X4 | HB30HL 2 030 06 | 2 | | 3 | 6 | 6 | 75 |
| 1180093X4 | HB30HL 2 040 08 | 2 | | 4 | 6 | 8 | 75 |
| 1180109X4 | HB30HL 2 050 10 | 2 | | 5 | 6 | 10 | 75 |
| 1180130X4 | HB30HL 2 060 12 | 2 | | 6 | 6 | 12 | 75 |
| 1180131X4 | HB30HL 2 080 16 | 2 | | 8 | 8 | 16 | 75 |
| 1180132X4 | HB30HL 2 100 20 | 2 | | 10 | 10 | 20 | 100 |
| 1180141X4 | HB30HL 2 120 24 | 2 | | 12 | 12 | 24 | 100 |

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta
Disponível bajo consulta

Order code = (1) Geometry Code + (2) Grade Code

CUTTING PARAMETERS || Parâmetros de corte | Parámetros de corte

| ISO | Material | Vc | | fz | |
|-----|-----------------|-----|-----|---------------------------|---------------------------|
| | | 10% | 30% | 10% | 30% |
| H | Hardened Steels | 120 | 110 | 0,006 x $\varnothing d_c$ | 0,005 x $\varnothing d_c$ |

INTEG GRADES

COATINGS

PHP

- Unmatched coating adhesion;
- Smoothest surface;
- Suitable for dry and wet machining;
- Color: Black;



Product of the latest coating technology, the PHP is the number one coating for machining steel and cast iron. Because of its smoothness at medium temperatures, the chips are able to flow effortlessly, maintaining the flutes clean and a long tool life even in dry conditions.

PHH

- Highest thermal stability;
- Smooth surface;
- High performance in dry machining;
- Color: Light brown;

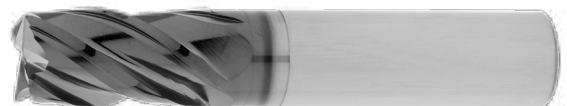


A prime coating for prime endmills, the PHH is the recommended coating for Hardened steels, as well as stainless steels and HRSA.

Because of its high performance at high temperatures the coating successfully protect the cutting edges allowing the tool to work for long periods of time.

PHU

- High thermal shock resistance;
- Carefully engineered surface quality;
- Suitable for dry and wet machining;
- Color: Grey;



Combining both excellent thermal resistance and excellent surface quality, the PHU coating is recommended for stainless steels, while also being suitable for steels and cast iron.

Because of its surface quality and thermal resistance it is able to prevent built-up-edge in both low-alloy steels and stainless steels, making it a very versatile coating.

SUBSTRATE

PH...920

- Universal substrate with great balance between toughness and wear resistance;
- Outstanding heat dissipation properties;
- Recommended for semi-finishing to roughing on most materials;

PH...603

- Harder grade with extreme wear resistance;
- Excellent thermal stability;
- Recommended for finishing applications and Hardened steels;

SOLID CARBIDE TROUBLESHOOTING

| |
|------------------|
| A |
| MILLING |
| Overview |
| Face milling |
| Hi-feed milling |
| Shoulder milling |
| Profile milling |
| Hardmill |
| Center & Chamfer |
| Spot face |
| Spare Parts |
| Technical Data |
| End Mills |

| Trouble Problema | Cause Causa Fuente | Possible Solution Solução Solución |
|--|---|---|
| Breaking of tool Quebra da ferramenta Ruptura de la herramienta | <ul style="list-style-type: none"> At time of engaging with work material No início da maquinação Al principio del mecanizado | <ul style="list-style-type: none"> 1. Decrease feed rate. 2. Decrease projection amount. 3. Shorten cutting edge length to required minimum limit. |
| | <ul style="list-style-type: none"> When ending cut No final da maquinação Al final del mecanizado | <ul style="list-style-type: none"> 1. Diminuir a taxa de avanço. 2. Diminuir quantidade de projeção. 3. Encurtar comprimento da aresta de corte para limite mínimo exigido. |
| | <ul style="list-style-type: none"> During normal cutting Durante o corte normal Durante el corte normal | <ul style="list-style-type: none"> 1. Diminuir a taxa de avanço. 2. Control wear - replace tool early. 3. Replace chuck or collet. 4. Decrease projection amount. 5. Carry out honing. 6. If 4 flute, reduce to 2 flute (clogging of chipping). 7. If dry cutting change to wet cutting utilize cutting fluid. In case of wet cutting flow oil supplied from the front, change to from rear angle of side top. Use ample with rate. |
| | <ul style="list-style-type: none"> When changing direction of feed Ao mudar do direcção do avanço Al cambiar la dirección de avance | <ul style="list-style-type: none"> 1. Utilize circular interpolation (in case of NC machine) or temporarily stop feed (Dowelling). 2. Reduce feed rate before and after change of directions. 3. Replace chuck or collect. |
| Fracture of cutting edge Fratura da aresta de corte Fractura de la arista de corte | <ul style="list-style-type: none"> Fracture of corners Fratura dos cantos Fratura dos cantos | <ul style="list-style-type: none"> 1. Carry out chamfering or nose with hand lapper. 2. Down cut - Up cut. |
| | <ul style="list-style-type: none"> Fracture at boundary of depth of cut Fratura no limite de profundidade de corte Fractura en el límite de profundidad de corte | <ul style="list-style-type: none"> 1. Criar chanfro. 2. Corte inferior - Corte Superior. |
| | <ul style="list-style-type: none"> Chipping at center part or overall Esmilhar na parte central ou global Astillado en parte central o general | <ul style="list-style-type: none"> 1. Criar chanfro. 2. Corte inferior - Corte Superior. |
| | <ul style="list-style-type: none"> Large fracturing of cutting edge Grande fratura da aresta de corte Gran fractura de la arista de corte | <ul style="list-style-type: none"> 1. Down cut - Up cut. 2. Reduce cutting speed. |
| Fracture of cutting edge Fratura da aresta de corte Fractura de la arista de corte | <ul style="list-style-type: none"> Fracture of corners Fratura dos cantos Fratura dos cantos | <ul style="list-style-type: none"> 1. Criar chanfro. 2. Corte inferior - Corte Superior. |
| | <ul style="list-style-type: none"> Fracture at boundary of depth of cut Fratura no limite de profundidade de corte Fractura en el límite de profundidad de corte | <ul style="list-style-type: none"> 1. Corte inferior - Corte Superior. 2. Reduzir velocidade de corte. |
| | <ul style="list-style-type: none"> Chipping at center part or overall Esmilhar na parte central ou global Astillado en parte central o general | <ul style="list-style-type: none"> 1. Corte inferior - Corte Superior. 2. Reduzir la velocidad de corte. |
| | <ul style="list-style-type: none"> Large fracturing of cutting edge Grande fratura da aresta de corte Gran fractura de la arista de corte | <ul style="list-style-type: none"> 1. Carry out honing or enlarge. 2. Change number of rotation (in case machine vibrates). 3. Increase cutting speed. 4. In case of squeaking noise during cutting, increase feed. 5. If dry cutting use cutting fluid or blow air. 6. Replace chuck or collet. 7. Reduce cutting speed. |
| Fracture of cutting edge Fratura da aresta de corte Fractura de la arista de corte | <ul style="list-style-type: none"> Fracture of corners Fratura dos cantos Fratura dos cantos | <ul style="list-style-type: none"> 1. Criar ou aumentar boleamento. 2. Alterar rotação (no caso da maquina vibrar). 3. Aumentar velocidade de corte. 4. No caso de barulho de esmagamento durante o corte, aumentar avanço. 5. Se estiver a maquina a seco, utilizar fluido de corte ou ar comprimido. 6. Substitua mandril ou porta-pinça. 7. Reduzir velocidade de corte. |
| | <ul style="list-style-type: none"> Fracture at boundary of depth of cut Fratura no limite de profundidade de corte Fractura en el límite de profundidad de corte | <ul style="list-style-type: none"> 1. Criar o aumentar redondeo. 2. Cambie la rotación (en el caso de la máquina vibrar). 3. Aumento de la velocidad de corte. 4. En el caso de ruido de trituración durante el corte, aumentar avance. 5. Si mecanizado en seco, utilizar un fluido de corte o aire comprimido. 6. Reemplace plato o el portaherramienta. 7. Reduzir la velocidad de corte. |
| | <ul style="list-style-type: none"> Chipping at center part or overall Esmilhar na parte central ou global Astillado en parte central o general | <ul style="list-style-type: none"> 1. Criar o aumentar redondeo. 2. Cambie la rotación (en el caso de la máquina vibrar). 3. Aumento de la velocidad de corte. 4. En el caso de ruido de trituración durante el corte, aumentar avance. 5. Si mecanizado en seco, utilizar un fluido de corte o aire comprimido. 6. Reemplace plato o el portaherramienta. 7. Reduzir la velocidad de corte. |
| | <ul style="list-style-type: none"> Large fracturing of cutting edge Grande fratura da aresta de corte Gran fractura de la arista de corte | <ul style="list-style-type: none"> 1. Decrease feed rate. 2. If 4 flute reduce to 2 flute. 3. Carry out honing or enlarge. 4. Replace chuck or collet. 5. Reduce cutting speed. 6. If dry cutting, change to wet cutting. In case oil supply in wet cutting is from the front, change to rear at an angle or from side top. Use ample supply. |
| Fracture of cutting edge Fratura da aresta de corte Fractura de la arista de corte | <ul style="list-style-type: none"> Fracture of corners Fratura dos cantos Fratura dos cantos | <ul style="list-style-type: none"> 1. Diminuir a taxa de avanço. 2. Se tiver 4 navalhas, reduzir para 2 (obstrução da apara). 3. Criar ou aumentar boleamento. 4. Substitua mandril ou porta-pinça. 5. Reduzir velocidade de corte. 6. Se utilizou corte seco alterar para corte com utilização de fluido. No caso de utilização de fluido frontal, alterar para utilização do fornecimento do fluido pela parte traseira. Use amplo fornecimento de fluido de corte. |
| | <ul style="list-style-type: none"> Fracture at boundary of depth of cut Fratura no limite de profundidade de corte Fractura en el límite de profundidad de corte | <ul style="list-style-type: none"> 1. Diminuir a taxa de avanço. 2. Se tiver 4 navalhas, reduzir para 2 (obstrução da apara). 3. Criar ou aumentar boleamento. 4. Substitua mandril ou porta-pinça. 5. Reduzir velocidade de corte. 6. Se utilizou corte seco alterar para corte com utilização de fluido. No caso de utilização de fluido frontal, alterar para utilização do fornecimento do fluido pela parte traseira. Use amplo fornecimento de fluido de corte. |
| | <ul style="list-style-type: none"> Chipping at center part or overall Esmilhar na parte central ou global Astillado en parte central o general | <ul style="list-style-type: none"> 1. Diminuir a taxa de avanço. 2. Se tiver 4 navalhas, reduzir para 2 (obstrução da apara). 3. Criar ou aumentar boleamento. 4. Substitua mandril ou porta-pinça. 5. Reduzir velocidade de corte. 6. Se utilizou corte seco alterar para corte com utilização de fluido. No caso de utilização de fluido frontal, alterar para utilização do fornecimento do fluido pela parte traseira. Use amplo fornecimento de fluido de corte. |
| | <ul style="list-style-type: none"> Large fracturing of cutting edge Grande fratura da aresta de corte Gran fractura de la arista de corte | <ul style="list-style-type: none"> 1. Disminuir la velocidad de avance. 2. Si 4 hélices, reducir a 2 hélices (obstrucción de viruta) 3. Crear o aumentar redondeo. 4. Reemplace plato o el portaherramienta. 5. Reduzir la velocidad de corte. 6. Si se utiliza corte en seco cambie para corte con uso del fluido. En caso de el uso de frente de fluido cambie para suministro de fluido desde la parte trasera. Utilice amplio suministro. |

| Trouble Problema | Cause Causa Fuente | Possible Solution Solução Solución |
|---|--|---|
| Rapid tool wear Desgaste prematuro da ferramenta Desgaste prematuro de la herramienta | | <ul style="list-style-type: none"> • 1. Reduce cutting speed. • 2. Up cut - Down cut • 3. Increase feed. • 4. Utilize wet cutting or air. • 5. If reground tool, improve surface roughness of flank. <ul style="list-style-type: none"> • 1. Reducir la velocidad de corte. • 2. Corte Superior - Corte Inferior. • 3. Aumentar avanço. • 4. Utilize fluido de corte ou ar comprimido. • 5. Se utilizar uma ferramenta afiada, melhora a rugosidade da superfície ou flanco. <ul style="list-style-type: none"> • 1. Reducir la velocidad de corte. • 2. Corte Superior - Corte Inferior. • 3. Aumento del avance. • 4. Utilice corte en mojado o el aire comprimido. • 5. Se utiliza una herramienta afilada, mejora la rugosidad de la superficie o arista. |
| Inferior finished surface Fraco acabamento da superfície Acabado superficial deficiente | <ul style="list-style-type: none"> • Surface is good but rough • Superfície boa mas irregular • Buena superficie, pero irregular | <ul style="list-style-type: none"> • 1. Decrease feed. • 2. In case using 2 flute, increase to 4 flute. <ul style="list-style-type: none"> • 1. Diminuir avanço. • 2. No caso de usar 2 hélices, aumentar para 4. <ul style="list-style-type: none"> • 1. Reducir avance. • 2. En caso de utilizar 2 fillos de corte, aumentar para 4. |
| | <ul style="list-style-type: none"> • Small chip welding • Soldadura de pequenas aparas • Soldadura de pequenas virutas | <ul style="list-style-type: none"> • 1. Increase cutting speed. • 2. Utilize wet cutting air blow (ample supply). • 3. Carry out fine honing. • 4. Up cut - Down cut. • 5. Increase feed or enlarge finish allowance. <ul style="list-style-type: none"> • 1. Aumente velocidade de corte. • 2. Utilize fluido de corte e ar comprimido. • 3. Aumentar boleamento. • 4. Corte Superior - Corte Inferior. • 5. Aumento o avanço ou alargue as tolerâncias no acabamento. <ul style="list-style-type: none"> • 1. Aumento de la velocidad de corte. • 2. Utilice fluidos de corte y aire comprimido. • 3. Aumentar redondeo. • 4. Corte Superior - Corte Inferior. • 5. Aumente el avance o ampliación de las tolerancias en el acabado. |
| | <ul style="list-style-type: none"> • With transverse streaks • Com as raías transversais • Con rayas transversales | <ul style="list-style-type: none"> • 1. Carry out fine honing. • 2. Use water insoluble cutting fluid. • 3. Down cut - Up cut. <ul style="list-style-type: none"> • 1. Aumentar boleamento. • 2. Utilize fluidos de corte. • 3. Corte Inferior - Corte Superior. <ul style="list-style-type: none"> • 1. Aumentar redondeo. • 2. Utilice fluidos de corte. • 3. Corte Inferior - Corte Superior. |
| | <ul style="list-style-type: none"> • Signs of excessive cutting • Sinais de corte excessivo • Señales de corte excesivo | <ul style="list-style-type: none"> • 1. Reduce finishing depth of cut. • 2. Increase cutting speed. • 3. Reduce feed. <ul style="list-style-type: none"> • 1. Reduzir profundidade de corte no acabamento. • 2. Aumente velocidade de corte. • 3. Diminuir avanço. <ul style="list-style-type: none"> • 1. Reducir la profundidad de corte en el acabado. • 2. Aumento de la velocidad de corte. • 3. Reducir avance. |
| Poor machining accuracy Fraca precisão na maquinação Pobre precisión en el mecanizado | <ul style="list-style-type: none"> • Finish dimensions are on minus side • Dimensões do acabamento estão inferiores ao previsto • Las dimensiones del acabado están terminando abajo de lo esperado | <ul style="list-style-type: none"> • 1. Up cut - Down cut. • 2. Reduce finishing depth of cut. • 3. Replace chuck or collet. • 4. Reduce projection amount. • 5. Increase cutting speed. <ul style="list-style-type: none"> • 1. Corte Superior - Corte Inferior. • 2. Reduzir profundidade de corte no acabamento. • 3. Substitua mandril ou porta-piça. • 4. Diminuir quantidade de projeção. • 5. Aumentar velocidade de corte. <ul style="list-style-type: none"> • 1. Corte Superior - Corte Inferior. • 2. Reducir la profundidad de corte en el acabado. • 3. Reemplace plato o el portaherramienta. • 4. Disminuir la cantidad de proyección. • 5. Aumento de la velocidad de corte. |
| | <ul style="list-style-type: none"> • Poor perpendicularity • Fraca perpendicularidade • Fraca perpendicularidade | <ul style="list-style-type: none"> • 1. Reduce finishing depth of cut. • 2. Replace chuck or collet. • 3. Reduce projection amount. • 4. Increase cutting speed. • 5. 2 Flute - 4 Flute. • 6. Reduce feed. • 7. Check wear rate - Replace tool. <ul style="list-style-type: none"> • 1. Reduzir profundidade de corte no acabamento. • 2. Substitua mandril ou porta-piça. • 3. Diminuir quantidade de projeção. • 4. Aumentar velocidade de corte. • 5. 2 hélices - 4 hélices. • 6. Diminuir avanço. • 7. Verifique o desgaste - Substitua a ferramenta. <ul style="list-style-type: none"> • 1. Reducir la profundidad de corte en el acabado. • 2. Reemplace plato o el portaherramienta. • 3. Disminuir la cantidad de proyección. • 4. Aumento de la velocidad de corte. • 5. 2 hélices - 4 hélices. • 6. Reducir avance. • 7. Revise el desgaste Reemplace la herramienta. |
| | | <ul style="list-style-type: none"> • 1. Increase feed rate (in case over 0.05 mm/Zahn, try reducing). • 2. Change cutting speed. • 3. Replace chuck or collet. • 4. Reduce projection amount. • 5. Use 2 flute cutter for rough cutting and 4 flute for finishing. • 6. Down cut - Up cut. <ul style="list-style-type: none"> • 1. Aumente o avanço (no caso de mais de 0,05 mm / Zahn, tente reduzir). • 2. Alterar velocidade de corte. • 3. Substitua mandril ou porta-piça. • 4. Diminuir quantidade de projeção. • 5. Usar 2 hélices para desbaste e 4 para acabamento. • 6. Corte Inferior - Corte Superior. <ul style="list-style-type: none"> • 1. Aumento del avance (en caso de más de 0,05 mm / Zahn, intente reducir). • 2. Cambie de la velocidad de corte. • 3. Reemplace plato o el portaherramienta. • 4. Disminuir la cantidad de proyección. • 5. Utilice 2 fillos de corte para desbaste y 4 para acabado. • 6. Corte Inferior - Corte Superior. |

A

MILLING

Overview

Face milling

High feed milling

Shoulder milling

Profile milling

Hardmill

Center & Chamfer

Spot face

Spare Parts

Technical Data

End Mills



B - DRILLING

B - 298 | Drills code key

B - 300 | Nomenclature

B - 301 | Overview

B



DRILLING



B - 302 | JET DRILLS

B - 312 | INTEGREGX DRILLS

B - 321 | TREPANNING DRILLS

B - 322 | SOLID CARBIDE DRILLS

B - 332 | Inserts code key

B - 334 | Inserts

B - 336 | Spare Parts

B - 346 | Technical Data

DRILLS CODE KEY

DRILLING

T D S

Drill group

2 1 5

Drilling diameter: $\varnothing 21,5$

2 5 - 3 D

Shank diameter: $\varnothing 25$

Drilling depth: Dia x 3

DRILLING

Jet Drills

T D C

Drill group

7 5 8 0

Drilling diameter: $\varnothing 70$ until $\varnothing 80$

4 0 - 3 D

Shank diameter: $\varnothing 40$

Drilling depth: Dia x 3

Integrex Drills

S C S

Drill group

2 5 5

Drilling diameter: $\varnothing 55$

3 2 - 3 D

Shank diameter: $\varnothing 32$

Drilling depth: Dia x 3

Vortex Drills

S C C

Drill group

6 0 6 5

Drilling diameter: $\varnothing 60$ until $\varnothing 65$

4 0 - 4 D

Shank diameter: $\varnothing 40$

Drilling depth: Dia x 4

Trepanning Drills

D H S

Drill group

0 0 4 0

Drilling diameter: $\varnothing 40$

3 2 - 5 D

Shank diameter: $\varnothing 32$

Drilling depth: Dia x 5

Solid Carbide Drills

D H C

Drill group

7 0 7 5

Drilling diameter: $\varnothing 70$ until $\varnothing 75$

4 0 - 8 D

Shank diameter: $\varnothing 40$

Drilling depth: Dia x 8

Inserts

Spare Parts

T F D

Drill group

2 9 0

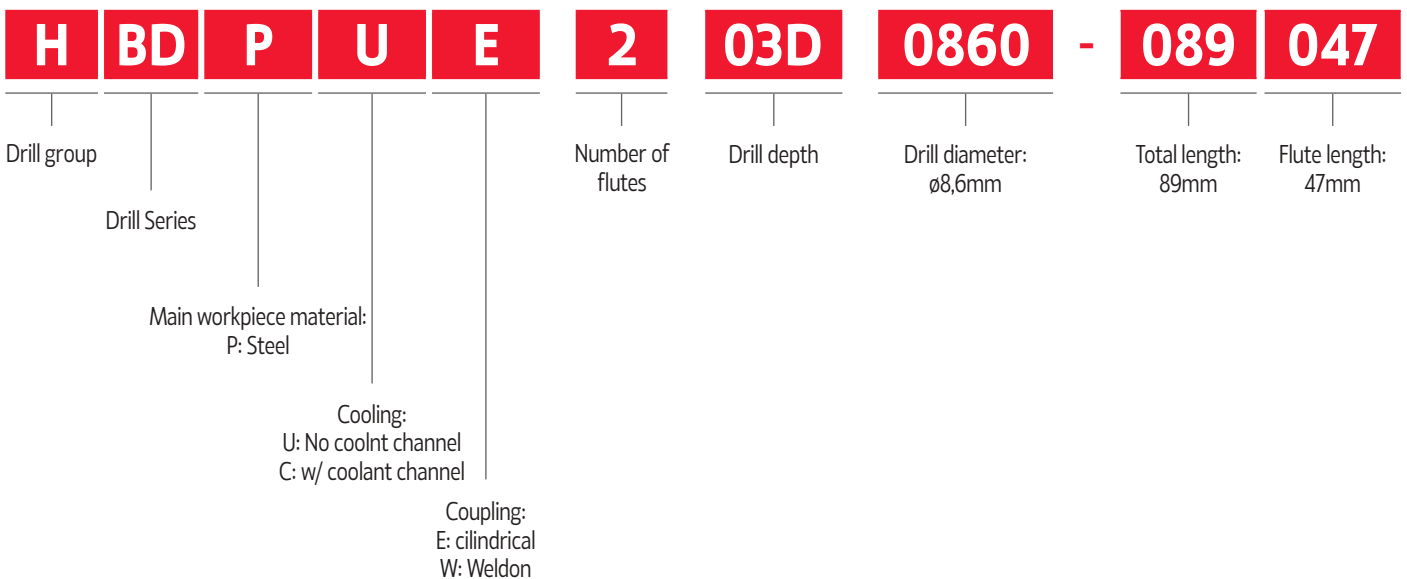
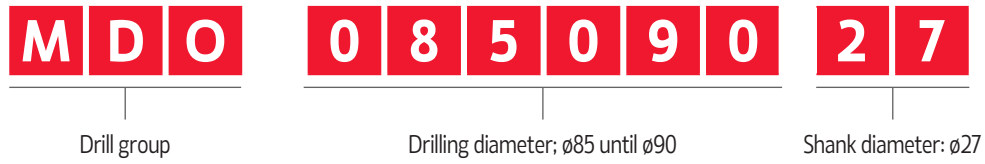
Drilling diameter: $\varnothing 29,0$

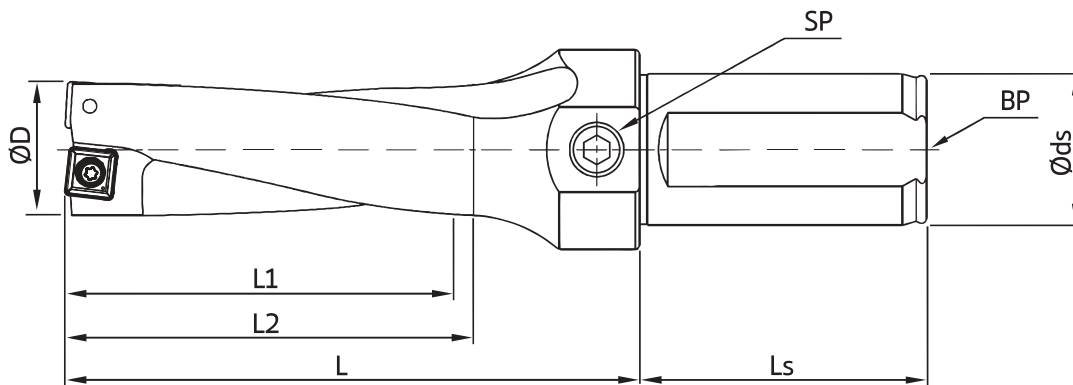
3 2 - 8 D

Shank diameter: $\varnothing 32$

Drilling depth: Dia x 8

Technical Data





ØD - Drill diameter

L - Length

L1 - Cut length

SP - Side plug

Øds - Shank diameter

Ls - Shank Length

L2 - Safety cut length

BP - Back plug

COOLANT SUPPLY | Furos de refrigeração | Agujeros de refrigeración

New version / Standard version*

| Type | BP | SP |
|------|-------|-------|
| TDS | ✓ / ✓ | ✗ / ✓ |
| TDC | ✓ / ✓ | ✓ / ✓ |
| SCS | ✓ / ✓ | ✗ / ✓ |
| SCC | ✓ / ✓ | ✓ / ✓ |
| DHS | ✓ / ✓ | ✗ / ✓ |
| DHC | ✓ / ✓ | ✗ / ✓ |
| TFD | ✓ / ✓ | ✓ / ✓ |
| MDO | ✓ / ✓ | ✓ / ✓ |
| PND | ✓ / ✓ | ✓ / ✓ |

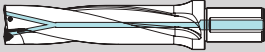
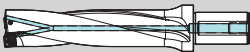
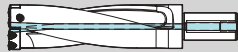

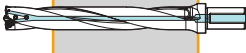


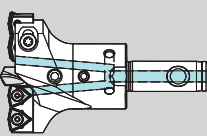
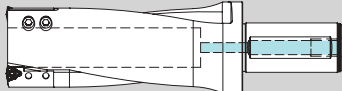


BP - Back Plug

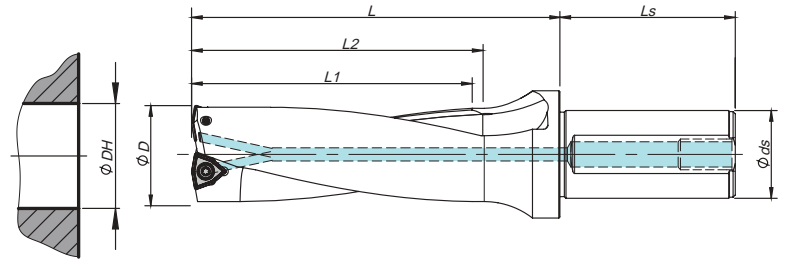
SP - Side Plug

✓ - Available

✗ - Not Available

* The new Drill version will replace the standard version when this type will be sold out.

| | | Diameter (mm) | | | | | | | | | |
|----------------------|--|---|----|---|----|--|--|---|----|-----|---------|
| | | 03 | 12 | 20 | 32 | 50 | 60 | 70 | 80 | 110 | ... 180 |
| Jet Drills | | | |  <p>TDS 3D Drill L1 max = 174mm</p> | | | | | | | |
| | | | |  <p>SCS Drill (3D-4D) L1 max = 200mm</p> | | | |  <p>TDC 3D Drill L1 max = 240mm</p> | | | |
| | | | | | |  <p>SCC Drill (3D-4D) L1 max = 320mm</p> | | | | | |
| | | | | | | | | | | | |
| Integrex Drills | | | |  <p>DHS Drill (6D-8D) L1 max = 300mm</p> | | | | | | | |
| | | | | | |  <p>DHC Drill (5D-8D) L1 max = 640mm</p> | | | | | |
| | | | |  <p>TFD Drill (6D-8D) L1 max = 240mm</p> | | | | | | | |
| Vortex Drills | | | | | | |  <p>Vortex Drill L1 max = 900mm</p> | | | | |
| Trepanning Drills | | | | | | |  <p>PND Drill L1 max = 250mm</p> | | | | |
| Solid Carbide Drills | |  <p>HBDP ... SC Drill (3D-5D) L1 max = 101mm</p> | | | | | | | | | |
| | |  <p>HBDP ... SC Drill (8D) L1 max = 162mm</p> | | | | | | | | | |











































| Øds | Ls | BP / SP | ØDH tolerance (mm) | |
|-----|----|---------|--------------------|---------------|
| | | | ØD | 3D |
| 20 | 50 | PT-1/8 | 13,0 - 21,5 | -0,10 / +0,15 |
| 25 | 56 | PT-1/8 | 22,0 - 50,0 | -0,12 / +0,20 |
| 32 | 60 | PT-1/4 | 50,0 - 58,0 | -0,15 / +0,25 |
| 40 | 70 | PT-1/4 | | |


| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | | Insert | Insert Screw | Torx key | Stock |
|----------------------|---------------------------------------|---|------|----|----|-----|-------------|--------------|----------|-------|
| | | ØD | Ø ds | L1 | L2 | L | | | | |
| 184034600 | TDS 13020-3D | 13,0 | 20 | 39 | 42 | 62 | WCKX 02T104 | P0180500 | XT06 | ☺ |
| 184034700 | TDS 13520-3D | 13,5 | 20 | 41 | 44 | 64 | WCKX 02T104 | P0180500 | XT06 | ☺ |
| 184034800 | TDS 14020-3D | 14,0 | 20 | 42 | 45 | 65 | WCKX 02T104 | P0180500 | XT06 | ☺ |
| 184034900 | TDS 14520-3D | 14,5 | 20 | 44 | 47 | 67 | WCKX 02T104 | P0180500 | XT06 | ☺ |
| 184035000 | TDS 15020-3D | 15,0 | 20 | 45 | 48 | 68 | WCKX 02T104 | P0180500 | XT06 | ☺ |
| 184035100 | TDS 15520-3D | 15,5 | 20 | 47 | 50 | 70 | WCKX 02T104 | P0180500 | XT06 | ☺ |
| 184035200 | TDS 16025-3D | 16,0 | 25 | 48 | 51 | 76 | WCKX 030204 | P0220500 | XT07 | ☺ |
| 184035300 | TDS 16525-3D | 16,5 | 25 | 50 | 53 | 78 | WCKX 030204 | P0220500 | XT07 | ☺ |
| 184035400 | TDS 17025-3D | 17,0 | 25 | 51 | 54 | 79 | WCKX 030204 | P0220500 | XT07 | ☺ |
| 184035500 | TDS 17525-3D | 17,5 | 25 | 53 | 56 | 81 | WCKX 030204 | P0220500 | XT07 | ☺ |
| 184035600 | TDS 18025-3D | 18,0 | 25 | 54 | 57 | 82 | WCKX 030204 | P0220500 | XT07 | ☺ |
| 184035700 | TDS 18525-3D | 18,5 | 25 | 56 | 59 | 84 | WCKX 030204 | P0220500 | XT07 | ☺ |
| 184035800 | TDS 19025-3D | 19,0 | 25 | 57 | 60 | 85 | WCKX 030204 | P0220500 | XT07 | ☺ |
| 184035900 | TDS 19525-3D | 19,5 | 25 | 59 | 62 | 87 | WCKX 030204 | P0220500 | XT07 | ☺ |
| 184036000 | TDS 20025-3D | 20,0 | 25 | 60 | 63 | 88 | WCKX 030204 | P0220500 | XT07 | ☺ |
| 184036100 | TDS 20525-3D | 20,5 | 25 | 62 | 65 | 90 | WCKX 040204 | P0250503 | XT08 | ☺ |
| 184036200 | TDS 21025-3D | 21,0 | 25 | 63 | 66 | 91 | WCKX 040204 | P0250503 | XT08 | ☺ |
| 184036300 | TDS 21525-3D | 21,5 | 25 | 65 | 68 | 93 | WCKX 040204 | P0250503 | XT08 | ☺ |
| 184036400 | TDS 22025-3D | 22,0 | 25 | 66 | 69 | 94 | WCKX 040204 | P0250503 | XT08 | ☺ |
| 184036500 | TDS 22525-3D | 22,5 | 25 | 68 | 71 | 96 | WCKX 040204 | P0250503 | XT08 | ☺ |
| 184036600 | TDS 23025-3D | 23,0 | 25 | 69 | 72 | 97 | WCKX 040204 | P0250503 | XT08 | ☺ |
| 184036700 | TDS 23525-3D | 23,5 | 25 | 71 | 74 | 99 | WCKX 040204 | P0250503 | XT08 | ☺ |
| 184036800 | TDS 24025-3D | 24,0 | 25 | 72 | 75 | 100 | WCKX 040204 | P0250503 | XT08 | ☺ |
| 184036900 | TDS 24525-3D | 24,5 | 25 | 74 | 77 | 102 | WCKX 040204 | P0250503 | XT08 | ☺ |
| 184037000 | TDS 25025-3D | 25,0 | 25 | 75 | 78 | 103 | WCKX 040204 | P0250503 | XT08 | ☺ |
| 184037100 | TDS 25532-3D | 25,5 | 32 | 77 | 80 | 110 | WCKX 050308 | P0300701 | XT08 | ☺ |
| 184037200 | TDS 26032-3D | 26,0 | 32 | 78 | 81 | 111 | WCKX 050308 | P0300701 | XT08 | ☺ |

☺ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | | Insert | Insert Screw  | Torx key  | Stock  |
|----------------------|---------------------------------------|---|------|-----|-----|-----|-------------|---|---|--|
| | | ØD | Ø ds | L1 | L2 | L | | | | |
| 184037300 | TDS 26532-3D | 26,5 | 32 | 80 | 83 | 113 | WCKX 050308 | P0300701 | XT08 |  |
| 184037400 | TDS 27032-3D | 27,0 | 32 | 81 | 84 | 114 | WCKX 050308 | P0300701 | XT08 |  |
| 184037500 | TDS 27532-3D | 27,5 | 32 | 83 | 86 | 116 | WCKX 050308 | P0300701 | XT08 |  |
| 184037600 | TDS 28032-3D | 28,0 | 32 | 84 | 87 | 117 | WCKX 050308 | P0300701 | XT08 |  |
| 184037700 | TDS 28532-3D | 28,5 | 32 | 86 | 89 | 119 | WCKX 050308 | P0300701 | XT08 |  |
| 184037800 | TDS 29032-3D | 29,0 | 32 | 87 | 90 | 120 | WCKX 050308 | P0300701 | XT08 |  |
| 184037900 | TDS 29532-3D | 29,5 | 32 | 89 | 92 | 122 | WCKX 050308 | P0300701 | XT08 |  |
| 184038000 | TDS 30032-3D | 30,0 | 32 | 90 | 93 | 123 | WCKX 050308 | P0300701 | XT08 |  |
| 184038100 | TDS 31032-3D | 31,0 | 32 | 93 | 96 | 126 | WCKX 06T308 | P0350903 | XT15 |  |
| 184038200 | TDS 32032-3D | 32,0 | 32 | 96 | 99 | 129 | WCKX 06T308 | P0350903 | XT15 |  |
| 184038300 | TDS 33032-3D | 33,0 | 32 | 99 | 102 | 132 | WCKX 06T308 | P0350903 | XT15 |  |
| 184038400 | TDS 34032-3D | 34,0 | 32 | 102 | 105 | 135 | WCKX 06T308 | P0350903 | XT15 |  |
| 184038500 | TDS 35032-3D | 35,0 | 32 | 105 | 108 | 138 | WCKX 06T308 | P0350903 | XT15 |  |
| 184038600 | TDS 36032-3D | 36,0 | 32 | 108 | 111 | 141 | WCKX 06T308 | P0350903 | XT15 |  |
| 184038700 | TDS 37032-3D | 37,0 | 32 | 111 | 114 | 144 | WCKX 06T308 | P0350903 | XT15 |  |
| 184038800 | TDS 38032-3D | 38,0 | 32 | 114 | 117 | 147 | WCKX 06T308 | P0350903 | XT15 |  |
| 184038900 | TDS 39032-3D | 39,0 | 32 | 117 | 120 | 150 | WCKX 06T308 | P0350903 | XT15 |  |
| 184039000 | TDS 40032-3D | 40,0 | 32 | 120 | 123 | 153 | WCKX 06T308 | P0350903 | XT15 |  |
| 184039100 | TDS 41032-3D | 41,0 | 32 | 123 | 126 | 156 | WCKX 06T308 | P0350903 | XT15 |  |
| 184039200 | TDS 42040-3D | 42,0 | 40 | 126 | 129 | 164 | WCKX 080408 | P0401101 | XT15 |  |
| 184039300 | TDS 43040-3D | 43,0 | 40 | 129 | 132 | 167 | WCKX 080408 | P0401101 | XT15 |  |
| 184039400 | TDS 44040-3D | 44,0 | 40 | 132 | 135 | 170 | WCKX 080408 | P0401101 | XT15 |  |
| 184039500 | TDS 45040-3D | 45,0 | 40 | 135 | 138 | 173 | WCKX 080408 | P0401101 | XT15 |  |
| 184039600 | TDS 46040-3D | 46,0 | 40 | 138 | 141 | 176 | WCKX 080408 | P0401101 | XT15 |  |
| 184039700 | TDS 47040-3D | 47,0 | 40 | 141 | 144 | 179 | WCKX 080408 | P0401101 | XT15 |  |
| 184039800 | TDS 48040-3D | 48,0 | 40 | 144 | 147 | 182 | WCKX 080408 | P0401101 | XT15 |  |
| 184039900 | TDS 49040-3D | 49,0 | 40 | 147 | 150 | 185 | WCKX 080408 | P0401101 | XT15 |  |
| 184040000 | TDS 50040-3D | 50,0 | 40 | 150 | 153 | 188 | WCKX 080408 | P0401101 | XT15 |  |
| 184040100 | TDS 51040-3D | 51,0 | 40 | 153 | 156 | 191 | WCKX 080408 | P0401101 | XT15 |  |
| 184040200 | TDS 52040-3D | 52,0 | 40 | 156 | 159 | 194 | WCKX 080408 | P0401101 | XT15 |  |
| 184040300 | TDS 53040-3D | 53,0 | 40 | 159 | 162 | 197 | WCKX 080408 | P0401101 | XT15 |  |
| 184040400 | TDS 54040-3D | 54,0 | 40 | 162 | 165 | 200 | WCKX 080408 | P0401101 | XT15 |  |
| 184040500 | TDS 55040-3D | 55,0 | 40 | 165 | 168 | 203 | WCKX 080408 | P0401101 | XT15 |  |
| 184040600 | TDS 56040-3D | 56,0 | 40 | 168 | 171 | 206 | WCKX 080408 | P0401101 | XT15 |  |
| 184040700 | TDS 57040-3D | 57,0 | 40 | 171 | 174 | 209 | WCKX 080408 | P0401101 | XT15 |  |
| 184040800 | TDS 58040-3D | 58,0 | 40 | 174 | 177 | 212 | WCKX 080408 | P0401101 | XT15 |  |

 Stock item | Produto de stock | Itens de stock

 Available under request | Disponível sobre consulta | Disponible bajo consulta

TDC 3D CARTRIDGE TYPE (DOUBLE INSERT) | Jet drills | Brocas jet | Brocas jet

DRILLING

Jet Drills

Integrex Drills

Vortex Drills

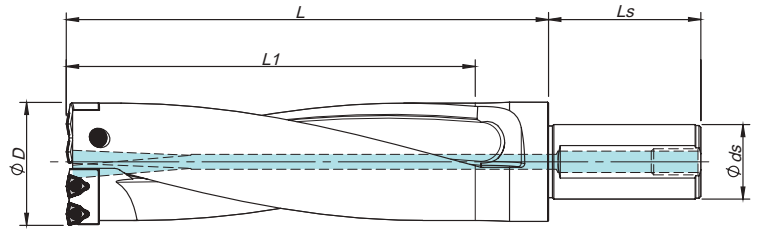
Trepanning Drills

Solid Carbide Drills







Inserts


Spare Parts

Technical Data

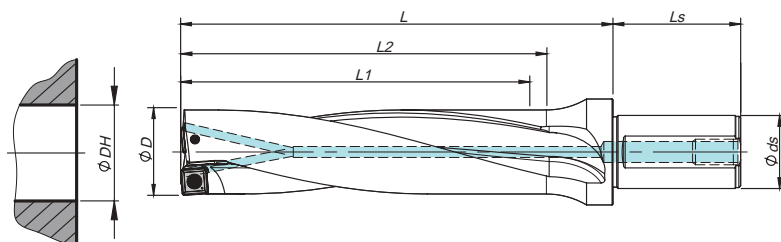


| | | |
|-----|----|----------|
| Øds | Ls | BP / SP |
| 40 | 70 | PT - 1/4 |






























| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | | Insert | Insert Screw  | Torx key  | Stock |
|----------------------|---------------------------------------|---|------|-----|-----|----------------|-------------|---|---|---|
| | | ØD | Ø ds | L1 | L | Cartridge | | | | |
| 184040900 | TDC 596540-3D | 59-65 | 40 | 195 | 235 | TDC 059065-I/O | WCKX 06T308 | P0350903 | XT15 |  |
| 184041000 | TDC 657040-3D | 65-70 | 40 | 210 | 250 | TDC 065070-I/O | WCKX 06T308 | P0350903 | XT15 |  |
| 184041100 | TDC 707540-3D | 70-75 | 40 | 225 | 265 | TDC 070075-I/O | WCKX 06T308 | P0350903 | XT15 |  |
| 184041200 | TDC 758040-3D | 75-80 | 40 | 240 | 280 | TDC 075080-I/O | WCKX 06T308 | P0350903 | XT15 |  |


 Stock item | Produto de stock | Itens de stock

 Available under request | Disponível sobre consulta | Disponible bajo consulta


































| Øds | Ls | BP / SP | ØDH tolerance (mm) | |
|-----|----|---------|--------------------|---------------|
| 20 | 50 | PT -1/8 | ØD | 3D |
| 25 | 56 | PT -1/8 | 13,0 - 21,5 | -0,10 / +0,15 |
| 32 | 60 | PT -1/4 | 22,0 - 50,0 | -0,12 / +0,20 |
| 40 | 70 | PT -1/4 | | |


| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | | Insert | Insert Screw  | Torx key  | Stock  |
|----------------------|---------------------------------------|---|------|----|----|-----|-------------|--|--|--|
| | | ØD | Ø ds | L1 | L2 | L | | | | |
| 184041400 | SCS 13020-3D | 13,0 | 20 | 39 | 42 | 62 | SPKX 050204 | P0200500 | XT06 |  |
| 184041500 | SCS 13520-3D | 13,5 | 20 | 41 | 44 | 64 | SPKX 050204 | P0200500 | XT06 |  |
| 184041600 | SCS 14020-3D | 14,0 | 20 | 42 | 45 | 65 | SPKX 050204 | P0200500 | XT06 |  |
| 184041700 | SCS 14520-3D | 14,5 | 20 | 44 | 47 | 67 | SPKX 050204 | P0200500 | XT06 |  |
| 184041800 | SCS 15020-3D | 15,0 | 20 | 45 | 48 | 68 | SPKX 050204 | P0200500 | XT06 |  |
| 184041900 | SCS 15525-3D | 15,5 | 25 | 47 | 50 | 75 | SPKX 060204 | P0220500 | XT07 |  |
| 184042000 | SCS 16025-3D | 16,0 | 25 | 48 | 51 | 76 | SPKX 060204 | P0220500 | XT07 |  |
| 184042100 | SCS 16525-3D | 16,5 | 25 | 50 | 53 | 78 | SPKX 060204 | P0220500 | XT07 |  |
| 184042200 | SCS 17025-3D | 17,0 | 25 | 51 | 54 | 79 | SPKX 060204 | P0220500 | XT07 |  |
| 184042300 | SCS 17525-3D | 17,5 | 25 | 53 | 56 | 81 | SPKX 060204 | P0220500 | XT07 |  |
| 184042400 | SCS 18025-3D | 18,0 | 25 | 54 | 57 | 82 | SPKX 060204 | P0220500 | XT07 |  |
| 184042500 | SCS 18525-3D | 18,5 | 25 | 56 | 59 | 84 | SPKX 060204 | P0220500 | XT07 |  |
| 184042600 | SCS 19025-3D | 19,0 | 25 | 57 | 60 | 85 | SPKX 060204 | P0220500 | XT07 |  |
| 184042700 | SCS 19525-3D | 19,5 | 25 | 59 | 62 | 87 | SPKX 060204 | P0220500 | XT07 |  |
| 184042800 | SCS 20025-3D | 20,0 | 25 | 60 | 63 | 88 | SPKX 060204 | P0220500 | XT07 |  |
| 184042900 | SCS 20525-3D | 20,5 | 25 | 62 | 65 | 90 | SPKX 060204 | P0220500 | XT07 |  |
| 184043000 | SCS 21025-3D | 21,0 | 25 | 63 | 66 | 91 | SPKX 060204 | P0220500 | XT07 |  |
| 184043100 | SCS 21525-3D | 21,5 | 25 | 65 | 68 | 93 | SPKX 060204 | P0220500 | XT07 |  |
| 184043200 | SCS 22032-3D | 22,0 | 32 | 66 | 69 | 99 | SPKX 07T308 | P0250704 | XT08 |  |
| 184043300 | SCS 22532-3D | 22,5 | 32 | 68 | 71 | 101 | SPKX 07T308 | P0250704 | XT08 |  |
| 184043400 | SCS 23032-3D | 23,0 | 32 | 69 | 72 | 102 | SPKX 07T308 | P0250704 | XT08 |  |
| 184043500 | SCS 23532-3D | 23,5 | 32 | 71 | 74 | 104 | SPKX 07T308 | P0250704 | XT08 |  |
| 184043600 | SCS 24032-3D | 24,0 | 32 | 72 | 75 | 105 | SPKX 07T308 | P0250704 | XT08 |  |
| 184043700 | SCS 24532-3D | 24,5 | 32 | 74 | 77 | 107 | SPKX 07T308 | P0250704 | XT08 |  |
| 184043800 | SCS 25032-3D | 25,0 | 32 | 75 | 78 | 108 | SPKX 07T308 | P0250704 | XT08 |  |
| 184043900 | SCS 25532-3D | 25,5 | 32 | 77 | 80 | 110 | SPKX 07T308 | P0250704 | XT08 |  |
| 184044000 | SCS 26032-3D | 26,0 | 32 | 78 | 81 | 111 | SPKX 07T308 | P0250704 | XT08 |  |


 Stock item | Produto de stock | Itens de stock

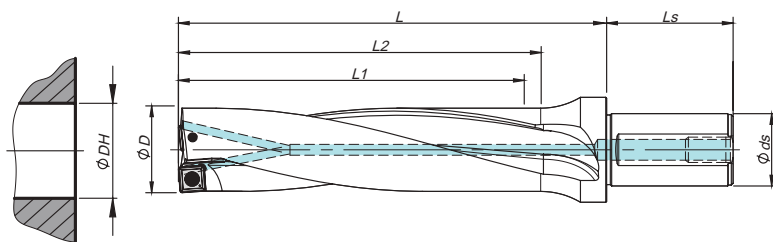
 Available under request | Disponível sobre consulta | Disponible bajo consulta

DRILLING
Jet Drills
Integrex Drills
Vortex Drills
Trepanning Drills
Solid Carbide Drills
Inserts
Spare Parts
Technical Data































| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | | Insert | Insert Screw  | Torx key  | Stock  |
|----------------------|---------------------------------------|---|------|-----|-----|-----|-------------|---|---|--|
| | | ØD | Ø ds | L1 | L2 | L | | | | |
| 184044100 | SCS 26532-3D | 26,5 | 32 | 80 | 83 | 113 | SPKX 07T308 | P0250704 | XT08 |  |
| 184044200 | SCS 27032-3D | 27,0 | 32 | 81 | 84 | 114 | SPKX 07T308 | P0250704 | XT08 |  |
| 184044400 | SCS 27532-3D | 27,5 | 32 | 83 | 86 | 116 | SPKX 07T308 | P0250704 | XT08 |  |
| 184044500 | SCS 28032-3D | 28,0 | 32 | 84 | 87 | 117 | SPKX 090408 | P0350903 | XT15 |  |
| 184044600 | SCS 28532-3D | 28,5 | 32 | 86 | 89 | 119 | SPKX 090408 | P0350903 | XT15 |  |
| 184044700 | SCS 29032-3D | 29,0 | 32 | 87 | 90 | 120 | SPKX 090408 | P0350903 | XT15 |  |
| 184044800 | SCS 29532-3D | 29,5 | 32 | 89 | 93 | 123 | SPKX 090408 | P0350903 | XT15 |  |
| 184044900 | SCS 30032-3D | 30,0 | 32 | 90 | 95 | 125 | SPKX 090408 | P0350903 | XT15 |  |
| 184045000 | SCS 31032-3D | 31,0 | 32 | 93 | 98 | 128 | SPKX 090408 | P0350903 | XT15 |  |
| 184045100 | SCS 32032-3D | 32,0 | 32 | 96 | 101 | 131 | SPKX 090408 | P0350903 | XT15 |  |
| 184045200 | SCS 33032-3D | 33,0 | 32 | 99 | 104 | 134 | SPKX 090408 | P0350903 | XT15 |  |
| 184045300 | SCS 34040-3D | 34,0 | 40 | 102 | 107 | 142 | SPKX 110408 | P0401200 | XT15 |  |
| 184045400 | SCS 35040-3D | 35,0 | 40 | 105 | 110 | 145 | SPKX 110408 | P0401200 | XT15 |  |
| 184045500 | SCS 36040-3D | 36,0 | 40 | 108 | 113 | 148 | SPKX 110408 | P0401200 | XT15 |  |
| 184045600 | SCS 37040-3D | 37,0 | 40 | 111 | 116 | 151 | SPKX 110408 | P0401200 | XT15 |  |
| 184045700 | SCS 38040-3D | 38,0 | 40 | 114 | 119 | 154 | SPKX 110408 | P0401200 | XT15 |  |
| 184045800 | SCS 39040-3D | 39,0 | 40 | 117 | 122 | 157 | SPKX 110408 | P0401200 | XT15 |  |
| 184045900 | SCS 40040-3D | 40,0 | 40 | 120 | 125 | 160 | SPKX 110408 | P0401200 | XT15 |  |
| 184046000 | SCS 41040-3D | 41,0 | 40 | 123 | 128 | 163 | SPKX 110408 | P0401200 | XT15 |  |
| 184046100 | SCS 42040-3D | 42,0 | 40 | 126 | 131 | 166 | SPKX 140512 | P0501300 | XT20 |  |
| 184046200 | SCS 43040-3D | 43,0 | 40 | 129 | 134 | 169 | SPKX 140512 | P0501300 | XT20 |  |
| 184046300 | SCS 44040-3D | 44,0 | 40 | 132 | 137 | 172 | SPKX 140512 | P0501300 | XT20 |  |
| 184046400 | SCS 45040-3D | 45,0 | 40 | 135 | 140 | 175 | SPKX 140512 | P0501300 | XT20 |  |
| 184046500 | SCS 46040-3D | 46,0 | 40 | 138 | 143 | 178 | SPKX 140512 | P0501300 | XT20 |  |
| 184046600 | SCS 47040-3D | 47,0 | 40 | 141 | 146 | 181 | SPKX 140512 | P0501300 | XT20 |  |
| 184046700 | SCS 48040-3D | 48,0 | 40 | 144 | 149 | 184 | SPKX 140512 | P0501300 | XT20 |  |
| 184046800 | SCS 49040-3D | 49,0 | 40 | 147 | 152 | 187 | SPKX 140512 | P0501300 | XT20 |  |
| 184046900 | SCS 50040-3D | 50,0 | 40 | 150 | 155 | 190 | SPKX 140512 | P0501300 | XT20 |  |


 Stock item | Produto de stock | Itens de stock

 Available under request | Disponível sobre consulta | Disponible bajo consulta


































| Øds | Ls | BP / SP | ØDH tolerance (mm) | |
|-----|----|---------|--------------------|---------------|
| | | | ØD | 4D |
| 20 | 50 | PT -1/8 | 13,0 - 21,5 | -0,15 / +0,20 |
| 25 | 56 | PT -1/8 | 22,0 - 50,0 | -0,15 / +0,25 |
| 32 | 60 | PT -1/4 | | |
| 40 | 70 | PT -1/4 | | |


| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | | Insert | Insert Screw  | Torx key  | Stock  |
|----------------------|---------------------------------------|---|------|-----|-----|-----|-------------|--|--|---|
| | | ØD | Ø ds | L1 | L2 | L | | | | |
| 184047100 | SCS 13020-4D | 13,0 | 20 | 52 | 55 | 75 | SPKX 050204 | P0200500 | XT06 |  |
| 184047200 | SCS 13520-4D | 13,5 | 20 | 54 | 57 | 77 | SPKX 050204 | P0200500 | XT06 |  |
| 184047300 | SCS 14020-4D | 14,0 | 20 | 56 | 59 | 79 | SPKX 050204 | P0200500 | XT06 |  |
| 184047400 | SCS 14520-4D | 14,5 | 20 | 58 | 61 | 81 | SPKX 050204 | P0200500 | XT06 |  |
| 184047500 | SCS 15020-4D | 15,0 | 20 | 60 | 63 | 83 | SPKX 050204 | P0200500 | XT06 |  |
| 184047600 | SCS 15525-4D | 15,5 | 25 | 62 | 65 | 90 | SPKX 060204 | P0220500 | XT07 |  |
| 184047700 | SCS 16025-4D | 16,0 | 25 | 64 | 67 | 92 | SPKX 060204 | P0220500 | XT07 |  |
| 184047800 | SCS 16525-4D | 16,5 | 25 | 66 | 69 | 94 | SPKX 060204 | P0220500 | XT07 |  |
| 184047900 | SCS 17025-4D | 17,0 | 25 | 68 | 71 | 96 | SPKX 060204 | P0220500 | XT07 |  |
| 184048000 | SCS 17525-4D | 17,5 | 25 | 70 | 73 | 98 | SPKX 060204 | P0220500 | XT07 |  |
| 184048100 | SCS 18025-4D | 18,0 | 25 | 72 | 75 | 100 | SPKX 060204 | P0220500 | XT07 |  |
| 184048200 | SCS 18525-4D | 18,5 | 25 | 74 | 77 | 102 | SPKX 060204 | P0220500 | XT07 |  |
| 184048300 | SCS 19025-4D | 19,0 | 25 | 76 | 79 | 104 | SPKX 060204 | P0220500 | XT07 |  |
| 184048400 | SCS 19525-4D | 19,5 | 25 | 78 | 81 | 106 | SPKX 060204 | P0220500 | XT07 |  |
| 184048500 | SCS 20025-4D | 20,0 | 25 | 80 | 83 | 108 | SPKX 060204 | P0220500 | XT07 |  |
| 184048600 | SCS 20525-4D | 20,5 | 25 | 82 | 85 | 110 | SPKX 060204 | P0220500 | XT07 |  |
| 184048700 | SCS 21025-4D | 21,0 | 25 | 84 | 87 | 112 | SPKX 060204 | P0220500 | XT07 |  |
| 184048800 | SCS 21525-4D | 21,5 | 25 | 86 | 89 | 114 | SPKX 060204 | P0220500 | XT07 |  |
| 184048900 | SCS 22032-4D | 22,0 | 32 | 88 | 91 | 121 | SPKX 07T308 | P0250704 | XT08 |  |
| 184049000 | SCS 22532-4D | 22,5 | 32 | 90 | 93 | 123 | SPKX 07T308 | P0250704 | XT08 |  |
| 184049100 | SCS 23032-4D | 23,0 | 32 | 92 | 95 | 125 | SPKX 07T308 | P0250704 | XT08 |  |
| 184049200 | SCS 23532-4D | 23,5 | 32 | 94 | 97 | 127 | SPKX 07T308 | P0250704 | XT08 |  |
| 184049300 | SCS 24032-4D | 24,0 | 32 | 96 | 99 | 129 | SPKX 07T308 | P0250704 | XT08 |  |
| 184049400 | SCS 24532-4D | 24,5 | 32 | 98 | 101 | 131 | SPKX 07T308 | P0250704 | XT08 |  |
| 184049500 | SCS 25032-4D | 25,0 | 32 | 100 | 103 | 133 | SPKX 07T308 | P0250704 | XT08 |  |
| 184049600 | SCS 25532-4D | 25,5 | 32 | 102 | 105 | 135 | SPKX 07T308 | P0250704 | XT08 |  |
| 184049700 | SCS 26032-4D | 26,0 | 32 | 104 | 107 | 137 | SPKX 07T308 | P0250704 | XT08 |  |

 Stock item | Produto de stock | Itens de stock

 Available under request | Disponível sobre consulta | Disponible bajo consulta

DRILLING
Jet Drills
Integrex Drills
Vortex Drills
Trepanning Drills
Solid Carbide Drills
Inserts
Spare Parts
Technical Data

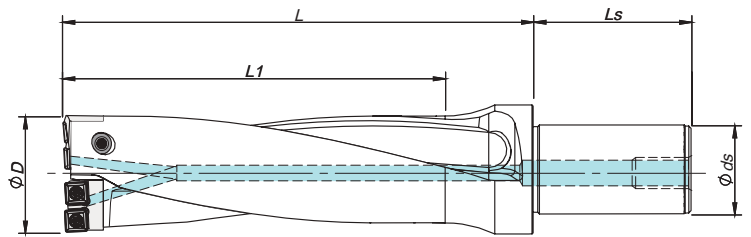
| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | | Insert | Insert Screw  | Torx key  | Stock  |
|----------------------|---------------------------------------|---|------|-----|-----|-----|--------------|---|---|--|
| | | ØD | Ø ds | L1 | L2 | L | | | | |
| 184049800 | SCS 26532-4D | 26,5 | 32 | 106 | 109 | 139 | SP... 07T308 | P0250704 | XT08 |  |
| 184049900 | SCS 27032-4D | 27,0 | 32 | 108 | 111 | 141 | SP... 07T308 | P0250704 | XT08 |  |
| 184050000 | SCS 27532-4D | 27,5 | 32 | 110 | 113 | 143 | SP... 07T308 | P0250704 | XT08 |  |
| 184050100 | SCS 28032-4D | 28,0 | 32 | 112 | 115 | 145 | SP... 090408 | P0350903 | XT15 |  |
| 184050200 | SCS 28532-4D | 28,5 | 32 | 114 | 117 | 147 | SP... 090408 | P0350903 | XT15 |  |
| 184050300 | SCS 29032-4D | 29,0 | 32 | 116 | 120 | 150 | SP... 090408 | P0350903 | XT15 |  |
| 184050400 | SCS 29532-4D | 29,5 | 32 | 118 | 123 | 153 | SP... 090408 | P0350903 | XT15 |  |
| 184050500 | SCS 30032-4D | 30,0 | 32 | 120 | 125 | 155 | SP... 090408 | P0350903 | XT15 |  |
| 184050600 | SCS 31032-4D | 31,0 | 32 | 124 | 129 | 159 | SP... 090408 | P0350903 | XT15 |  |
| 184050700 | SCS 32032-4D | 32,0 | 32 | 128 | 133 | 163 | SP... 090408 | P0350903 | XT15 |  |
| 184050800 | SCS 33032-4D | 33,0 | 32 | 132 | 137 | 167 | SP... 090408 | P0350903 | XT15 |  |
| 184050900 | SCS 34040-4D | 34,0 | 40 | 136 | 141 | 176 | SP... 110408 | P0401200 | XT15 |  |
| 184051000 | SCS 35040-4D | 35,0 | 40 | 140 | 145 | 180 | SP... 110408 | P0401200 | XT15 |  |
| 184051100 | SCS 36040-4D | 36,0 | 40 | 144 | 149 | 184 | SP... 110408 | P0401200 | XT15 |  |
| 184051200 | SCS 37040-4D | 37,0 | 40 | 148 | 153 | 188 | SP... 110408 | P0401200 | XT15 |  |
| 184051300 | SCS 38040-4D | 38,0 | 40 | 152 | 157 | 192 | SP... 110408 | P0401200 | XT15 |  |
| 184051400 | SCS 39040-4D | 39,0 | 40 | 156 | 161 | 196 | SP... 110408 | P0401200 | XT15 |  |
| 184051500 | SCS 40040-4D | 40,0 | 40 | 160 | 165 | 200 | SP... 110408 | P0401200 | XT15 |  |
| 184051600 | SCS 41040-4D | 41,0 | 40 | 164 | 169 | 204 | SP... 110408 | P0401200 | XT15 |  |
| 184051700 | SCS 42040-4D | 42,0 | 40 | 168 | 173 | 208 | SP... 140512 | P0501300 | XT20 |  |
| 184051800 | SCS 43040-4D | 43,0 | 40 | 172 | 177 | 212 | SP... 140512 | P0501300 | XT20 |  |
| 184051900 | SCS 44040-4D | 44,0 | 40 | 176 | 181 | 216 | SP... 140512 | P0501300 | XT20 |  |
| 184052000 | SCS 45040-4D | 45,0 | 40 | 180 | 185 | 220 | SP... 140512 | P0501300 | XT20 |  |
| 184052100 | SCS 46040-4D | 46,0 | 40 | 184 | 189 | 224 | SP... 140512 | P0501300 | XT20 |  |
| 184052200 | SCS 47040-4D | 47,0 | 40 | 188 | 193 | 228 | SP... 140512 | P0501300 | XT20 |  |
| 184052300 | SCS 48040-4D | 48,0 | 40 | 192 | 197 | 232 | SP... 140512 | P0501300 | XT20 |  |
| 184052400 | SCS 49040-4D | 49,0 | 40 | 196 | 201 | 236 | SP... 140512 | P0501300 | XT20 |  |
| 184052500 | SCS 50040-4D | 50,0 | 40 | 200 | 205 | 240 | SP... 140512 | P0501300 | XT20 |  |

 Stock item | Produto de stock | Itens de stock









 Available under request | Disponível sobre consulta | Disponible bajo consulta


SCC 3D CARTRIDGE TYPE (DOUBLE INSERT) | Jet drills | Brocas jet | Brocas jet

Size adaptable cartridge (5mm)



| Øds | Ls | BP / SP |
|-----|----|----------|
| 40 | 70 | PT - 1/4 |

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Cartridge | Insert | Insert Screw | Torx key | Stock |
|----------------------|---------------------------------------|--|------|-----|-----|----------------|-------------|---|---|---|
| | | ØD | Ø ds | L1 | L | | |  |  | |
| 184231800 | SCC 505540-3D | 50-55 | 40 | 165 | 205 | SCC 050055-I/O | SPKX 090408 | P0350903 | XT15 |  |
| 184231900 | SCC 556040-3D | 55-60 | 40 | 180 | 220 | SCC 055060-I/O | SPKX 090408 | P0350903 | XT15 |  |
| 184232000 | SCC 606540-3D | 60-65 | 40 | 195 | 235 | SCC 060065-I/O | SPKX 110408 | P0401200 | XT15 |  |
| 184232100 | SCC 657040-3D | 65-70 | 40 | 210 | 250 | SCC 065070-I/O | SPKX 110408 | P0401200 | XT15 |  |
| 184232200 | SCC 707540-3D | 70-75 | 40 | 225 | 265 | SCC 070075-I/O | SPKX 110408 | P0401200 | XT15 |  |
| 184232300 | SCC 758040-3D | 75-80 | 40 | 240 | 278 | SCC 075080-I/O | SPKX 140512 | P0501300 | XT20 |  |

 Stock item | Produto de stock | Itens de stock

 Available under request | Disponível sobre consulta | Disponible bajo consulta

3D

DRILLING

Jet Drills

Integrex Drills

Vortex Drills

Trepanning Drills

Solid Carbide Drills

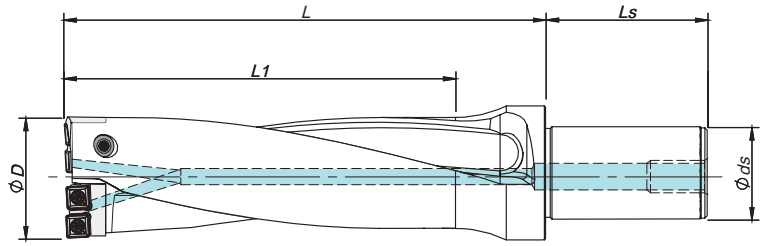
Inserts

Spare Parts









Technical Data


SCC 4D CARTRIDGE TYPE (DOUBLE INSERT) | Jet drills | Brocas jet | Brocas jet


Size adaptable cartridge (5mm)



| | | |
|-----|----|----------|
| Øds | Ls | BP / SP |
| 40 | 70 | PT - 1/4 |

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Cartridge | Insert | Insert Screw  | Torx key  | Stock |
|----------------------|---------------------------------------|--|------|-----|-----|----------------|-------------|---|---|---|
| | | ØD | Ø ds | L1 | L | | | | | |
| 184232400 | SCC 505540-4D | 50-55 | 40 | 220 | 260 | SCC 050055-I/O | SPKX 090408 | P0350903 | XT15 |  |
| 184232500 | SCC 556040-4D | 55-60 | 40 | 240 | 280 | SCC 055060-I/O | SPKX 090408 | P0350903 | XT15 |  |
| 184232600 | SCC 606540-4D | 60-65 | 40 | 260 | 300 | SCC 060065-I/O | SPKX 110408 | P0401200 | XT15 |  |
| 184232700 | SCC 657040-4D | 65-70 | 40 | 280 | 320 | SCC 065070-I/O | SPKX 110408 | P0401200 | XT15 |  |
| 184232800 | SCC 707540-4D | 70-75 | 40 | 300 | 340 | SCC 070075-I/O | SPKX 110408 | P0401200 | XT15 |  |
| 184232900 | SCC 758040-4D | 75-80 | 40 | 320 | 358 | SCC 075080-I/O | SPKX 140512 | P0501300 | XT20 |  |

 Stock item | Produto de stock | Itens de stock

 Available under request | Disponível sobre consulta | Disponible bajo consulta

DRILLING

Jet Drills

Integrex Drills

Vortex Drills

Trepanning Drills

Solid Carbide Drills

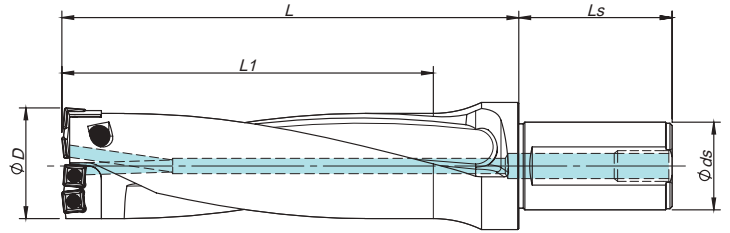
Inserts

Spare Parts

Technical Data

SCC 4D CARTRIDGE TYPE (DOUBLE INSERT) | Jet drills | Brocas jet | Brocas jet

Size adjustment cartridge (1mm)



| Øds | Ls | BP / SP |
|-----|----|----------|
| 40 | 70 | PT - 1/4 |

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Cartridge | Insert | Insert Screw  | Torx key  | Stock |
|----------------------|---------------------------------------|--|------|-----|-----|-----------------------|-------------|---|---|-------|
| | | ØD | Ø ds | L1 | L | | | | | |
| 184056100 | SCC 555640-4D | 55-56 | 40 | 235 | 275 | CISP 5560 / COSP 5556 | SPKX 090408 | P0350903 | XT15 | ⊕ |
| 184056300 | SCC 575840-4D | 57-58 | 40 | 235 | 275 | CISP 5560 / COSP 5758 | SPKX 090408 | P0350903 | XT15 | ⊕ |
| 184056400 | SCC 585940-4D | 58-59 | 40 | 235 | 275 | CISP 5560 / COSP 5859 | SPKX 090408 | P0350903 | XT15 | ⊕ |
| 184056500 | SCC 596040-4D | 59-60 | 40 | 235 | 275 | CISP 5560 / COSP 5960 | SPKX 090408 | P0350903 | XT15 | ⊕ |
| 184057100 | SCC 656640-4D | 65-66 | 40 | 275 | 315 | CISP 6570 / COSP 6566 | SPKX 110408 | P0401200 | XT15 | ⊕ |
| 184057200 | SCC 666740-4D | 66-67 | 40 | 275 | 315 | CISP 6570 / COSP 6667 | SPKX 110408 | P0401200 | XT15 | ⊕ |
| 184057300 | SCC 676840-4D | 67-68 | 40 | 275 | 315 | CISP 6570 / COSP 6768 | SPKX 110408 | P0401200 | XT15 | ⊕ |
| 184057400 | SCC 686940-4D | 68-69 | 40 | 275 | 315 | CISP 6570 / COSP 6869 | SPKX 110408 | P0401200 | XT15 | ⊕ |
| 184057500 | SCC 697040-4D | 69-70 | 40 | 275 | 315 | CISP 6570 / COSP 6970 | SPKX 110408 | P0401200 | XT15 | ⊕ |
| 184058400 | SCC 787940-4D | 78-79 | 40 | 315 | 355 | CISP 7580 / COSP 7879 | SPKX 140512 | P0501300 | XT20 | ⊕ |
| 184058500 | SCC 798040-4D | 79-80 | 40 | 315 | 355 | CISP 7580 / COSP 7980 | SPKX 140512 | P0501300 | XT20 | ⊕ |

⊕ Stock item | Produto de stock | Itens de stock
○ Available under request | Disponível sobre consulta | Disponible bajo consulta
⊕ Available until sold out | Disponível até acabar o stock | Disponible hasta acabar el stock

* The new Drill version will replace the standard version when this type will be sold out.

DRILLING

Jet Drills

Integrex Drills

Vortex Drills

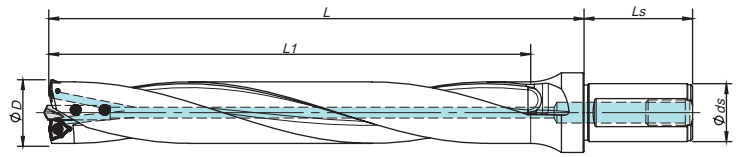
Trepanning Drills

Solid Carbide Drills

Inserts

Spare Parts


Technical Data



New version / Standard version*

| Øds | Ls | BP / SP |
|-----|---------|----------|
| 32 | 60 / 70 | PT - 1/4 |

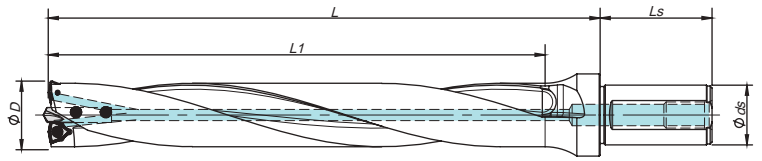
Order separately

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Insert | Insert Screw  | Torx key  | Pilot drill  | Stock |
|----------------------|---------------------------------------|--|------|-----|-----|-------------|---|---|--|-------|
| | | ØD | Ø ds | L1 | L | | | | | |
| 184058600 | DHS 002532-5D | 25 | 32 | 150 | 180 | WCKX 030204 | P0220500 | XT07 | MDP 3006 | ○ |
| 184058700 | DHS 002632-5D | 26 | 32 | 150 | 180 | WCKX 040204 | P0250503 | XT08 | MDP 3006 | ○ |
| 184058800 | DHS 002732-5D | 27 | 32 | 150 | 180 | WCKX 040204 | P0250503 | XT08 | MDP 3006 | ○ |
| 184058900 | DHS 002832-5D | 28 | 32 | 150 | 180 | WCKX 040204 | P0250503 | XT08 | MDP 3006 | ○ |
| 184059000 | DHS 002932-5D | 29 | 32 | 150 | 180 | WCKX 040204 | P0250503 | XT08 | MDP 3006 | ○ |
| 184059100 | DHS 003032-5D | 30 | 32 | 150 | 180 | WCKX 040204 | P0250503 | XT08 | MDP 3006 | ○ |
| 184059200 | DHS 003132-5D | 31 | 32 | 175 | 205 | WCKX 050308 | P0300701 | XT08 | MDP 3508 | ○ |
| 184059300 | DHS 003232-5D | 32 | 32 | 175 | 205 | WCKX 050308 | P0300701 | XT08 | MDP 3508 | ○ |
| 184059400 | DHS 003332-5D | 33 | 32 | 175 | 205 | WCKX 050308 | P0300701 | XT08 | MDP 3508 | ○ |
| 184059500 | DHS 003432-5D | 34 | 32 | 175 | 205 | WCKX 050308 | P0300701 | XT08 | MDP 3508 | ○ |
| 184059600 | DHS 003532-5D | 35 | 32 | 175 | 205 | WCKX 050308 | P0300701 | XT08 | MDP 3508 | ○ |
| 184059700 | DHS 003632-5D | 36 | 32 | 200 | 230 | WCKX 050308 | P0300701 | XT08 | MDP 3508 | ○ |
| 184059800 | DHS 003732-5D | 37 | 32 | 200 | 230 | WCKX 050308 | P0300701 | XT08 | MDP 3508 | ○ |
| 184059900 | DHS 003832-5D | 38 | 32 | 200 | 230 | WCKX 050308 | P0300701 | XT08 | MDP 3508 | ○ |
| 184060000 | DHS 003932-5D | 39 | 32 | 200 | 230 | WCKX 050308 | P0300701 | XT08 | MDP 3508 | ○ |
| 184060100 | DHS 004032-5D | 40 | 32 | 200 | 230 | WCKX 050308 | P0300701 | XT08 | MDP 3508 | ○ |

Stock item | Produto de stock | Itens de stock
 Available under request | Disponível sobre consulta | Disponible bajo consulta

Note: This type of drills are supplied without pilot drills. Please order them separately.




Please see Page B - 315 for setting pilot drill.



New version / Standard version*

| Øds | Ls | BP / SP |
|-----|---------|----------|
| 32 | 60 / 70 | PT - 1/4 |

Order separatly

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Insert | Insert Screw  | Torx key  | Pilot drill  | Stock |
|----------------------|---------------------------------------|--|------|-----|-----|-------------|---|---|--|-------|
| | | ØD | Ø ds | L1 | L | | | | | |
| 184062100 | DHS 002532-8D | 25 | 32 | 220 | 250 | WCKX 030204 | P0220500 | XT07 | MDP 3006 | ☉ |
| 184062200 | DHS 002632-8D | 26 | 32 | 220 | 250 | WCKX 040204 | P0250503 | XT08 | MDP 3006 | ○ |
| 184062300 | DHS 002732-8D | 27 | 32 | 220 | 250 | WCKX 040204 | P0250503 | XT08 | MDP 3006 | ○ |
| 184062400 | DHS 002832-8D | 28 | 32 | 220 | 250 | WCKX 040204 | P0250503 | XT08 | MDP 3006 | ○ |
| 184062500 | DHS 002932-8D | 29 | 32 | 220 | 250 | WCKX 040204 | P0250503 | XT08 | MDP 3006 | ○ |
| 184062600 | DHS 003032-8D | 30 | 32 | 220 | 250 | WCKX 040204 | P0250503 | XT08 | MDP 3006 | ☉ |
| 184062700 | DHS 003132-8D | 31 | 32 | 260 | 290 | WCKX 050308 | P0300701 | XT08 | MDP 3508 | ○ |
| 184062800 | DHS 003232-8D | 32 | 32 | 260 | 290 | WCKX 050308 | P0300701 | XT08 | MDP 3508 | ○ |
| 184062900 | DHS 003332-8D | 33 | 32 | 260 | 290 | WCKX 050308 | P0300701 | XT08 | MDP 3508 | ○ |
| 184063000 | DHS 003432-8D | 34 | 32 | 260 | 290 | WCKX 050308 | P0300701 | XT08 | MDP 3508 | ○ |
| 184063100 | DHS 003532-8D | 35 | 32 | 260 | 290 | WCKX 050308 | P0300701 | XT08 | MDP 3508 | ☉ |
| 184063200 | DHS 003632-8D | 36 | 32 | 300 | 330 | WCKX 050308 | P0300701 | XT08 | MDP 3508 | ○ |
| 184063300 | DHS 003732-8D | 37 | 32 | 300 | 330 | WCKX 050308 | P0300701 | XT08 | MDP 3508 | ○ |
| 184063400 | DHS 003832-8D | 38 | 32 | 300 | 330 | WCKX 050308 | P0300701 | XT08 | MDP 3508 | ○ |
| 184063500 | DHS 003932-8D | 39 | 32 | 300 | 330 | WCKX 050308 | P0300701 | XT08 | MDP 3508 | ○ |
| 184063600 | DHS 004032-8D | 40 | 32 | 300 | 330 | WCKX 050308 | P0300701 | XT08 | MDP 3508 | ☉ |

☉ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Note: This type of drills are supplied without pilot drills. Please order them separately.

Please see Page B - 315 for setting pilot drill.

DHC 5D CARTRIDGE TYPE (SINGLE & DOUBLE INSERT)

Integrex drills | Brocas integrex | Brocas integrex

DRILLING

Jet Drills

Integrex Drills

Vortex Drills

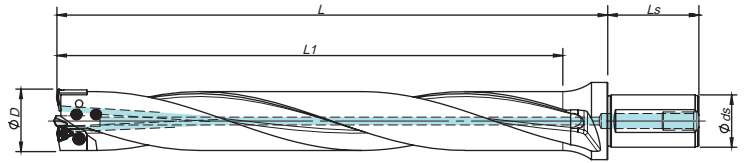
Trepanning Drills

Solid Carbide Drills

Inserts

Spare Parts

Technical Data



New version / Standard version*

| Øds | Ls | BP / SP |
|-----|---------|----------|
| 40 | 70 / 80 | PT - 1/4 |

Order separately

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Cartridge | Insert | Insert Screw | Torx key | Pilot drill | Stock |
|--------------------------------|---------------------------------------|---|------|-----|-----|-----------------------------|-------------|-----------------|----------|-------------|-------|
| | | ØD | Ø ds | L1 | L | | | | | | |
| 184192500 | DHC 004140-5D | 41 | 40 | 225 | 260 | CWC 041045-I / CWC 000041-O | WCKX 06T308 | P0350903 | XT15 | MDP 3510 | ○ |
| 184192600 | DHC 004240-5D | 42 | 40 | 225 | 260 | CWC 041045-I / CWC 000042-O | WCKX 06T308 | P0350903 | XT15 | MDP 3510 | ○ |
| 184192700 | DHC 004340-5D | 43 | 40 | 225 | 260 | CWC 041045-I / CWC 000043-O | WCKX 06T308 | P0350903 | XT15 | MDP 3510 | ○ |
| 184192800 | DHC 004440-5D | 44 | 40 | 225 | 260 | CWC 041045-I / CWC 000044-O | WCKX 06T308 | P0350903 | XT15 | MDP 3510 | ○ |
| 184192900 | DHC 004540-5D | 45 | 40 | 225 | 260 | CWC 041045-I / CWC 000045-O | WCKX 06T308 | P0350903 | XT15 | MDP 3510 | ○ |
| 184193000 | DHC 004640-5D | 46 | 40 | 250 | 285 | CWC 046050-I / CWC 000046-O | WCKX 06T308 | P0350903 | XT15 | MDP 3510 | ○ |
| 184193100 | DHC 004740-5D | 47 | 40 | 250 | 285 | CWC 046050-I / CWC 000047-O | WCKX 06T308 | P0350903 | XT15 | MDP 3510 | ○ |
| 184193200 | DHC 004840-5D | 48 | 40 | 250 | 285 | CWC 046050-I / CWC 000048-O | WCKX 06T308 | P0350903 | XT15 | MDP 3510 | ○ |
| 184193300 | DHC 004940-5D | 49 | 40 | 250 | 285 | CWC 046050-I / CWC 000049-O | WCKX 06T308 | P0350903 | XT15 | MDP 3510 | ○ |
| 184193400 | DHC 005040-5D | 50 | 40 | 250 | 285 | CWC 046050-I / CWC 000050-O | WCKX 06T308 | P0350903 | XT15 | MDP 3510 | ○ |
| 184193500 | DHC 005140-5D | 51 | 40 | 275 | 310 | CWC 051055-I / CWC 000051-O | WCKX 080408 | P0401101 | XT15 | MDP 3812 | ○ |
| 184193600 | DHC 005240-5D | 52 | 40 | 275 | 310 | CWC 051055-I / CWC 000052-O | WCKX 080408 | P0401101 | XT15 | MDP 3812 | ○ |
| 184193700 | DHC 005340-5D | 53 | 40 | 275 | 310 | CWC 051055-I / CWC 000053-O | WCKX 080408 | P0401101 | XT15 | MDP 3812 | ○ |
| 184193800 | DHC 005440-5D | 54 | 40 | 275 | 310 | CWC 051055-I / CWC 000054-O | WCKX 080408 | P0401101 | XT15 | MDP 3812 | ○ |
| 184193900 | DHC 005540-5D | 55 | 40 | 275 | 310 | CWC 051055-I / CWC 000055-O | WCKX 080408 | P0401101 | XT15 | MDP 3812 | ○ |
| 184194000 | DHC 005640-5D | 56 | 40 | 300 | 335 | CWC 056059-I / CWC 000056-O | WCKX 080408 | P0401101 | XT15 | MDP 3812 | ○ |
| 184194100 | DHC 005740-5D | 57 | 40 | 300 | 335 | CWC 056059-I / CWC 000057-O | WCKX 080408 | P0401101 | XT15 | MDP 3812 | ○ |
| 184194200 | DHC 005840-5D | 58 | 40 | 300 | 335 | CWC 056059-I / CWC 000058-O | WCKX 080408 | P0401101 | XT15 | MDP 3812 | ○ |
| 184194300 | DHC 005940-5D | 59 | 40 | 300 | 335 | CWC 056059-I / CWC 000059-O | WCKX 080408 | P0401101 | XT15 | MDP 3812 | ○ |
| 2 INSERTS PER CARTRIDGE | | | | | | | | | | | |
| 184065600 | DHC 606540-5D | 60-65 | 40 | 325 | 360 | MDC 060065-I/O | WCKX 050308 | P0300701 | XT08 | MDP 3812 | ○ |
| 184065700 | DHC 657040-5D | 65-70 | 40 | 350 | 385 | MDC 065070-I/O | WCKX 050308 | P0300701 | XT08 | MDP 3812 | ○ |
| 184065800 | DHC 707540-5D | 70-75 | 40 | 375 | 410 | MDC 070075-I/O | WCKX 050308 | P0300701 | XT08 | MDP 3812 | ○ |
| 184065900 | DHC 758040-5D | 75-80 | 40 | 400 | 435 | MDC 075080-I/O | WCKX 06T308 | P0350903 | XT15 | MDP 4516 | ○ |

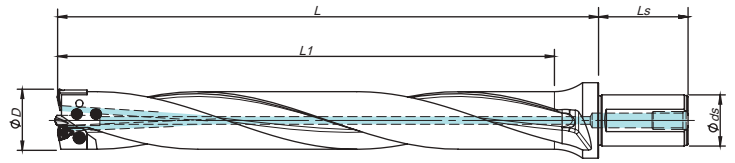
☑ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Note: This type of drills are supplied without pilot drills. Please order them separately.

Please see Page B - 315 for setting pilot drill.

DHC 8D CARTRIDGE TYPE (SINGLE & DOUBLE INSERT)

Integrex drills | Brocas integrex | Brocas integrex



New version / Standard version*

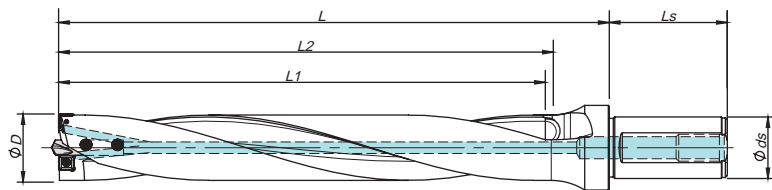
| Øds | Ls | BP / SP |
|-----|---------|----------|
| 40 | 70 / 80 | PT - 1/4 |

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Cartridge | Insert | Order separately | | | Stock |
|--------------------------------|---------------------------------------|---|------|-----|-----|-----------------------------|-------------|------------------|----------|-------------|-------|
| | | ØD | Ø ds | L1 | L | | | Insert Screw | Torx key | Pilot drill | |
| 184194400 | DHC 004140-8D | 41 | 40 | 340 | 375 | CWC 041045-I / CWC 000041-O | WCKX 06T308 | P0350903 | XT15 | MDP 3510 | ○ |
| 184194500 | DHC 004240-8D | 42 | 40 | 340 | 375 | CWC 041045-I / CWC 000042-O | WCKX 06T308 | P0350903 | XT15 | MDP 3510 | ○ |
| 184194600 | DHC 004340-8D | 43 | 40 | 340 | 375 | CWC 041045-I / CWC 000043-O | WCKX 06T308 | P0350903 | XT15 | MDP 3510 | ○ |
| 184194700 | DHC 004440-8D | 44 | 40 | 340 | 375 | CWC 041045-I / CWC 000044-O | WCKX 06T308 | P0350903 | XT15 | MDP 3510 | ○ |
| 184194800 | DHC 004540-8D | 45 | 40 | 340 | 375 | CWC 041045-I / CWC 000045-O | WCKX 06T308 | P0350903 | XT15 | MDP 3510 | ○ |
| 184194900 | DHC 004640-8D | 46 | 40 | 380 | 415 | CWC 046050-I / CWC 000046-O | WCKX 06T308 | P0350903 | XT15 | MDP 3510 | ○ |
| 184195000 | DHC 004740-8D | 47 | 40 | 380 | 415 | CWC 046050-I / CWC 000047-O | WCKX 06T308 | P0350903 | XT15 | MDP 3510 | ○ |
| 184195100 | DHC 004840-8D | 48 | 40 | 380 | 415 | CWC 046050-I / CWC 000048-O | WCKX 06T308 | P0350903 | XT15 | MDP 3510 | ○ |
| 184195200 | DHC 004940-8D | 49 | 40 | 380 | 415 | CWC 046050-I / CWC 000049-O | WCKX 06T308 | P0350903 | XT15 | MDP 3510 | ○ |
| 184195300 | DHC 005040-8D | 50 | 40 | 380 | 415 | CWC 046050-I / CWC 000050-O | WCKX 06T308 | P0350903 | XT15 | MDP 3510 | ○ |
| 184195400 | DHC 005140-8D | 51 | 40 | 420 | 455 | CWC 051055-I / CWC 000051-O | WCKX 080408 | P0401101 | XT15 | MDP 3812 | ○ |
| 184195500 | DHC 005240-8D | 52 | 40 | 420 | 455 | CWC 051055-I / CWC 000052-O | WCKX 080408 | P0401101 | XT15 | MDP 3812 | ○ |
| 184195600 | DHC 005340-8D | 53 | 40 | 420 | 455 | CWC 051055-I / CWC 000053-O | WCKX 080408 | P0401101 | XT15 | MDP 3812 | ○ |
| 184195700 | DHC 005440-8D | 54 | 40 | 420 | 455 | CWC 051055-I / CWC 000054-O | WCKX 080408 | P0401101 | XT15 | MDP 3812 | ○ |
| 184195800 | DHC 005540-8D | 55 | 40 | 420 | 455 | CWC 051055-I / CWC 000055-O | WCKX 080408 | P0401101 | XT15 | MDP 3812 | ○ |
| 184195900 | DHC 005640-8D | 56 | 40 | 460 | 495 | CWC 056059-I / CWC 000056-O | WCKX 080408 | P0401101 | XT15 | MDP 3812 | ○ |
| 184196000 | DHC 005740-8D | 57 | 40 | 460 | 495 | CWC 056059-I / CWC 000057-O | WCKX 080408 | P0401101 | XT15 | MDP 3812 | ○ |
| 184196100 | DHC 005840-8D | 58 | 40 | 460 | 495 | CWC 056059-I / CWC 000058-O | WCKX 080408 | P0401101 | XT15 | MDP 3812 | ○ |
| 184196200 | DHC 005940-8D | 59 | 40 | 460 | 495 | CWC 056059-I / CWC 000059-O | WCKX 080408 | P0401101 | XT15 | MDP 3812 | ○ |
| 2 INSERTS PER CARTRIDGE | | | | | | | | | | | |
| 184066000 | DHC 606540-8D | 60-65 | 40 | 520 | 555 | MDC 060065-I/O | WCKX 050308 | P0300701 | XT08 | MDP 3812 | ○ |
| 184066100 | DHC 657040-8D | 65-70 | 40 | 560 | 595 | MDC 065070-I/O | WCKX 050308 | P0300701 | XT08 | MDP 3812 | ○ |
| 184066200 | DHC 707540-8D | 70-75 | 40 | 600 | 635 | MDC 070075-I/O | WCKX 050308 | P0300701 | XT08 | MDP 3812 | ○ |
| 184066300 | DHC 758040-8D | 75-80 | 40 | 640 | 675 | MDC 075080-I/O | WCKX 06T308 | P0350903 | XT15 | MDP 4516 | ○ |




☺ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Note: This type of drills are supplied without pilot drills. Please order them separately.

Please see Page B - 315 for setting pilot drill.



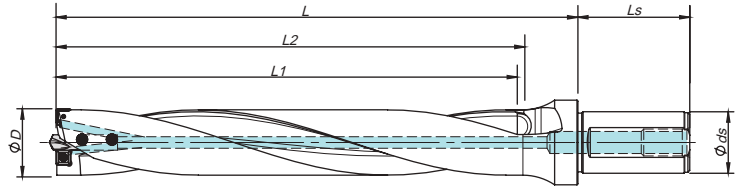
| Øds | Ls | BP / SP |
|-----|----|----------|
| 25 | 50 | PT - 1/8 |
| 32 | 60 | PT - 1/4 |

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | | Insert | Insert Screw  | Torx key  | Pilot drill  | Stock |
|----------------------|---------------------------------------|--|------|-----|-----|-----|-------------|---|---|--|-------|
| | | ØD | Ø ds | L1 | L2 | L | | | | | |
| | | Order separately | | | | | | | | | |
| 184154300 | TFD 18025-6D | 18,0 | 25 | 108 | 112 | 142 | SPKX 050204 | P0200500 | XT06 | MDP 2006 | ○ |
| 184154400 | TFD 18525-6D | 18,5 | 25 | 111 | 115 | 145 | SPKX 050204 | P0200500 | XT06 | MDP 2006 | ○ |
| 184154500 | TFD 19025-6D | 19,0 | 25 | 114 | 118 | 148 | SPKX 050204 | P0200500 | XT06 | MDP 2006 | ○ |
| 184154600 | TFD 19525-6D | 19,5 | 25 | 117 | 121 | 151 | SPKX 050204 | P0200500 | XT06 | MDP 2006 | ○ |
| 184154700 | TFD 20025-6D | 20,0 | 25 | 120 | 124 | 154 | SPKX 060204 | P0220500 | XT07 | MDP 2006 | ○ |
| 184154800 | TFD 20525-6D | 20,5 | 25 | 123 | 127 | 157 | SPKX 060204 | P0220500 | XT07 | MDP 2006 | ○ |
| 184154900 | TFD 21025-6D | 21,0 | 25 | 126 | 130 | 160 | SPKX 060204 | P0220500 | XT07 | MDP 2006 | ○ |
| 184155000 | TFD 21525-6D | 21,5 | 25 | 129 | 133 | 163 | SPKX 060204 | P0220500 | XT07 | MDP 2006 | ○ |
| 184155100 | TFD 22025-6D | 22,0 | 25 | 132 | 136 | 166 | SPKX 060204 | P0220500 | XT07 | MDP 2006 | ○ |
| 184155200 | TFD 22525-6D | 22,5 | 25 | 135 | 139 | 169 | SPKX 060204 | P0220500 | XT07 | MDP 2006 | ○ |
| 184155300 | TFD 23025-6D | 23,0 | 25 | 138 | 142 | 172 | SPKX 060204 | P0220500 | XT07 | MDP 2006 | ○ |
| 184155400 | TFD 23525-6D | 23,5 | 25 | 141 | 145 | 175 | SPKX 060204 | P0220500 | XT07 | MDP 2006 | ○ |
| 184155500 | TFD 24025-6D | 24,0 | 25 | 144 | 148 | 178 | SPKX 060204 | P0220500 | XT07 | MDP 2006 | ○ |
| 184155600 | TFD 24525-6D | 24,5 | 25 | 147 | 151 | 181 | SPKX 060204 | P0220500 | XT07 | MDP 2006 | ○ |
| 184155700 | TFD 25025-6D | 25,0 | 25 | 150 | 154 | 184 | SPKX 060204 | P0220500 | XT07 | MDP 2006 | ○ |
| 184155800 | TFD 25532-6D | 25,5 | 32 | 153 | 157 | 192 | SPKX 07T308 | P0250704 | XT08 | MDP 2508 | ○ |
| 184155900 | TFD 26032-6D | 26,0 | 32 | 156 | 160 | 195 | SPKX 07T308 | P0250704 | XT08 | MDP 2508 | ○ |
| 184156000 | TFD 26532-6D | 26,5 | 32 | 159 | 163 | 198 | SPKX 07T308 | P0250704 | XT08 | MDP 2508 | ○ |
| 184156100 | TFD 27032-6D | 27,0 | 32 | 162 | 166 | 201 | SPKX 07T308 | P0250704 | XT08 | MDP 2508 | ○ |
| 184156200 | TFD 27532-6D | 27,5 | 32 | 165 | 169 | 204 | SPKX 07T308 | P0250704 | XT08 | MDP 2508 | ○ |
| 184156300 | TFD 28032-6D | 28,0 | 32 | 168 | 172 | 207 | SPKX 07T308 | P0250704 | XT08 | MDP 2508 | ○ |
| 184156400 | TFD 28532-6D | 28,5 | 32 | 171 | 175 | 210 | SPKX 07T308 | P0250704 | XT08 | MDP 2508 | ○ |
| 184156500 | TFD 29032-6D | 29,0 | 32 | 174 | 178 | 213 | SPKX 07T308 | P0250704 | XT08 | MDP 2508 | ○ |
| 184156600 | TFD 29532-6D | 29,5 | 32 | 177 | 181 | 216 | SPKX 07T308 | P0250704 | XT08 | MDP 2508 | ○ |
| 184156700 | TFD 30032-6D | 30,0 | 32 | 180 | 184 | 219 | SPKX 07T308 | P0250704 | XT08 | MDP 2508 | ○ |

Stock item | Produto de stock | Itens de stock Available under request | Disponível sobre consulta | Disponible bajo consulta




Note: This type of drills are supplied without pilot drills. Please order them separately.

Please see Page B - 315 for setting pilot drill.



| Øds | Ls | BP / SP |
|-----|----|----------|
| 25 | 56 | PT - 1/8 |
| 32 | 60 | PT - 1/4 |

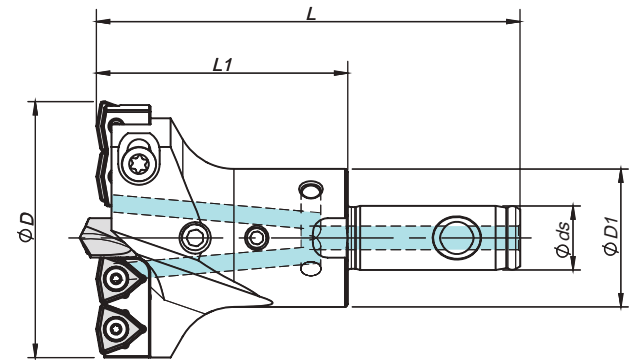
Order separately

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | | Insert | Insert Screw  | Torx key  | Pilot drill  | Stock |
|----------------------|---------------------------------------|--|------|-----|-----|-----|-------------|---|---|--|-------|
| | | ØD | Ø ds | L1 | L2 | L | | | | | |
| 184151800 | TFD 18025-8D | 18,0 | 25 | 144 | 149 | 179 | SPKX 050204 | P0200500 | XT06 | MDP 2006 | ○ |
| 184151900 | TFD 18525-8D | 18,5 | 25 | 148 | 153 | 183 | SPKX 050204 | P0200500 | XT06 | MDP 2006 | ○ |
| 184152000 | TFD 19025-8D | 19,0 | 25 | 152 | 157 | 187 | SPKX 050204 | P0200500 | XT06 | MDP 2006 | ○ |
| 184152100 | TFD 19525-8D | 19,5 | 25 | 156 | 161 | 191 | SPKX 050204 | P0200500 | XT06 | MDP 2006 | ○ |
| 184152200 | TFD 20025-8D | 20,0 | 25 | 160 | 165 | 195 | SPKX 060204 | P0220500 | XT07 | MDP 2006 | ○ |
| 184152300 | TFD 20525-8D | 20,5 | 25 | 164 | 169 | 199 | SPKX 060204 | P0220500 | XT07 | MDP 2006 | ○ |
| 184152400 | TFD 21025-8D | 21,0 | 25 | 168 | 173 | 203 | SPKX 060204 | P0220500 | XT07 | MDP 2006 | ○ |
| 184152500 | TFD 21525-8D | 21,5 | 25 | 172 | 177 | 207 | SPKX 060204 | P0220500 | XT07 | MDP 2006 | ○ |
| 184151200 | TFD 22025-8D | 22,0 | 25 | 176 | 181 | 211 | SPKX 060204 | P0220500 | XT07 | MDP 2006 | ○ |
| 184152700 | TFD 22525-8D | 22,5 | 25 | 180 | 185 | 215 | SPKX 060204 | P0220500 | XT07 | MDP 2006 | ○ |
| 184152800 | TFD 23025-8D | 23,0 | 25 | 184 | 189 | 219 | SPKX 060204 | P0220500 | XT07 | MDP 2006 | ○ |
| 184152900 | TFD 23525-8D | 23,5 | 25 | 188 | 193 | 223 | SPKX 060204 | P0220500 | XT07 | MDP 2006 | ○ |
| 184153000 | TFD 24025-8D | 24,0 | 25 | 192 | 197 | 227 | SPKX 060204 | P0220500 | XT07 | MDP 2006 | ○ |
| 184153100 | TFD 24525-8D | 24,5 | 25 | 196 | 201 | 231 | SPKX 060204 | P0220500 | XT07 | MDP 2006 | ○ |
| 184151300 | TFD 25025-8D | 25,0 | 25 | 200 | 205 | 235 | SPKX 060204 | P0220500 | XT07 | MDP 2006 | ○ |
| 184153300 | TFD 25532-8D | 25,5 | 32 | 204 | 209 | 244 | SPKX 07T308 | P0250704 | XT08 | MDP 2508 | ○ |
| 184153400 | TFD 26032-8D | 26,0 | 32 | 208 | 213 | 248 | SPKX 07T308 | P0250704 | XT08 | MDP 2508 | ○ |
| 184153500 | TFD 26532-8D | 26,5 | 32 | 212 | 217 | 252 | SPKX 07T308 | P0250704 | XT08 | MDP 2508 | ○ |
| 184153600 | TFD 27032-8D | 27,0 | 32 | 216 | 221 | 256 | SPKX 07T308 | P0250704 | XT08 | MDP 2508 | ○ |
| 184153700 | TFD 27532-8D | 27,5 | 32 | 220 | 225 | 260 | SPKX 07T308 | P0250704 | XT08 | MDP 2508 | ○ |
| 184153800 | TFD 28032-8D | 28,0 | 32 | 224 | 229 | 264 | SPKX 07T308 | P0250704 | XT08 | MDP 2508 | ○ |
| 184153900 | TFD 28532-8D | 28,5 | 32 | 228 | 233 | 268 | SPKX 07T308 | P0250704 | XT08 | MDP 2508 | ○ |
| 184154000 | TFD 29032-8D | 29,0 | 32 | 232 | 237 | 272 | SPKX 07T308 | P0250704 | XT08 | MDP 2508 | ○ |
| 184154100 | TFD 29532-8D | 29,5 | 32 | 236 | 241 | 276 | SPKX 07T308 | P0250704 | XT08 | MDP 2508 | ○ |
| 184154200 | TFD 30032-8D | 30,0 | 32 | 240 | 245 | 280 | SPKX 07T308 | P0250704 | XT08 | MDP 2508 | ○ |

Stock item | Produto de stock | Itens de stock Available under request | Disponível sobre consulta | Disponible bajo consulta

Note: This type of drills are supplied without pilot drills. Please order them separately.

Please see Page B - 315 for setting pilot drill.



Order separately

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | | Cartridge | Insert | Insert Screw | Torx key | Pilot drill | Stock |
|----------------------|---------------------------------------|--|------|----|---|-----|-----------|--------|-----------------|----------|-------------|-------|
| | | ØD | Ø ds | L1 | L | ØD1 | | | | | | |

2 INSERTS PER CARTRIDGE

| | | | | | | | | | | | | |
|-----------|--------------|--------|----|----|-----|----|----------------|-------------|----------|------|----------|---|
| 184031000 | MDO 04505013 | 45-50 | 13 | 50 | 85 | 28 | MDC 045050-I/O | WCKX 030204 | P0220500 | XT07 | MDP 3510 | ⊗ |
| 184031100 | MDO 05005513 | 50-55 | 13 | 50 | 85 | 28 | MDC 050055-I/O | WCKX 030204 | P0220500 | XT07 | MDP 3510 | ⊗ |
| 184031200 | MDO 05506016 | 55-60 | 16 | 60 | 100 | 32 | MDC 055060-I/O | WCKX 040204 | P0250503 | XT08 | MDP 3812 | ⊗ |
| 184031300 | MDO 06006516 | 60-65 | 16 | 60 | 100 | 32 | MDC 060065-I/O | WCKX 050308 | P0300701 | XT08 | MDP 3812 | ⊗ |
| 184031500 | MDO 06507016 | 65-70 | 16 | 60 | 100 | 32 | MDC 065070-I/O | WCKX 050308 | P0300701 | XT08 | MDP 3812 | ⊗ |
| 184032400 | MDO 07007522 | 70-75 | 22 | 70 | 115 | 40 | MDC 070075-I/O | WCKX 050308 | P0300701 | XT08 | MDP 3812 | ⊗ |
| 184032500 | MDO 07508022 | 75-80 | 22 | 70 | 115 | 40 | MDC 075080-I/O | WCKX 06T308 | P0350903 | XT15 | MDP 4516 | ⊗ |
| 184032600 | MDO 08008522 | 80-85 | 22 | 70 | 115 | 40 | MDC 080085-I/O | WCKX 06T308 | P0350903 | XT15 | MDP 4516 | ⊗ |
| 184032700 | MDO 08509027 | 85-90 | 27 | 70 | 120 | 48 | MDC 085090-I/O | WCKX 06T308 | P0350903 | XT15 | MDP 4516 | ⊗ |
| 184032800 | MDO 09009527 | 90-95 | 27 | 70 | 120 | 48 | MDC 090095-I/O | WCKX 06T308 | P0350903 | XT15 | MDP 4516 | ⊗ |
| 184032900 | MDO 09510027 | 95-100 | 27 | 70 | 120 | 48 | MDC 095100-I/O | WCKX 06T308 | P0350903 | XT15 | MDP 4516 | ⊗ |

3 INSERTS PER CARTRIDGE

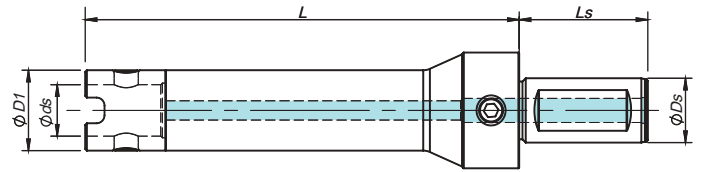
| | | | | | | | | | | | | |
|-----------|--------------|---------|----|-----|-----|----|----------------|-------------|----------|------|----------|---|
| 184033000 | MDO 10010532 | 100-105 | 32 | 80 | 130 | 58 | MDC 100105-I/O | WCKX 050308 | P0300701 | XT08 | MDP 4520 | ⊗ |
| 184066400 | MDO 10511032 | 105-110 | 32 | 80 | 130 | 58 | MDC 105110-I/O | WCKX 06T308 | P0350903 | XT15 | MDP 4520 | ⊗ |
| 184066500 | MDO 11011532 | 110-115 | 32 | 80 | 130 | 58 | MDC 110115-I/O | WCKX 06T308 | P0350903 | XT15 | MDP 4520 | ⊗ |
| 184066600 | MDO 11512040 | 115-120 | 40 | 90 | 145 | 70 | MDC 115120-I/O | WCKX 06T308 | P0350903 | XT15 | MDP 4520 | ⊗ |
| 184066700 | MDO 12012540 | 120-125 | 40 | 90 | 145 | 70 | MDC 120125-I/O | WCKX 06T308 | P0350903 | XT15 | MDP 5625 | ⊗ |
| 184066800 | MDO 12513040 | 125-130 | 40 | 90 | 145 | 70 | MDC 125130-I/O | WCKX 06T308 | P0350903 | XT15 | MDP 5625 | ⊗ |
| 184066900 | MDO 13013540 | 130-135 | 40 | 90 | 145 | 70 | MDC 130135-I/O | WCKX 06T308 | P0350903 | XT15 | MDP 5625 | ⊗ |
| 184067000 | MDO 13514040 | 135-140 | 40 | 90 | 145 | 70 | MDC 135140-I/O | WCKX 06T308 | P0350903 | XT15 | MDP 5625 | ⊗ |
| 184067100 | MDO 14015050 | 140-150 | 50 | 100 | 160 | 80 | MDC 140150-I/O | WCKX 080408 | P0401101 | XT15 | MDP 5625 | ⊗ |
| 184067200 | MDO 15016050 | 150-160 | 50 | 100 | 160 | 80 | MDC 150160-I/O | WCKX 080408 | P0401101 | XT15 | MDP 5625 | ⊗ |
| 184067300 | MDO 16017050 | 160-170 | 50 | 100 | 160 | 80 | MDC 160170-I/O | WCKX 080408 | P0401101 | XT15 | MDP 6830 | ⊗ |
| 184067400 | MDO 17018050 | 170-180 | 50 | 100 | 160 | 80 | MDC 170180-I/O | WCKX 080408 | P0401101 | XT15 | MDP 6830 | ⊗ |

⊗ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Drills with larger diameter available under request with a minimum order quantity.

Note: This type of drills are supplied without pilot drills. Please order them separately.


Please see Page B - 318 for setting pilot drill.



New version / Standard version*

| Øds | Ls | BP / SP |
|-----|----------|----------|
| 32 | 70 | PT - 1/4 |
| 40 | 80 | PT - 1/4 |
| 50 | 80 / 100 | PT - 1/4 |

Order separatly

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | |  Drive Ring | Stock |
|----------------------|---------------------------------------|--|-----|-----|-----|--|-------|
| | | ØDs | Øds | ØD1 | L | | |
| 184121900 | MDS 32115130 | 32 | 13 | 28 | 115 | MDR 1028 | ⊗ |
| 184253700 | MDS 32200130 | 32 | 13 | 28 | 200 | MDR 1028 | ⊗ |
| 184255400 | MDS 32300130 | 32 | 13 | 28 | 300 | MDR 1028 | ⊗ |
| 184122100 | MDS 40125160 | 40 | 16 | 32 | 125 | MDR 1032 | ⊗ |
| 184253800 | MDS 40200160 | 40 | 16 | 32 | 200 | MDR 1032 | ⊗ |
| 184255500 | MDS 40300160 | 40 | 16 | 32 | 300 | MDR 1032 | ⊗ |
| 184122300 | MDS 40148220 | 40 | 22 | 40 | 148 | MDR 1240 | ⊗ |
| 184122400 | MDS 40200220 | 40 | 22 | 40 | 200 | MDR 1240 | ⊗ |
| 184122500 | MDS 40300220 | 40 | 22 | 40 | 300 | MDR 1240 | ⊗ |
| 184122600 | MDS 40168270 | 40 | 27 | 48 | 168 | MDR 1248 | ⊗ |
| 184122700 | MDS 40300270 | 40 | 27 | 48 | 300 | MDR 1248 | ⊗ |
| 184122800 | MDS 40186320 | 40 | 32 | 58 | 186 | MDR 1458 | ⊗ |
| 184122900 | MDS 40300320 | 40 | 32 | 58 | 300 | MDR 1458 | ⊗ |
| 184123000 | MDS 50186400 | 50 | 40 | 70 | 186 | MDR 1470 | ⊗ |
| 184123100 | MDS 50300400 | 50 | 40 | 70 | 300 | MDR 1470 | ⊗ |
| 184123200 | MDS 50184500 | 50 | 50 | 80 | 184 | MDR 1680 | ⊗ |
| 184123300 | MDS 50300500 | 50 | 50 | 80 | 300 | MDR 1680 | ⊗ |

⊗ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Note: This shanks type are supplied without drive ring. Please order them separately.

DRILLING

Jet Drills

Integrex Drills

Vortex Drills

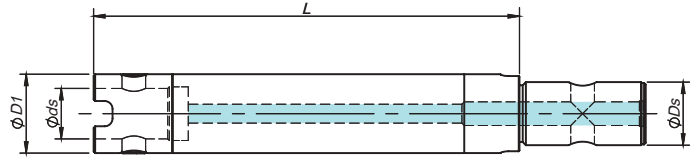
Trepanning Drills

Solid Carbide Drills























Inserts

Spare Parts

Technical Data

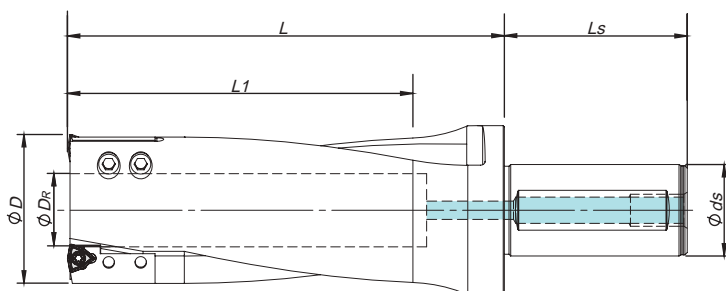


Order separately

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Drive Ring  | Stock |
|----------------------|---------------------------------------|--|-----|-----|-----|---|---|
| | | ØDs | Øds | ØD1 | L | | |
| 184023500 | MDE 13115280 | 13 | 13 | 28 | 115 | MDR 1028 |  |
| 184023600 | MDE 13150280 | 13 | 13 | 28 | 150 | MDR 1028 |  |
| 184023700 | MDE 13200280 | 13 | 13 | 28 | 200 | MDR 1028 |  |
| 184021800 | MDE 13300280 | 13 | 13 | 28 | 300 | MDR 1028 |  |
| 184023800 | MDE 16115320 | 16 | 16 | 32 | 115 | MDR 1032 |  |
| 184021900 | MDE 16200320 | 16 | 16 | 32 | 200 | MDR 1032 |  |
| 184023900 | MDE 16300320 | 16 | 16 | 32 | 300 | MDR 1032 |  |
| 184024000 | MDE 22113400 | 22 | 22 | 40 | 113 | MDR 1240 |  |
| 184024100 | MDE 22200400 | 22 | 22 | 40 | 200 | MDR 1240 |  |
| 184024200 | MDE 22300400 | 22 | 22 | 40 | 300 | MDR 1240 |  |
| 184024300 | MDE 27113480 | 27 | 27 | 48 | 113 | MDR 1248 |  |
| 184024400 | MDE 27200480 | 27 | 27 | 48 | 200 | MDR 1248 |  |
| 184024500 | MDE 27300480 | 27 | 27 | 48 | 300 | MDR 1248 |  |
| 184024600 | MDE 32186580 | 32 | 32 | 58 | 186 | MDR 1458 |  |
| 184024700 | MDE 32300580 | 32 | 32 | 58 | 300 | MDR 1458 |  |
| 184024800 | MDE 40186700 | 40 | 40 | 70 | 186 | MDR 1470 |  |
| 184024900 | MDE 40300700 | 40 | 40 | 70 | 300 | MDR 1470 |  |
| 184025000 | MDE 40500700 | 40 | 40 | 70 | 500 | MDR 1470 |  |
| 184025100 | MDE 50204800 | 50 | 50 | 80 | 204 | MDR 1680 |  |
| 184025200 | MDE 50300800 | 50 | 50 | 80 | 300 | MDR 1680 |  |
| 184025300 | MDE 50500800 | 50 | 50 | 80 | 500 | MDR 1680 |  |

 Stock item | Produto de stock | Itens de stock  Available under request | Disponível sobre consulta | Disponible bajo consulta

Note: This shanks type are supplied without drive ring. Please order them separately.



| Øds | Ls | BP / SP |
|-----|-----|----------|
| 32 | 70 | PT - 1/4 |
| 40 | 80 | PT - 1/4 |
| 50 | 100 | PT - 1/4 |

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | | Cartridge | Insert | Insert Screw | Torx key | Stock |
|----------------------|---------------------------------------|--|------|------|-----|-----|----------------|-------------|-----------------|----------|-------|
| | | ØD | Ø DR | Ø ds | L1 | L | | | | | |
| 184067500 | PND 04032-2D | 40,0 | 10,0 | 32 | 100 | 140 | PNC 040055-I/O | WCKX 050308 | P0300701 | XT08 | ○ |
| 184067600 | PND 04540-2D | 45,0 | 15,0 | 40 | 100 | 130 | PNC 040055-I/O | WCKX 050308 | P0300701 | XT08 | ○ |
| 184067700 | PND 05040-2D | 50,0 | 21,0 | 40 | 120 | 150 | PNC 040055-I/O | WCKX 050308 | P0300701 | XT08 | ○ |
| 184067800 | PND 05540-2D | 55,0 | 26,0 | 40 | 120 | 150 | PNC 040055-I/O | WCKX 050308 | P0300701 | XT08 | ○ |
| 184067900 | PND 06040-2D | 60,0 | 24,5 | 40 | 150 | 190 | PNC 060110-I/O | WCKX 06T308 | P0350903 | XT15 | ○ |
| 184068000 | PND 06540-2D | 65,0 | 30,5 | 40 | 150 | 190 | PNC 060110-I/O | WCKX 06T308 | P0350903 | XT15 | ○ |
| 184068100 | PND 07040-2D | 70,0 | 35,5 | 40 | 170 | 210 | PNC 060110-I/O | WCKX 06T308 | P0350903 | XT15 | ○ |
| 184068200 | PND 07540-2D | 75,0 | 40,5 | 40 | 170 | 210 | PNC 060110-I/O | WCKX 06T308 | P0350903 | XT15 | ○ |
| 184068300 | PND 08040-2D | 80,0 | 45,5 | 40 | 190 | 230 | PNC 060110-I/O | WCKX 06T308 | P0350903 | XT15 | ○ |
| 184068400 | PND 08550-2D | 85,0 | 50,5 | 50 | 190 | 230 | PNC 060110-I/O | WCKX 06T308 | P0350903 | XT15 | ○ |
| 184068500 | PND 09050-2D | 90,0 | 55,0 | 50 | 210 | 250 | PNC 060110-I/O | WCKX 06T308 | P0350903 | XT15 | ○ |
| 184068600 | PND 09550-2D | 95,0 | 60,0 | 50 | 210 | 250 | PNC 060110-I/O | WCKX 06T308 | P0350903 | XT15 | ○ |
| 184068700 | PND 10050-2D | 100,0 | 66,0 | 50 | 250 | 290 | PNC 060110-I/O | WCKX 06T308 | P0350903 | XT15 | ○ |
| 184068800 | PND 11050-2D | 110,0 | 76,0 | 50 | 250 | 290 | PNC 060110-I/O | WCKX 06T308 | P0350903 | XT15 | ○ |

Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

HBDPCE 2 03D

DRILLING

Jet Drills

Integrex Drills

Vortex Drills

Trepanning Drills

Solid Carbide Drills

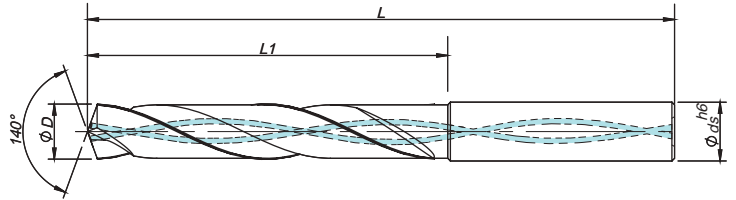
Inserts

Spare Parts

Technical Data



| | |
|----------------|-------------------|
| P | K |
| HRC ≤ 60 | IT8-9 IT class |



| Drill Dia. ØD | ØD3,0 | 3,0<ØD≤6,0 | 6,0<ØD≤10,0 | 10,0<ØD≤18,0 | 18,0<ØD≤20,0 |
|-----------------|--------|------------|-------------|--------------|--------------|
| Hole Tolerances | +0,002 | +0,004 | +0,006 | +0,007 | +0,008 |
| | +0,012 | +0,016 | +0,021 | +0,025 | +0,028 |

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Z | PHU920 |
|----------------------|---------------------------------------|---|------|----|----|---|--------|
| | | ØD | Ø ds | L1 | L | | |
| 1180956Z9 | HBDPCE 2 03D 0300-062020 | 3 | 6 | 20 | 62 | 2 | ⊗ |
| 1180957Z9 | HBDPCE 2 03D 0310-062020 | 3,1 | 6 | 20 | 62 | 2 | ⊗ |
| 1180958Z9 | HBDPCE 2 03D 0320-062020 | 3,2 | 6 | 20 | 62 | 2 | ⊗ |
| 1180959Z9 | HBDPCE 2 03D 0330-062020 | 3,3 | 6 | 20 | 62 | 2 | ⊗ |
| 1180960Z9 | HBDPCE 2 03D 0340-062020 | 3,4 | 6 | 20 | 62 | 2 | ⊗ |
| 1180961Z9 | HBDPCE 2 03D 0350-062020 | 3,5 | 6 | 20 | 62 | 2 | ⊗ |
| 1180962Z9 | HBDPCE 2 03D 0360-062020 | 3,6 | 6 | 20 | 62 | 2 | ○ |
| 1180963Z9 | HBDPCE 2 03D 0370-062020 | 3,7 | 6 | 20 | 62 | 2 | ○ |
| 1180964Z9 | HBDPCE 2 03D 0380-066024 | 3,8 | 6 | 24 | 66 | 2 | ○ |
| 1180965Z9 | HBDPCE 2 03D 0390-066024 | 3,9 | 6 | 24 | 66 | 2 | ○ |
| 1180966Z9 | HBDPCE 2 03D 0400-066024 | 4 | 6 | 24 | 66 | 2 | ⊗ |
| 1180967Z9 | HBDPCE 2 03D 0410-066024 | 4,1 | 6 | 24 | 66 | 2 | ○ |
| 1180968Z9 | HBDPCE 2 03D 0420-066024 | 4,2 | 6 | 24 | 66 | 2 | ⊗ |
| 1180969Z9 | HBDPCE 2 03D 0430-066024 | 4,3 | 6 | 24 | 66 | 2 | ○ |
| 1180970Z9 | HBDPCE 2 03D 0440-066024 | 4,4 | 6 | 24 | 66 | 2 | ○ |
| 1180971Z9 | HBDPCE 2 03D 0450-066024 | 4,5 | 6 | 24 | 66 | 2 | ○ |
| 1180972Z9 | HBDPCE 2 03D 0460-066024 | 4,6 | 6 | 24 | 66 | 2 | ⊗ |
| 1180973Z9 | HBDPCE 2 03D 0470-066024 | 4,7 | 6 | 24 | 66 | 2 | ○ |
| 1180974Z9 | HBDPCE 2 03D 0480-066028 | 4,8 | 6 | 28 | 66 | 2 | ○ |
| 1180975Z9 | HBDPCE 2 03D 0490-066028 | 4,9 | 6 | 28 | 66 | 2 | ○ |
| 1180976Z9 | HBDPCE 2 03D 0500-066028 | 5 | 6 | 28 | 66 | 2 | ⊗ |
| 1180977Z9 | HBDPCE 2 03D 0510-066028 | 5,1 | 6 | 28 | 66 | 2 | ○ |

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Z | PHU920 |
|----------------------|---------------------------------------|---|------|----|----|---|--------|
| | | ØD | Ø ds | L1 | L | | |
| 1180978Z9 | HBDPCE 2 03D 0520-066028 | 5,2 | 6 | 28 | 66 | 2 | ○ |
| 1180979Z9 | HBDPCE 2 03D 0530-066028 | 5,3 | 6 | 28 | 66 | 2 | ○ |
| 1180980Z9 | HBDPCE 2 03D 0540-066028 | 5,4 | 6 | 28 | 66 | 2 | ○ |
| 1180981Z9 | HBDPCE 2 03D 0550-066028 | 5,5 | 6 | 28 | 66 | 2 | ○ |
| 1180982Z9 | HBDPCE 2 03D 0560-066028 | 5,6 | 6 | 28 | 66 | 2 | ⊗ |
| 1180983Z9 | HBDPCE 2 03D 0570-066028 | 5,7 | 6 | 28 | 66 | 2 | ○ |
| 1180984Z9 | HBDPCE 2 03D 0580-066028 | 5,8 | 6 | 28 | 66 | 2 | ○ |
| 1180985Z9 | HBDPCE 2 03D 0590-066028 | 5,9 | 6 | 28 | 66 | 2 | ○ |
| 1180986Z9 | HBDPCE 2 03D 0600-066028 | 6 | 6 | 28 | 66 | 2 | ⊗ |
| 1180987Z9 | HBDPCE 2 03D 0610-079034 | 6,1 | 8 | 34 | 79 | 2 | ○ |
| 1180988Z9 | HBDPCE 2 03D 0620-079034 | 6,2 | 8 | 34 | 79 | 2 | ○ |
| 1180989Z9 | HBDPCE 2 03D 0630-079034 | 6,3 | 8 | 34 | 79 | 2 | ○ |
| 1180990Z9 | HBDPCE 2 03D 0640-079034 | 6,4 | 8 | 34 | 79 | 2 | ○ |
| 1180991Z9 | HBDPCE 2 03D 0650-079034 | 6,5 | 8 | 34 | 79 | 2 | ⊗ |
| 1180792Z9 | HBDPCE 2 03D 0660-079034 | 6,6 | 8 | 34 | 79 | 2 | ○ |
| 1180992Z9 | HBDPCE 2 03D 0670-079034 | 6,7 | 8 | 34 | 79 | 2 | ○ |
| 1180993Z9 | HBDPCE 2 03D 0680-079034 | 6,8 | 8 | 34 | 79 | 2 | ⊗ |
| 1180994Z9 | HBDPCE 2 03D 0690-079034 | 6,9 | 8 | 34 | 79 | 2 | ○ |
| 1180995Z9 | HBDPCE 2 03D 0700-079034 | 7 | 8 | 34 | 79 | 2 | ⊗ |
| 1180996Z9 | HBDPCE 2 03D 0710-079041 | 7,1 | 8 | 41 | 79 | 2 | ○ |
| 1180997Z9 | HBDPCE 2 03D 0720-079041 | 7,2 | 8 | 41 | 79 | 2 | ○ |
| 1180998Z9 | HBDPCE 2 03D 0730-079041 | 7,3 | 8 | 41 | 79 | 2 | ○ |

⊗ Stock item | Produto de stock
Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Z | PHU920 |
|----------------------|---------------------------------------|---|------|----|-----|---|--------|
| | | ØD | Ø ds | L1 | L | | |
| 1180999Z9 | HBDPCE 2 03D 0740-079041 | 7,4 | 8 | 41 | 79 | 2 | ○ |
| 1181000Z9 | HBDPCE 2 03D 0750-079041 | 7,5 | 8 | 41 | 79 | 2 | ○ |
| 1181001Z9 | HBDPCE 2 03D 0760-079041 | 7,6 | 8 | 41 | 79 | 2 | ○ |
| 1181002Z9 | HBDPCE 2 03D 0770-079041 | 7,7 | 8 | 41 | 79 | 2 | ○ |
| 1181003Z9 | HBDPCE 2 03D 0780-079041 | 7,8 | 8 | 41 | 79 | 2 | ○ |
| 1181004Z9 | HBDPCE 2 03D 0790-079041 | 7,9 | 8 | 41 | 79 | 2 | ○ |
| 1181005Z9 | HBDPCE 2 03D 0800-079041 | 8 | 8 | 41 | 79 | 2 | ⊗ |
| 1181006Z9 | HBDPCE 2 03D 0810-089047 | 8,1 | 10 | 47 | 89 | 2 | ○ |
| 1181007Z9 | HBDPCE 2 03D 0820-089047 | 8,2 | 10 | 47 | 89 | 2 | ○ |
| 1181008Z9 | HBDPCE 2 03D 0830-089047 | 8,3 | 10 | 47 | 89 | 2 | ○ |
| 1181009Z9 | HBDPCE 2 03D 0840-089047 | 8,4 | 10 | 47 | 89 | 2 | ○ |
| 1181010Z9 | HBDPCE 2 03D 0850-089047 | 8,5 | 10 | 47 | 89 | 2 | ○ |
| 1181011Z9 | HBDPCE 2 03D 0860-089047 | 8,6 | 10 | 47 | 89 | 2 | ○ |
| 1181012Z9 | HBDPCE 2 03D 0870-089047 | 8,7 | 10 | 47 | 89 | 2 | ○ |
| 1181013Z9 | HBDPCE 2 03D 0880-089047 | 8,8 | 10 | 47 | 89 | 2 | ○ |
| 1181014Z9 | HBDPCE 2 03D 0890-089047 | 8,9 | 10 | 47 | 89 | 2 | ○ |
| 1181015Z9 | HBDPCE 2 03D 0900-089047 | 9 | 10 | 47 | 89 | 2 | ⊗ |
| 1181016Z9 | HBDPCE 2 03D 0910-089047 | 9,1 | 10 | 47 | 89 | 2 | ○ |
| 1181017Z9 | HBDPCE 2 03D 0920-089047 | 9,2 | 10 | 47 | 89 | 2 | ○ |
| 1181018Z9 | HBDPCE 2 03D 0930-089047 | 9,3 | 10 | 47 | 89 | 2 | ○ |
| 1181019Z9 | HBDPCE 2 03D 0940-089047 | 9,4 | 10 | 47 | 89 | 2 | ○ |
| 1181020Z9 | HBDPCE 2 03D 0950-089047 | 9,5 | 10 | 47 | 89 | 2 | ○ |
| 1181021Z9 | HBDPCE 2 03D 0960-089047 | 9,6 | 10 | 47 | 89 | 2 | ○ |
| 1181022Z9 | HBDPCE 2 03D 0970-089047 | 9,7 | 10 | 47 | 89 | 2 | ○ |
| 1181023Z9 | HBDPCE 2 03D 0980-089047 | 9,8 | 10 | 47 | 89 | 2 | ○ |
| 1181024Z9 | HBDPCE 2 03D 0990-089047 | 9,9 | 10 | 47 | 89 | 2 | ○ |
| 1181025Z9 | HBDPCE 2 03D 1000-089047 | 10 | 10 | 47 | 89 | 2 | ⊗ |
| 1181026Z9 | HBDPCE 2 03D 1010-102055 | 10,1 | 12 | 55 | 102 | 2 | ○ |
| 1181027Z9 | HBDPCE 2 03D 1020-102055 | 10,2 | 12 | 55 | 102 | 2 | ⊗ |
| 1181028Z9 | HBDPCE 2 03D 1030-102055 | 10,3 | 12 | 55 | 102 | 2 | ○ |
| 1181029Z9 | HBDPCE 2 03D 1040-102055 | 10,4 | 12 | 55 | 102 | 2 | ○ |
| 1181030Z9 | HBDPCE 2 03D 1050-102055 | 10,5 | 12 | 55 | 102 | 2 | ○ |
| 1181031Z9 | HBDPCE 2 03D 1060-102055 | 10,6 | 12 | 55 | 102 | 2 | ○ |
| 1181032Z9 | HBDPCE 2 03D 1070-102055 | 10,7 | 12 | 55 | 102 | 2 | ○ |
| 1181033Z9 | HBDPCE 2 03D 1080-102055 | 10,8 | 12 | 55 | 102 | 2 | ○ |
| 1181034Z9 | HBDPCE 2 03D 1090-102055 | 10,9 | 12 | 55 | 102 | 2 | ○ |
| 1181035Z9 | HBDPCE 2 03D 1100-102055 | 11 | 12 | 55 | 102 | 2 | ⊗ |
| 1181036Z9 | HBDPCE 2 03D 1110-102055 | 11,1 | 12 | 55 | 102 | 2 | ○ |
| 1181037Z9 | HBDPCE 2 03D 1120-102055 | 11,2 | 12 | 55 | 102 | 2 | ○ |
| 1181038Z9 | HBDPCE 2 03D 1130-102055 | 11,3 | 12 | 55 | 102 | 2 | ○ |
| 1181039Z9 | HBDPCE 2 03D 1140-102055 | 11,4 | 12 | 55 | 102 | 2 | ○ |
| 1181040Z9 | HBDPCE 2 03D 1150-102055 | 11,5 | 12 | 55 | 102 | 2 | ○ |
| 1181041Z9 | HBDPCE 2 03D 1160-102055 | 11,6 | 12 | 55 | 102 | 2 | ○ |
| 1181042Z9 | HBDPCE 2 03D 1170-102055 | 11,7 | 12 | 55 | 102 | 2 | ○ |
| 1181043Z9 | HBDPCE 2 03D 1180-102055 | 11,8 | 12 | 55 | 102 | 2 | ○ |

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Z | PHU920 |
|----------------------|---------------------------------------|---|------|----|-----|---|--------|
| | | ØD | Ø ds | L1 | L | | |
| 1181044Z9 | HBDPCE 2 03D 1190-102055 | 11,9 | 12 | 55 | 102 | 2 | ○ |
| 1181045Z9 | HBDPCE 2 03D 1200-102055 | 12 | 12 | 55 | 102 | 2 | ⊗ |
| 1181046Z9 | HBDPCE 2 03D 1250-107060 | 12,5 | 14 | 60 | 107 | 2 | ⊗ |
| 1181047Z9 | HBDPCE 2 03D 1300-107060 | 13 | 14 | 60 | 107 | 2 | ○ |
| 1181048Z9 | HBDPCE 2 03D 1350-107060 | 13,5 | 14 | 60 | 107 | 2 | ○ |
| 1181049Z9 | HBDPCE 2 03D 1400-107060 | 14 | 14 | 60 | 107 | 2 | ⊗ |
| 1181050Z9 | HBDPCE 2 03D 1450-115065 | 14,5 | 16 | 65 | 115 | 2 | ⊗ |
| 1181051Z9 | HBDPCE 2 03D 1500-115065 | 15 | 16 | 65 | 115 | 2 | ⊗ |
| 1181052Z9 | HBDPCE 2 03D 1550-115065 | 15,5 | 16 | 65 | 115 | 2 | ○ |
| 1181053Z9 | HBDPCE 2 03D 1600-115065 | 16 | 16 | 65 | 115 | 2 | ○ |
| 1181054Z9 | HBDPCE 2 03D 1650-123073 | 16,5 | 18 | 73 | 123 | 2 | ○ |
| 1181055Z9 | HBDPCE 2 03D 1700-123073 | 17 | 18 | 73 | 123 | 2 | ○ |
| 1181056Z9 | HBDPCE 2 03D 1750-123073 | 17,5 | 18 | 73 | 123 | 2 | ○ |
| 1181057Z9 | HBDPCE 2 03D 1800-123073 | 18 | 18 | 73 | 123 | 2 | ○ |
| 1181058Z9 | HBDPCE 2 03D 1850-131079 | 18,5 | 20 | 79 | 131 | 2 | ○ |
| 1181059Z9 | HBDPCE 2 03D 1900-131079 | 19 | 20 | 79 | 131 | 2 | ○ |
| 1181060Z9 | HBDPCE 2 03D 1950-131079 | 19,5 | 20 | 79 | 131 | 2 | ○ |
| 1181061Z9 | HBDPCE 2 03D 2000-131079 | 20 | 20 | 79 | 131 | 2 | ○ |

⊗ Stock item | Produto de stock
Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta

HBDPUE 2 03D

DRILLING

Jet Drills

Integrex Drills

Vortex Drills

Trepanning Drills

Solid Carbide Drills

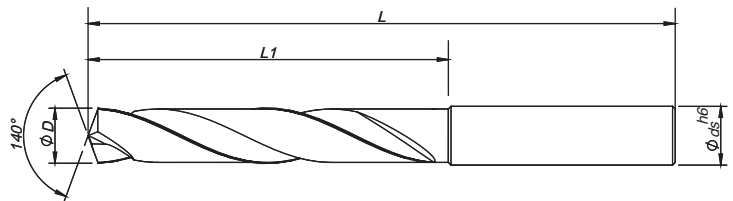
Inserts

Spare Parts

Technical Data



| | |
|----------------|-------------------|
| P | K |
| HRC ≤ 60 | IT8-9 IT class |



| Drill Dia. ØD | ØD3,0 | 3,0<ØD≤6,0 | 6,0<ØD≤10,0 | 10,0<ØD≤18,0 | 18,0<ØD≤20,0 |
|-----------------|--------|------------|-------------|--------------|--------------|
| Hole Tolerances | +0,002 | +0,004 | +0,006 | +0,007 | +0,008 |
| | +0,012 | +0,016 | +0,021 | +0,025 | +0,028 |

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Z | PHU920 |
|----------------------|---------------------------------------|--|------|----|----|---|--------|
| | | ØD | Ø ds | L1 | L | | |
| 1180784Z9 | HBDPUE 2 03D 0300-062020 | 3 | 6 | 20 | 62 | 2 | ○ |
| 1180852Z9 | HBDPUE 2 03D 0310-062020 | 3,1 | 6 | 20 | 62 | 2 | ○ |
| 1180853Z9 | HBDPUE 2 03D 0320-062020 | 3,2 | 6 | 20 | 62 | 2 | ○ |
| 1180854Z9 | HBDPUE 2 03D 0330-062020 | 3,3 | 6 | 20 | 62 | 2 | ○ |
| 1180790Z9 | HBDPUE 2 03D 0340-062020 | 3,4 | 6 | 20 | 62 | 2 | ○ |
| 1180855Z9 | HBDPUE 2 03D 0350-062020 | 3,5 | 6 | 20 | 62 | 2 | ○ |
| 1180856Z9 | HBDPUE 2 03D 0360-062020 | 3,6 | 6 | 20 | 62 | 2 | ○ |
| 1180857Z9 | HBDPUE 2 03D 0370-062020 | 3,7 | 6 | 20 | 62 | 2 | ○ |
| 1180858Z9 | HBDPUE 2 03D 0380-066024 | 3,8 | 6 | 24 | 66 | 2 | ○ |
| 1180859Z9 | HBDPUE 2 03D 0390-066024 | 3,9 | 6 | 24 | 66 | 2 | ○ |
| 1180860Z9 | HBDPUE 2 03D 0400-066024 | 4 | 6 | 24 | 66 | 2 | ○ |
| 1180861Z9 | HBDPUE 2 03D 0410-066024 | 4,1 | 6 | 24 | 66 | 2 | ○ |
| 1180862Z9 | HBDPUE 2 03D 0420-066024 | 4,2 | 6 | 24 | 66 | 2 | ○ |
| 1180863Z9 | HBDPUE 2 03D 0430-066024 | 4,3 | 6 | 24 | 66 | 2 | ○ |
| 1180864Z9 | HBDPUE 2 03D 0440-066024 | 4,4 | 6 | 24 | 66 | 2 | ○ |
| 1180865Z9 | HBDPUE 2 03D 0450-066024 | 4,5 | 6 | 24 | 66 | 2 | ○ |
| 1180866Z9 | HBDPUE 2 03D 0460-066024 | 4,6 | 6 | 24 | 66 | 2 | ○ |
| 1180867Z9 | HBDPUE 2 03D 0470-066024 | 4,7 | 6 | 24 | 66 | 2 | ○ |
| 1180868Z9 | HBDPUE 2 03D 0480-066028 | 4,8 | 6 | 28 | 66 | 2 | ○ |
| 1180869Z9 | HBDPUE 2 03D 0490-066028 | 4,9 | 6 | 28 | 66 | 2 | ○ |
| 1180870Z9 | HBDPUE 2 03D 0500-066028 | 5 | 6 | 28 | 66 | 2 | ○ |
| 1180871Z9 | HBDPUE 2 03D 0510-066028 | 5,1 | 6 | 28 | 66 | 2 | ○ |

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Z | PHU920 |
|----------------------|---------------------------------------|--|------|----|----|---|--------|
| | | ØD | Ø ds | L1 | L | | |
| 1180872Z9 | HBDPUE 2 03D 0520-066028 | 5,2 | 6 | 28 | 66 | 2 | ○ |
| 1180873Z9 | HBDPUE 2 03D 0530-066028 | 5,3 | 6 | 28 | 66 | 2 | ○ |
| 1180874Z9 | HBDPUE 2 03D 0540-066028 | 5,4 | 6 | 28 | 66 | 2 | ○ |
| 1180875Z9 | HBDPUE 2 03D 0550-066028 | 5,5 | 6 | 28 | 66 | 2 | ○ |
| 1180791Z9 | HBDPUE 2 03D 0560-066028 | 5,6 | 6 | 28 | 66 | 2 | ○ |
| 1180876Z9 | HBDPUE 2 03D 0570-066028 | 5,7 | 6 | 28 | 66 | 2 | ○ |
| 1180877Z9 | HBDPUE 2 03D 0580-066028 | 5,8 | 6 | 28 | 66 | 2 | ○ |
| 1180878Z9 | HBDPUE 2 03D 0590-066028 | 5,9 | 6 | 28 | 66 | 2 | ○ |
| 1180879Z9 | HBDPUE 2 03D 0600-066028 | 6 | 6 | 28 | 66 | 2 | ○ |
| 1180880Z9 | HBDPUE 2 03D 0610-079034 | 6,1 | 8 | 34 | 79 | 2 | ○ |
| 1180881Z9 | HBDPUE 2 03D 0620-079034 | 6,2 | 8 | 34 | 79 | 2 | ○ |
| 1180882Z9 | HBDPUE 2 03D 0630-079034 | 6,3 | 8 | 34 | 79 | 2 | ○ |
| 1180883Z9 | HBDPUE 2 03D 0640-079034 | 6,4 | 8 | 34 | 79 | 2 | ○ |
| 1180884Z9 | HBDPUE 2 03D 0650-079034 | 6,5 | 8 | 34 | 79 | 2 | ○ |
| 1180885Z9 | HBDPUE 2 03D 0660-079034 | 6,6 | 8 | 34 | 79 | 2 | ○ |
| 1180886Z9 | HBDPUE 2 03D 0670-079034 | 6,7 | 8 | 34 | 79 | 2 | ○ |
| 1180887Z9 | HBDPUE 2 03D 0680-079034 | 6,8 | 8 | 34 | 79 | 2 | ○ |
| 1180888Z9 | HBDPUE 2 03D 0690-079034 | 6,9 | 8 | 34 | 79 | 2 | ○ |
| 1180889Z9 | HBDPUE 2 03D 0700-079034 | 7 | 8 | 34 | 79 | 2 | ○ |
| 1180890Z9 | HBDPUE 2 03D 0710-079041 | 7,1 | 8 | 41 | 79 | 2 | ○ |
| 1180891Z9 | HBDPUE 2 03D 0720-079041 | 7,2 | 8 | 41 | 79 | 2 | ○ |
| 1180892Z9 | HBDPUE 2 03D 0730-079041 | 7,3 | 8 | 41 | 79 | 2 | ○ |

Stock item | Produto de stock / Itens de stock Available under request | Disponível sobre consulta / Disponible bajo consulta

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Z | PHU920 |
|----------------------|---------------------------------------|---|------|----|-----|---|--------|
| | | ØD | Ø ds | L1 | L | | |
| 1180893Z9 | HBDPUE 2 03D 0740-079041 | 7,4 | 8 | 41 | 79 | 2 | ○ |
| 1180894Z9 | HBDPUE 2 03D 0750-079041 | 7,5 | 8 | 41 | 79 | 2 | ○ |
| 1180895Z9 | HBDPUE 2 03D 0760-079041 | 7,6 | 8 | 41 | 79 | 2 | ○ |
| 1180896Z9 | HBDPUE 2 03D 0770-079041 | 7,7 | 8 | 41 | 79 | 2 | ○ |
| 1180897Z9 | HBDPUE 2 03D 0780-079041 | 7,8 | 8 | 41 | 79 | 2 | ○ |
| 1180898Z9 | HBDPUE 2 03D 0790-079041 | 7,9 | 8 | 41 | 79 | 2 | ○ |
| 1180899Z9 | HBDPUE 2 03D 0800-079041 | 8 | 8 | 41 | 79 | 2 | ○ |
| 1180900Z9 | HBDPUE 2 03D 0810-089047 | 8,1 | 10 | 47 | 89 | 2 | ○ |
| 1180901Z9 | HBDPUE 2 03D 0820-089047 | 8,2 | 10 | 47 | 89 | 2 | ○ |
| 1180902Z9 | HBDPUE 2 03D 0830-089047 | 8,3 | 10 | 47 | 89 | 2 | ○ |
| 1180903Z9 | HBDPUE 2 03D 0840-089047 | 8,4 | 10 | 47 | 89 | 2 | ○ |
| 1180904Z9 | HBDPUE 2 03D 0850-089047 | 8,5 | 10 | 47 | 89 | 2 | ○ |
| 1180905Z9 | HBDPUE 2 03D 0860-089047 | 8,6 | 10 | 47 | 89 | 2 | ○ |
| 1180906Z9 | HBDPUE 2 03D 0870-089047 | 8,7 | 10 | 47 | 89 | 2 | ○ |
| 1180907Z9 | HBDPUE 2 03D 0880-089047 | 8,8 | 10 | 47 | 89 | 2 | ○ |
| 1180908Z9 | HBDPUE 2 03D 0890-089047 | 8,9 | 10 | 47 | 89 | 2 | ○ |
| 1180909Z9 | HBDPUE 2 03D 0900-089047 | 9 | 10 | 47 | 89 | 2 | ○ |
| 1180910Z9 | HBDPUE 2 03D 0910-089047 | 9,1 | 10 | 47 | 89 | 2 | ○ |
| 1180911Z9 | HBDPUE 2 03D 0920-089047 | 9,2 | 10 | 47 | 89 | 2 | ○ |
| 1180912Z9 | HBDPUE 2 03D 0930-089047 | 9,3 | 10 | 47 | 89 | 2 | ○ |
| 1180913Z9 | HBDPUE 2 03D 0940-089047 | 9,4 | 10 | 47 | 89 | 2 | ○ |
| 1180914Z9 | HBDPUE 2 03D 0950-089047 | 9,5 | 10 | 47 | 89 | 2 | ○ |
| 1180915Z9 | HBDPUE 2 03D 0960-089047 | 9,6 | 10 | 47 | 89 | 2 | ○ |
| 1180916Z9 | HBDPUE 2 03D 0970-089047 | 9,7 | 10 | 47 | 89 | 2 | ○ |
| 1180917Z9 | HBDPUE 2 03D 0980-089047 | 9,8 | 10 | 47 | 89 | 2 | ○ |
| 1180918Z9 | HBDPUE 2 03D 0990-089047 | 9,9 | 10 | 47 | 89 | 2 | ○ |
| 1180919Z9 | HBDPUE 2 03D 1000-089047 | 10 | 10 | 47 | 89 | 2 | ○ |
| 1180920Z9 | HBDPUE 2 03D 1010-102055 | 10,1 | 12 | 55 | 102 | 2 | ○ |
| 1180921Z9 | HBDPUE 2 03D 1020-102055 | 10,2 | 12 | 55 | 102 | 2 | ○ |
| 1180922Z9 | HBDPUE 2 03D 1030-102055 | 10,3 | 12 | 55 | 102 | 2 | ○ |
| 1180923Z9 | HBDPUE 2 03D 1040-102055 | 10,4 | 12 | 55 | 102 | 2 | ○ |
| 1180924Z9 | HBDPUE 2 03D 1050-102055 | 10,5 | 12 | 55 | 102 | 2 | ○ |
| 1180925Z9 | HBDPUE 2 03D 1060-102055 | 10,6 | 12 | 55 | 102 | 2 | ○ |
| 1180926Z9 | HBDPUE 2 03D 1070-102055 | 10,7 | 12 | 55 | 102 | 2 | ○ |
| 1180927Z9 | HBDPUE 2 03D 1080-102055 | 10,8 | 12 | 55 | 102 | 2 | ○ |
| 1180928Z9 | HBDPUE 2 03D 1090-102055 | 10,9 | 12 | 55 | 102 | 2 | ○ |
| 1180929Z9 | HBDPUE 2 03D 1100-102055 | 11 | 12 | 55 | 102 | 2 | ○ |
| 1180930Z9 | HBDPUE 2 03D 1110-102055 | 11,1 | 12 | 55 | 102 | 2 | ○ |
| 1180931Z9 | HBDPUE 2 03D 1120-102055 | 11,2 | 12 | 55 | 102 | 2 | ○ |
| 1180932Z9 | HBDPUE 2 03D 1130-102055 | 11,3 | 12 | 55 | 102 | 2 | ○ |
| 1180933Z9 | HBDPUE 2 03D 1140-102055 | 11,4 | 12 | 55 | 102 | 2 | ○ |
| 1180934Z9 | HBDPUE 2 03D 1150-102055 | 11,5 | 12 | 55 | 102 | 2 | ○ |
| 1180935Z9 | HBDPUE 2 03D 1160-102055 | 11,6 | 12 | 55 | 102 | 2 | ○ |
| 1180936Z9 | HBDPUE 2 03D 1170-102055 | 11,7 | 12 | 55 | 102 | 2 | ○ |
| 1180937Z9 | HBDPUE 2 03D 1180-102055 | 11,8 | 12 | 55 | 102 | 2 | ○ |

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Z | PHU920 |
|----------------------|---------------------------------------|---|------|----|-----|---|--------|
| | | ØD | Ø ds | L1 | L | | |
| 1180938Z9 | HBDPUE 2 03D 1190-102055 | 11,9 | 12 | 55 | 102 | 2 | ○ |
| 1180939Z9 | HBDPUE 2 03D 1200-102055 | 12 | 12 | 55 | 102 | 2 | ○ |
| 1180940Z9 | HBDPUE 2 03D 1250-107060 | 12,5 | 14 | 60 | 107 | 2 | ○ |
| 1180941Z9 | HBDPUE 2 03D 1300-107060 | 13 | 14 | 60 | 107 | 2 | ○ |
| 1180942Z9 | HBDPUE 2 03D 1350-107060 | 13,5 | 14 | 60 | 107 | 2 | ○ |
| 1180943Z9 | HBDPUE 2 03D 1400-107060 | 14 | 14 | 60 | 107 | 2 | ○ |
| 1180944Z9 | HBDPUE 2 03D 1450-115065 | 14,5 | 16 | 65 | 115 | 2 | ○ |
| 1180945Z9 | HBDPUE 2 03D 1500-115065 | 15 | 16 | 65 | 115 | 2 | ○ |
| 1180946Z9 | HBDPUE 2 03D 1550-115065 | 15,5 | 16 | 65 | 115 | 2 | ○ |
| 1180947Z9 | HBDPUE 2 03D 1600-115065 | 16 | 16 | 65 | 115 | 2 | ○ |
| 1180948Z9 | HBDPUE 2 03D 1650-123073 | 16,5 | 18 | 73 | 123 | 2 | ○ |
| 1180949Z9 | HBDPUE 2 03D 1700-123073 | 17 | 18 | 73 | 123 | 2 | ○ |
| 1180950Z9 | HBDPUE 2 03D 1750-123073 | 17,5 | 18 | 73 | 123 | 2 | ○ |
| 1180951Z9 | HBDPUE 2 03D 1800-123073 | 18 | 18 | 73 | 123 | 2 | ○ |
| 1180952Z9 | HBDPUE 2 03D 1850-131079 | 18,5 | 20 | 79 | 131 | 2 | ○ |
| 1180953Z9 | HBDPUE 2 03D 1900-131079 | 19 | 20 | 79 | 131 | 2 | ○ |
| 1180954Z9 | HBDPUE 2 03D 1950-131079 | 19,5 | 20 | 79 | 131 | 2 | ○ |
| 1180955Z9 | HBDPUE 2 03D 2000-131079 | 20 | 20 | 79 | 131 | 2 | ○ |

Stock item | Produto de stock
Itens de stock

Available under request | Disponível sobre consulta
Disponível bajo consulta

HBDPCE 2 05D

DRILLING

Jet Drills

Integrex Drills

Vortex Drills

Trepanning Drills

Solid Carbide Drills

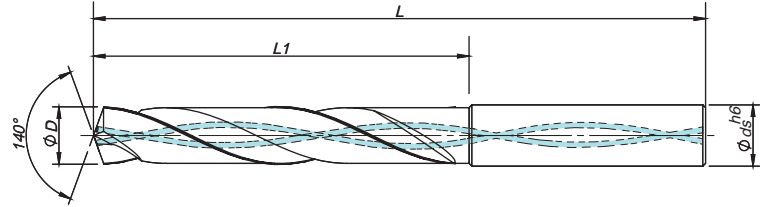
Inserts

Spare Parts

Technical Data

P K

HRC ≤ 60
IT8-9 IT class



| Drill Dia. ØD | ØD3,0 | 3,0<ØD≤6,0 | 6,0<ØD≤10,0 | 10,0<ØD≤18,0 | 18,0<ØD≤20,0 |
|-----------------|--------|------------|-------------|--------------|--------------|
| Hole Tolerances | +0,002 | +0,004 | +0,006 | +0,007 | +0,008 |
| | +0,012 | +0,016 | +0,021 | +0,025 | +0,028 |

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Z | PHU920 |
|----------------------|---------------------------------------|--|------|----|----|---|--------|
| | | ØD | Ø ds | L1 | L | | |
| 1180788Z9 | HBDPCE 2 05D 0300-066028 | 3 | 6 | 28 | 66 | 2 | ⊗ |
| 1181160Z9 | HBDPCE 2 05D 0310-066028 | 3,1 | 6 | 28 | 66 | 2 | ⊗ |
| 1181161Z9 | HBDPCE 2 05D 0320-066028 | 3,2 | 6 | 28 | 66 | 2 | ⊗ |
| 1181162Z9 | HBDPCE 2 05D 0330-066028 | 3,3 | 6 | 28 | 66 | 2 | ⊗ |
| 1180797Z9 | HBDPCE 2 05D 0340-066028 | 3,4 | 6 | 28 | 66 | 2 | ⊗ |
| 1181163Z9 | HBDPCE 2 05D 0350-066028 | 3,5 | 6 | 28 | 66 | 2 | ⊗ |
| 1181164Z9 | HBDPCE 2 05D 0360-066028 | 3,6 | 6 | 28 | 66 | 2 | ○ |
| 1180798Z9 | HBDPCE 2 05D 0370-066028 | 3,7 | 6 | 28 | 66 | 2 | ⊗ |
| 1181165Z9 | HBDPCE 2 05D 0380-074036 | 3,8 | 6 | 36 | 74 | 2 | ○ |
| 1181166Z9 | HBDPCE 2 05D 0390-074036 | 3,9 | 6 | 36 | 74 | 2 | ○ |
| 1181167Z9 | HBDPCE 2 05D 0400-074036 | 4 | 6 | 36 | 74 | 2 | ⊗ |
| 1181168Z9 | HBDPCE 2 05D 0410-074036 | 4,1 | 6 | 36 | 74 | 2 | ⊗ |
| 1180799Z9 | HBDPCE 2 05D 0420-074036 | 4,2 | 6 | 36 | 74 | 2 | ⊗ |
| 1180800Z9 | HBDPCE 2 05D 0430-074036 | 4,3 | 6 | 36 | 74 | 2 | ⊗ |
| 1181169Z9 | HBDPCE 2 05D 0440-074036 | 4,4 | 6 | 36 | 74 | 2 | ○ |
| 1181170Z9 | HBDPCE 2 05D 0450-074036 | 4,5 | 6 | 36 | 74 | 2 | ○ |
| 1181171Z9 | HBDPCE 2 05D 0460-074036 | 4,6 | 6 | 36 | 74 | 2 | ○ |
| 1181172Z9 | HBDPCE 2 05D 0470-074036 | 4,7 | 6 | 36 | 74 | 2 | ⊗ |
| 1181173Z9 | HBDPCE 2 05D 0480-082044 | 4,8 | 6 | 44 | 82 | 2 | ○ |
| 1181174Z9 | HBDPCE 2 05D 0490-082044 | 4,9 | 6 | 44 | 82 | 2 | ○ |
| 1180801Z9 | HBDPCE 2 05D 0500-082044 | 5 | 6 | 44 | 82 | 2 | ⊗ |
| 1181175Z9 | HBDPCE 2 05D 0510-082044 | 5,1 | 6 | 44 | 82 | 2 | ○ |
| 1181176Z9 | HBDPCE 2 05D 0520-082044 | 5,2 | 6 | 44 | 82 | 2 | ○ |
| 1181177Z9 | HBDPCE 2 05D 0530-082044 | 5,3 | 6 | 44 | 82 | 2 | ○ |
| 1181178Z9 | HBDPCE 2 05D 0540-082044 | 5,4 | 6 | 44 | 82 | 2 | ○ |

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Z | PHU920 |
|----------------------|---------------------------------------|--|------|----|----|---|--------|
| | | ØD | Ø ds | L1 | L | | |
| 1181179Z9 | HBDPCE 2 05D 0550-082044 | 5,5 | 6 | 44 | 82 | 2 | ○ |
| 1181180Z9 | HBDPCE 2 05D 0560-082044 | 5,6 | 6 | 44 | 82 | 2 | ○ |
| 1181181Z9 | HBDPCE 2 05D 0570-082044 | 5,7 | 6 | 44 | 82 | 2 | ○ |
| 1180802Z9 | HBDPCE 2 05D 0580-082044 | 5,8 | 6 | 44 | 82 | 2 | ⊗ |
| 1181182Z9 | HBDPCE 2 05D 0590-082044 | 5,9 | 6 | 44 | 82 | 2 | ○ |
| 1181183Z9 | HBDPCE 2 05D 0600-082044 | 6 | 6 | 44 | 82 | 2 | ⊗ |
| 1181184Z9 | HBDPCE 2 05D 0610-091053 | 6,1 | 8 | 53 | 91 | 2 | ○ |
| 1181185Z9 | HBDPCE 2 05D 0620-091053 | 6,2 | 8 | 53 | 91 | 2 | ○ |
| 1181186Z9 | HBDPCE 2 05D 0630-091053 | 6,3 | 8 | 53 | 91 | 2 | ○ |
| 1181187Z9 | HBDPCE 2 05D 0640-091053 | 6,4 | 8 | 53 | 91 | 2 | ○ |
| 1180787Z9 | HBDPCE 2 05D 0650-091053 | 6,5 | 8 | 53 | 91 | 2 | ⊗ |
| 1181188Z9 | HBDPCE 2 05D 0660-091053 | 6,6 | 8 | 53 | 91 | 2 | ⊗ |
| 1181189Z9 | HBDPCE 2 05D 0670-091053 | 6,7 | 8 | 53 | 91 | 2 | ○ |
| 1180803Z9 | HBDPCE 2 05D 0680-091053 | 6,8 | 8 | 53 | 91 | 2 | ⊗ |
| 1181190Z9 | HBDPCE 2 05D 0690-091053 | 6,9 | 8 | 53 | 91 | 2 | ○ |
| 1180804Z9 | HBDPCE 2 05D 0700-091053 | 7 | 8 | 53 | 91 | 2 | ⊗ |
| 1181191Z9 | HBDPCE 2 05D 0710-091053 | 7,1 | 8 | 53 | 91 | 2 | ○ |
| 1181192Z9 | HBDPCE 2 05D 0720-091053 | 7,2 | 8 | 53 | 91 | 2 | ○ |
| 1181193Z9 | HBDPCE 2 05D 0730-091053 | 7,3 | 8 | 53 | 91 | 2 | ○ |
| 1180805Z9 | HBDPCE 2 05D 0740-091053 | 7,4 | 8 | 53 | 91 | 2 | ⊗ |
| 1181194Z9 | HBDPCE 2 05D 0750-091053 | 7,5 | 8 | 53 | 91 | 2 | ○ |
| 1181195Z9 | HBDPCE 2 05D 0760-091053 | 7,6 | 8 | 53 | 91 | 2 | ○ |
| 1181196Z9 | HBDPCE 2 05D 0770-091053 | 7,7 | 8 | 53 | 91 | 2 | ○ |
| 1181197Z9 | HBDPCE 2 05D 0780-091053 | 7,8 | 8 | 53 | 91 | 2 | ○ |
| 1181198Z9 | HBDPCE 2 05D 0790-091053 | 7,9 | 8 | 53 | 91 | 2 | ○ |

⊗ Stock item | Produto de stock
Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Z | PHU920 |
|----------------------|---------------------------------------|---|------|----|-----|---|--------|
| | | ØD | Ø ds | L1 | L | | |
| 1181199Z9 | HBDPCE 2 05D 0800-091053 | 8 | 8 | 53 | 91 | 2 | ⊗ |
| 1181200Z9 | HBDPCE 2 05D 0810-103061 | 8,1 | 10 | 61 | 103 | 2 | ○ |
| 1181201Z9 | HBDPCE 2 05D 0820-103061 | 8,2 | 10 | 61 | 103 | 2 | ○ |
| 1181202Z9 | HBDPCE 2 05D 0830-103061 | 8,3 | 10 | 61 | 103 | 2 | ○ |
| 1181203Z9 | HBDPCE 2 05D 0840-103061 | 8,4 | 10 | 61 | 103 | 2 | ○ |
| 1180806Z9 | HBDPCE 2 05D 0850-103061 | 8,5 | 10 | 61 | 103 | 2 | ⊗ |
| 1181204Z9 | HBDPCE 2 05D 0860-103061 | 8,6 | 10 | 61 | 103 | 2 | ○ |
| 1181205Z9 | HBDPCE 2 05D 0870-103061 | 8,7 | 10 | 61 | 103 | 2 | ○ |
| 1181206Z9 | HBDPCE 2 05D 0880-103061 | 8,8 | 10 | 61 | 103 | 2 | ○ |
| 1181207Z9 | HBDPCE 2 05D 0890-103061 | 8,9 | 10 | 61 | 103 | 2 | ○ |
| 1180807Z9 | HBDPCE 2 05D 0900-103061 | 9 | 10 | 61 | 103 | 2 | ⊗ |
| 1181208Z9 | HBDPCE 2 05D 0910-103061 | 9,1 | 10 | 61 | 103 | 2 | ○ |
| 1181209Z9 | HBDPCE 2 05D 0920-103061 | 9,2 | 10 | 61 | 103 | 2 | ○ |
| 1181210Z9 | HBDPCE 2 05D 0930-103061 | 9,3 | 10 | 61 | 103 | 2 | ○ |
| 1181211Z9 | HBDPCE 2 05D 0940-103061 | 9,4 | 10 | 61 | 103 | 2 | ○ |
| 1181212Z9 | HBDPCE 2 05D 0950-103061 | 9,5 | 10 | 61 | 103 | 2 | ○ |
| 1181213Z9 | HBDPCE 2 05D 0960-103061 | 9,6 | 10 | 61 | 103 | 2 | ○ |
| 1181214Z9 | HBDPCE 2 05D 0970-103061 | 9,7 | 10 | 61 | 103 | 2 | ○ |
| 1181215Z9 | HBDPCE 2 05D 0980-103061 | 9,8 | 10 | 61 | 103 | 2 | ○ |
| 1181216Z9 | HBDPCE 2 05D 0990-103061 | 9,9 | 10 | 61 | 103 | 2 | ○ |
| 1181217Z9 | HBDPCE 2 05D 1000-103061 | 10 | 10 | 61 | 103 | 2 | ⊗ |
| 1181218Z9 | HBDPCE 2 05D 1010-118071 | 10,1 | 12 | 71 | 118 | 2 | ○ |
| 1180808Z9 | HBDPCE 2 05D 1020-118071 | 10,2 | 12 | 71 | 118 | 2 | ⊗ |
| 1181219Z9 | HBDPCE 2 05D 1030-118071 | 10,3 | 12 | 71 | 118 | 2 | ○ |
| 1181220Z9 | HBDPCE 2 05D 1040-118071 | 10,4 | 12 | 71 | 118 | 2 | ○ |
| 1180809Z9 | HBDPCE 2 05D 1050-118071 | 10,5 | 12 | 71 | 118 | 2 | ⊗ |
| 1180810Z9 | HBDPCE 2 05D 1060-118071 | 10,6 | 12 | 71 | 118 | 2 | ⊗ |
| 1181221Z9 | HBDPCE 2 05D 1070-118071 | 10,7 | 12 | 71 | 118 | 2 | ○ |
| 1181222Z9 | HBDPCE 2 05D 1080-118071 | 10,8 | 12 | 71 | 118 | 2 | ○ |
| 1181223Z9 | HBDPCE 2 05D 1090-118071 | 10,9 | 12 | 71 | 118 | 2 | ○ |
| 1180811Z9 | HBDPCE 2 05D 1100-118071 | 11 | 12 | 71 | 118 | 2 | ⊗ |
| 1181224Z9 | HBDPCE 2 05D 1110-118071 | 11,1 | 12 | 71 | 118 | 2 | ○ |
| 1181225Z9 | HBDPCE 2 05D 1120-118071 | 11,2 | 12 | 71 | 118 | 2 | ○ |
| 1181226Z9 | HBDPCE 2 05D 1130-118071 | 11,3 | 12 | 71 | 118 | 2 | ○ |
| 1181227Z9 | HBDPCE 2 05D 1140-118071 | 11,4 | 12 | 71 | 118 | 2 | ○ |
| 1180812Z9 | HBDPCE 2 05D 1150-118071 | 11,5 | 12 | 71 | 118 | 2 | ⊗ |
| 1181228Z9 | HBDPCE 2 05D 1160-118071 | 11,6 | 12 | 71 | 118 | 2 | ○ |
| 1181229Z9 | HBDPCE 2 05D 1170-118071 | 11,7 | 12 | 71 | 118 | 2 | ○ |
| 1181230Z9 | HBDPCE 2 05D 1180-118071 | 11,8 | 12 | 71 | 118 | 2 | ○ |
| 1181231Z9 | HBDPCE 2 05D 1190-118071 | 11,9 | 12 | 71 | 118 | 2 | ○ |
| 1180813Z9 | HBDPCE 2 05D 1200-118071 | 12 | 12 | 71 | 118 | 2 | ⊗ |
| 1181232Z9 | HBDPCE 2 05D 1250-124077 | 12,5 | 14 | 77 | 124 | 2 | ○ |
| 1180814Z9 | HBDPCE 2 05D 1300-124077 | 13 | 14 | 77 | 124 | 2 | ⊗ |
| 1181233Z9 | HBDPCE 2 05D 1350-124077 | 13,5 | 14 | 77 | 124 | 2 | ○ |
| 1181234Z9 | HBDPCE 2 05D 1400-124077 | 14 | 14 | 77 | 124 | 2 | ○ |

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Z | PHU920 |
|----------------------|---------------------------------------|---|------|-----|-----|---|--------|
| | | ØD | Ø ds | L1 | L | | |
| 1181235Z9 | HBDPCE 2 05D 1450-133083 | 14,5 | 16 | 83 | 133 | 2 | ○ |
| 1181236Z9 | HBDPCE 2 05D 1500-133083 | 15 | 16 | 83 | 133 | 2 | ○ |
| 1181237Z9 | HBDPCE 2 05D 1550-133083 | 15,5 | 16 | 83 | 133 | 2 | ○ |
| 1181238Z9 | HBDPCE 2 05D 1600-133083 | 16 | 16 | 83 | 133 | 2 | ○ |
| 1181239Z9 | HBDPCE 2 05D 1650-143093 | 16,5 | 18 | 93 | 143 | 2 | ○ |
| 1181240Z9 | HBDPCE 2 05D 1700-143093 | 17 | 18 | 93 | 143 | 2 | ○ |
| 1180816Z9 | HBDPCE 2 05D 1750-143093 | 17,5 | 18 | 93 | 143 | 2 | ⊗ |
| 1181241Z9 | HBDPCE 2 05D 1800-143093 | 18 | 18 | 93 | 143 | 2 | ○ |
| 1181242Z9 | HBDPCE 2 05D 1850-153101 | 18,5 | 20 | 101 | 153 | 2 | ○ |
| 1181243Z9 | HBDPCE 2 05D 1900-153101 | 19 | 20 | 101 | 153 | 2 | ○ |
| 1181244Z9 | HBDPCE 2 05D 1950-153101 | 19,5 | 20 | 101 | 153 | 2 | ○ |
| 1181245Z9 | HBDPCE 2 05D 2000-153101 | 20 | 20 | 101 | 153 | 2 | ○ |

⊗ Stock item | Produto de stock
Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta

HBDPUE 2 05D

DRILLING

Jet Drills

Integrex Drills

Vortex Drills

Trepanning Drills

Solid Carbide Drills

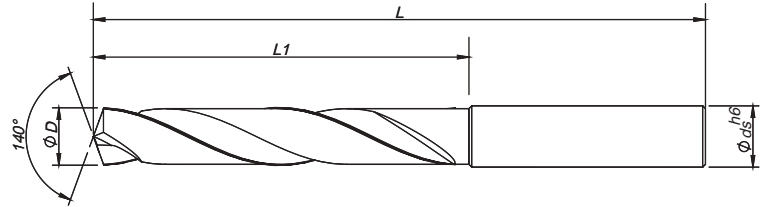
Inserts

Spare Parts

Technical Data

P K

HRC ≤ 60
IT8-9
IT class



| Drill Dia. ØD | ØD3,0 | 3,0<ØD≤6,0 | 6,0<ØD≤10,0 | 10,0<ØD≤18,0 | 18,0<ØD≤20,0 |
|-----------------|--------|------------|-------------|--------------|--------------|
| Hole Tolerances | +0,002 | +0,004 | +0,006 | +0,007 | +0,008 |
| | +0,012 | +0,016 | +0,021 | +0,025 | +0,028 |

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Z | PHU920 |
|----------------------|---------------------------------------|--|------|----|----|---|--------|
| | | ØD | Ø ds | L1 | L | | |
| 1180793Z9 | HBDPUE 2 05D 0300-066028 | 3 | 6 | 28 | 66 | 2 | ○ |
| 1180794Z9 | HBDPUE 2 05D 0310-066028 | 3,1 | 6 | 28 | 66 | 2 | ○ |
| 1181062Z9 | HBDPUE 2 05D 0320-066028 | 3,2 | 6 | 28 | 66 | 2 | ○ |
| 1181063Z9 | HBDPUE 2 05D 0330-066028 | 3,3 | 6 | 28 | 66 | 2 | ○ |
| 1180789Z9 | HBDPUE 2 05D 0340-066028 | 3,4 | 6 | 28 | 66 | 2 | ○ |
| 1181064Z9 | HBDPUE 2 05D 0350-066028 | 3,5 | 6 | 28 | 66 | 2 | ○ |
| 1181065Z9 | HBDPUE 2 05D 0360-066028 | 3,6 | 6 | 28 | 66 | 2 | ○ |
| 1181066Z9 | HBDPUE 2 05D 0370-066028 | 3,7 | 6 | 28 | 66 | 2 | ○ |
| 1181067Z9 | HBDPUE 2 05D 0380-074036 | 3,8 | 6 | 36 | 74 | 2 | ○ |
| 1180795Z9 | HBDPUE 2 05D 0390-074036 | 3,9 | 6 | 36 | 74 | 2 | ○ |
| 1181068Z9 | HBDPUE 2 05D 0400-074036 | 4 | 6 | 36 | 74 | 2 | ○ |
| 1181069Z9 | HBDPUE 2 05D 0410-074036 | 4,1 | 6 | 36 | 74 | 2 | ○ |
| 1180785Z9 | HBDPUE 2 05D 0420-074036 | 4,2 | 6 | 36 | 74 | 2 | ○ |
| 1181070Z9 | HBDPUE 2 05D 0430-074036 | 4,3 | 6 | 36 | 74 | 2 | ○ |
| 1181071Z9 | HBDPUE 2 05D 0440-074036 | 4,4 | 6 | 36 | 74 | 2 | ○ |
| 1181072Z9 | HBDPUE 2 05D 0450-074036 | 4,5 | 6 | 36 | 74 | 2 | ○ |
| 1181073Z9 | HBDPUE 2 05D 0460-074036 | 4,6 | 6 | 36 | 74 | 2 | ○ |
| 1180786Z9 | HBDPUE 2 05D 0470-074036 | 4,7 | 6 | 36 | 74 | 2 | ○ |
| 1181074Z9 | HBDPUE 2 05D 0480-082044 | 4,8 | 6 | 44 | 82 | 2 | ○ |
| 1181075Z9 | HBDPUE 2 05D 0490-082044 | 4,9 | 6 | 44 | 82 | 2 | ○ |
| 1180782Z9 | HBDPUE 2 05D 0500-082044 | 5 | 6 | 44 | 82 | 2 | ○ |
| 1181076Z9 | HBDPUE 2 05D 0510-082044 | 5,1 | 6 | 44 | 82 | 2 | ○ |
| 1181077Z9 | HBDPUE 2 05D 0520-082044 | 5,2 | 6 | 44 | 82 | 2 | ○ |
| 1181078Z9 | HBDPUE 2 05D 0530-082044 | 5,3 | 6 | 44 | 82 | 2 | ○ |
| 1181079Z9 | HBDPUE 2 05D 0540-082044 | 5,4 | 6 | 44 | 82 | 2 | ○ |

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Z | PHU920 |
|----------------------|---------------------------------------|--|------|----|----|---|--------|
| | | ØD | Ø ds | L1 | L | | |
| 1181080Z9 | HBDPUE 2 05D 0550-082044 | 5,5 | 6 | 44 | 82 | 2 | ○ |
| 1181081Z9 | HBDPUE 2 05D 0560-082044 | 5,6 | 6 | 44 | 82 | 2 | ○ |
| 1181082Z9 | HBDPUE 2 05D 0570-082044 | 5,7 | 6 | 44 | 82 | 2 | ○ |
| 1181083Z9 | HBDPUE 2 05D 0580-082044 | 5,8 | 6 | 44 | 82 | 2 | ○ |
| 1181084Z9 | HBDPUE 2 05D 0590-082044 | 5,9 | 6 | 44 | 82 | 2 | ○ |
| 1181085Z9 | HBDPUE 2 05D 0600-082044 | 6 | 6 | 44 | 82 | 2 | ○ |
| 1181086Z9 | HBDPUE 2 05D 0610-091053 | 6,1 | 8 | 53 | 91 | 2 | ○ |
| 1181087Z9 | HBDPUE 2 05D 0620-091053 | 6,2 | 8 | 53 | 91 | 2 | ○ |
| 1181088Z9 | HBDPUE 2 05D 0630-091053 | 6,3 | 8 | 53 | 91 | 2 | ○ |
| 1181089Z9 | HBDPUE 2 05D 0640-091053 | 6,4 | 8 | 53 | 91 | 2 | ○ |
| 1181090Z9 | HBDPUE 2 05D 0650-091053 | 6,5 | 8 | 53 | 91 | 2 | ○ |
| 1181091Z9 | HBDPUE 2 05D 0660-091053 | 6,6 | 8 | 53 | 91 | 2 | ○ |
| 1181092Z9 | HBDPUE 2 05D 0670-091053 | 6,7 | 8 | 53 | 91 | 2 | ○ |
| 1180781Z9 | HBDPUE 2 05D 0680-091053 | 6,8 | 8 | 53 | 91 | 2 | ○ |
| 1181093Z9 | HBDPUE 2 05D 0690-091053 | 6,9 | 8 | 53 | 91 | 2 | ○ |
| 1181094Z9 | HBDPUE 2 05D 0700-091053 | 7 | 8 | 53 | 91 | 2 | ○ |
| 1181095Z9 | HBDPUE 2 05D 0710-091053 | 7,1 | 8 | 53 | 91 | 2 | ○ |
| 1181096Z9 | HBDPUE 2 05D 0720-091053 | 7,2 | 8 | 53 | 91 | 2 | ○ |
| 1181097Z9 | HBDPUE 2 05D 0730-091053 | 7,3 | 8 | 53 | 91 | 2 | ○ |
| 1181098Z9 | HBDPUE 2 05D 0740-091053 | 7,4 | 8 | 53 | 91 | 2 | ○ |
| 1181099Z9 | HBDPUE 2 05D 0750-091053 | 7,5 | 8 | 53 | 91 | 2 | ○ |
| 1181100Z9 | HBDPUE 2 05D 0760-091053 | 7,6 | 8 | 53 | 91 | 2 | ○ |
| 1181101Z9 | HBDPUE 2 05D 0770-091053 | 7,7 | 8 | 53 | 91 | 2 | ○ |
| 1181102Z9 | HBDPUE 2 05D 0780-091053 | 7,8 | 8 | 53 | 91 | 2 | ○ |
| 1181103Z9 | HBDPUE 2 05D 0790-091053 | 7,9 | 8 | 53 | 91 | 2 | ○ |

Stock item | Produto de stock
Itens de stock

Available under request | Disponível sobre consulta
Disponível bajo consulta

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Z | PHU920 |
|----------------------|---------------------------------------|---|------|----|-----|---|--------|
| | | ØD | Ø ds | L1 | L | | |
| 1181104Z9 | HBDPUE 2 05D 0800-091053 | 8 | 8 | 53 | 91 | 2 | ○ |
| 1181105Z9 | HBDPUE 2 05D 0810-103061 | 8,1 | 10 | 61 | 103 | 2 | ○ |
| 1181106Z9 | HBDPUE 2 05D 0820-103061 | 8,2 | 10 | 61 | 103 | 2 | ○ |
| 1181107Z9 | HBDPUE 2 05D 0830-103061 | 8,3 | 10 | 61 | 103 | 2 | ○ |
| 1181108Z9 | HBDPUE 2 05D 0840-103061 | 8,4 | 10 | 61 | 103 | 2 | ○ |
| 1181109Z9 | HBDPUE 2 05D 0850-103061 | 8,5 | 10 | 61 | 103 | 2 | ○ |
| 1181110Z9 | HBDPUE 2 05D 0860-103061 | 8,6 | 10 | 61 | 103 | 2 | ○ |
| 1181111Z9 | HBDPUE 2 05D 0870-103061 | 8,7 | 10 | 61 | 103 | 2 | ○ |
| 1181112Z9 | HBDPUE 2 05D 0880-103061 | 8,8 | 10 | 61 | 103 | 2 | ○ |
| 1181113Z9 | HBDPUE 2 05D 0890-103061 | 8,9 | 10 | 61 | 103 | 2 | ○ |
| 1181114Z9 | HBDPUE 2 05D 0900-103061 | 9 | 10 | 61 | 103 | 2 | ○ |
| 1181115Z9 | HBDPUE 2 05D 0910-103061 | 9,1 | 10 | 61 | 103 | 2 | ○ |
| 1181116Z9 | HBDPUE 2 05D 0920-103061 | 9,2 | 10 | 61 | 103 | 2 | ○ |
| 1181117Z9 | HBDPUE 2 05D 0930-103061 | 9,3 | 10 | 61 | 103 | 2 | ○ |
| 1181118Z9 | HBDPUE 2 05D 0940-103061 | 9,4 | 10 | 61 | 103 | 2 | ○ |
| 1181119Z9 | HBDPUE 2 05D 0950-103061 | 9,5 | 10 | 61 | 103 | 2 | ○ |
| 1181120Z9 | HBDPUE 2 05D 0960-103061 | 9,6 | 10 | 61 | 103 | 2 | ○ |
| 1181121Z9 | HBDPUE 2 05D 0970-103061 | 9,7 | 10 | 61 | 103 | 2 | ○ |
| 1181122Z9 | HBDPUE 2 05D 0980-103061 | 9,8 | 10 | 61 | 103 | 2 | ○ |
| 1181123Z9 | HBDPUE 2 05D 0990-103061 | 9,9 | 10 | 61 | 103 | 2 | ○ |
| 1181124Z9 | HBDPUE 2 05D 1000-103061 | 10 | 10 | 61 | 103 | 2 | ○ |
| 1181125Z9 | HBDPUE 2 05D 1010-118071 | 10,1 | 12 | 71 | 118 | 2 | ○ |
| 1181126Z9 | HBDPUE 2 05D 1020-118071 | 10,2 | 12 | 71 | 118 | 2 | ○ |
| 1181127Z9 | HBDPUE 2 05D 1030-118071 | 10,3 | 12 | 71 | 118 | 2 | ○ |
| 1181128Z9 | HBDPUE 2 05D 1040-118071 | 10,4 | 12 | 71 | 118 | 2 | ○ |
| 1180796Z9 | HBDPUE 2 05D 1050-118071 | 10,5 | 12 | 71 | 118 | 2 | ○ |
| 1181129Z9 | HBDPUE 2 05D 1060-118071 | 10,6 | 12 | 71 | 118 | 2 | ○ |
| 1181130Z9 | HBDPUE 2 05D 1070-118071 | 10,7 | 12 | 71 | 118 | 2 | ○ |
| 1181131Z9 | HBDPUE 2 05D 1080-118071 | 10,8 | 12 | 71 | 118 | 2 | ○ |
| 1181132Z9 | HBDPUE 2 05D 1090-118071 | 10,9 | 12 | 71 | 118 | 2 | ○ |
| 1181133Z9 | HBDPUE 2 05D 1100-118071 | 11 | 12 | 71 | 118 | 2 | ○ |
| 1181134Z9 | HBDPUE 2 05D 1110-118071 | 11,1 | 12 | 71 | 118 | 2 | ○ |
| 1181135Z9 | HBDPUE 2 05D 1120-118071 | 11,2 | 12 | 71 | 118 | 2 | ○ |
| 1181136Z9 | HBDPUE 2 05D 1130-118071 | 11,3 | 12 | 71 | 118 | 2 | ○ |
| 1181137Z9 | HBDPUE 2 05D 1140-118071 | 11,4 | 12 | 71 | 118 | 2 | ○ |
| 1181138Z9 | HBDPUE 2 05D 1150-118071 | 11,5 | 12 | 71 | 118 | 2 | ○ |
| 1181139Z9 | HBDPUE 2 05D 1160-118071 | 11,6 | 12 | 71 | 118 | 2 | ○ |
| 1181140Z9 | HBDPUE 2 05D 1170-118071 | 11,7 | 12 | 71 | 118 | 2 | ○ |
| 1181141Z9 | HBDPUE 2 05D 1180-118071 | 11,8 | 12 | 71 | 118 | 2 | ○ |
| 1181142Z9 | HBDPUE 2 05D 1190-118071 | 11,9 | 12 | 71 | 118 | 2 | ○ |
| 1181143Z9 | HBDPUE 2 05D 1200-118071 | 12 | 12 | 71 | 118 | 2 | ○ |
| 1181144Z9 | HBDPUE 2 05D 1250-124077 | 12,5 | 14 | 77 | 124 | 2 | ○ |
| 1181145Z9 | HBDPUE 2 05D 1300-124077 | 13 | 14 | 77 | 124 | 2 | ○ |
| 1181146Z9 | HBDPUE 2 05D 1350-124077 | 13,5 | 14 | 77 | 124 | 2 | ○ |
| 1181147Z9 | HBDPUE 2 05D 1400-124077 | 14 | 14 | 77 | 124 | 2 | ○ |

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Z | PHU920 |
|----------------------|---------------------------------------|---|------|-----|-----|---|--------|
| | | ØD | Ø ds | L1 | L | | |
| 1181148Z9 | HBDPUE 2 05D 1450-133083 | 14,5 | 16 | 83 | 133 | 2 | ○ |
| 1181149Z9 | HBDPUE 2 05D 1500-133083 | 15 | 16 | 83 | 133 | 2 | ○ |
| 1181150Z9 | HBDPUE 2 05D 1550-133083 | 15,5 | 16 | 83 | 133 | 2 | ○ |
| 1181151Z9 | HBDPUE 2 05D 1600-133083 | 16 | 16 | 83 | 133 | 2 | ○ |
| 1181152Z9 | HBDPUE 2 05D 1650-143093 | 16,5 | 18 | 93 | 143 | 2 | ○ |
| 1181153Z9 | HBDPUE 2 05D 1700-143093 | 17 | 18 | 93 | 143 | 2 | ○ |
| 1181154Z9 | HBDPUE 2 05D 1750-143093 | 17,5 | 18 | 93 | 143 | 2 | ○ |
| 1181155Z9 | HBDPUE 2 05D 1800-143093 | 18 | 18 | 93 | 143 | 2 | ○ |
| 1181156Z9 | HBDPUE 2 05D 1850-153101 | 18,5 | 20 | 101 | 153 | 2 | ○ |
| 1181157Z9 | HBDPUE 2 05D 1900-153101 | 19 | 20 | 101 | 153 | 2 | ○ |
| 1181158Z9 | HBDPUE 2 05D 1950-153101 | 19,5 | 20 | 101 | 153 | 2 | ○ |
| 1181159Z9 | HBDPUE 2 05D 2000-153101 | 20 | 20 | 101 | 153 | 2 | ○ |

Stock item | Produto de stock
Itens de stock

Available under request | Disponível sobre consulta
Disponível bajo consulta

HBDPCE 2 08D

DRILLING

Jet Drills

Integrex Drills

Vortex Drills

Trepanning Drills

Solid Carbide Drills

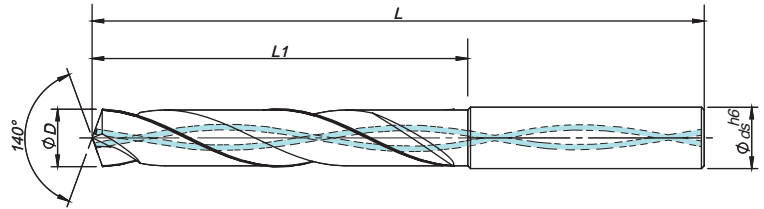
Inserts

Spare Parts

Technical Data



| | |
|----------------|-------------------|
| P | K |
| HRC ≤ 48 | IT8-9 IT class |



| Drill Dia. ØD | 5,0<ØD≤6,0 | 6,0<ØD≤10,0 | 10,0<ØD≤12,0 |
|-----------------|------------|-------------|--------------|
| Hole Tolerances | +0,004 | +0,006 | +0,007 |
| | +0,016 | +0,021 | +0,025 |

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Z | PHU920 |
|----------------------|---------------------------------------|--|------|----|----|---|--------|
| | | ØD | Ø ds | L1 | L | | |
| 1181246Z9 | HBDPCE 2 08D 0300-072034 | 3 | 6 | 34 | 72 | 2 | ○ |
| 1181247Z9 | HBDPCE 2 08D 0310-072034 | 3,1 | 6 | 34 | 72 | 2 | ○ |
| 1181248Z9 | HBDPCE 2 08D 0320-072034 | 3,2 | 6 | 34 | 72 | 2 | ○ |
| 1181249Z9 | HBDPCE 2 08D 0330-072034 | 3,3 | 6 | 34 | 72 | 2 | ○ |
| 1181250Z9 | HBDPCE 2 08D 0340-072034 | 3,4 | 6 | 34 | 72 | 2 | ○ |
| 1181251Z9 | HBDPCE 2 08D 0350-072034 | 3,5 | 6 | 34 | 72 | 2 | ○ |
| 1181252Z9 | HBDPCE 2 08D 0360-072034 | 3,6 | 6 | 34 | 72 | 2 | ○ |
| 1181253Z9 | HBDPCE 2 08D 0370-072034 | 3,7 | 6 | 34 | 72 | 2 | ○ |
| 1181254Z9 | HBDPCE 2 08D 0380-081043 | 3,8 | 6 | 43 | 81 | 2 | ○ |
| 1181255Z9 | HBDPCE 2 08D 0390-081043 | 3,9 | 6 | 43 | 81 | 2 | ○ |
| 1181256Z9 | HBDPCE 2 08D 0400-081043 | 4 | 6 | 43 | 81 | 2 | ○ |
| 1181257Z9 | HBDPCE 2 08D 0410-081043 | 4,1 | 6 | 43 | 81 | 2 | ○ |
| 1181258Z9 | HBDPCE 2 08D 0420-081043 | 4,2 | 6 | 43 | 81 | 2 | ○ |
| 1181259Z9 | HBDPCE 2 08D 0430-081043 | 4,3 | 6 | 43 | 81 | 2 | ○ |
| 1181260Z9 | HBDPCE 2 08D 0440-081043 | 4,4 | 6 | 43 | 81 | 2 | ○ |
| 1181261Z9 | HBDPCE 2 08D 0450-081043 | 4,5 | 6 | 43 | 81 | 2 | ○ |
| 1181262Z9 | HBDPCE 2 08D 0460-081043 | 4,6 | 6 | 43 | 81 | 2 | ○ |
| 1181263Z9 | HBDPCE 2 08D 0470-081043 | 4,7 | 6 | 43 | 81 | 2 | ○ |
| 1181264Z9 | HBDPCE 2 08D 0480-095057 | 4,8 | 6 | 57 | 95 | 2 | ○ |
| 1181265Z9 | HBDPCE 2 08D 0490-095057 | 4,9 | 6 | 57 | 95 | 2 | ○ |
| 1181266Z9 | HBDPCE 2 08D 0500-095057 | 5 | 6 | 57 | 95 | 2 | ○ |
| 1181267Z9 | HBDPCE 2 08D 0510-095057 | 5,1 | 6 | 57 | 95 | 2 | ○ |
| 1181268Z9 | HBDPCE 2 08D 0520-095057 | 5,2 | 6 | 57 | 95 | 2 | ○ |
| 1181269Z9 | HBDPCE 2 08D 0530-095057 | 5,3 | 6 | 57 | 95 | 2 | ○ |
| 1181270Z9 | HBDPCE 2 08D 0540-095057 | 5,4 | 6 | 57 | 95 | 2 | ○ |

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Z | PHU920 |
|----------------------|---------------------------------------|--|------|----|-----|---|--------|
| | | ØD | Ø ds | L1 | L | | |
| 1181271Z9 | HBDPCE 2 08D 0550-095057 | 5,5 | 6 | 57 | 95 | 2 | ○ |
| 1181272Z9 | HBDPCE 2 08D 0560-095057 | 5,6 | 6 | 57 | 95 | 2 | ○ |
| 1181273Z9 | HBDPCE 2 08D 0570-095057 | 5,7 | 6 | 57 | 95 | 2 | ○ |
| 1181274Z9 | HBDPCE 2 08D 0580-095057 | 5,8 | 6 | 57 | 95 | 2 | ○ |
| 1181275Z9 | HBDPCE 2 08D 0590-095057 | 5,9 | 6 | 57 | 95 | 2 | ○ |
| 1181276Z9 | HBDPCE 2 08D 0600-095057 | 6 | 6 | 57 | 95 | 2 | ○ |
| 1181277Z9 | HBDPCE 2 08D 0610-114076 | 6,1 | 8 | 76 | 114 | 2 | ○ |
| 1181278Z9 | HBDPCE 2 08D 0620-114076 | 6,2 | 8 | 76 | 114 | 2 | ○ |
| 1181279Z9 | HBDPCE 2 08D 0630-114076 | 6,3 | 8 | 76 | 114 | 2 | ○ |
| 1181280Z9 | HBDPCE 2 08D 0640-114076 | 6,4 | 8 | 76 | 114 | 2 | ○ |
| 1181281Z9 | HBDPCE 2 08D 0650-114076 | 6,5 | 8 | 76 | 114 | 2 | ○ |
| 1181282Z9 | HBDPCE 2 08D 0660-114076 | 6,6 | 8 | 76 | 114 | 2 | ○ |
| 1181283Z9 | HBDPCE 2 08D 0670-114076 | 6,7 | 8 | 76 | 114 | 2 | ○ |
| 1181284Z9 | HBDPCE 2 08D 0680-114076 | 6,8 | 8 | 76 | 114 | 2 | ○ |
| 1181285Z9 | HBDPCE 2 08D 0690-114076 | 6,9 | 8 | 76 | 114 | 2 | ○ |
| 1181286Z9 | HBDPCE 2 08D 0700-114076 | 7 | 8 | 76 | 114 | 2 | ○ |
| 1181287Z9 | HBDPCE 2 08D 0710-114076 | 7,1 | 8 | 76 | 114 | 2 | ○ |
| 1181288Z9 | HBDPCE 2 08D 0720-114076 | 7,2 | 8 | 76 | 114 | 2 | ○ |
| 1181289Z9 | HBDPCE 2 08D 0730-114076 | 7,3 | 8 | 76 | 114 | 2 | ○ |
| 1181290Z9 | HBDPCE 2 08D 0740-114076 | 7,4 | 8 | 76 | 114 | 2 | ○ |
| 1181291Z9 | HBDPCE 2 08D 0750-114076 | 7,5 | 8 | 76 | 114 | 2 | ○ |
| 1181292Z9 | HBDPCE 2 08D 0760-114076 | 7,6 | 8 | 76 | 114 | 2 | ○ |
| 1181293Z9 | HBDPCE 2 08D 0770-114076 | 7,7 | 8 | 76 | 114 | 2 | ○ |
| 1181294Z9 | HBDPCE 2 08D 0780-114076 | 7,8 | 8 | 76 | 114 | 2 | ○ |
| 1181295Z9 | HBDPCE 2 08D 0790-114076 | 7,9 | 8 | 76 | 114 | 2 | ○ |

Stock item | Produto de stock / Available under request | Disponível sobre consulta / Disponible bajo consulta

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Z | PHU920 |
|----------------------|---------------------------------------|---|------|-----|-----|---|--------|
| | | ØD | Ø ds | L1 | L | | |
| 1181296Z9 | HBDPCE 2 08D 0800-114076 | 8 | 8 | 76 | 114 | 2 | ○ |
| 1181297Z9 | HBDPCE 2 08D 0810-142095 | 8,1 | 10 | 95 | 142 | 2 | ○ |
| 1181298Z9 | HBDPCE 2 08D 0820-142095 | 8,2 | 10 | 95 | 142 | 2 | ○ |
| 1181299Z9 | HBDPCE 2 08D 0830-142095 | 8,3 | 10 | 95 | 142 | 2 | ○ |
| 1181300Z9 | HBDPCE 2 08D 0840-142095 | 8,4 | 10 | 95 | 142 | 2 | ○ |
| 1181301Z9 | HBDPCE 2 08D 0850-142095 | 8,5 | 10 | 95 | 142 | 2 | ○ |
| 1181302Z9 | HBDPCE 2 08D 0860-142095 | 8,6 | 10 | 95 | 142 | 2 | ○ |
| 1181303Z9 | HBDPCE 2 08D 0870-142095 | 8,7 | 10 | 95 | 142 | 2 | ○ |
| 1181304Z9 | HBDPCE 2 08D 0880-142095 | 8,8 | 10 | 95 | 142 | 2 | ○ |
| 1181305Z9 | HBDPCE 2 08D 0890-142095 | 8,9 | 10 | 95 | 142 | 2 | ○ |
| 1181306Z9 | HBDPCE 2 08D 0900-142095 | 9 | 10 | 95 | 142 | 2 | ○ |
| 1181307Z9 | HBDPCE 2 08D 0910-142095 | 9,1 | 10 | 95 | 142 | 2 | ○ |
| 1181308Z9 | HBDPCE 2 08D 0920-142095 | 9,2 | 10 | 95 | 142 | 2 | ○ |
| 1181309Z9 | HBDPCE 2 08D 0930-142095 | 9,3 | 10 | 95 | 142 | 2 | ○ |
| 1181310Z9 | HBDPCE 2 08D 0940-142095 | 9,4 | 10 | 95 | 142 | 2 | ○ |
| 1181311Z9 | HBDPCE 2 08D 0950-142095 | 9,5 | 10 | 95 | 142 | 2 | ○ |
| 1181312Z9 | HBDPCE 2 08D 0960-142095 | 9,6 | 10 | 95 | 142 | 2 | ○ |
| 1181313Z9 | HBDPCE 2 08D 0970-142095 | 9,7 | 10 | 95 | 142 | 2 | ○ |
| 1181314Z9 | HBDPCE 2 08D 0980-142095 | 9,8 | 10 | 95 | 142 | 2 | ○ |
| 1181315Z9 | HBDPCE 2 08D 0990-142095 | 9,9 | 10 | 95 | 142 | 2 | ○ |
| 1181316Z9 | HBDPCE 2 08D 1000-142095 | 10 | 10 | 95 | 142 | 2 | ○ |
| 1181317Z9 | HBDPCE 2 08D 1010-162114 | 10,1 | 12 | 114 | 162 | 2 | ○ |
| 1181318Z9 | HBDPCE 2 08D 1020-162114 | 10,2 | 12 | 114 | 162 | 2 | ○ |
| 1181319Z9 | HBDPCE 2 08D 1030-162114 | 10,3 | 12 | 114 | 162 | 2 | ○ |
| 1181320Z9 | HBDPCE 2 08D 1040-162114 | 10,4 | 12 | 114 | 162 | 2 | ○ |
| 1181321Z9 | HBDPCE 2 08D 1050-162114 | 10,5 | 12 | 114 | 162 | 2 | ○ |
| 1181322Z9 | HBDPCE 2 08D 1060-162114 | 10,6 | 12 | 114 | 162 | 2 | ○ |
| 1181323Z9 | HBDPCE 2 08D 1070-162114 | 10,7 | 12 | 114 | 162 | 2 | ○ |
| 1181324Z9 | HBDPCE 2 08D 1080-162114 | 10,8 | 12 | 114 | 162 | 2 | ○ |
| 1181325Z9 | HBDPCE 2 08D 1090-162114 | 10,9 | 12 | 114 | 162 | 2 | ○ |
| 1181326Z9 | HBDPCE 2 08D 1100-162114 | 11 | 12 | 114 | 162 | 2 | ○ |
| 1181327Z9 | HBDPCE 2 08D 1110-162114 | 11,1 | 12 | 114 | 162 | 2 | ○ |
| 1181328Z9 | HBDPCE 2 08D 1120-162114 | 11,2 | 12 | 114 | 162 | 2 | ○ |
| 1181329Z9 | HBDPCE 2 08D 1130-162114 | 11,3 | 12 | 114 | 162 | 2 | ○ |
| 1181330Z9 | HBDPCE 2 08D 1140-162114 | 11,4 | 12 | 114 | 162 | 2 | ○ |
| 1181331Z9 | HBDPCE 2 08D 1150-162114 | 11,5 | 12 | 114 | 162 | 2 | ○ |
| 1181332Z9 | HBDPCE 2 08D 1160-162114 | 11,6 | 12 | 114 | 162 | 2 | ○ |
| 1181333Z9 | HBDPCE 2 08D 1170-162114 | 11,7 | 12 | 114 | 162 | 2 | ○ |
| 1181334Z9 | HBDPCE 2 08D 1180-162114 | 11,8 | 12 | 114 | 162 | 2 | ○ |
| 1181335Z9 | HBDPCE 2 08D 1190-162114 | 11,9 | 12 | 114 | 162 | 2 | ○ |
| 1181336Z9 | HBDPCE 2 08D 1200-162114 | 12 | 12 | 114 | 162 | 2 | ○ |

Stock item | Produto de stock
Itens de stock

Available under request | Disponível sobre consulta
Disponível bajo consulta

ISO DRILLING INSERTS CODE KEY

DRILLING
Jet Drills
Integrex Drills
Vortex Drills
Trepanning Drills
Solid Carbide Drills
Inserts
Spare Parts
Technical Data

| | | | |
|---|--|---|---------|
| H | | M | |
| O | | V | |
| P | | W | |
| S | | L | |
| T | | A | |
| C | | B | |
| D | | K | |
| E | | R | |
| F | | X | Special |

1- Insert shape symbol

| Symbol | m (mm) | d (mm) | s (mm) |
|--------|-------------|-------------|--------|
| A | ±0.005 | ±0.025 | ±0.025 |
| F | ±0.005 | ±0.013 | ±0.025 |
| C | ±0.013 | ±0.025 | ±0.025 |
| H | ±0.013 | ±0.013 | ±0.025 |
| E | ±0.025 | ±0.025 | ±0.025 |
| G | ±0.025 | ±0.025 | ±0.13 |
| J | ±0.005 | ±0.05~±0.13 | ±0.025 |
| K* | ±0.013 | ±0.05~±0.13 | ±0.025 |
| L* | ±0.025 | ±0.05~±0.13 | ±0.025 |
| M* | ±0.08~±0.20 | ±0.05~±0.13 | ±0.13 |
| N* | ±0.08~±0.20 | ±0.05~±0.13 | ±0.025 |
| U* | ±0.13~±0.38 | ±0.08~±0.25 | ±0.13 |

*As a rule, the sides of these inserts are as sintered. Tolerance differs with insert size, for the accuracy of class M, refer to the table on the right.

Triangular inserts with a facet (secondary cutting edge)

| Detailed dimension of M class insert Insert height Tolerances (mm) | | | | | |
|---|-------|-------|-------|-------|-------|
| Inscribed circle | T | S | C | D | V |
| 6.35 | ±0.08 | - | - | - | - |
| 9.525 | ±0.08 | ±0.08 | ±0.11 | ±0.10 | ±0.13 |
| 12.70 | ±0.13 | ±0.13 | ±0.13 | ±0.15 | - |
| 15.875 | ±0.15 | ±0.15 | ±0.15 | ±0.18 | - |
| 19.05 | ±0.15 | ±0.15 | ±0.15 | ±0.18 | - |
| 25.40 | - | ±0.18 | - | - | - |
| 31.75 | - | ±0.25 | - | - | - |

| Inscribed circle Tolerances (mm) | | | | | |
|----------------------------------|-------|-------|-------|-------|-------|
| Inscribed circle | T | S | C | D | V |
| 6.35 | ±0.05 | - | - | - | - |
| 9.525 | ±0.05 | ±0.05 | ±0.05 | ±0.05 | ±0.05 |
| 12.70 | ±0.08 | ±0.08 | ±0.08 | ±0.08 | ±0.08 |
| 15.875 | ±0.10 | ±0.10 | ±0.10 | ±0.10 | ±0.10 |
| 19.05 | - | - | - | - | ±0.10 |
| 25.40 | - | ±0.13 | - | - | ±0.10 |
| 31.75 | - | ±0.20 | - | - | ±0.12 |

3 - Tolerances symbol

| | | | | |
|---|---|---|---|-----------------------|
| A | B | C | D | E |
| | | | | |
| F | G | N | P | O |
| | | | | Other clearance angle |

2 - Normal clearance symbol

ISO **W C K X**

| 4 - Insert symbol | | | | | | | | | | | | | | | |
|-------------------|-----------|---|---------------------------|-------|--------|-----------|---|-------------------------|---------------------------|--------|-----------|--------------|---------------------------|---------------------------|--|
| symbol | Type | Hole type | Chipbreaker | Shape | symbol | Type | Hole type | Chipbreaker | Shape | symbol | Type | Hole type | Chipbreaker | Shape | |
| W | with hole | Round hole / one countersink (40°-60°) | Without chipbreaker | | H | with hole | Round hole / one countersink (70°-90°) | Chipbreaker on one side | | G | with hole | Round hole | Chipbreaker on both sides | | |
| T | | | Chipbreaker on one side | | C | | Round hole / double countersink (70°-90°) | Without chipbreaker | | N | | - | Without chipbreaker | | |
| Q | | Round hole / double countersink (40°-60°) | Without chipbreaker | | J | | Round hole | Round hole | Chipbreaker on both sides | | R | without hole | - | Chipbreaker on one side | |
| U | | | Chipbreaker on both sides | | A | | | | Without chipbreaker | | F | | - | Chipbreaker on both sides | |
| B | | Round hole / one countersink (70°-90°) | Without chipbreaker | | M | | Chipbreaker on one side | | X | - | - | - | - | On request | |

| R's | 35° | 55° | 80° | 90° | 60° | 80° | Ø CI | | ANSI |
|------|-----|-----|-----|-----|-----|-----|--------|-------|--------|
| | V's | D's | C's | S's | T's | W's | mm | inch | Symbol |
| - | 06 | 04 | - | 03 | 06 | 02 | 3,97 | 5/32 | 1,20 |
| - | 08 | 05 | 04 | 04 | 08 | L3 | 4,76 | 3/16 | 1,50 |
| - | 09 | 06 | 05 | 05 | 09 | 03 | 5,56 | 7/32 | 1,80 |
| 06** | - | - | - | - | - | - | 6,00 | 0,236 | |
| 06* | 11 | 07 | 06 | 06 | 11 | 04 | 6,35 | 1/4 | 2,00 |
| 07* | 13 | 09 | 08 | 07 | 13 | 05 | 7,94 | 5/16 | 2,50 |
| 08* | - | - | - | - | - | - | 8,00 | 0,315 | |
| 09* | 16 | 11 | 09 | 09 | 16 | 06 | 9,525 | 3/8 | 3,00 |
| 10** | - | - | - | - | - | - | 10,00 | 0,394 | |
| 12** | - | - | - | - | - | - | 12,00 | 0,472 | |
| 12* | 22 | 15 | 12 | 12 | 22 | 08 | 12,70 | 1/2 | 4,00 |
| 15* | 27 | 19 | 16 | 15 | 27 | 10 | 15,875 | 5/8 | 5,00 |
| 16** | - | - | - | - | - | - | 16,00 | 0,63 | |
| 19* | 33 | 23 | 19 | 19 | 33 | 13 | 19,05 | 3/4 | 6,00 |
| 20** | - | - | - | - | - | - | 20,00 | 0,787 | |
| 25** | - | - | - | - | - | - | 25,00 | 0,984 | |
| 25* | 44 | 31 | 25 | 25 | 44 | 17 | 25,40 | 1,00 | 8,00 |
| 31* | 54 | 38 | 32 | 31 | 54 | 21 | 31,75 | 1 1/4 | 10,00 |
| 32** | - | - | - | - | - | - | 32,00 | 1,26 | |

* ANSI designation only (Radius Designation is R00)

** Metric designation only (Radius Designation is M0)

According to International Standard ISO 1832 - 2012(E)

"Indexable inserts for cutting tools - Designation"

| ISO | mm | ANSI | inch |
|-----|-------|------|-------|
| 01 | 1.59 | 1 | 0.062 |
| T1 | 1.98 | 1.2 | 0.078 |
| 02 | 2.38 | 1.5 | 0.094 |
| 03 | 3.18 | 2 | 0.125 |
| T3 | 3.97 | 2.5 | 0.156 |
| 04 | 4.76 | 3 | 0.188 |
| 05 | 5.56 | 3.5 | 0.219 |
| 06 | 6.35 | 4 | 0.250 |
| 07 | 7.94 | 5 | 0.312 |
| 09 | 9.52 | 6 | 0.375 |
| 12 | 12.70 | 8 | 0.500 |

5 - Insert size symbol

6 - Insert thickness symbol



| 7 - Insert corner symbol | | | |
|----------------------------|--------------|------|------|
| ISO | mm | inch | ANSI |
| 00 | Sharp nose | | 0 |
| 01 | 0.10 | .004 | 0.2 |
| 02 | 0.20 | .008 | 0.5 |
| 04 | 0.40 | .015 | 1 |
| 08 | 0.80 | .032 | 2 |
| 12 | 1.2 | .047 | 3 |
| 16 | 1.6 | .062 | 4 |
| 20 | 2.0 | .078 | 5 |
| 24 | 2.4 | .094 | 6 |
| 28 | 2.8 | .109 | 7 |
| 32 | 3.2 | .125 | 8 |
| 00 (inch or M0/ metric) | Round insert | | 0 |

| 7.1* - Insert edges symbol | | | |
|---|---------|---|---------|
| For inserts having secondary edges two digits are used: | | | |
| 1 st digit is secondary edge | | 2 nd digit is secondary edges relief angle | |
| A | 45° | A | 3° |
| D | 60° | B | 5° |
| E | 75° | C | 7° |
| F | 85° | D | 15° |
| P | 90° | E | 20° |
| Z | special | F | 25° |
| *only when required. | | G | 30° |
| | | N | 0° |
| | | P | 11° |
| | | Z | special |

| 8 - Cutting edge information | | |
|------------------------------|-----------------------|--------|
| Shape | Honing | Symbol |
| | No honing | F |
| | With honing | E |
| | Chamfered No honing | T |
| | Chamfered with honing | S |
| *only when required. | | |

INSERTS

SPKX | Inserts | Pastilhas | Plaquetas

DRILLING

Jet Drills

Integrex Drills

Vortex Drills

Trepanning Drills

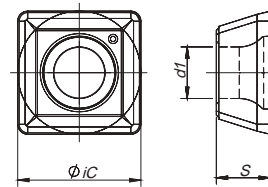
Solid Carbide Drills

Inserts

Spare Parts

Technical Data

(PHC grade)



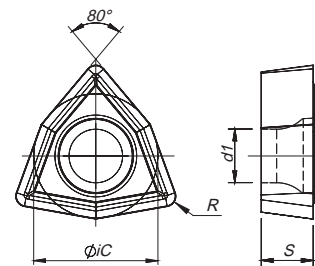
| (1) Geometry code | ISO Reference | P | | | M | | | K | | S | | | N | Dimensions Dimensões Dimensiones (mm) | | | |
|-------------------|----------------|-----|----|----|-----|----|----|-----|----|-----|----|----|-----|---|------|------|-----|
| | | PVD | | | PVD | | | PVD | | PVD | | | UNC | iC | S | d1 | R |
| | | 68 | 66 | J3 | 68 | 66 | J3 | 68 | 66 | 68 | 66 | J3 | 10 | | | | |
| 1111281 | SPKX 050204 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 5,00 | 2,38 | 2,20 | 0,4 |
| 1111282 | SPKX 060204 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 6,00 | 2,38 | 2,55 | 0,4 |
| 1142099 | SPHX 060204-LN | | | | | | | | | | | | ⊗ | 6,00 | 2,38 | 2,55 | 0,4 |
| 1111283 | SPKX 07T308 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 7,94 | 3,97 | 2,85 | 0,8 |
| 1111284 | SPKX 090408 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 9,80 | 4,30 | 4,10 | 0,8 |
| 1111285 | SPKX 110408 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 11,50 | 4,80 | 4,40 | 0,8 |
| 1111286 | SPKX 140512 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 14,30 | 5,20 | 5,75 | 1,2 |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

WCKX | Inserts | Pastilhas | Plaquetas



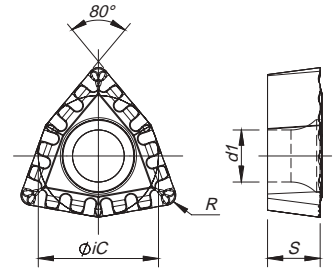
| (1) Geometry code | ISO Reference | P | | | | M | | K | | S | | Dimensions Dimensões Dimensiones (mm) | | | |
|-------------------|---------------|-----|----|----|----|-----|----|-----|----|-----|----|---|------|------|-----|
| | | PVD | | | | PVD | | CVD | | PVD | | iC | S | d1 | R |
| | | 68 | 66 | I5 | 78 | 68 | 66 | 68 | 66 | 68 | 66 | | | | |
| 1140300 | WCKX 02T104 | ⊗ | ⊗ | ○ | ○ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 4,76 | 1,98 | 2,00 | 0,4 |
| 1140276 | WCKX 030204 | ⊗ | ⊗ | ○ | ○ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 5,56 | 2,38 | 2,55 | 0,4 |
| 1140277 | WCKX 040204 | ⊗ | ⊗ | ○ | ○ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 6,35 | 2,38 | 2,85 | 0,4 |
| 1140278 | WCKX 050308 | ⊗ | ⊗ | ○ | ○ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 7,94 | 3,18 | 3,50 | 0,8 |
| 1140279 | WCKX 06T308 | ⊗ | ⊗ | ○ | ○ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 9,55 | 3,97 | 4,10 | 0,8 |
| 1140280 | WCKX 080408 | ⊗ | ⊗ | ○ | ○ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 12,70 | 4,76 | 5,60 | 0,8 |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

WCKX-LC for low carbon steels | Inserts | Pastilhas | Plaquetas



| | | P | | Dimensions Dimensões Dimensiones (mm) | | | |
|------------------------------|---------------------------|--------|--------|---|------|------|-----|
| | | PVD | | | | | |
| | ⁽²⁾ Grade code | 68 | 66 | iC | S | d1 | R |
| ⁽¹⁾ Geometry code | ISO Reference | PH6920 | PH6930 | | | | |
| 1142068 | WCKX 050308-LC | ⊗ | ⊗ | 7,94 | 3,18 | 3,50 | 0,8 |
| 1142069 | WCKX 06T308-LC | ⊗ | ⊗ | 9,55 | 3,97 | 4,10 | 0,8 |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

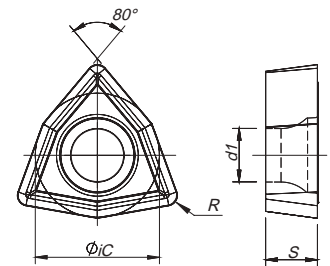
Insert order code = (1) Geometry Code + (2) Grade Code

WCMX | Inserts | Pastilhas | Plaquetas

ISO references for other drilling systems



(PHC grade)



| | | P | | M | | K | | S | | Dimensions Dimensões Dimensiones (mm) | | | |
|------------------------------|---------------|--------|--------|--------|--------|--------|--------|--------|--------|---|------|-----|-----|
| | | PVD | | PVD | | PVD | | PVD | | | | | |
| | | 68 | J3 | 68 | J3 | 68 | J3 | 68 | J3 | | | | |
| ⁽¹⁾ Geometry code | ISO Reference | PH6920 | PHC930 | PH6920 | PHC930 | PH6920 | PHC930 | PH6920 | PHC930 | iC | S | d1 | R |
| 1120827 | WCMX 030204 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | 5,56 | 2,38 | 2,8 | 0,4 |
| 1120828 | WCMX 030208 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 5,56 | 2,38 | 2,8 | 0,8 |
| 1120829 | WCMX 040208 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 6,35 | 2,38 | 3,1 | 0,8 |
| 1120830 | WCMX 050308 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 7,94 | 3,18 | 3,2 | 0,8 |
| 1120831 | WCMX 06T308 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 9,525 | 3,97 | 3,7 | 0,8 |
| 1120832 | WCMX 080408 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 12,70 | 4,76 | 4,3 | 0,8 |
| 1120833 | WCMX 080412 | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 12,70 | 4,76 | 4,3 | 1,2 |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

SPARE PARTS

CD

DRILLING

Jet Drills

Integrex Drills

Vortex Drills

Trepanning Drills

Solid Carbide Drills

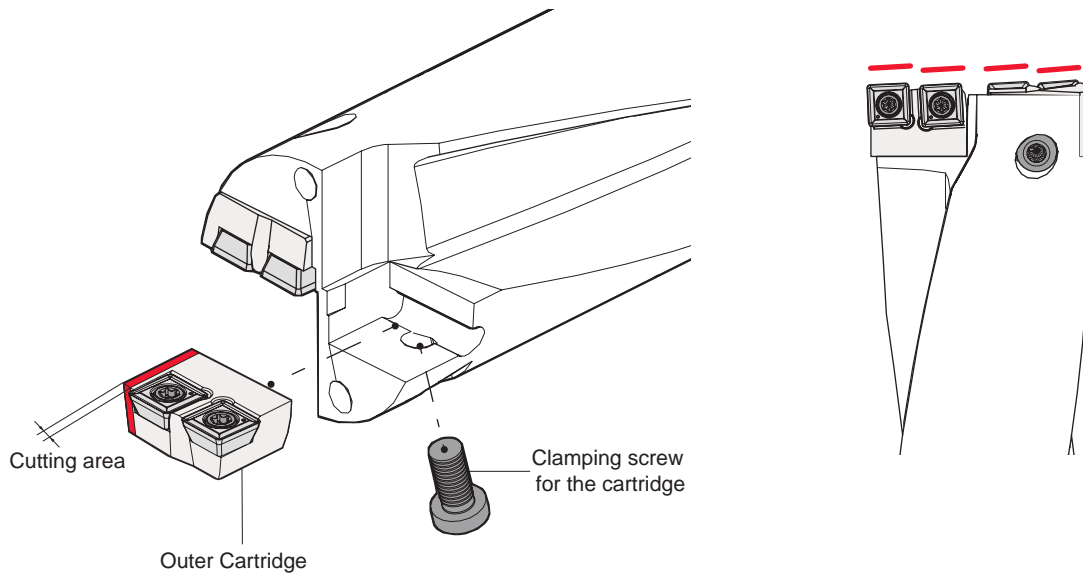
Inserts

Spare Parts

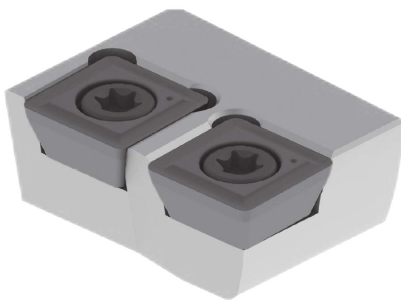
Technical Data

SIZE ADAPTABLE CARTRIDGE (5mm)

- Unlock the clamping screw of the outer cartridge and move out the cartridge from the body.
- Cut off the outer cartridge's inside contacted part after calculation of the diameter that you want to drill.
- Slick the rough corner surface of the cut cartridge.
- Adhere closely the cartridge to the body not to make chink and fix it with the clamping screw firmly.

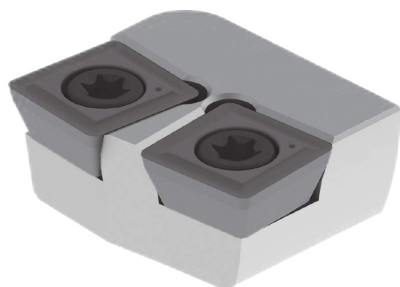




SCC CARTRIDGE (5mm)



| ØD | Inner Cartridge | | Outer Cartridge | | Insert | Insert Screw | Torx key | For Drill |
|-------|-----------------|--------------|-----------------|--------------|--------------|--------------|----------|--------------------|
| | Order Code | Reference | Order Code | Reference | | | | |
| 50-55 | 184230600 | SCC 050055-I | 184230700 | SCC 050055-O | SP... 090408 | P0350903 | XT15 | SCC 505540-3D & 4D |
| 55-60 | 184230800 | SCC 055060-I | 184230900 | SCC 055060-O | SP... 090408 | P0350903 | XT15 | SCC 556040-3D & 4D |
| 60-65 | 184231000 | SCC 060065-I | 184231100 | SCC 060065-O | SP... 110408 | P0401200 | XT15 | SCC 606540-3D & 4D |
| 65-70 | 184231200 | SCC 065070-I | 184231300 | SCC 065070-O | SP... 110408 | P0401200 | XT15 | SCC 657040-3D & 4D |
| 70-75 | 184231400 | SCC 070075-I | 184231500 | SCC 070075-O | SP... 110408 | P0401200 | XT15 | SCC 707540-3D & 4D |
| 75-80 | 184231600 | SCC 075080-I | 184231700 | SCC 075080-O | SP... 140512 | P0501300 | XT20 | SCC 758040-3D & 4D |

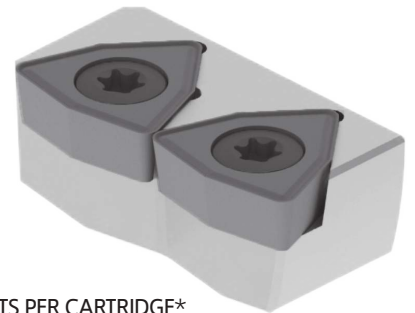
SCC CARTRIDGE (1mm)





| ØD | Inner Cartridge | | Outer Cartridge | | Insert | Insert Screw | Torx key | For Drill |
|-------|-----------------|-----------|-----------------|-----------|--------------|---|---|--------------------|
| | Order Code | Reference | Order Code | Reference | |  |  | |
| 50-51 | 184069500 | CISP 5055 | 184070100 | COSP 5051 | SP... 090408 | P0350903 | XT15 | SCC 505140-3D & 4D |
| 51-52 | 184069500 | CISP 5055 | 184070200 | COSP 5152 | SP... 090408 | P0350903 | XT15 | SCC 515240-3D & 4D |
| 52-53 | 184069500 | CISP 5055 | 184070300 | COSP 5253 | SP... 090408 | P0350903 | XT15 | SCC 525340-3D & 4D |
| 53-54 | 184069500 | CISP 5055 | 184070400 | COSP 5354 | SP... 090408 | P0350903 | XT15 | SCC 535440-3D & 4D |
| 54-55 | 184069500 | CISP 5055 | 184070500 | COSP 5455 | SP... 090408 | P0350903 | XT15 | SCC 545540-3D & 4D |
| 55-56 | 184069600 | CISP 5560 | 184070600 | COSP 5556 | SP... 090408 | P0350903 | XT15 | SCC 555640-3D & 4D |
| 56-57 | 184069600 | CISP 5560 | 184070700 | COSP 5657 | SP... 090408 | P0350903 | XT15 | SCC 565740-3D & 4D |
| 57-58 | 184069600 | CISP 5560 | 184070800 | COSP 5758 | SP... 090408 | P0350903 | XT15 | SCC 575840-3D & 4D |
| 58-59 | 184069600 | CISP 5560 | 184070900 | COSP 5859 | SP... 090408 | P0350903 | XT15 | SCC 585940-3D & 4D |
| 59-60 | 184069600 | CISP 5560 | 184071000 | COSP 5960 | SP... 090408 | P0350903 | XT15 | SCC 596040-3D & 4D |
| 60-61 | 184069700 | CISP 6065 | 184071100 | COSP 6061 | SP... 110408 | P0401200 | XT15 | SCC 606140-3D & 4D |
| 61-62 | 184069700 | CISP 6065 | 184071200 | COSP 6162 | SP... 110408 | P0401200 | XT15 | SCC 616240-3D & 4D |
| 62-63 | 184069700 | CISP 6065 | 184071300 | COSP 6263 | SP... 110408 | P0401200 | XT15 | SCC 626340-3D & 4D |
| 63-64 | 184069700 | CISP 6065 | 184071400 | COSP 6364 | SP... 110408 | P0401200 | XT15 | SCC 636440-3D & 4D |
| 64-65 | 184069700 | CISP 6065 | 184071500 | COSP 6465 | SP... 110408 | P0401200 | XT15 | SCC 646540-3D & 4D |
| 65-66 | 184069800 | CISP 6570 | 184071600 | COSP 6566 | SP... 110408 | P0401200 | XT15 | SCC 656640-3D & 4D |
| 66-67 | 184069800 | CISP 6570 | 184071700 | COSP 6667 | SP... 110408 | P0401200 | XT15 | SCC 666740-3D & 4D |
| 67-68 | 184069800 | CISP 6570 | 184071800 | COSP 6768 | SP... 110408 | P0401200 | XT15 | SCC 676840-3D & 4D |
| 68-69 | 184069800 | CISP 6570 | 184071900 | COSP 6869 | SP... 110408 | P0401200 | XT15 | SCC 686940-3D & 4D |
| 69-70 | 184069800 | CISP 6570 | 184072000 | COSP 6970 | SP... 110408 | P0401200 | XT15 | SCC 697040-3D & 4D |
| 70-71 | 184069900 | CISP 7075 | 184250100 | COSP 7071 | SP... 110408 | P0401200 | XT15 | SCC 707140-3D & 4D |
| 71-72 | 184069900 | CISP 7075 | 184072200 | COSP 7172 | SP... 110408 | P0401200 | XT15 | SCC 717240-3D & 4D |
| 72-73 | 184069900 | CISP 7075 | 184072300 | COSP 7273 | SP... 110408 | P0401200 | XT15 | SCC 727340-3D & 4D |
| 73-74 | 184069900 | CISP 7075 | 184072400 | COSP 7374 | SP... 110408 | P0401200 | XT15 | SCC 737440-3D & 4D |
| 74-75 | 184069900 | CISP 7075 | 184072500 | COSP 7475 | SP... 110408 | P0401200 | XT15 | SCC 747540-3D & 4D |
| 75-76 | 184070000 | CISP 7580 | 184072600 | COSP 7576 | SP... 140512 | P0501300 | XT20 | SCC 757640-3D & 4D |
| 76-77 | 184070000 | CISP 7580 | 184072700 | COSP 7677 | SP... 140512 | P0501300 | XT20 | SCC 767740-3D & 4D |
| 77-78 | 184070000 | CISP 7580 | 184072800 | COSP 7778 | SP... 140512 | P0501300 | XT20 | SCC 777840-3D & 4D |
| 78-79 | 184070000 | CISP 7580 | 184072900 | COSP 7879 | SP... 140512 | P0501300 | XT20 | SCC 787940-3D & 4D |
| 79-80 | 184070000 | CISP 7580 | 184073000 | COSP 7980 | SP... 140512 | P0501300 | XT20 | SCC 798040-3D & 4D |

SPARE PARTS

DHC CARTRIDGE



2 INSERTS PER CARTRIDGE*

| ØD | Inner Cartridge | | Outer Cartridge | | Insert | Insert Screw | Torx key | For Drill |
|---------------------------------|-----------------|--------------|-----------------|--------------|--------------|---|---|--------------------|
| | Order Code | Reference | Order Code | Reference | |  |  | |
| 41 | 184250300 | CWC 041045-I | 184226700 | CWC 000041-O | WC... 06T308 | P0350903 | XT15 | DHC 004140-5D & 8D |
| 42 | 184250300 | CWC 041045-I | 184226800 | CWC 000042-O | WC... 06T308 | P0350903 | XT15 | DHC 004240-5D & 8D |
| 43 | 184250300 | CWC 041045-I | 184226900 | CWC 000043-O | WC... 06T308 | P0350903 | XT15 | DHC 004340-5D & 8D |
| 44 | 184250300 | CWC 041045-I | 184227000 | CWC 000044-O | WC... 06T308 | P0350903 | XT15 | DHC 004440-5D & 8D |
| 45 | 184250300 | CWC 041045-I | 184227100 | CWC 000045-O | WC... 06T308 | P0350903 | XT15 | DHC 004540-5D & 8D |
| 46 | 184226400 | CWC 046050-I | 184227200 | CWC 000046-O | WC... 06T308 | P0350903 | XT15 | DHC 004640-5D & 8D |
| 47 | 184226400 | CWC 046050-I | 184227300 | CWC 000047-O | WC... 06T308 | P0350903 | XT15 | DHC 004740-5D & 8D |
| 48 | 184226400 | CWC 046050-I | 184227400 | CWC 000048-O | WC... 06T308 | P0350903 | XT15 | DHC 004840-5D & 8D |
| 49 | 184226400 | CWC 046050-I | 184227500 | CWC 000049-O | WC... 06T308 | P0350903 | XT15 | DHC 004940-5D & 8D |
| 50 | 184226400 | CWC 046050-I | 184227600 | CWC 000050-O | WC... 06T308 | P0350903 | XT15 | DHC 005040-5D & 8D |
| 51 | 184226500 | CWC 051055-I | 184227700 | CWC 000051-O | WC... 080408 | P0401101 | XT15 | DHC 005140-5D & 8D |
| 52 | 184226500 | CWC 051055-I | 184227800 | CWC 000052-O | WC... 080408 | P0401101 | XT15 | DHC 005240-5D & 8D |
| 53 | 184226500 | CWC 051055-I | 184227900 | CWC 000053-O | WC... 080408 | P0401101 | XT15 | DHC 005340-5D & 8D |
| 54 | 184226500 | CWC 051055-I | 184228000 | CWC 000054-O | WC... 080408 | P0401101 | XT15 | DHC 005440-5D & 8D |
| 55 | 184226500 | CWC 051055-I | 184228100 | CWC 000055-O | WC... 080408 | P0401101 | XT15 | DHC 005540-5D & 8D |
| 56 | 184226600 | CWC 056059-I | 184228200 | CWC 000056-O | WC... 080408 | P0401101 | XT15 | DHC 005640-5D & 8D |
| 57 | 184226600 | CWC 056059-I | 184228300 | CWC 000057-O | WC... 080408 | P0401101 | XT15 | DHC 005740-5D & 8D |
| 58 | 184226600 | CWC 056059-I | 184228400 | CWC 000058-O | WC... 080408 | P0401101 | XT15 | DHC 005840-5D & 8D |
| 59 | 184226600 | CWC 056059-I | 184228500 | CWC 000059-O | WC... 080408 | P0401101 | XT15 | DHC 005940-5D & 8D |
| 2 INSERTS PER CARTRIDGE* | | | | | | | | |
| 60-65 | 184250600* | MDC 060065-I | 184252900* | MDC 060065-O | WC... 050308 | P0300701 | XT08 | DHC 606540-5D & 8D |
| 65-70 | 184250700* | MDC 065070-I | 184253000* | MDC 065070-O | WC... 050308 | P0300701 | XT08 | DHC 657040-5D & 8D |
| 70-75 | 184250800* | MDC 070075-I | 184063700* | MDC 070075-O | WC... 050308 | P0300701 | XT08 | DHC 707540-5D & 8D |
| 75-80 | 184250900* | MDC 075080-I | 184063800* | MDC 075080-O | WC... 06T308 | P0350903 | XT15 | DHC 758040-5D & 8D |

DRILLING

Jet Drills

Integrex Drills

Vortex Drills

Trepanning Drills

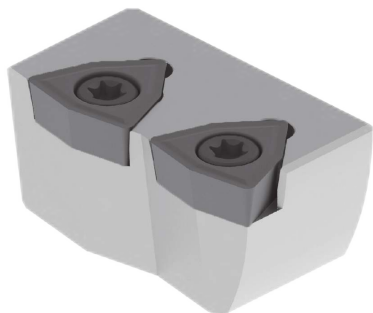
Solid Carbide Drills



Inserts

Spare Parts

Technical Data



TDC CARTRIDGE



| ØD | Inner Cartridge | | Outer Cartridge | | Insert | Insert Screw | Torx key | For Drill |
|-------|-----------------|--------------|-----------------|--------------|--------------|---|---|---------------|
| | Order Code | Reference | Order Code | Reference | |  |  | |
| 59-65 | 184109200 | TDC 059065-I | 184109300 | TDC 059065-O | WC... 06T308 | P0350903 | XT15 | TDC 596540-3D |
| 65-70 | 184109400 | TDC 065070-I | 184109500 | TDC 065070-O | WC... 06T308 | P0350903 | XT15 | TDC 657040-3D |
| 70-75 | 184109600 | TDC 070075-I | 184109700 | TDC 070075-O | WC... 06T308 | P0350903 | XT15 | TDC 707540-3D |
| 75-80 | 184109800 | TDC 075080-I | 184109900 | TDC 075080-O | WC... 06T308 | P0350903 | XT15 | TDC 758040-3D |

PND CARTRIDGE



| ØD | Inner Cartridge | | Outer Cartridge | | Insert | Insert Screw | Torx key | For Drill |
|--------|-----------------|--------------|-----------------|--------------|--------------|--|---|-----------------------------|
| | Order Code | Reference | Order Code | Reference | |  |  | |
| 40-55 | 184110000 | PNC 040055-I | 184128700 | PNC 040055-O | WC... 050308 | P0300701 | XT08 | PND 04032-2D ~ PND 05540-2D |
| 60-110 | 184110100 | PNC 060110-I | 184128800 | PNC 060110-O | WC... 06T308 | P0350903 | XT15 | PND 06040-2D ~ PND 11050-2D |

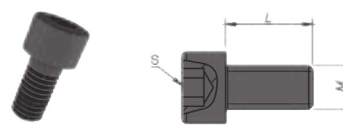
SPARE PARTS

SCREWS & KEYS

DRILLING



Screw for Cartridge (DIN 912)



| Order Code | Reference Referência Referencia |
|------------|---------------------------------------|
| 290031400 | P0200500 |
| 290030600 | P0220500 |
| 290031300 | P0250704 |
| 290030900 | P0350903 |
| 290047500 | P0401200 |
| 290031700 | P0501300 |
| 290025800 | P0180500 |
| 290033100 | P0250503 |
| 290030800 | P0300701 |
| 290031000 | P0401101 |

| Order Code | Reference Referência Referencia |
|------------|---------------------------------------|
| 290011400 | XT06 |
| 290012900 | XT07 |
| 290011700 | XT08 |
| 290025700 | XT09 |
| 290012400 | XT15 |
| 290013200 | XT20 |
| 290074700 | TT15 |
| 290056000 | TT20 |
| 290056100 | TT25 |

| Order Code Código | Screw | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | |
|----------------------|----------|---|------|-----|
| | | M | L | S |
| 290042800 | P0501079 | M4 x 0,7 | 10,0 | 2,0 |
| 290042900 | P0501279 | M5 x 0,8 | 12,0 | 2,5 |
| 290043000 | P0601279 | M6 x 1,0 | 12,0 | 2,5 |
| 290043100 | P0601479 | M6 x 1,0 | 14,0 | 3,0 |
| 290043600 | P0601679 | M6 x 1,0 | 16,0 | 3,0 |
| 290043300 | P0801879 | M8 x 1,25 | 18,0 | 4,0 |
| 290043400 | P0802079 | M8 x 1,25 | 20,0 | 4,0 |
| 290043500 | P0802579 | M8 x 1,25 | 25,0 | 4,0 |

Jet Drills

Integrex Drills

Vortex Drills

Trepanning Drills

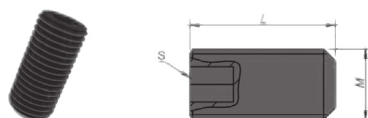
Solid Carbide Drills

Inserts

Spare Parts

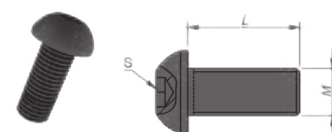
Technical Data

Fixing Screw and Clamping Bolt for Pilot Drill (DIN 916)



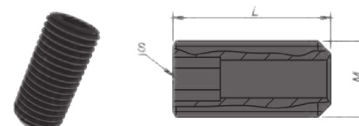
| Order Code Código | Screw | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | |
|----------------------|----------|---|------|-----|
| | | M | L | S |
| 290040100 | P0400875 | M4 x 0,7 | 8,0 | 2,0 |
| 290040200 | P0500875 | M5 x 0,8 | 8,0 | 2,5 |
| 290040300 | P0501075 | M5 x 0,8 | 10,0 | 2,5 |
| 290040400 | P0601075 | M6 x 1,0 | 10,0 | 3,0 |
| 290040500 | P0601275 | M6 x 1,0 | 12,0 | 3,0 |
| 290040600 | P0801275 | M8 x 1,25 | 12,0 | 4,0 |
| 290040700 | P0801575 | M8 x 1,25 | 15,0 | 4,0 |
| 290040800 | P1001575 | M10 x 1,5 | 15,0 | 5,0 |
| 290040900 | P1002075 | M10 x 1,5 | 20,0 | 5,0 |
| 290041000 | P1202075 | M12 x 1,75 | 20,0 | 6,0 |
| 290041100 | P1202575 | M12 x 1,75 | 25,0 | 6,0 |
| 290041200 | P1402575 | M14 x 2,0 | 25,0 | 6,0 |
| 290041300 | P1602575 | M16 x 2,0 | 25,0 | 8,0 |

Screw for Cartridge (ISO 7380)



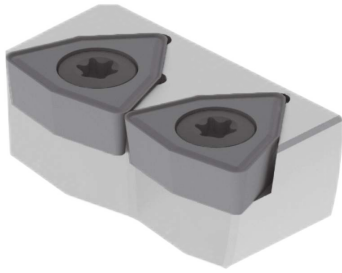
| Order Code Código | Screw | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | |
|----------------------|----------|---|------|-----|
| | | M | L | S |
| 290042500 | P0401078 | M4 x 0,7 | 10,0 | 2,0 |
| 290042600 | P0501078 | M5 x 0,8 | 10,0 | 2,5 |
| 290042700 | P0501278 | M5 x 0,8 | 12,0 | 2,5 |

Adjustment Screw for Pilot Drill (DIN 916 w/ hole)



| Order Code Código | Screw | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | |
|----------------------|----------|---|------|-----|
| | | M | L | S |
| 290041400 | P0601076 | M6 x 1,0 | 10,0 | 3,0 |
| 290041500 | P0801576 | M8 x 1,25 | 15,0 | 4,0 |
| 290041600 | P1001676 | M10 x 1,5 | 16,0 | 5,0 |
| 290041700 | P1001876 | M10 x 1,5 | 18,0 | 5,0 |
| 290041800 | P1202076 | M12 x 1,75 | 20,0 | 6,0 |
| 290041900 | P1402076 | M14 x 2,0 | 20,0 | 6,0 |

VORTEX SPARE PARTS - MDO CARTRIDGE



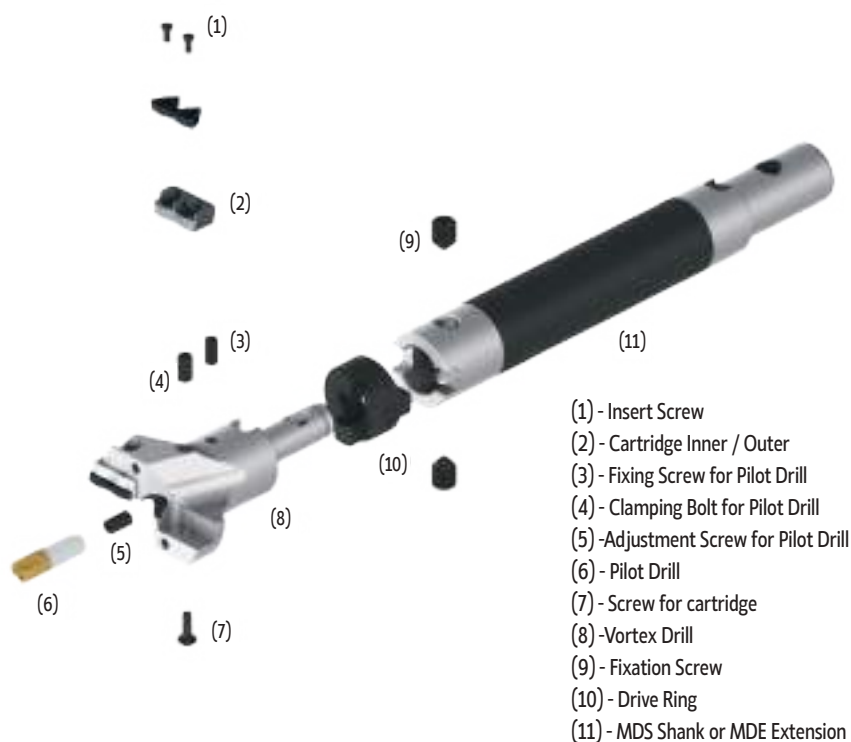
| ØD | Inner Cartridge | | Outer Cartridge | | Insert | Insert Screw | Torx key | For Drill |
|--------------------------------|-----------------|--------------|-----------------|--------------|--------------|--------------|----------|--------------|
| | Order Code | Reference | Order Code | Reference | | | | |
| 2 INSERTS PER CARTRIDGE | | | | | | | | |
| 45-50 | 184062000 | MDC 045050-I | 184252600 | MDC 045050-O | WC... 030204 | P0220500 | XT07 | MDO 04505013 |
| 50-55 | 184250400 | MDC 050055-I | 184252700 | MDC 050055-O | WC... 030204 | P0220500 | XT07 | MDO 05005513 |
| 55-60 | 184250500 | MDC 055060-I | 184252800 | MDC 055060-O | WC... 040204 | P0250503 | XT08 | MDO 05506016 |
| 60-65 | 184250600 | MDC 060065-I | 184252900 | MDC 060065-O | WC... 050308 | P0300701 | XT08 | MDO 06006516 |
| 65-70 | 184250700 | MDC 065070-I | 184253000 | MDC 065070-O | WC... 050308 | P0300701 | XT08 | MDO 06507016 |
| 70-75 | 184250800 | MDC 070075-I | 184063700 | MDC 070075-O | WC... 050308 | P0300701 | XT08 | MDO 07007522 |
| 75-80 | 184250900 | MDC 075080-I | 184063800 | MDC 075080-O | WC... 06T308 | P0350903 | XT15 | MDO 07508022 |
| 80-85 | 184251000 | MDC 080085-I | 184063900 | MDC 080085-O | WC... 06T308 | P0350903 | XT15 | MDO 08008522 |
| 85-90 | 184251100 | MDC 085090-I | 184064000 | MDC 085090-O | WC... 06T308 | P0350903 | XT15 | MDO 08509027 |
| 90-95 | 184251200 | MDC 090095-I | 184064100 | MDC 090095-O | WC... 06T308 | P0350903 | XT15 | MDO 09009527 |
| 95-100 | 184251300 | MDC 095100-I | 184064200 | MDC 095100-O | WC... 06T308 | P0350903 | XT15 | MDO 09510027 |
| 3 INSERTS PER CARTRIDGE | | | | | | | | |
| 100-105 | 184251400 | MDC 100105-I | 184064300 | MDC 100105-O | WC... 050308 | P0300701 | XT08 | MDO 10010532 |
| 105-110 | 184251500 | MDC 105110-I | 184253100 | MDC 105110-O | WC... 06T308 | P0350903 | XT15 | MDO 10511032 |
| 110-115 | 184251600 | MDC 110115-I | 184253200 | MDC 110115-O | WC... 06T308 | P0350903 | XT15 | MDO 11011532 |
| 115-120 | 184251700 | MDC 115120-I | 184253300 | MDC 115120-O | WC... 06T308 | P0350903 | XT15 | MDO 11512040 |
| 120-125 | 184251800 | MDC 120125-I | 184253400 | MDC 120125-O | WC... 06T308 | P0350903 | XT15 | MDO 12012540 |
| 125-130 | 184251900 | MDC 125130-I | 184253500 | MDC 125130-O | WC... 06T308 | P0350903 | XT15 | MDO 12513040 |
| 130-135 | 184252000 | MDC 130135-I | 184068900 | MDC 130135-O | WC... 06T308 | P0350903 | XT15 | MDO 13013540 |
| 135-140 | 184252100 | MDC 135140-I | 184069000 | MDC 135140-O | WC... 06T308 | P0350903 | XT15 | MDO 13514040 |
| 140-150 | 184252200 | MDC 140150-I | 184253600 | MDC 140150-O | WC... 080408 | P0401101 | XT15 | MDO 14015050 |
| 150-160 | 184252300 | MDC 150160-I | 184069200 | MDC 150160-O | WC... 080408 | P0401101 | XT15 | MDO 15016050 |
| 160-170 | 184252400 | MDC 160170-I | 184069300 | MDC 160170-O | WC... 080408 | P0401101 | XT15 | MDO 16017050 |
| 170-180 | 184252500 | MDC 170180-I | 184069400 | MDC 170180-O | WC... 080408 | P0401101 | XT15 | MDO 17018050 |

SPARE PARTS

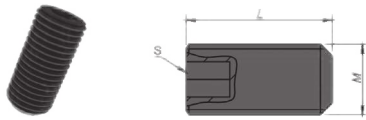
VORTEX SPARE PARTS - SCREWS

| Vortex Drill | (3) Fixing Screw for Pilot Drill | | (4) Clamping Bolt for Pilot Drill | | (5) Adjustment Screw for Pilot Drill | | (7) Screw for Cartridge | |
|--------------|----------------------------------|----------|-----------------------------------|----------|--------------------------------------|----------|-------------------------|----------|
| | Order Code | Screw | Order Code | Screw | Order Code | Screw | Order Code | Screw |
| MDO 04505013 | 290040100 | P0400875 | 290040400 | P0601075 | 290041400 | P0601076 | 290042500 | P0401078 |
| MDO 05005513 | 290040100 | P0400875 | 290040400 | P0601075 | 290041400 | P0601076 | 290042500 | P0401078 |
| MDO 05506016 | 290040100 | P0400875 | 290040600 | P0801275 | 290041500 | P0801576 | 290042700 | P0501278 |
| MDO 06006516 | 290040200 | P0500875 | 290040600 | P0801275 | 290041500 | P0801576 | 290042700 | P0501278 |
| MDO 06507016 | 290040200 | P0500875 | 290040600 | P0801275 | 290041500 | P0801576 | 290042700 | P0501278 |
| MDO 07007522 | 290040200 | P0500875 | 290040700 | P0801575 | 290041500 | P0801576 | 290042700 | P0501278 |
| MDO 07508022 | 290040400 | P0601075 | 290040900 | P1002075 | 290041600 | P1001676 | 290043000 | P0601279 |
| MDO 08008522 | 290040400 | P0601075 | 290040900 | P1002075 | 290041600 | P1001676 | 290043100 | P0601479 |
| MDO 08509027 | 290040400 | P0601075 | 290040900 | P1002075 | 290041700 | P1001876 | 290043600 | P0601679 |
| MDO 09009527 | 290040400 | P0601075 | 290040900 | P1002075 | 290041700 | P1001876 | 290043600 | P0601679 |
| MDO 09510027 | 290040400 | P0601075 | 290040900 | P1002075 | 290041700 | P1001876 | 290043600 | P0601679 |
| MDO 10010532 | 290040400 | P0601075 | 290041000 | P1202075 | 290041800 | P1202076 | 290043300 | P0801879 |
| MDO 10511032 | 290040400 | P0601075 | 290041000 | P1202075 | 290041800 | P1202076 | 290043300 | P0801879 |
| MDO 11011532 | 290040400 | P0601075 | 290041000 | P1202075 | 290041800 | P1202076 | 290043300 | P0801879 |
| MDO 11512040 | 290040400 | P0601075 | 290041100 | P1202575 | 290041900 | P1402076 | 290043400 | P0802079 |
| MDO 12012540 | 290040400 | P0601075 | 290041200 | P1402575 | 290041900 | P1402076 | 290043500 | P0802579 |
| MDO 12513040 | 290040400 | P0601075 | 290041200 | P1402575 | 290041900 | P1402076 | 290043500 | P0802579 |
| MDO 13013540 | 290040400 | P0601075 | 290041200 | P1402575 | 290041900 | P1402076 | 290043500 | P0802579 |
| MDO 13514040 | 290040400 | P0601075 | 290041200 | P1402575 | 290041900 | P1402076 | 290043500 | P0802579 |
| MDO 14015050 | 290040400 | P0601075 | 290041200 | P1402575 | 290041900 | P1402076 | 290043500 | P0802579 |
| MDO 15016050 | 290040400 | P0601075 | 290041200 | P1402575 | 290041900 | P1402076 | 290043500 | P0802579 |
| MDO 16017050 | 290040400 | P0601075 | 290041300 | P1602575 | 290041900 | P1402076 | 290043500 | P0802579 |
| MDO 17018050 | 290040400 | P0601075 | 290041300 | P1602575 | 290041900 | P1402076 | 290043500 | P0802579 |

| (9) Fixation Screw for MDS Shank, MDE Extension, MDM Reducer | | |
|--|-------------------|----------|
| ØD / ØD1 | Order Code Código | Screw |
| 28 | 290032400 | P0801280 |
| 32 | 290032400 | P0801280 |
| 40 | 290032500 | P1001580 |
| 48 | 290032600 | P1201880 |
| 58 | 290039600 | P1202080 |
| 70 | 290032800 | P1602780 |
| 80 | 290032800 | P1602780 |

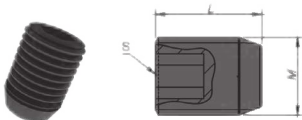


Fixing Screw and Clamping Bolt for Pilot Drill (DIN 916)



| Order Code Código | Screw | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | |
|----------------------|----------|---|------|-----|
| | | M | L | S |
| 290040100 | P0400875 | M4 x 0,7 | 8,0 | 2,0 |
| 290040200 | P0500875 | M5 x 0,8 | 8,0 | 2,5 |
| 290040400 | P0601075 | M6 x 1,0 | 10,0 | 3,0 |
| 290040500 | P0601275 | M6 x 1,0 | 12,0 | 3,0 |
| 290040700 | P0801575 | M8 x 1,25 | 15,0 | 4,0 |
| 290040900 | P1002075 | M10 x 1,5 | 20,0 | 5,0 |
| 290041000 | P1202075 | M12 x 1,75 | 20,0 | 6,0 |
| 290041100 | P1202575 | M12 x 1,75 | 25,0 | 6,0 |
| 290041200 | P1402575 | M14 x 2,0 | 25,0 | 6,0 |
| 290041300 | P1602575 | M16 x 2,0 | 25,0 | 8,0 |

Fixation Screw for MDS Shank, MDE Extension, MDM Reducer



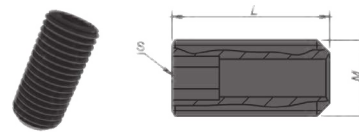
| Order Code Código | Screw | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | |
|----------------------|----------|---|------|-----|
| | | M | L | S |
| 290032400 | P0801280 | M8 | 12,0 | 4,0 |
| 290032500 | P1001580 | M10 | 15,0 | 5,0 |
| 290032600 | P1201880 | M12 | 18,0 | 6,0 |
| 290039600 | P1202080 | M12 | 20,0 | 6,0 |
| 290032800 | P1602780 | M16 | 27,0 | 8,0 |

Insert Screw



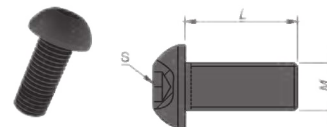
| Order Code | Screw |
|------------|----------|
| 290030600 | P0220500 |
| 290033100 | P0250503 |
| 290030800 | P0300701 |
| 290030900 | P0350903 |
| 290031000 | P0401101 |

Adjustment Screw for Pilot Drill (DIN 916 w/ hole)



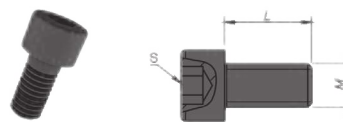
| Order Code Código | Screw | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | |
|----------------------|----------|---|------|-----|
| | | M | L | S |
| 290041400 | P0601076 | M6 x 1,0 | 10,0 | 3,0 |
| 290041500 | P0801576 | M8 x 1,25 | 15,0 | 4,0 |
| 290041600 | P1001676 | M10 x 1,5 | 16,0 | 5,0 |
| 290041700 | P1001876 | M10 x 1,5 | 18,0 | 5,0 |
| 290041800 | P1202076 | M12 x 1,75 | 20,0 | 6,0 |
| 290041900 | P1402076 | M14 x 2,0 | 20,0 | 6,0 |

Screw for Cartridge (ISO 7380)



| Order Code Código | Screw | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | |
|----------------------|----------|---|------|-----|
| | | M | L | S |
| 290042500 | P0401078 | M4 x 0,7 | 10,0 | 2,0 |
| 290042700 | P0501278 | M5 x 0,8 | 12,0 | 2,5 |

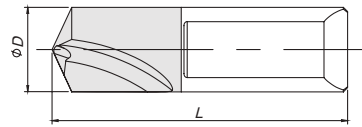
Screw for Cartridge (DIN 912)



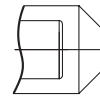
| Order Code Código | Screw | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | |
|----------------------|----------|---|------|-----|
| | | M | L | S |
| 290043000 | P0601279 | M6 x 1,0 | 12,0 | 2,5 |
| 290043100 | P0601479 | M6 x 1,0 | 14,0 | 3,0 |
| 290043600 | P0601679 | M6 x 1,0 | 16,0 | 3,0 |
| 290043300 | P0801879 | M8 x 1,25 | 18,0 | 4,0 |
| 290043400 | P0802079 | M8 x 1,25 | 20,0 | 4,0 |
| 290043500 | P0802579 | M8 x 1,25 | 25,0 | 4,0 |

SPARE PARTS

PILOT DRILL



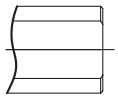
Shank Type



A (with cone)



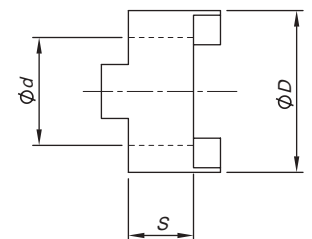
B (with chamfer)



C

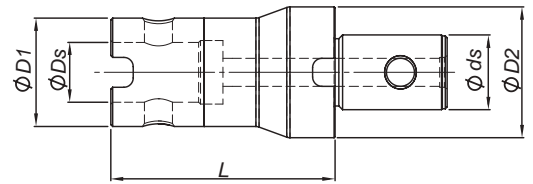
| Order Code | Reference | Dimensions (mm) | | Type | Oil Hole | For Drill |
|------------|-----------|-----------------|----|------|----------|---------------------------------|
| | | ØD | L | | | |
| 184104100 | MDP 3006 | 6 | 30 | B | - | DHS (Ø25 - Ø30) |
| 184104400 | MDP 3508 | 8 | 35 | B | - | DHS (Ø31 - Ø40) |
| 184033100 | MDP 3510 | 10 | 35 | B | ✓ | DHC (Ø41 - Ø50), MDO (Ø45-Ø55) |
| 184033200 | MDP 3812 | 12 | 38 | B | ✓ | DHC (Ø51 - Ø75), MDO (Ø55-Ø75) |
| 184033300 | MDP 4516 | 16 | 45 | B | ✓ | DHC (Ø75 - Ø80), MDO (Ø75-Ø100) |
| 184033400 | MDP 4520 | 20 | 45 | C | ✓ | MDO (Ø100-Ø120) |
| 184033500 | MDP 5625 | 25 | 56 | C | ✓ | MDO (Ø120-Ø160) |
| 184033600 | MDP 6830 | 30 | 68 | C | ✓ | MDO (Ø160-Ø180) |
| 184150900 | MDP 2006 | 6 | 20 | A | - | TFD (Ø18,0 - Ø25,0) |
| 184151000 | MDP 2508 | 8 | 25 | A | - | TFD (Ø25,5 - Ø30,0) |



DRIVE RING



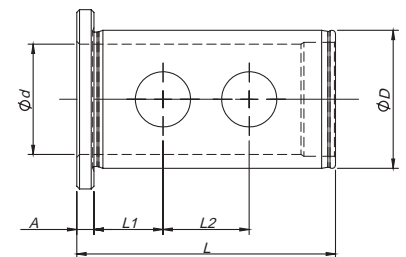
| Order Code | Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | |
|------------|-----------|---|----|----|
| | | ØD | Ød | S |
| 184021600 | MDR 1028 | 28 | 13 | 10 |
| 184021700 | MDR 1032 | 32 | 16 | 10 |
| 184022100 | MDR 1240 | 40 | 22 | 12 |
| 184022200 | MDR 1248 | 48 | 27 | 12 |
| 184022300 | MDR 1458 | 58 | 32 | 14 |
| 184022400 | MDR 1470 | 70 | 40 | 14 |
| 184022500 | MDR 1680 | 80 | 50 | 16 |

MDM - REDUCER



| Order Code | Reference | Dimensions / Dimensões / Dimensiones (mm) | | | | | Drive Ring D1 | Drive Ring D2 |
|------------|--------------|---|-----|-----|-----|-----|---|---|
| | | ØDs | Øds | ØD1 | ØD2 | L |  |  |
| 184253900 | MDM 16100130 | 13 | 16 | 28 | 32 | 100 | MDR 1028 | MDR 1032 |
| 184254000 | MDM 22100160 | 16 | 22 | 32 | 40 | 100 | MDR 1032 | MDR 1240 |
| 184254100 | MDM 27100220 | 22 | 27 | 40 | 48 | 100 | MDR 1240 | MDR 1248 |
| 184254200 | MDM 32100130 | 13 | 32 | 28 | 58 | 100 | MDR 1028 | MDR 1458 |
| 184254300 | MDM 32100160 | 16 | 32 | 32 | 58 | 100 | MDR 1032 | MDR 1458 |
| 184254400 | MDM 32100220 | 22 | 32 | 40 | 58 | 100 | MDR 1240 | MDR 1458 |
| 184254500 | MDM 32100270 | 27 | 32 | 48 | 58 | 100 | MDR 1248 | MDR 1458 |
| 184254600 | MDM 40100320 | 32 | 40 | 58 | 70 | 100 | MDR 1458 | MDR 1470 |
| 184254700 | MDM 50080130 | 13 | 50 | 28 | 80 | 80 | MDR 1028 | MDR 1680 |
| 184254800 | MDM 50080160 | 16 | 50 | 32 | 80 | 80 | MDR 1032 | MDR 1680 |
| 184254900 | MDM 50080220 | 22 | 50 | 40 | 80 | 80 | MDR 1240 | MDR 1680 |
| 184255000 | MDM 50080270 | 27 | 50 | 48 | 80 | 80 | MDR 1248 | MDR 1680 |
| 184255100 | MDM 50080320 | 32 | 50 | 58 | 80 | 80 | MDR 1458 | MDR 1680 |
| 184250200 | MDM 50150400 | 40 | 50 | 70 | 80 | 150 | MDR 1470 | MDR 1680 |

RDS - DRILL SLEEVE



| Order Code | Reference | Dimensions / Dimensões / Dimensiones (mm) | | | | | |
|------------|------------|---|----|----|----|----|---|
| | | ØD | Ød | L | L1 | L2 | A |
| 184258900 | RDS 203265 | 32 | 20 | 65 | 20 | - | 5 |
| 184259000 | RDS 253265 | 32 | 25 | 65 | 20 | 20 | 5 |
| 184259100 | RDS 204075 | 40 | 20 | 75 | 20 | - | 5 |
| 184259200 | RDS 254075 | 40 | 25 | 75 | 20 | 25 | 5 |
| 184259300 | RDS 324075 | 40 | 32 | 75 | 20 | 25 | 5 |
| 184259400 | RDS 205095 | 50 | 20 | 95 | 35 | - | 5 |
| 184259500 | RDS 255095 | 50 | 25 | 95 | 35 | - | 5 |
| 184259600 | RDS 325095 | 50 | 32 | 95 | 35 | 35 | 5 |
| 184259700 | RDS 405095 | 50 | 40 | 95 | 35 | 35 | 5 |

TECHNICAL DATA | Datos técnicos | Datos técnicos

| | 1 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | | |
|--|---|---|--------|--------|----|--------|----|----|-----|----|----|-----|--|
| DRILLING Jet Drills P STEEL | | | PH6910 | | | | | | | | | PVD | |
| | | | | PH6920 | | | | | | | | | |
| | | | | PHU920 | | | | | NEW | | | | |
| | | | | | | PH6930 | | | | | | | |
| | | | | | | PHC930 | | | | | | | |
| Integrex Drills M STAINLESS STEEL | | | | PH6920 | | | | | | | | PVD | |
| | | | | PHU920 | | | | | NEW | | | | |
| | | | | | | PH6930 | | | | | | | |
| | | | | | | PHC930 | | | | | | | |
| Vortex Drills K CAST IRON | | | PH6910 | | | | | | | | | PVD | |
| | | | | PH6920 | | | | | | | | | |
| | | | | PHU920 | | | | | NEW | | | | |
| | | | | | | PH6930 | | | | | | | |
| | | | | | | PHC930 | | | | | | | |
| Trepanning Drills N ALUMINIUM | | | PH0910 | | | | | | | | | UNC | |
| | | | | | | | | | | | | | |

PVD GRADES

PH6910

P05-P10
K05-K10

Coated carbide grade with a very hard substrate for drilling of steels and cast irons.

PH6920

P10-P35
M10-M25
K10-K30

Coated grade over a tough wear resistance substrate for general purpose machining.

PH6930

P20-P40
M20-M30
K20-K40

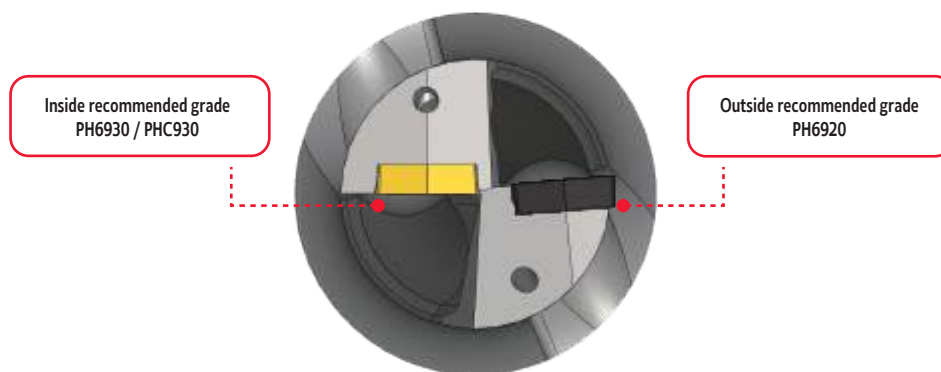
Grade suitable for applications with instability conditions. Excellent solution for medium cutting speed applications.

PHC930

P20-P40
M20-M30
K20-K40

Grade suitable for applications with instability conditions. Excellent solution for medium cutting speed applications. Coated in Yellow to be visually distinguishable.

Grades recommendation for drilling systems



Note: This recommendation should be applied on High Alloy Steels, Stainless Steels and HRSA materials.

PHU920

Combining both excellent thermal resistance and excellent surface quality, the PHU920 grade is recommended for steels, stainless steels and cast iron.

Because of its surface quality and thermal resistance it is able to prevent built-up-edge in both low-alloy steels and stainless steels, making it a very versatile grade.

- High thermal shock resistance
- Carefully engineered surface quality
- Suitable for dry and wet machining
- Color: Grey

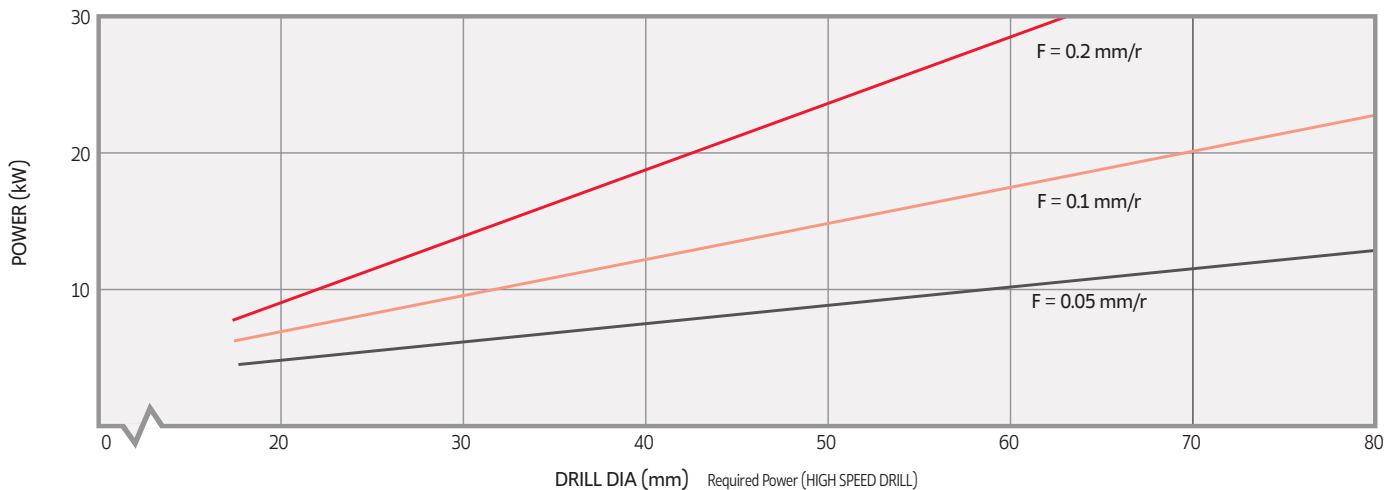


JET DRILLS = TDS & TDC DRILL TYPE

Recommended Speeds and Feeds | Parâmetros de Corte Recomendados Recomendaciones de Datos de Corte

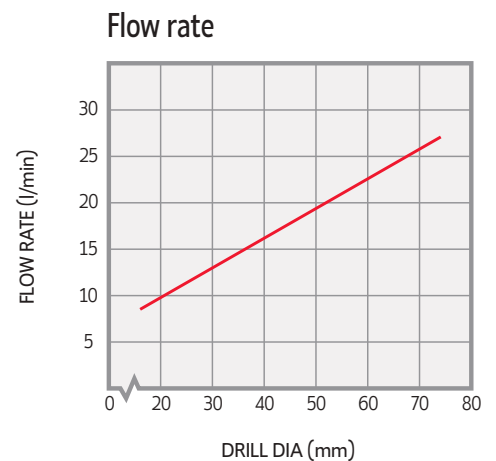
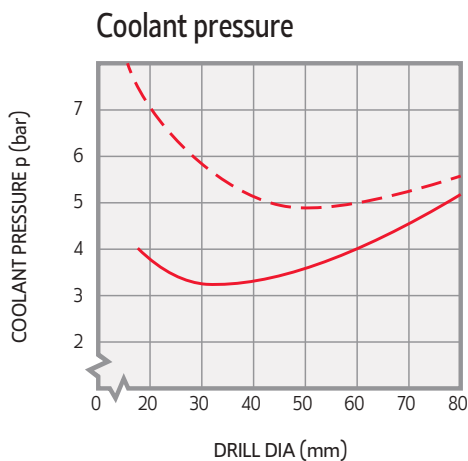
| ISO | Material Group Grupo Materiais Grupo Materiales | Vc (m/min) | Ø13-15,5 | Ø16-20 | Ø20,5-25 | Ø25,5-30 | Ø31-41 | Ø42-58 | Ø59-80 |
|----------|---|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| P | UNALLOYED STEEL (-0,25%) | 180-260 | 0,05-0,08 | 0,06-0,10 | 0,07-0,12 | 0,09-0,15 | 0,11-0,18 | 0,15-0,28 | 0,11-0,18 |
| | LOW-ALLOY STEEL (0,25%-) | 150-240 | 0,05-0,08 | 0,06-0,10 | 0,07-0,12 | 0,09-0,15 | 0,11-0,18 | 0,15-0,28 | 0,11-0,18 |
| | LOW-ALLOY STEEL | 120-240 | 0,05-0,08 | 0,06-0,10 | 0,07-0,12 | 0,09-0,15 | 0,11-0,18 | 0,15-0,28 | 0,11-0,18 |
| | HIGH-ALLOY STEEL | 130-220 | 0,05-0,08 | 0,06-0,10 | 0,07-0,12 | 0,09-0,15 | 0,11-0,18 | 0,15-0,28 | 0,11-0,18 |
| M | STAINLESS STEEL | 150-220 | 0,04-0,08 | 0,05-0,09 | 0,06-0,12 | 0,07-0,13 | 0,08-0,16 | 0,10-0,20 | 0,08-0,16 |
| K | GREY CAST IRON | 150-250 | 0,05-0,11 | 0,07-0,13 | 0,08-0,12 | 0,10-0,18 | 0,14-0,26 | 0,18-0,35 | 0,14-0,26 |
| | CAST IRON WITH NODULAR CAST | 120-200 | 0,05-0,11 | 0,06-0,13 | 0,07-0,12 | 0,08-0,18 | 0,14-0,26 | 0,18-0,35 | 0,14-0,26 |
| N | ALUMINIUM FORGING ALLOYS | 180-280 | 0,04-0,06 | 0,07-0,12 | 0,08-0,13 | 0,09-0,15 | 0,12-0,20 | 0,08-0,13 | 0,09-0,15 |
| | ALUMINIUM CAST ALLOYS | 120-270 | 0,04-0,06 | 0,06-0,12 | 0,08-0,13 | 0,09-0,15 | 0,12-0,20 | 0,08-0,13 | 0,09-0,15 |

Power Requirements | Requisitos de Potência | Requisitos de Potencia



• This chart is based on machining experiences using steels with a hardness of 200-250HB and cutting speed of 100m/min.
• For cast iron the effective power requirement is around 30% lower.

Coolant Application Chart | Tabela Aplicação de Refrigeração | Tabla Aplicación de Refrigerante



TDS & TDC DRILL TYPE

Hole Tolerance and Maximum Hole Size With Radial Adjustment | Tolerância do Furo e Dimensão Máxima do Furo com Ajuste Radial | Tolerancia de los Agujeros y el Tamaño Del agujero Máximo con Ajuste Radial



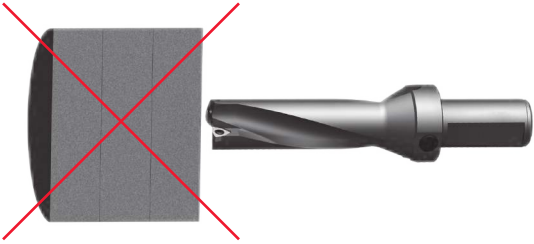

| Drill D | Radial Adjust | Max Hole D |
|---------|---------------|------------|
| 13.00 | 1.50 | 16.00 |
| 13.50 | 1.50 | 16.50 |
| 14.00 | 1.50 | 17.00 |
| 14.50 | 1.50 | 17.50 |
| 15.00 | 1.50 | 18.00 |
| 15.50 | 1.50 | 18.50 |
| 16.00 | 1.50 | 19.00 |
| 16.50 | 1.50 | 19.50 |
| 17.00 | 1.50 | 20.00 |
| 17.50 | 1.50 | 20.50 |
| 18.00 | 1.40 | 20.80 |
| 18.50 | 1.30 | 21.10 |
| 19.00 | 1.20 | 21.40 |
| 20.00 | 1.00 | 22.00 |
| 21.00 | 1.60 | 24.20 |
| 22.00 | 1.50 | 25.00 |
| 23.00 | 1.25 | 25.50 |
| 24.00 | 1.00 | 26.00 |
| 25.00 | 0.80 | 26.60 |
| 26.00 | 2.50 | 31.00 |
| 27.00 | 2.20 | 31.40 |
| 28.00 | 2.10 | 32.20 |
| 29.00 | 1.80 | 32.60 |
| 30.00 | 1.50 | 33.00 |
| 31.00 | 3.50 | 38.00 |
| 32.00 | 3.20 | 38.40 |

| Drill D | Radial Adjust | Max Hole D |
|---------|---------------|------------|
| 33.00 | 3.00 | 39.00 |
| 34.00 | 2.80 | 39.60 |
| 35.00 | 2.50 | 40.00 |
| 36.00 | 2.30 | 40.60 |
| 37.00 | 2.00 | 41.00 |
| 38.00 | 1.80 | 41.60 |
| 39.00 | 1.50 | 42.00 |
| 40.00 | 1.20 | 42.40 |
| 41.00 | 1.00 | 43.00 |
| 42.00 | 4.20 | 50.40 |
| 43.00 | 4.00 | 51.00 |
| 44.00 | 3.70 | 51.40 |
| 45.00 | 3.50 | 52.00 |
| 46.00 | 3.30 | 52.60 |
| 47.00 | 3.00 | 53.00 |
| 48.00 | 2.70 | 53.40 |
| 49.00 | 2.50 | 54.00 |
| 50.00 | 2.20 | 54.40 |
| 51.00 | 2.00 | 55.00 |
| 52.00 | 1.80 | 55.60 |
| 53.00 | 1.50 | 56.00 |
| 54.00 | 1.20 | 56.40 |
| 55.00 | 0.80 | 56.60 |
| 56.00 | 0.60 | 57.20 |
| 58.00 | 0.40 | 58.80 |

DRILLING
Jet Drills
Integrex Drills
Vortex Drills
Trepanning Drills
Solid Carbide Drills
Inserts
Spare Parts
Technical Data

JET DRILLS - TDS & TDC DRILL TYPE

Rules & Tips | Regras e Dicas | Normas e Consejos

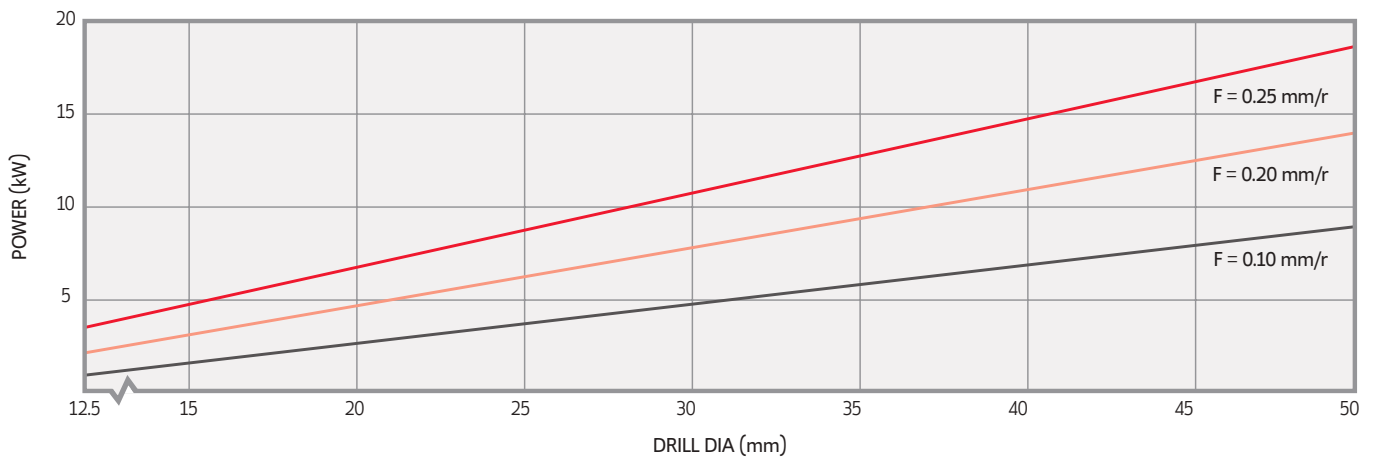
| Operation Operação Operación | Description Descrição Descripción |
|---|--|
| <ul style="list-style-type: none"> • SPOT DRILLING THROUGH ON INCLINED SURFACES • FURAÇÃO LOCALIZADA E FURAÇÃO ATRAVÉS DE SUPERFÍCIES INCLINADAS • PERFORACIÓN LOCALIZADA Y PERFORACION SOBRE SUPERFÍCIES INCLINADAS  | <ul style="list-style-type: none"> • Up to a 30° inclination angle is possible without reducing the cutting parameters. For angles between 30-40°, reduce feed force at incline surface by 50% • Até um ângulo de 30° é possível sem a redução dos parâmetros de corte. Para ângulos entre 30-40°, reduza o avanço na superfície inclinada em 50%. • Hasta un ângulo de inclinación de 30° es posible sin la reducción de los parámetros de corte. En ângulos entre 30-40°, reduzca el avance en 50%. |
| <ul style="list-style-type: none"> • INTERRUPTED CUTS • CORTE INTERROMPIDO • CORTE INTERRUPTIDO  | <ul style="list-style-type: none"> • For problem-free drilling in interrupted cuts (cross drilling, etc.), reduce the cutting force and feed by 30% to maintain maximum stability of the machine and clamping mechanisms. • Para furação em corte interrompido, reduza a velocidade de corte e o avanço em 30% para manter a estabilidade máxima da máquina e sistemas de aperto. • En perforación en corte interrumpido, reduzca la velocidad de corte e el avance en 30% para mantener la estabilidad. |
| <ul style="list-style-type: none"> • DRILLING OF STACKED PLATES • FURAÇÃO DE CHAPAS EMPILHADAS • PERFORACIÓN DE PLACAS APILADAS  | <ul style="list-style-type: none"> • This is not possible with the standart TDS or TDC drills. A final disc will form when the drill breaks through. • Esta operação não é possível com as brocas standart TDS ou TDC. Um disco forma-se e poderá saltar no final da operação quando trespassa a peça. • Esta operación no es posible con brocas standart TDS o TDC. |
| <ul style="list-style-type: none"> • BORING • MADRILAGEM • MANDRILAGEM  | <ul style="list-style-type: none"> • When the TDC or TDS drill are used as boring tool, offset the drill in the direction of the cutter insert. Watch the outer insert for wear because is cutting more metal than the inner insert and may require more frequent indexing. • Quando as TDS ou TDC são usadas para operações de mandrilamento oriente a broca pela pastilha exterior. Observe o desgaste da pastilha exterior uma vez que esta debasta mais metal que a pastilha exterior e poderá requerer uma indexação mais frequente. • Siempre que use las TDS o TDC en operaciones de mandrilage, oriente el inserto exterior. Se deve observar el desgaste del inserto exterior una vez que podrá necesitar de una indexación mas regular. |

JET DRILLS - SCS & SCC DRILL TYPE

Recommended Speeds and Feeds | Parâmetros de Corte Recomendados | Recomendaciones de Datos de Corte

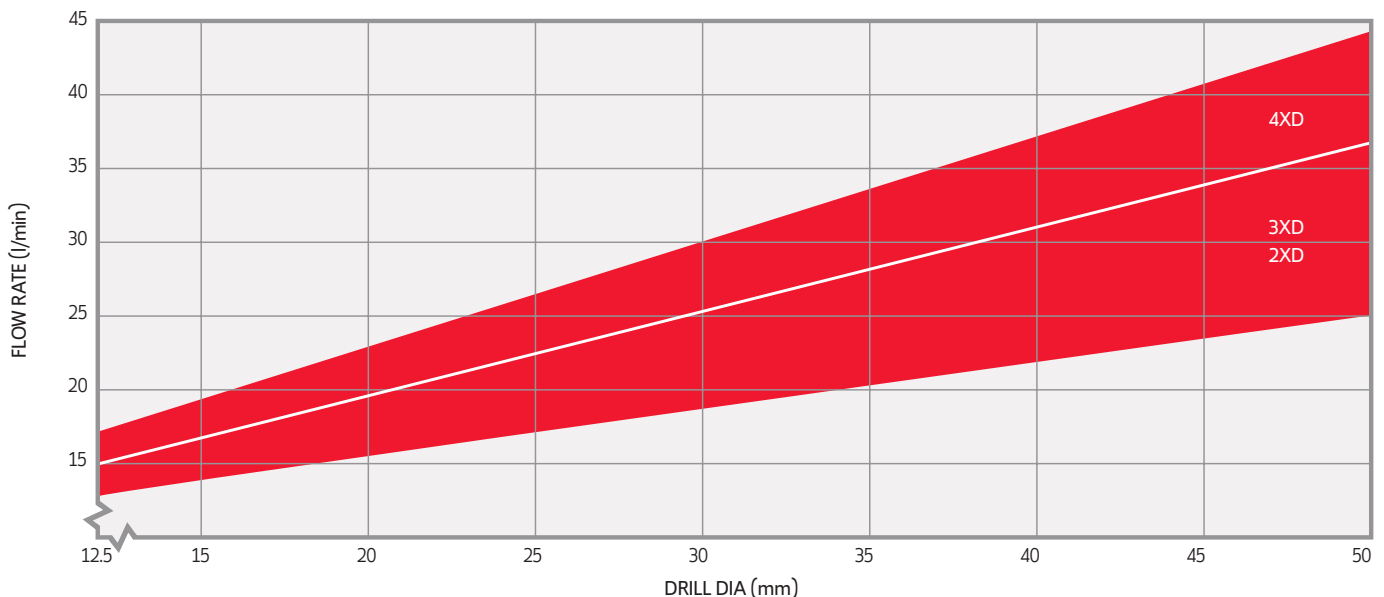
| ISO | Material Group Grupo Materiais Grupo Materiales | Vc (m/min) | Ø12,5-15 | Ø15,5-21,5 | Ø22-27,5 | Ø28-33 | Ø34-41 | Ø42-50 | Ø50-60 | Ø60-75 | Ø75-80 |
|----------|---|---------------|-----------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| P | UNALLOYED STEEL (-0,25%) | 180-250 | 0,05-0,08 | 0,06-0,10 | 0,06-0,12 | 0,07-0,13 | 0,08-0,15 | 0,08-0,16 | 0,06-0,12 | 0,08-0,12 | 0,08-0,12 |
| | LOW-ALLOY STEEL (0,25%-) | 160-220 | 0,06-0,12 | 0,08-0,15 | 0,10-0,18 | 0,12-0,22 | 0,12-0,24 | 0,13-0,25 | 0,10-0,14 | 0,12-0,18 | 0,11-0,18 |
| | LOW-ALLOY STEEL | 150-220 | 0,06-0,12 | 0,08-0,14 | 0,10-0,18 | 0,12-0,22 | 0,12-0,23 | 0,13-0,24 | 0,08-0,15 | 0,10-0,18 | 0,10-0,18 |
| | HIGH-ALLOY STEEL | 130-180 | 0,06-0,10 | 0,08-0,15 | 0,10-0,20 | 0,12-0,23 | 0,12-0,24 | 0,13-0,25 | 0,08-0,14 | 0,09-0,15 | 0,09-0,14 |
| M | STAINLESS STEEL | 170-240 | 0,05-0,10 | 0,06-0,12 | 0,08-0,15 | 0,09-0,16 | 0,10-0,17 | 0,11-0,19 | 0,06-0,13 | 0,08-0,15 | 0,08-0,14 |
| K | GREY CAST IRON | 180-250 | 0,06-0,12 | 0,08-0,16 | 0,12-0,20 | 0,15-0,25 | 0,16-0,28 | 0,18-0,30 | 0,12-0,20 | 0,15-0,20 | 0,15-0,20 |
| | CAST IRON WITH NODULAR CAST | 130-200 | 0,06-0,10 | 0,08-0,15 | 0,10-0,18 | 0,12-0,20 | 0,15-0,23 | 0,16-0,25 | 0,10-0,15 | 0,09-0,18 | 0,10-0,18 |

Power Requirements | Requisitos de Potência | Requisitos de Potencia



- These chart is based on machining experiences using steels with a hardness of 200-250HB and cutting speed of 100m/min.
- For cast iron the effective power requirement is around 30% lower.

Coolant Application Chart | Tabela Aplicação de Refrigeração | Tabla Aplicación de Refrigerante







JET DRILLS - SCS DRILL TYPE

Hole Tolerance and Maximum Hole Size With Radial Adjustment
 Tolerância do Furo e Dimensão Máxima do Furo com Ajuste Radial
 Tolerancia de los Agujeros y el Tamaño Del agujero Máximo con Ajuste Radial

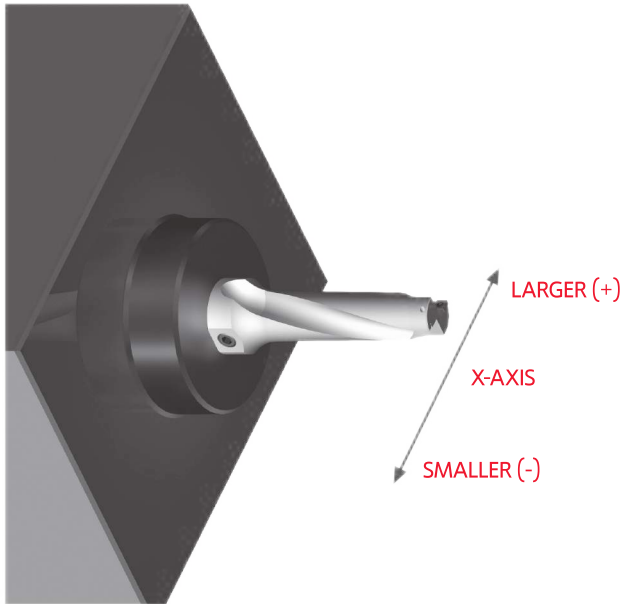
| Drill D | 4xD | |
|---------|---------------|-------------|
| | Radial Adjust | Max. Hole D |
| 13 | 0.50 | 14.0 |
| 14 | 0.50 | 15.0 |
| 15 | 0.50 | 16.0 |
| 16 | 0.50 | 17.0 |
| 17 | 0.50 | 18.0 |
| 18 | 0.50 | 19.0 |
| 19 | 0.50 | 20.0 |
| 20 | 0.50 | 21.0 |
| 21 | 0.25 | 21.5 |
| 22 | 0.50 | 23.0 |
| 23 | 0.50 | 24.0 |
| 24 | 0.50 | 25.0 |
| 25 | 0.50 | 26.0 |
| 26 | 0.25 | 26.5 |
| 27 | 0.25 | 27.5 |
| 28 | 0.50 | 29.0 |
| 29 | 0.50 | 30.0 |
| 30 | 0.50 | 31.0 |
| 31 | 0.25 | 31.5 |
| 32 | 0.25 | 32.5 |
| 33 | 0.25 | 33.5 |
| 34 | 0.50 | 35.0 |
| 35 | 0.50 | 36.0 |
| 36 | 0.50 | 37.0 |
| 37 | 0.50 | 38.0 |
| 38 | 0.50 | 39.0 |
| 39 | 0.50 | 40.0 |
| 40 | 0.25 | 40.5 |
| 41 | 0.25 | 41.5 |
| 42 | 0.50 | 43.0 |
| 43 | 0.50 | 44.0 |
| 44 | 0.50 | 45.0 |
| 45 | 0.50 | 46.0 |
| 46 | 0.50 | 47.0 |
| 47 | 0.50 | 48.0 |
| 48 | 0.25 | 48.5 |
| 49 | 0.25 | 49.5 |
| 50 | 0.25 | 50.5 |

| Drill D | 4xD | |
|---------|---------------|-------------|
| | Radial Adjust | Max. Hole D |
| 13 | 0.50 | 14.0 |
| 14 | 0.50 | 15.0 |
| 15 | 0.50 | 16.0 |
| 16 | 0.50 | 17.0 |
| 17 | 0.50 | 18.0 |
| 18 | 0.50 | 19.0 |
| 19 | 0.50 | 20.0 |
| 20 | 0.50 | 21.0 |
| 21 | 0.25 | 21.5 |
| 22 | 0.50 | 23.0 |
| 23 | 0.50 | 24.0 |
| 24 | 0.50 | 25.0 |
| 25 | 0.50 | 26.0 |
| 26 | 0.25 | 26.5 |
| 27 | 0.25 | 27.5 |
| 28 | 0.50 | 29.0 |
| 29 | 0.50 | 30.0 |
| 30 | 0.50 | 31.0 |
| 31 | 0.25 | 31.5 |
| 32 | 0.25 | 32.5 |
| 33 | 0.25 | 33.5 |
| 34 | 0.50 | 35.0 |
| 35 | 0.50 | 36.0 |
| 36 | 0.50 | 37.0 |
| 37 | 0.50 | 38.0 |
| 38 | 0.50 | 39.0 |
| 39 | 0.50 | 40.0 |
| 40 | 0.25 | 40.5 |
| 41 | 0.25 | 41.5 |
| 42 | 0.50 | 43.0 |
| 43 | 0.50 | 44.0 |
| 44 | 0.50 | 45.0 |
| 45 | 0.50 | 46.0 |
| 46 | 0.50 | 47.0 |
| 47 | 0.50 | 48.0 |
| 48 | 0.25 | 48.5 |
| 49 | 0.25 | 49.5 |
| 50 | 0.25 | 50.5 |

| Problem Problema | Corrective Action | Possível Solução | Solución Posible |
|--|---|--|--|
| <p>INNER CUTTING EDGE CRACKING</p>  | <p>On Lathes:</p> <ul style="list-style-type: none"> • Check machine alignment. • Check clamping accuracy. If tool clamping cannot be improved and/or optimum machine stability is doubtful, reduce feed by 30%. • User tougher carbide grade. <p>TIP: Grades can be mixed to achieve optimum performance.</p> <p>Example: Use grade PH6125 in the inside pocket with PH6135 in the outside pocket.</p> | <p>Em Tornos:</p> <ul style="list-style-type: none"> • Verifique o alinhamento máquina. • Verifique a precisão do aperto. Se o aperto não puder ser melhorado e/ou a otimização da estabilidade da máquina é duvidosa, reduza o avanço em 30%. • Usar classes de graus mais duras. <p>DICA: Misture classes Graus para alcançar o desempenho ideal.</p> <p>Exemplo: Utilize PH6125 na pastilha interior e PH6135 na pastilha exterior.</p> | <p>Tornos en:</p> <ul style="list-style-type: none"> • Compruebe la alineación de máquinas. • Verificar la precisión de sujeción. Si la herramienta de sujeción no puede mejorar y/o optimizar la estabilidad de la máquina es dudosa, reducir los piensos en un 30%. • El usuario de carburo de calidad es más estrictas. <p>SUGERENCIA: Las calificaciones se pueden mezclar para lograr un rendimiento óptimo.</p> <p>Ejemplo: Utilice PH6125 en el inserto interior e PH6135 en el inserto exterior.</p> |
| <p>CHIP EVACUATION NOT OPTIMAL</p>  | <ul style="list-style-type: none"> • Increase coolant pressure and volume (coolant helps support chip evacuation as well as cooling the cutting edges). • Optimize chip control for a given application. • Increase cutting speed by 20%. | <ul style="list-style-type: none"> • Aumente a pressão e volume do líquido de refrigeração (este permite uma melhor evacuação da apar, bem como um arrefecimento das arestas de corte). • Optimize o controlo das aparas para cada operação. • Aumentar a velocidade de corte de 20%. | <ul style="list-style-type: none"> • Aumentar la presión del refrigerante y el volumen (el líquido de refrigeración de chips de apoyo ayuda a la evacuación, así como el enfriamiento de la corte de los bordes). • Optimizar el control de chip para una aplicación determinada. • Aumentar la velocidad de corte un 20%. |
| <p>EXCESSIVE INSERT WEAR</p>  | <ul style="list-style-type: none"> • Increase coolant pressure and volume. • Reduce cutting speed by 20%. • Use a more wear – resistant grade. | <ul style="list-style-type: none"> • Aumente o volume e a pressão do líquido de refrigeração. • Reduzir a velocidade de corte de 20%. • Utilize um grau mais resistente ao desgaste. | <ul style="list-style-type: none"> • Aumentar la presión del refrigerante y el volumen. • Reducir la velocidad de corte en un 20%. • Utilice un mayor desgaste - resistente grado. |
| <p>POOR DRILL HOLE QUALITY</p>  | <ul style="list-style-type: none"> • Increase coolant pressure and volume. • Increase cutting speed by 20% • Check clamping accuracy (tool and workpiece) for possible improvement. <p>TIP: Use higher speed with lighter feed to produce better hole quality.</p> | <ul style="list-style-type: none"> • Aumente o volume e a pressão do líquido de refrigeração. • Aumentar a velocidade de corte de 20% • Verifique a precisão do aperto (ferramenta e peça). <p>DICA: Utilize velocidades com avanços menores para produzir uma melhor qualidade do furo.</p> | <ul style="list-style-type: none"> • Aumentar la presión del refrigerante y el volumen. • Aumentar la velocidad de corte en un 20% • Verificar la precisión de sujeción (herramienta y pieza de trabajo) para una posible mejora. <p>SUGERENCIA: El uso ligero con mayor velocidad de alimentación para producir una mejor calidad agujero.</p> |

Initial Drill Set Up and Check | Ajuste Inicial da Broca e Verificação | Ajuste Inicial de la Broca e su Verificación

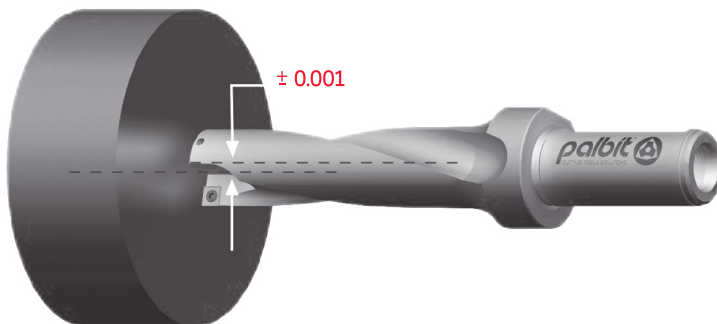
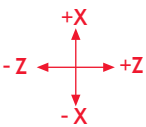
DRILLING
Jet Drills
Integrex Drills
Vortex Drills
Trepanning Drills
Solid Carbide Drills
Inserts
Spare Parts
Technical Data



- The cutting edge of insert should be parallel to X-axis to make it possible to do offset cutting. Since a flat part on shank for side lock clamping has been made parallel with the cutting edge line of insert, operator can set the drill as per flat part of shank.

- A aresta de corte da pastilha deve ser paralela ao eixo X tornando possível o alinhamento de corte.

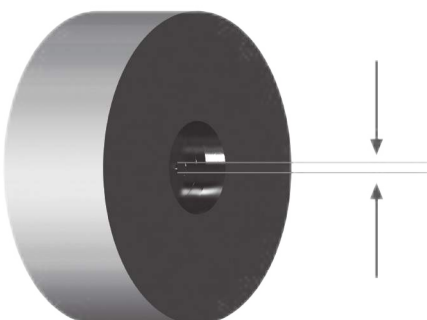
- El hilo de corte del inserto se debe posicionar paralelamente al axis-X tornando posible el aliñamiento de corte.



- The outer insert should be located in the direction (+) of X-axis to allow offset cutting and then the inner insert should face the operator.

- A pastilha exterior deve estar localizada na direcção (+) do eixo-X, permitindo assim o alinhamento do corte, a pastilha interior deve estar virada ao operador.

- El inserto exterior se debe localizar en la dirección (+) del axis-X, permitiendo el aliñamiento del corte, el inserto interior debe quedar-se virado para el operador.



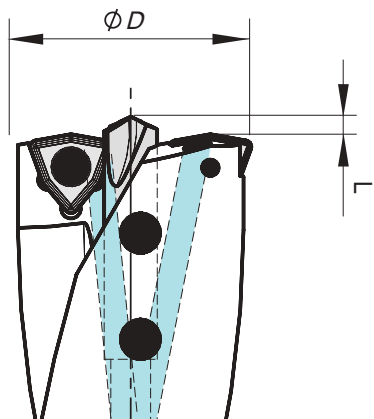
- To check up the setting of drill before use, test it by drilling about 5mm depth and then measure the core size if it is around 0,2mm - 0,7mm.

- Para verificar o ajuste faça o teste furando cerca de 5mm de profundidade medindo depois o núcleo verificando se este tem aproximadamente 0,2 a 0,7mm.

- Para comprobar el ajuste hacer un taladro de cerca de 5 mm de profundidad, medido después su núcleo si se trata de 0,2 a 0,7 mm.

INTEGREX DRILLS - DHS, DHC, TFD DRILL TYPE

Pilot Drill Adjustment | Ajuste da Broca Piloto | Ajuste de la Broca Piloto

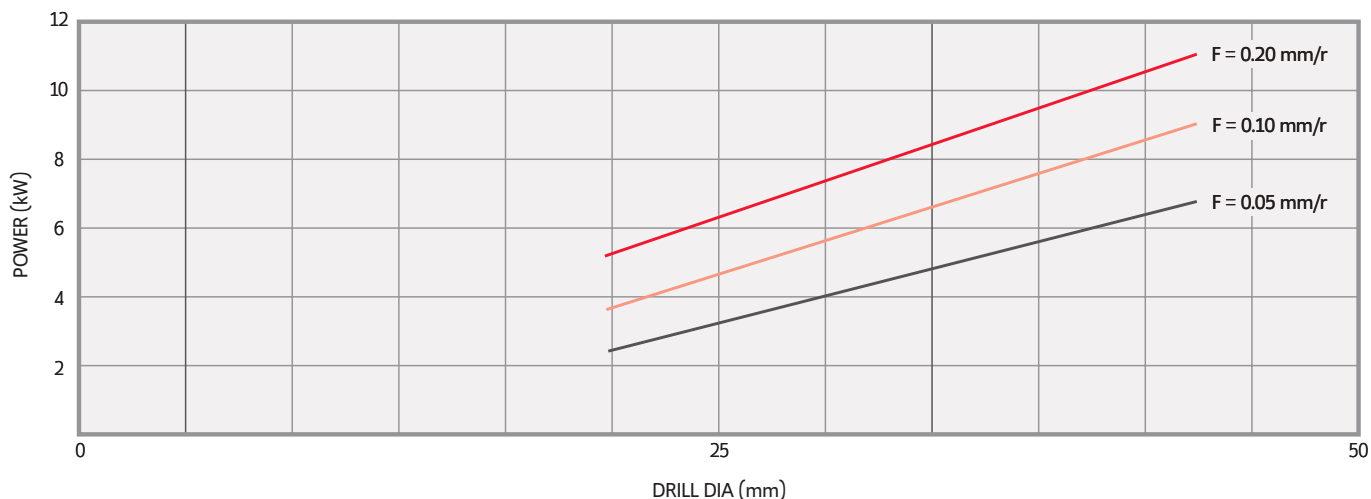


| ØD | L |
|-------|-----|
| 18-24 | 2,5 |
| 25-30 | 3,0 |
| 31-39 | 4,0 |
| 40-59 | 4,5 |
| 60-80 | 5,0 |

Recommended Speeds and Feeds | Parâmetros de Corte Recomendados Recomendaciones de Datos de Corte

| ISO | Material Group Grupo Materiais Grupo Materiales | Vc (m/min) | Ø25 | Ø26-30 | Ø31-40 | Ø41-50 | Ø51-59 | Ø60-75 | Ø75-80 |
|----------|---|---------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| P | UNALLOYED STEEL (-0,25%) | 130-190 | 0,06-0,10 | 0,07-0,11 | 0,08-0,12 | 0,10-0,14 | 0,14-0,20 | 0,08-0,12 | 0,10-0,14 |
| | LOW-ALLOY STEEL (0,25%-) | 130-190 | 0,06-0,10 | 0,07-0,11 | 0,08-0,12 | 0,10-0,14 | 0,12-0,18 | 0,08-0,12 | 0,10-0,14 |
| | LOW-ALLOY STEEL (-HB300) | 100-140 | 0,06-0,10 | 0,07-0,11 | 0,08-0,12 | 0,10-0,14 | 0,12-0,18 | 0,08-0,12 | 0,10-0,14 |
| | HIGH-ALLOY STEEL (HB300-) | 60-100 | 0,05-0,07 | 0,05-0,07 | 0,06-0,08 | 0,06-0,10 | 0,09-0,13 | 0,06-0,08 | 0,06-0,10 |
| M | STAINLESS STEEL | 60-110 | 0,04-0,07 | 0,04-0,11 | 0,06-0,12 | 0,08-0,14 | 0,10-0,18 | 0,06-0,12 | 0,08-0,14 |
| K | GREY CAST IRON | 130-190 | 0,07-0,13 | 0,07-0,15 | 0,08-0,16 | 0,10-0,18 | 0,12-0,22 | 0,08-0,16 | 0,10-0,18 |
| | CAST IRON WITH NODULAR CAST | 110-190 | 0,04-0,13 | 0,07-0,15 | 0,08-0,16 | 0,10-0,25 | 0,12-0,26 | 0,08-0,16 | 0,10-0,25 |





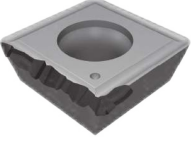


Power Requirements | Requisitos de Potência | Requisitos de Potencia



INTEGREX DRILLS - DHS, DHC, TFD DRILL TYPE

Rules & Tips | Regras e Dicas | Normas e Consejos

| | WRONG | CORRECT | EN | PT | ES |
|----------------------|-------|---------|---|--|--|
| DRILLING | | | <p>Spot Drilling</p> <p>For plain/straight surfaces, no spot drilling is required. For centering, the center drill diameter should be considerably smaller than the pilot drill diameter.</p> | <p>Furação Localizada</p> <p>Para superfícies planas a furação localizada não é necessária. O diâmetro da broca de pré-furação deve ser consideravelmente menor do que o diâmetro da broca-piloto.</p> | <p>Perforación Localizada</p> <p>Para superficies planas, no se requiere la perforación in situ. Para centrar el diámetro de pre-perforación debe ser considerablemente más pequeño que el diámetro de la broca piloto.</p> |
| Jet Drills | | | <p>Spot drilling and drilling through on inclined surfaces.</p> <p>Up to an 8° inclination angle is possible. Drilling through at a maximum of 4° is possible; otherwise, a pre-facing operation is necessary.</p> | <p>Furação localizada e furação através de superfícies inclinadas.</p> <p>Até 8° ângulo de inclinação é possível. Furação até a um máximo de 4° é possível, caso contrário, é necessária uma pré-operação.</p> | <p>Perforación localizada y perforación sobre superficies inclinadas.</p> <p>Hasta un ángulo de inclinación de 8° es posible. A través de la perforación en un máximo de 4° es posible, de otro modo, es necesaria pre-operación.</p> |
| Integrex Drills | | | <p>Multi-Stage Drill Hole</p> <p>Integrex series drills are not recommended for boring operations. First, use the Integrex drill to drill a larger diameter hole. Then, use a solid carbide drill for smaller holes. Optimum centering of the solid carbide drill is possible on the drill hole of the pilot drill.</p> | <p>Furo Multi-Estágio</p> <p>As brocas Integrex não são recomendadas para operações de mandrilagem. Primeiro utilize a Integrex para o furo de diâmetro maior, então use uma broca Metal Duro Integrex para o furo de diâmetro mais reduzido.</p> | <p>Multi-etapa taladro</p> <p>Las brocas Integrex no son recomendadas para las operaciones de mandrilagen. En primer lugar, utilizar la Integrex para perforar un agujero de diámetro mayor. A continuación, utilice una broca de carburo sólido para los pequeños agujeros. Centrado óptimo del taladro de carburo sólido es posible en el taladro de la broca piloto.</p> |
| Vortex Drills | | | <p>Multi-Stage Drill Hole</p> <p>Integrex series drills are not recommended for boring operations. First, use the Integrex drill to drill a larger diameter hole. Then, use a solid carbide drill for smaller holes. Optimum centering of the solid carbide drill is possible on the drill hole of the pilot drill.</p> | <p>Furo Multi-Estágio</p> <p>As brocas Integrex não são recomendadas para operações de mandrilagem. Primeiro utilize a Integrex para o furo de diâmetro maior, então use uma broca Metal Duro Integrex para o furo de diâmetro mais reduzido.</p> | <p>Multi-etapa taladro</p> <p>Las brocas Integrex no son recomendadas para las operaciones de mandrilagen. En primer lugar, utilizar la Integrex para perforar un agujero de diámetro mayor. A continuación, utilice una broca de carburo sólido para los pequeños agujeros. Centrado óptimo del taladro de carburo sólido es posible en el taladro de la broca piloto.</p> |
| Trepanning Drills | | | <p>Multi-Stage Drill Hole</p> <p>Integrex series drills are not recommended for boring operations. First, use the Integrex drill to drill a larger diameter hole. Then, use a solid carbide drill for smaller holes. Optimum centering of the solid carbide drill is possible on the drill hole of the pilot drill.</p> | <p>Furo Multi-Estágio</p> <p>As brocas Integrex não são recomendadas para operações de mandrilagem. Primeiro utilize a Integrex para o furo de diâmetro maior, então use uma broca Metal Duro Integrex para o furo de diâmetro mais reduzido.</p> | <p>Multi-etapa taladro</p> <p>Las brocas Integrex no son recomendadas para las operaciones de mandrilagen. En primer lugar, utilizar la Integrex para perforar un agujero de diámetro mayor. A continuación, utilice una broca de carburo sólido para los pequeños agujeros. Centrado óptimo del taladro de carburo sólido es posible en el taladro de la broca piloto.</p> |
| Solid Carbide Drills | | | <p>Drilling of stacked plates</p> <p>This is not possible with Integrex series drills because a final disc forms when the drill breaks through.</p> <p>Caution: During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect all bystanders.</p> | <p>Furação de chapas empilhadas</p> <p>Isso não é possível com a Integrex porque um disco final forma-se quando a broca passa</p> <p>Cuidado: Durante operações de trespassar uma placa, uma avara ou disco é produzido quando a broca rompe através da peça. Quando a broca está parada e é a peça rotativa, este disco pode ser arremessado da brecha pela força centrífuga. Proporcionar adequada blindagem para proteger todos os transeuntes.</p> | <p>Perforación de placas apiladas</p> <p>Esto no es posible con la Integrex debido a un disco que se forma cuando el taladro a través de las placas.</p> <p>Precaución: Durante las operaciones a través de agujeros, una babosa o disco se produce como la herramienta provocando saltos de la pieza. Cuando la perforación es estacionaria y la pieza está girando, este disco puede ser lanzado desde el plato por la fuerza centrífuga. Proporcionar la protección adecuada para proteger a todos los transeúntes.</p> |
| Inserts | | | <p>Drilling of stacked plates</p> <p>This is not possible with Integrex series drills because a final disc forms when the drill breaks through.</p> <p>Caution: During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect all bystanders.</p> | <p>Furação de chapas empilhadas</p> <p>Isso não é possível com a Integrex porque um disco final forma-se quando a broca passa</p> <p>Cuidado: Durante operações de trespassar uma placa, uma avara ou disco é produzido quando a broca rompe através da peça. Quando a broca está parada e é a peça rotativa, este disco pode ser arremessado da brecha pela força centrífuga. Proporcionar adequada blindagem para proteger todos os transeuntes.</p> | <p>Perforación de placas apiladas</p> <p>Esto no es posible con la Integrex debido a un disco que se forma cuando el taladro a través de las placas.</p> <p>Precaución: Durante las operaciones a través de agujeros, una babosa o disco se produce como la herramienta provocando saltos de la pieza. Cuando la perforación es estacionaria y la pieza está girando, este disco puede ser lanzado desde el plato por la fuerza centrífuga. Proporcionar la protección adecuada para proteger a todos los transeúntes.</p> |
| Spare Parts | | | <p>Drilling of stacked plates</p> <p>This is not possible with Integrex series drills because a final disc forms when the drill breaks through.</p> <p>Caution: During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect all bystanders.</p> | <p>Furação de chapas empilhadas</p> <p>Isso não é possível com a Integrex porque um disco final forma-se quando a broca passa</p> <p>Cuidado: Durante operações de trespassar uma placa, uma avara ou disco é produzido quando a broca rompe através da peça. Quando a broca está parada e é a peça rotativa, este disco pode ser arremessado da brecha pela força centrífuga. Proporcionar adequada blindagem para proteger todos os transeuntes.</p> | <p>Perforación de placas apiladas</p> <p>Esto no es posible con la Integrex debido a un disco que se forma cuando el taladro a través de las placas.</p> <p>Precaución: Durante las operaciones a través de agujeros, una babosa o disco se produce como la herramienta provocando saltos de la pieza. Cuando la perforación es estacionaria y la pieza está girando, este disco puede ser lanzado desde el plato por la fuerza centrífuga. Proporcionar la protección adecuada para proteger a todos los transeúntes.</p> |
| Technical Data | | | <p>Drilling of stacked plates</p> <p>This is not possible with Integrex series drills because a final disc forms when the drill breaks through.</p> <p>Caution: During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect all bystanders.</p> | <p>Furação de chapas empilhadas</p> <p>Isso não é possível com a Integrex porque um disco final forma-se quando a broca passa</p> <p>Cuidado: Durante operações de trespassar uma placa, uma avara ou disco é produzido quando a broca rompe através da peça. Quando a broca está parada e é a peça rotativa, este disco pode ser arremessado da brecha pela força centrífuga. Proporcionar adequada blindagem para proteger todos os transeuntes.</p> | <p>Perforación de placas apiladas</p> <p>Esto no es posible con la Integrex debido a un disco que se forma cuando el taladro a través de las placas.</p> <p>Precaución: Durante las operaciones a través de agujeros, una babosa o disco se produce como la herramienta provocando saltos de la pieza. Cuando la perforación es estacionaria y la pieza está girando, este disco puede ser lanzado desde el plato por la fuerza centrífuga. Proporcionar la protección adecuada para proteger a todos los transeúntes.</p> |

| Problem Problema | Corrective Action | Possível Solução | Solución Posible |
|--|--|--|--|
| PILOT DRILL CRACKING  | On Lathes: <ul style="list-style-type: none"> • Verify that the tool is centered correctly. Readjust machine, if necessary. • Check clamping accuracy (tool and workpiece). | Em Tornos: <ul style="list-style-type: none"> • Verifique se a ferramenta está centrada correctamente. Reajustar a máquina caso necessário. • Verifique a precisão do aperto (ferramento e peça). | Tornos en: <ul style="list-style-type: none"> • Compruebe que la herramienta se centra correctamente. Reajustar la máquina, si es necesario. • Verificar la precisión de sujeción (herramienta y pieza de trabajo) para una posible mejora. |
| INNER INSERT CRACKING  | <ul style="list-style-type: none"> • Use tougher carbide grade. • Reduce feed by 20%. • Check clamping accuracy (tool and workpiece) for possible improvement. | <ul style="list-style-type: none"> • Use classes de graus mais duras. • Reduza o avanço em 20%. • Verifique a precisão do aperto (ferramento e peça). | <ul style="list-style-type: none"> • Uso más duras de carburo de grado. • Reducción de los piensos en un 20%. • Verificar la precisión de sujeción (herramienta y pieza de trabajo) para una posible mejora. |
| OUTER INSERT CRACKING  | <ul style="list-style-type: none"> • Use tougher carbide grade and / or stronger insert geometry. • Reduce feed by 20% • When drilling through, reduce feed by 50%. • Check clamping accuracy (tool and workpiece) for possible improvement. | <ul style="list-style-type: none"> • Use classes de graus mais duras. • Reduza o avanço em 20%. • Verifique a precisão do aperto (ferramento e peça). | <ul style="list-style-type: none"> • Uso más duras de carburo de grado. • Reducción de los piensos en un 20%. • Verificar la precisión de sujeción (herramienta y pieza de trabajo) para una posible mejora. |
| EXTENSIVE PILOT DRILL WEAR  | <ul style="list-style-type: none"> • Use coated carbide pilot drill. • Increase coolant pressure and volume. • Reduce cutting speed by 20%. | <ul style="list-style-type: none"> • Utilize uma broca piloto revestida. • Aumente a pressão e o volume do líquido de refrigeração. • Reduzir a velocidade de corte em 20%. | <ul style="list-style-type: none"> • Utilice broca piloto revestida. • Aumentar la presión del refrigerante y el volumen. • Reducir la velocidad de corte en un 20%. |
| EXCESSIVE INSERT WEAR  | On Lathes: <ul style="list-style-type: none"> • Use a more wear-resistant carbide grade. • Increase coolant pressure and volume. • Reduce cutting speed by 20%. | Em Tornos: <ul style="list-style-type: none"> • Utilize um grau mais resistente ao desgaste. • Aumente a pressão e o volume do líquido de refrigeração. • Reduza a velocidade de corte em 20%. | Tornos en: <ul style="list-style-type: none"> • Utilice un más resistentes al desgaste de carburo de grado. • Aumentar la presión del refrigerante y el volumen. • Reducir la velocidad de corte en un 20% |
| CHIP BREAKING NOT OPTIMAL  | <ul style="list-style-type: none"> • Optimize chip control for given application. • Increase cutting speed by 20%, reduce feed by 20%. | <ul style="list-style-type: none"> • Optimizar a evacuação da apar para cada operação. • Aumentar a velocidade de corte em 20% e reduzir o avanço em 20%. | <ul style="list-style-type: none"> • Optimizar el control de chip aplicación dada. • Aumentar la velocidad de corte en un 20%, reducir la alimentación en un 20%. |
| CHIP EVACUATION NOT OPTIMAL, POOR DRILL HOLE QUALITY  | <ul style="list-style-type: none"> • Increase coolant pressure and volume. • Increase cutting speed by 20%. | <ul style="list-style-type: none"> • Aumentar o volume e a pressão do líquido de refrigeração. • Aumentar a velocidade de corte em 20%. | <ul style="list-style-type: none"> • Aumentar la presión del refrigerante y el volumen. • Aumentar la velocidad de corte en un 20%. |

VORTEX DRILLS - CUTTING PARAMETERS AND ADJUSTMENTS

QR

DRILLING

Jet Drills

Integrex Drills

Vortex Drills

Trepanning Drills

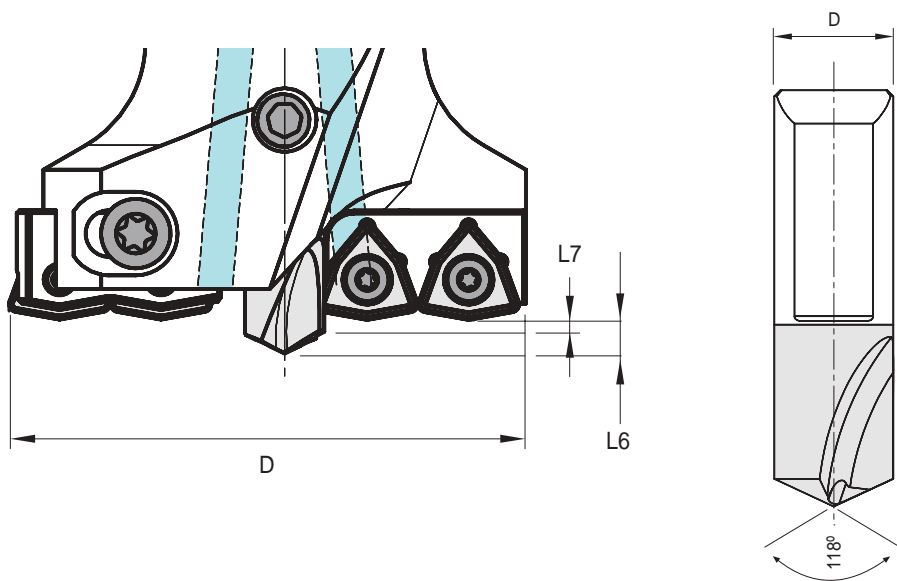
Solid Carbide Drills

Inserts

Spare Parts

Technical Data

Pilot Drill Adjustment | Ajuste da Broca Piloto | Ajuste de la Broca Piloto

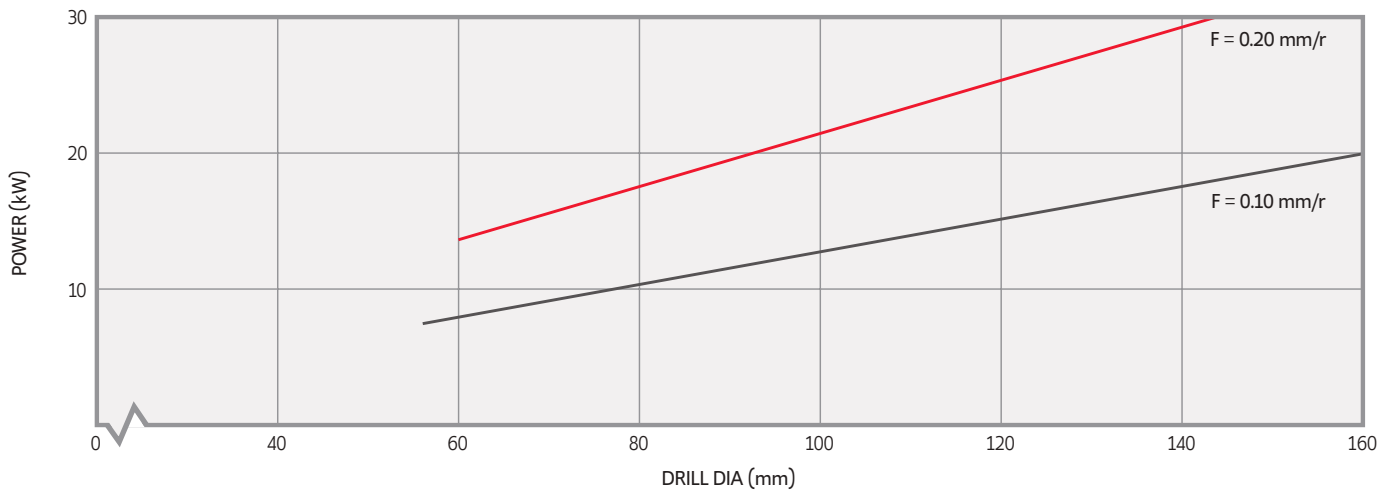


| Dc (mm) | 2D to 4D | | 4D to 6D | | > 6D | |
|---------|----------|------|----------|------|------|------|
| | L7 | L6 | L7 | L6 | L7 | L6 |
| 45-55 | 1,6 | 4,0 | 1,8 | 4,2 | 2,0 | 4,4 |
| 55-75 | 1,8 | 5,4 | 2,0 | 5,6 | 2,2 | 5,8 |
| 75-100 | 2,2 | 6,5 | 2,5 | 6,8 | 2,8 | 7,1 |
| 100-120 | 2,4 | 7,7 | 2,8 | 8,1 | 3,2 | 8,5 |
| 120-170 | 3,2 | 9,9 | 3,6 | 10,3 | 4,0 | 10,7 |
| 170-180 | 3,5 | 12,2 | 3,9 | 12,6 | 4,3 | 13,0 |

Recommended Speeds and Feeds | Parâmetros de Corte Recomendados
 Recomendaciones de Datos de Corte

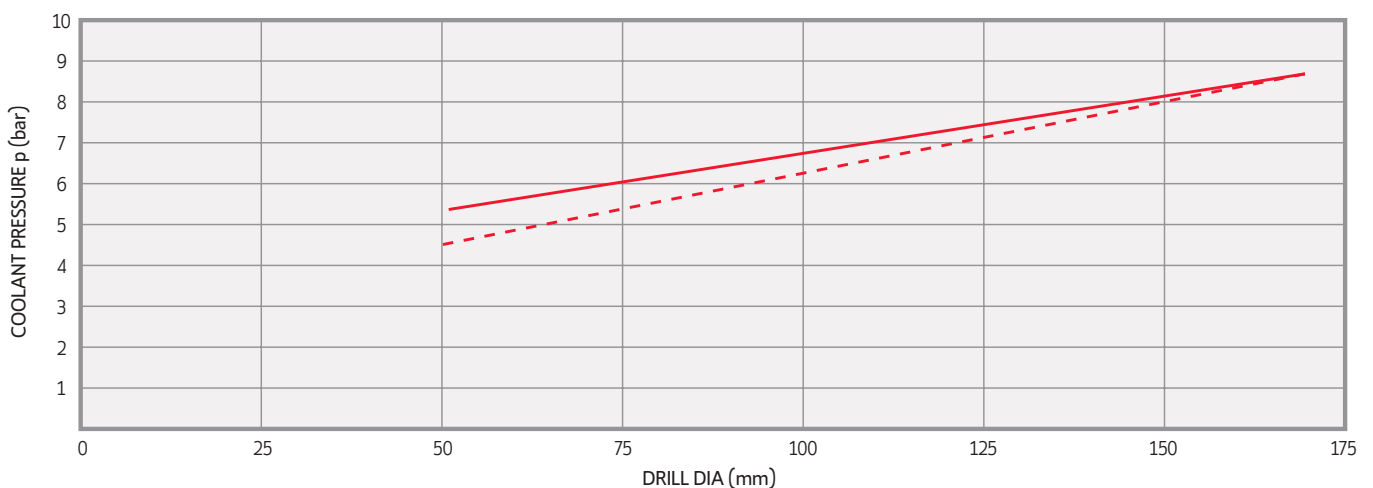
| ISO | Material Group Grupo Materiais Grupo Materiales | Vc (m/min) | Ø45-55 | Ø55-60 | Ø60-75 | Ø75-100 | Ø100-105 | Ø105-150 | Ø150-180 |
|----------|---|---------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| P | UNALLOYED STEEL (-0,25%) | 120-180 | 0,06-0,10 | 0,07-0,11 | 0,08-0,12 | 0,10-0,14 | 0,14-0,20 | 0,08-0,12 | 0,10-0,14 |
| | LOW-ALLOY STEEL (0,25%-) | 110-170 | 0,06-0,10 | 0,07-0,11 | 0,08-0,12 | 0,10-0,14 | 0,12-0,18 | 0,08-0,12 | 0,10-0,14 |
| | LOW-ALLOY STEEL (-HB300) | 90-130 | 0,06-0,10 | 0,07-0,11 | 0,08-0,12 | 0,10-0,14 | 0,12-0,18 | 0,08-0,12 | 0,10-0,14 |
| | HIGH-ALLOY STEEL (HB300-) | 60-100 | 0,05-0,07 | 0,05-0,07 | 0,06-0,08 | 0,06-0,10 | 0,09-0,13 | 0,06-0,08 | 0,06-0,10 |
| M | STAINLESS STEEL | 60-110 | 0,04-0,07 | 0,04-0,11 | 0,06-0,12 | 0,08-0,14 | 0,10-0,18 | 0,06-0,12 | 0,08-0,14 |
| K | GREY CAST IRON | 120-180 | 0,07-0,13 | 0,07-0,15 | 0,08-0,16 | 0,10-0,18 | 0,12-0,22 | 0,08-0,16 | 0,10-0,18 |
| | CAST IRON WITH NODULAR CAST | 100-180 | 0,04-0,13 | 0,07-0,15 | 0,08-0,16 | 0,10-0,25 | 0,12-0,26 | 0,08-0,16 | 0,10-0,25 |

Power Requirements | Requisitos de Potência | Requisitos de Potencia



* These chart is based on machining experiences using steels with a hardness of 200-250HB and cutting speed of 100m/min.









Coolant Application Chart | Tabela Aplicação de Refrigeração | Tabla Aplicación de Refrigerante



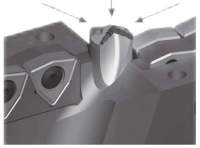




VORTEX DRILLS - CUTTING PARAMETERS AND ADJUSTMENTS

Parâmetros de corte e ajustes | Condiciones de corte y ajustes

Rules & Tips | Regras e Dicas | Normas e Consejos

| | WRONG | CORRECT | EN | PT | ES |
|----------------------|---|---|---|--|--|
| DRILLING |  |  | <p>Spot Drilling</p> <p>For plain/straight surfaces, no spot drilling is required. For centering, the center drill diameter should be considerably smaller than the pilot drill diameter.</p> | <p>Furação Localizada</p> <p>Para superfícies planas a furação localizada não é necessária. O diâmetro da broca de pré-furação deve ser consideravelmente menor do que o diâmetro da broca-piloto.</p> | <p>Perforación Localizada</p> <p>Para superficies planas, no se requiere la perforación in situ. Para centrar el diámetro de pré-perforación debe ser considerablemente más pequeño que el diámetro de la broca piloto.</p> |
| Jet Drills |  |  | <p>Spot drilling and drilling through on inclined surfaces.</p> <p>Up to an 8° inclination angle is possible. Drilling through at a maximum of 4° is possible; otherwise, a pre-facing operation is required.</p> | <p>Furação localizada e furação através de superfícies inclinadas.</p> <p>Até 8° ângulo de inclinação é possível. Furação até a um máximo de 4° é possível, caso contrário, é necessária uma pré-operação.</p> | <p>Perforación localizada y perforación sobre superficies inclinadas.</p> <p>Hasta un ángulo de inclinación de 8° es posible. A través de la perforación en un máximo de 4° es posible, de otro modo, es necesaria pre-operación.</p> |
| Integrex Drills |  |  | <p>Multi-Stage Drill Hole</p> <p>Vortex series drills are not recommended for boring operations. First, use the Integrex drill to drill a larger diameter hole. Then, use a solid carbide drill for smaller holes. Optimum centering of the solid carbide drill is possible on the drill hole of the pilot drill.</p> | <p>Furo Multi-Estágio</p> <p>As brocas Vortex não são recomendadas para operações de mandrilagem. Primeiro utilize a Integrex para o furo de diâmetro maior, então use uma broca Metal Duro Integrex para o furo de diâmetro mais reduzido.</p> | <p>Multi-etapa taladro</p> <p>Las brocas Vortex no son recomendadas para las operaciones de mandrilagen. En primer lugar, utilizar la Integrex para perforar un agujero de diámetro mayor. A continuación, utilice una broca de carburo sólido para los pequeños agujeros. Centrado óptimo del taladro de carburo sólido es posible en el taladro de la broca piloto.</p> |
| Vortex Drills |  |  | <p>Drilling of stacked plates</p> <p>This is not possible with Integrex series drills because a final disc forms when the drill breaks through.</p> <p>Caution: During through-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect all bystanders.</p> | <p>Furação de chapas empilhadas</p> <p>Isso não é possível com a Integrex porque um disco final forma-se quando a broca passa</p> <p>Cuidado: Durante operações de trespassar uma placa, uma apana ou disco é produzido quando a broca rompe através da peça. Quando a broca está parada e é a peça rotativa, este disco pode ser arremessado da brecha pela força centrífuga. Proporcionar adequada blindagem para proteger todos os transeuntes.</p> | <p>Perforación de placas apiladas</p> <p>Esto no es posible con la Integrex debido a un disco que se forma cuando el taladro a través de las placas.</p> <p>Precaución: Durante las operaciones a través de agujeros, una babosa o disco se produce como la herramienta provocando saltos de la pieza. Cuando la perforación es estacionaria y la pieza está girando, este disco puede ser lanzado desde el plato por la fuerza centrífuga. Proporcionar la protección adecuada para proteger a todos los transeúntes.</p> |
| Trepanning Drills | | | | | |
| Solid Carbide Drills | | | | | |
| Inserts | | | | | |
| Spare Parts | | | | | |
| Technical Data | | | | | |

| Problem Problema | Corrective Action | Possível Solução | Solución Posible |
|--|--|---|--|
| PILOT DRILL CRACKING  | On Lathes: <ul style="list-style-type: none"> • Verify that the tool is centered correctly. Readjust machine, if necessary. • Check clamping accuracy (tool and workpiece). | Em Tornos: <ul style="list-style-type: none"> • Verifique se a ferramenta está centrada correctamente. Reajustar a máquina caso necessário. • Verifique a precisão do aperto (ferramento e peça). | Tornos en: <ul style="list-style-type: none"> • Compruebe que la herramienta se centra correctamente. Reajustar la máquina, si es necesario. • Verificar la precisión de sujeción (herramienta y pieza de trabajo) para una posible mejora. |
| INSERT CRACKING  | <ul style="list-style-type: none"> • Use tougher carbide grade. • Check clamping accuracy (tool and workpiece) for possible run out. | <ul style="list-style-type: none"> • Use classes de graus mais duras. • Verifique a precisão do aperto (ferramenta e peça). | <ul style="list-style-type: none"> • Uso más duras de carburo de grado. • Verificar la precisión de sujeción (herramienta y pieza de trabajo) para su posible run out. |
| EXCESSIVE INSERT WEAR  | <ul style="list-style-type: none"> • Use coated pilot drill. • Increase coolant pressure and volume. • Reduce speed by 20% • Use wear & resistant carbide grade. | <ul style="list-style-type: none"> • Utilizar uma broca piloto revestida. • Aumentar o volume e a pressão do líquido de refrigeração. • Reduzir a velocidade de corte em 20%. • Utilizar classes de graus mais resistentes ao desgaste. | <ul style="list-style-type: none"> • Utilice broca piloto revestida. • Aumentar la presión del refrigerante y el volumen. • Reduzca la velocidad en un 20% • Utilice el desgaste y resistentes de carburo de grado. |
| CHIP BREAKING NOT OPTIMAL  | <ul style="list-style-type: none"> • Optimize chip control for given application by using different chipbreaker geometry. • Increase cutting speed by 20%; reduce feed by 20%. | <ul style="list-style-type: none"> • Optimizar o controlo da aparra numa determinada operação outra geometria de quebra aparas. • Aumentar a velocidade de corte em 20% e reduzir o avanço em 20%. | <ul style="list-style-type: none"> • Optimizar el control de viruta numa dada aplicación mediante utilización de otra geometría quebra viruta • Aumentar la velocidad de corte en un 20%, reducir la alimentación en un 20%. |
| CHIP EVACUATION NOT OPTIMAL, POOR DRILL HOLE QUALITY  | <ul style="list-style-type: none"> • Increase coolant pressure and volume. • Increase cutting speed by 20%. | <ul style="list-style-type: none"> • Aumentar o volume e a pressão do líquido de refrigeração. • Aumentar a velocidade de corte em 20%. | <ul style="list-style-type: none"> • Aumentar la presión del refrigerante y el volumen. • Aumentar la velocidad de corte en un 20%. |

SAFETY

Caution:

• During trough-hole operations, a slug or disc is produced as the tool breaks through the workpiece. When the drill is stationary and the workpiece is rotating, this slug may be hurled from the chuck by centrifugal force. Provide adequate shielding to protect all bystanders.

• When drilling through, a small shoulder will be produced on breakthrough as the pilot drill is no longer cutting.

TREPANING DRILLS - CUTTING PARAMETERS AND ADJUSTMENTS

Parâmetros de corte e ajustes | Condiciones de corte y ajustes

DRILLING

Jet Drills

Integrex Drills

Vortex Drills

Trepanning Drills

Solid Carbide Drills

Inserts

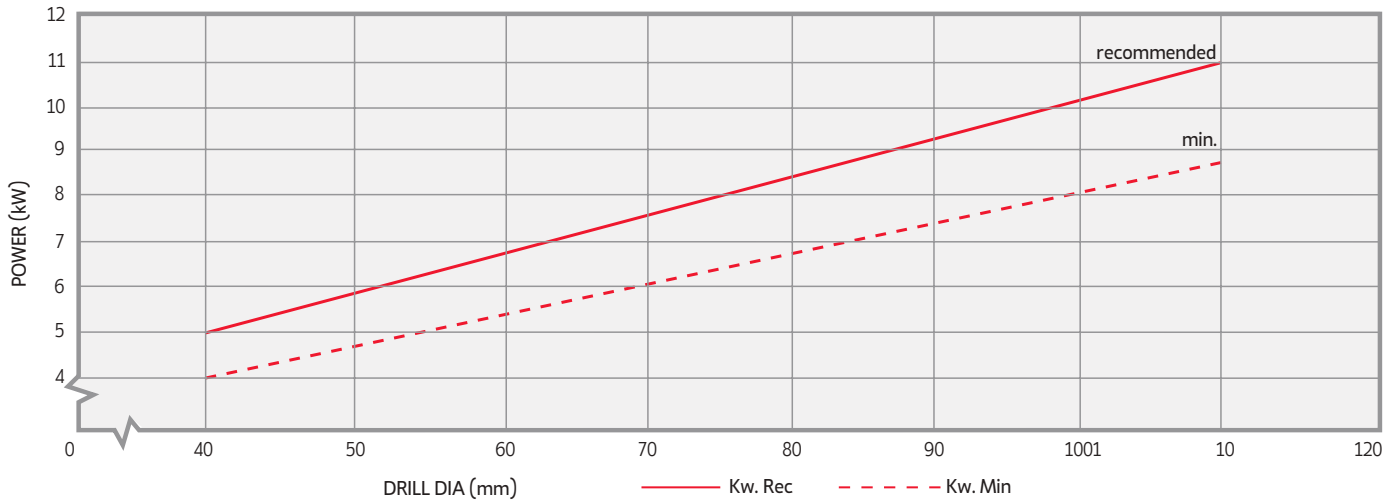
Spare Parts

Technical Data

Recommended Speeds and Feeds | Parâmetros de Corte Recomendados Recomendaciones de Datos de Corte

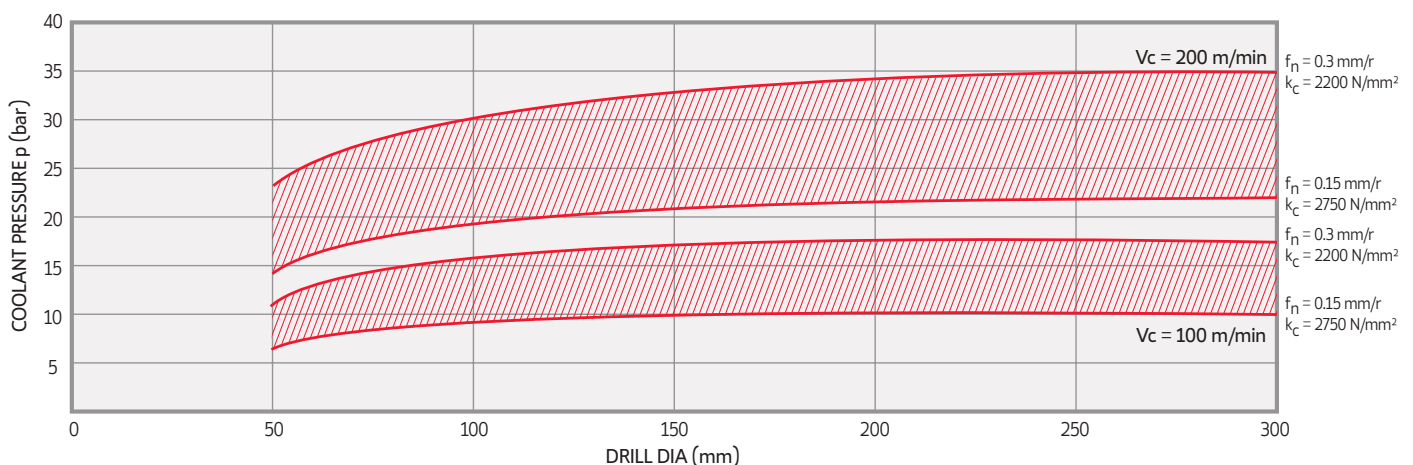
| ISO | Material Group Grupo Materiais Grupo Materiales | DC (mm) | Fn (mm/r) | Vc (m/min) |
|-----|---|---------|-----------|------------|
| P | UNALLOYED STEEL (-0,25%) | 60-110 | 0,07-0,20 | 130-345 |
| | LOW-ALLOY STEEL (0,25%-) | 60-110 | 0,10-0,20 | 100-210 |
| | LOW-ALLOY STEEL | 60-110 | 0,10-0,20 | 90-200 |
| | STEEL CASTING | 60-110 | 0,06-0,18 | 120-280 |
| M | STAINLESS STEEL | 60-110 | 0,10-0,20 | 100-240 |
| K | GREY CAST IRON | 60-110 | 0,14-0,26 | 105-280 |
| | CAST IRON WITH NODULAR CAST | 60-110 | 0,14-0,20 | 110-195 |
| N | ALUMINIUM FORGING ALLOYS | 60-110 | 0,12-0,22 | 250-400 |
| | COPPER AND COPPER ALLOYS | 60-110 | 0,12-0,22 | 180-350 |

Power Requirements | Requisitos de Potência | Requisitos de Potencia



• The cutting fluid quantity is measured at the cutting edge of the drill

Coolant Application Chart | Tabela Aplicação de Refrigeração | Tabla Aplicación de Refrigerante



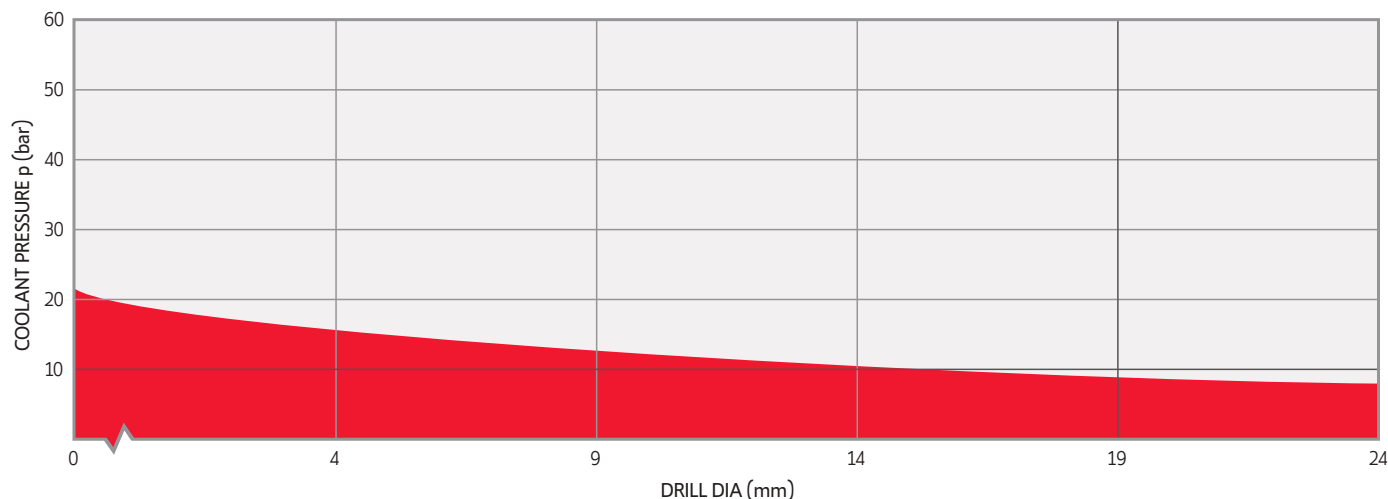
SOLID CARBIDE DRILLS - CUTTING PARAMETERS AND ADJUSTMENTS

Parâmetros de corte e ajustes | Condiciones de corte y ajustes

Recommended Speeds and Feeds | Parâmetros de Corte Recomendados Recomendaciones de Datos de Corte

| ISO | Material Group Grupo Materiais Grupo Materiales | Vc (m/min) | f (mm/rev) | | | |
|----------|---|---------------|------------|-----------|-----------|-----------|
| | | | Ø3-8mm | Ø8-12mm | Ø12-16mm | Ø16-20mm |
| P | UNALLOYED STEEL (-0,25%) | 80-100 | 0,10-0,20 | 0,15-0,25 | 0,20-0,40 | 0,25-0,50 |
| | LOW-ALLOY STEEL (0,25%-) | 70-100 | 0,10-0,20 | 0,20-0,30 | 0,20-0,35 | 0,25-0,40 |
| | HIGH-ALLOY STEEL | 40-70 | 0,08-0,15 | 0,12-0,22 | 0,20-0,40 | 0,25-0,40 |
| M | STAINLESS STEEL | 35-50 | 0,08-0,15 | 0,12-0,25 | 0,15-0,30 | 0,20-0,35 |
| K | MALEABLE CAST IRON | 70-100 | 0,10-0,30 | 0,20-0,40 | 0,25-0,40 | 0,25-0,50 |
| | GREY CAST IRON | 70-100 | 0,10-0,25 | 0,20-0,35 | 0,30-0,45 | 0,35-0,55 |

Coolant Application Chart | Tabela Aplicação de Refrigeração | Tabla Aplicación de Refrigerante



SOLID CARBIDE DRILLS - TROUBLESHOOTING

| Problem Problema | Cause Causa Fuente | Possible Solution Solução Solución |
|---|--|--|
| Heavy wear on the cutting corners Desgaste profundo das arestas de corte Desgaste profundo de los gabilanse | <ul style="list-style-type: none"> Spintering on the cutting corners Estilhaçamento das esquinas de corte Astillado en las esquinas de corte | <ul style="list-style-type: none"> Check cooling lubricant. In the case of internal coolant supply, increase coolant pressure. In the case of external coolant supply, adjust positioning of coolant jet. Cool from both sides. Veja o lubrificante. No caso de fornecimento interno, aumente a pressão da refrigeração, no caso de fornecimento externo, ajuste o posicionamento do jorro do refrigerante, esfrie ambos os lados. Compruebe el lubricante de refrigeración. En caso de suministro de refrigerante interno, aumente la presión del refrigerante. En caso de suministro de refrigerante externo, ajuste el posicionamiento del chorro de refrigerante. Enfrie desde ambos lados. |
| | <ul style="list-style-type: none"> Cutting conditions Condições de corte Condiciones de corte | <ul style="list-style-type: none"> Reduce cutting speed, increase feed. Reduza a velocidade de corte, aumente o avanço. Reduzca la velocidad de corte, aumente el avance. |
| Spintering on the chisel edge Estilhaçamento do fio de corte transversal Astillado del filo de corte transversal | <ul style="list-style-type: none"> Clamping chuck Sistema de amarrar Sistema amarrar | <ul style="list-style-type: none"> Check clamping accuracy. Use hydraulic clamping chuck or high-precision chucking system. Comprove a precisão da fixação utilize uma pinça de fixação hidráulica ou um sistema de aperto de alta precisão. Compruebe la precisión de la fijación. Utilice una pinza de fijación hidráulica o un sistema de amarrar de alta precisión. |
| | <ul style="list-style-type: none"> Cutting conditions Condições de corte Condiciones de corte | <ul style="list-style-type: none"> Increase feed. Aumente o avanço. Aumente el avance. |
| Built-up edge Acrescimo do fio de corte Recrecimiento del filo de corte | <ul style="list-style-type: none"> Insufficient coolant. Refrigeração insuficiente Refrigerante insuficiente | <ul style="list-style-type: none"> Check cooling lubricant. In the case of internal coolant supply, increase coolant pressure. In the case of external coolant supply, adjust positioning of coolant jet. Cool from both sides. Veja o lubrificante. No caso de fornecimento interno, aumente a pressão da refrigeração, no caso de fornecimento externo, ajuste o posicionamento do jorro do refrigerante, esfrie ambos lados. Compruebe el lubricante de refrigeración. En caso de suministro de refrigerante interno, aumente la presión del refrigerante. En caso de suministro de refrigerante externo, ajuste el posicionamiento del chorro de refrigerante. Enfrie desde ambos lados. |
| | <ul style="list-style-type: none"> Cutting conditions Condições de corte Condiciones de corte | <ul style="list-style-type: none"> Increase speed 20-30%. Aumente a velocidade em uns 20% a 30%. Aumente la velocidad en un 20-30%. |
| Spintering on the cutting edges Estilhaçamento do fio de corte principal Astillado del filo de corte principal | <ul style="list-style-type: none"> Clamping chuck Sistema de amarrar Sistema amarrar | <ul style="list-style-type: none"> Check clamping accuracy and torque transmission. Use hydraulic clamping chuck or high-precision chucking system. Comprove a precisão da fixação utilize uma pinça de fixação hidráulica ou um sistema de aperto de alta precisão. Compruebe la precisión de la fijación y la transmisión de par. Utilice una pinza de fijación hidráulica o un sistema de amarrar de alta precisión. |
| | <ul style="list-style-type: none"> Cutting conditions caused by built-up edge Condições de corte provocadas por acrecimos no fio de corte Condiciones de corte provocadas por recrecimiento del filo de corte | <ul style="list-style-type: none"> Check cutting values and, possibly increase cutting speed. Examine regularly for built-up edge. Veja os valores de corte e a ser possível aumente a velocidade de corte. Examine regularmente o aumento do fio de corte. Compruebe los valores de corte y a ser posible aumente la velocidad de corte. Examine regularmente el recrecimiento del filo de corte. |
| Thermal checking / Comb cracking Desgaste / Rotura dos chanfros Desgaste / Rotura de los chaflanes | <ul style="list-style-type: none"> Cutting conditions Condições de corte Condiciones de corte | <ul style="list-style-type: none"> Inconsistent / insufficient coolant supply. Fornecimento de refrigeração, inconsistente/insuficiente. Suministro de refrigerante inconsistente/insuficiente. |
| Heavy wear on the cutting corners Desgaste profundo dos chanfros Desgaste profundo de los chaflanes | <ul style="list-style-type: none"> Workpiece movement Movimento das peças de trabalho Movimiento de piezas de trabajo | <ul style="list-style-type: none"> Stabilize workpiece chucking and check stability of machine tool. Estabilize a fixação da peça de trabalho e veja a estabilidade da máquina ferramenta. Establezca la fijación de la pieza de trabajo y compruebe la estabilidad de la máquina herramienta |
| | <ul style="list-style-type: none"> Insufficient coolant Refrigeração insuficiente Refrigerante insuficiente | <ul style="list-style-type: none"> Check cooling lubricant. In the case of internal coolant supply, increase coolant pressure. In the case of external coolant supply, adjust positioning of coolant jet. Cool from both sides. Veja o lubrificante. No caso de fornecimento interno, aumente a pressão da refrigeração, no caso de fornecimento externo, ajuste o posicionamento do jorro do refrigerante, esfrie ambos lados. Compruebe el lubricante de refrigeración. En caso de suministro de refrigerante interno, aumente la presión del refrigerante. En caso de suministro de refrigerante externo, ajuste el posicionamiento del chorro de refrigerante. Enfrie desde ambos lados. |
| | <ul style="list-style-type: none"> Wrong drill Broca incorrecta Broca incorrecta | <ul style="list-style-type: none"> Check drill type, drilling depth, cooling system, and workpiece material. Veja o tipo de broca, a profundidade do furo, o sistema de refrigeração e o material de trabalho. Compruebe el tipo de broca, la profundidad de taladrado, el sistema de refrigeración y el material de trabajo. |
| | <ul style="list-style-type: none"> Cutting conditions Condições de corte Condiciones de corte | <ul style="list-style-type: none"> Check cutting parameters at exit. Reduce feed 15-20% prior to breakout. Revise os parâmetros de corte de saída. Reduza o avanço em uns 15% a 20% antes da rotura. Revise los parámetros de corte de la salida. Reduzca el avance en un 15-20% antes de la rotura. |
| Hole too big Furo demasiado grande Orificio demasiado grande | <ul style="list-style-type: none"> Cutting conditions Condições de corte Condiciones de corte | <ul style="list-style-type: none"> Check cutting values, increase cutting speed, or reduce feed. Comprove os valores de corte, aumente a velocidade de corte e reduza o avanço. Compruebe los valores de corte, aumente la velocidad de corte o reduzca el avance. |
| | <ul style="list-style-type: none"> Clamping chuck Sistema de amarrar Sistema amarrar | <ul style="list-style-type: none"> Check clamping accuracy and torque transmission. Use hydraulic clamping chuck or high-precision chucking system. Comprove a precisão da fixação utilize uma pinça de fixação hidráulica ou um sistema de aperto de alta precisão. Compruebe la precisión de la fijación y la transmisión de par. Utilice una pinza de fijación hidráulica o un sistema de amarrar de alta precisión. |
| | <ul style="list-style-type: none"> Wrong drill Broca incorrecta Broca incorrecta | <ul style="list-style-type: none"> Check drill diameter. Please notice that drills are ground to a positive tolerance. Check concentric running. Veja o diâmetro da broca. Assegure-se que as brocas estão ligadas a uma tolerância positiva. Comprove que o funcionamento é concêntrico. Compruebe el diámetro de la broca. Asegúrese de que las brocas están conectadas a una tolerancia positiva. Compruebe el funcionamiento concéntrico. |

| Problem Problema | Cause Causa Fuente | Possible Solution Solução Solución |
|--|--|--|
| Hole too small Furo demasiado pequeno Orificio demasiado pequeno | <ul style="list-style-type: none"> Insufficient coolant Refrigeração insuficiente Refrigerante insuficiente | <ul style="list-style-type: none"> Check cooling lubricant. In the case of internal coolant supply, increase coolant pressure. In the case of external coolant supply, adjusting positioning of coolant jet. Cool from both sides. Veja o lubrificante. No caso de fornecimento interno, aumente a pressão da refrigeração, no caso de fornecimento externo, ajuste o posicionamento do jorro do refrigerante, esfrie ambos lados. Compruebe el lubricante de refrigeración. En caso de suministro de refrigerante interno, aumente la presión del refrigerante. En caso de suministro de refrigerante externo, ajuste el posicionamiento del chorro de refrigerante. Enfrie desde ambos lados. |
| | <ul style="list-style-type: none"> Cutting conditions Condições de corte Condiciones de corte | <ul style="list-style-type: none"> Reduce cutting speed; increase feed. Reduza a velocidade de corte, aumente o avanço. Reduzca la velocidad de corte, aumente el avance. |
| | <ul style="list-style-type: none"> Wrong drill Broca incorrecta Broca incorrecta | <ul style="list-style-type: none"> Check cutting-edge diameter. Veja o diâmetro do fio de corte. Compruebe el diámetro del filo de corte. |
| Hole not cylindrical Furo não está recto Orificio no es recto | <ul style="list-style-type: none"> Clamping chuck Sistema de amarre Sistema amarre | <ul style="list-style-type: none"> Check clamping accuracy and torque transmission. Use hydraulic clamping chuck or high-precision chucking system. Veja a precisão da fixação e a transmissão do par. Utilize uma pinça de fixação hidráulica ou um sistema de aperto de alta precisão. Compruebe la precisión de la fijación y la transmisión de par. Utilice una pinza de fijación hidráulica o un sistema de amarre de alta precisión. |
| | <ul style="list-style-type: none"> Workpiece movement Movimento das peças de trabalho Movimiento de piezas de trabajo | <ul style="list-style-type: none"> Stabilize workpiece chucking and check stability of machine tool. Estabilize a fixação da peça de trabalho e veja a estabilidade da máquina ferramenta. Estabilice la fijación de la pieza de trabajo y compruebe la estabilidad de la máquina herramienta. |
| | <ul style="list-style-type: none"> Wrong drill Broca incorreta Broca incorrecta | <ul style="list-style-type: none"> Check drill type and drilling depth. Use longer drills Veja o tipo de broca e a profundidade do furo. Utilize brocas mais largas. Compruebe el tipo de broca y la profundidad de taladrado. Utilice brocas más largas. |
| | <ul style="list-style-type: none"> Cutting conditions Condições de corte Condiciones de corte | <ul style="list-style-type: none"> Reduce feed at entry. Reduza o avanço de entrada. Reduzca el avance de la entrada. |
| Drill Breakage Rotura da broca Rotura de broca | <ul style="list-style-type: none"> Workpiece movement Movimento das peças de trabalho Movimiento de piezas de trabajo | <ul style="list-style-type: none"> Stabilize workpiece chucking and check stability of machine tool. Estabilize a fixação da peça de trabalho e veja a estabilidade da máquina ferramenta. Estabilice la fijación de la pieza de trabajo y compruebe la estabilidad de la máquina herramienta. |
| | <ul style="list-style-type: none"> Wrong drill Broca incorreta Broca incorrecta | <ul style="list-style-type: none"> Check drill type, drilling depth, cooling system, and workpiece material. Veja o tipo de broca, a profundidade do furo, o sistema de refrigeração e o material de trabalho. Compruebe el tipo de broca, la profundidad de taladrado, el sistema de refrigeración y el material de trabajo. |
| | <ul style="list-style-type: none"> Insufficient coolant Refrigeração insuficiente Refrigerante insuficiente | <ul style="list-style-type: none"> Check cooling lubricant. In the case of internal coolant supply, increase coolant pressure. In the case of external coolant supply, adjusting positioning of coolant jet. Cool from both sides. Veja o lubrificante. No caso de fornecimento interno, aumente a pressão da refrigeração, no caso de fornecimento externo, ajuste o posicionamento do jorro do refrigerante, esfrie ambos lados. Compruebe el lubricante de refrigeración. En caso de suministro de refrigerante interno, aumente la presión del refrigerante. En caso de suministro de refrigerante externo, ajuste el posicionamiento del chorro de refrigerante. Enfrie desde ambos lados. |
| | <ul style="list-style-type: none"> Cutting conditions Condições de corte Condiciones de corte | <ul style="list-style-type: none"> Check cutting values, and possibly reduce feed. Comprove os valores de corte, aumente a velocidade de corte e reduza o avanço. Compruebe los valores de corte y a ser posible reduzca el avance. |
| Splintering on the cutting corners Estilhamento das esquinas de corte Astillado en las esquinas de corte | <ul style="list-style-type: none"> Workpiece movement Movimento das peças de trabalho Movimiento de piezas de trabajo | <ul style="list-style-type: none"> Stabilize workpiece chucking and check stability of machine tool. Estabilize a fixação da peça de trabalho e veja a estabilidade da máquina ferramenta. Estabilice la fijación de la pieza de trabajo y compruebe la estabilidad de la máquina herramienta. |
| | <ul style="list-style-type: none"> Wrong drill Broca incorreta Broca incorrecta | <ul style="list-style-type: none"> Check drill type, drilling depth, cooling system, and workpiece material. Possibly, use longer drill. Comprove o tipo de broca, a profundidade do furo, sistema de refrigeração e o material de trabalho. A ser possível utilize uma broca mais larga. Compruebe el tipo de broca, la profundidad de taladrado, sistema de refrigeración y material de trabajo. A ser posible, utilice una broca más larga. |
| | <ul style="list-style-type: none"> Insufficient coolant Refrigeração insuficiente Refrigerante insuficiente | <ul style="list-style-type: none"> Check cooling lubricant. In the case of internal coolant supply, increase coolant pressure. In the case of external coolant supply, adjusting positioning of coolant jet. Cool from both sides. Veja o lubrificante. No caso de fornecimento interno, aumente a pressão da refrigeração, no caso de fornecimento externo, ajuste o posicionamento do jorro do refrigerante, esfrie ambos lados. Compruebe el lubricante de refrigeración. En caso de suministro de refrigerante interno, aumente la presión del refrigerante. En caso de suministro de refrigerante externo, ajuste el posicionamiento del chorro de refrigerante. Enfrie desde ambos lados. |
| | <ul style="list-style-type: none"> Cutting conditions Condições de corte Condiciones de corte | <ul style="list-style-type: none"> Check cutting values, and possibly reduce feed. Comprove os valores de corte, aumente a velocidade de corte e reduza o avanço. Compruebe los valores de corte y a ser posible reduzca el avance. |



C - TURNING

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C - 370 | ISO turning inserts code key

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TURNING



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C - 504 | Railway turning inserts

C - 518 | External Toolholders

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C - 696 | Spare Parts

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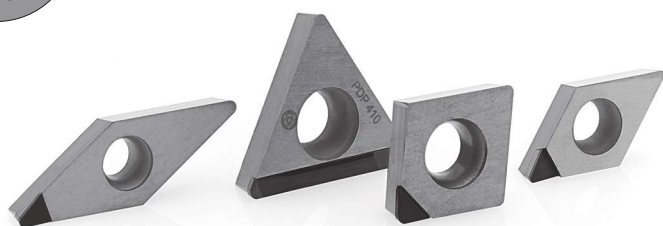
PCD GRADE FOR MACHINING NON-FERROUS MATERIALS

NEW

Grau PCD para maquinar materiais não-ferrosos | Calidad PCD para maquinar materiales no-ferrosos

LASER MACHINING TECHNOLOGY

- High cutting edge quality
- Customized chip-breaker according to our customers' needs



Used in 90% of all applications in non-ferrous materials. Ideal for aluminium alloys (Si ≤ 12%), graphite and graphite composites

Extreme edge sharpness/retention achieving a fine surface finishing.



Machining of Al/Si alloys with high Si content (Si ≥ 12%)

Excellent abrasion resistance and good thermal stability.

PCBN GRADE FOR MACHINING HARDENED MATERIALS

NEW

Grau PCBN para maquinar materiais endurecidos | Calidad PCBN para maquinar materiales endurecidos



Machining of hardened materials in high continuous cut up to 200m/min cutting speed.

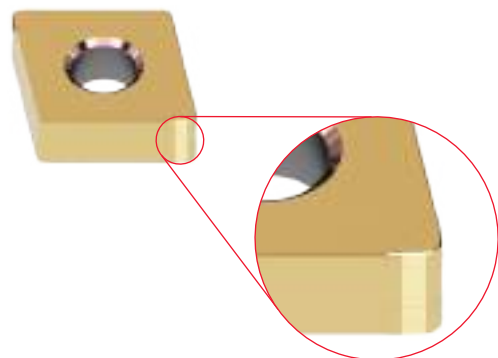
Can be used on high resistance alloys. (New PVD coating for PCBN inserts with improved wear resistance.)



Machining of hardened materials in light to heavy interrupted cuts.

Enhanced crater and flank wear resistance with an excellent balance of toughness.

WIPER INSERT || Pastilha wiper | Plaquita wiper



Wiper inserts provide two possibilities for process improvement:

- Improved surface finish with standard cutting data;
- Maintained surface finish at substantially higher feed rate.

PHH NEW GRADE - THE CUTTING EDGE TECHNOLOGY FOR SUPERALLOYS TURNING

NEW

Novo grau PHH - A tecnologia de ponta para super-ligas em torneamento | Nueva calidad PHH - La tecnología de vanguardia para superaleaciones en torneado

A NEW TURN FOR STAINLESS STEEL AND HRSA TURNING



PHH910
M05-M10
S05-S15

PHH920
M10-M25
S15-S30

An hard micro grain substrate combined with a thin optimized nanostructure PVD coating with excelent heat dissipation

The solution for Stainless steel and HRSA from medium turning to finishing.
For continuous to semi-interrupted turning.
First choice for HRSA.

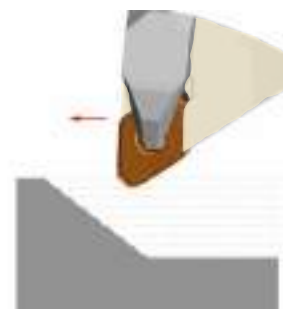
DOMX - THE REVOLUTION IN HRSA MEDIUM TO ROUGH TURNING

NEW

A revolução em torneamento de materiais termorresistentes | La revolución en el torneado de materiales exóticos

Designed especially for HRSA, the new DOMX combined with the latest PHH technology, offers exceptional performance in exotic materials machining. When your material has high Ni or Co content DOMX is the choice!

- ⊗ First choice for **HRSA** medium to rough turning;
- ⊗ **4 positive cutting edges on double sided insert.**



- ⊗ Machine at 45° with a 93° holder;
- ⊗ **Up to + 140% tool life improvement.**

ISO TURNING INSERTS CODE KEY

| | | | |
|---|--|---|---------|
| H | | M | |
| O | | V | |
| P | | W | |
| S | | L | |
| T | | A | |
| C | | B | |
| D | | K | |
| E | | R | |
| F | | X | Special |

1 - Insert shape symbol

| Symbol | m (mm) | d (mm) | s (mm) |
|--------|-------------|-------------|--------|
| A | ±0.005 | ±0.025 | ±0.025 |
| F | ±0.005 | ±0.013 | ±0.025 |
| C | ±0.013 | ±0.025 | ±0.025 |
| H | ±0.013 | ±0.013 | ±0.025 |
| E | ±0.025 | ±0.025 | ±0.025 |
| G | ±0.025 | ±0.025 | ±0.13 |
| J | ±0.005 | ±0.05~±0.13 | ±0.025 |
| K* | ±0.013 | ±0.05~±0.13 | ±0.025 |
| L* | ±0.025 | ±0.05~±0.13 | ±0.025 |
| M* | ±0.08~±0.20 | ±0.05~±0.13 | ±0.13 |
| N* | ±0.08~±0.20 | ±0.05~±0.13 | ±0.025 |
| U* | ±0.13~±0.38 | ±0.08~±0.25 | ±0.13 |

Triangular inserts with a facet (secondary cutting edge)

| Detailed dimension of M class insert Insert height Tolerances (mm) | | | | | |
|---|-------|-------|-------|-------|-------|
| Inscribed circle | T | S | C | D | V |
| 6.35 | ±0.08 | - | - | - | - |
| 9.525 | ±0.08 | ±0.08 | ±0.11 | ±0.10 | ±0.13 |
| 12.70 | ±0.13 | ±0.13 | ±0.13 | ±0.15 | - |
| 15.875 | ±0.15 | ±0.15 | ±0.15 | ±0.18 | - |
| 19.05 | ±0.15 | ±0.15 | ±0.15 | ±0.18 | - |
| 25.40 | - | ±0.18 | - | - | - |
| 31.75 | - | ±0.25 | - | - | - |

| Inscribed circle Tolerances (mm) | | | | | |
|----------------------------------|-------|-------|-------|-------|-------|
| Inscribed circle | T | S | C | D | V |
| 6.35 | ±0.05 | - | - | - | - |
| 9.525 | ±0.05 | ±0.05 | ±0.05 | ±0.05 | ±0.05 |
| 12.70 | ±0.08 | ±0.08 | ±0.08 | ±0.08 | ±0.08 |
| 15.875 | ±0.10 | ±0.10 | ±0.10 | ±0.10 | ±0.10 |
| 19.05 | - | - | - | - | ±0.10 |
| 25.40 | - | ±0.13 | - | - | ±0.10 |
| 31.75 | - | ±0.20 | - | - | ±0.12 |

3 - Tolerances symbol

*As a rule, the sides of these inserts are as sintered. Tolerance differs with insert size, for the accuracy of class M, refer to the table on the right.

| A | B | C | D | E |
|---|---|---|---|-----------------------|
| | | | | |
| | | | | Other clearance angle |

2 - Normal clearance symbol



| 4 - Insert symbol | | | | | | | | | | | | | | | |
|-------------------|-----------|---|---------------------------|-------|--------|-----------|---|-------------------------|---------------------------|--------|-----------|--------------|---------------------------|---------------------------|------------|
| symbol | Type | Hole type | Chipbreaker | Shape | symbol | Type | Hole type | Chipbreaker | Shape | symbol | Type | Hole type | Chipbreaker | Shape | |
| W | with hole | Round hole / one countersink (40°-60°) | Without chipbreaker | | H | with hole | Round hole / one countersink (70°-90°) | Chipbreaker on one side | | G | with hole | Round hole | Chipbreaker on both sides | | |
| T | | | Chipbreaker on one side | | C | | Round hole / double countersink (70°-90°) | Without chipbreaker | | N | | - | Without chipbreaker | | |
| Q | | Round hole / double countersink (40°-60°) | Without chipbreaker | | J | | Round hole | Round hole | Chipbreaker on both sides | | R | without hole | - | Chipbreaker on one side | |
| U | | | Chipbreaker on both sides | | A | | | | Without chipbreaker | | F | | - | Chipbreaker on both sides | |
| B | | Round hole / one countersink (70°-90°) | Without chipbreaker | | M | | Chipbreaker on one side | | X | - | - | - | - | - | On request |

Sistema de codificação para pastilhas de torneamento ISO Codificación para plaquitas de torneado ISO

| R's | 35° V's | 55° D's | 80° C's | 90° S's | 60° T's | 80° W's | Ø CI | | ANSI |
|------|------------|------------|------------|------------|------------|------------|--------|-------|--------|
| | | | | | | | mm | inch | Symbol |
| - | 06 | 04 | - | 03 | 06 | 02 | 3,97 | 5/32 | 1,20 |
| - | 08 | 05 | 04 | 04 | 08 | L3 | 4,76 | 3/16 | 1,50 |
| - | 09 | 06 | 05 | 05 | 09 | 03 | 5,56 | 7/32 | 1,80 |
| 06** | - | - | - | - | - | - | 6,00 | 0,236 | |
| 06* | 11 | 07 | 06 | 06 | 11 | 04 | 6,35 | 1/4 | 2,00 |
| 07* | 13 | 09 | 08 | 07 | 13 | 05 | 7,94 | 5/16 | 2,50 |
| 08* | - | - | - | - | - | - | 8,00 | 0,315 | |
| 09* | 16 | 11 | 09 | 09 | 16 | 06 | 9,525 | 3/8 | 3,00 |
| 10** | - | - | - | - | - | - | 10,00 | 0,394 | |
| 12** | - | - | - | - | - | - | 12,00 | 0,472 | |
| 12* | 22 | 15 | 12 | 12 | 22 | 08 | 12,70 | 1/2 | 4,00 |
| 15* | 27 | 19 | 16 | 15 | 27 | 10 | 15,875 | 5/8 | 5,00 |
| 16** | - | - | - | - | - | - | 16,00 | 0,63 | |
| 19* | 33 | 23 | 19 | 19 | 33 | 13 | 19,05 | 3/4 | 6,00 |
| 20** | - | - | - | - | - | - | 20,00 | 0,787 | |
| 25** | - | - | - | - | - | - | 25,00 | 0,984 | |
| 25* | 44 | 31 | 25 | 25 | 44 | 17 | 25,40 | 1,00 | 8,00 |
| 31* | 54 | 38 | 32 | 31 | 54 | 21 | 31,75 | 1 1/4 | 10,00 |
| 32** | - | - | - | - | - | - | 32,00 | 1,26 | |

5 - Insert size symbol

* ANSI designation only
(Radius Designation is R0)

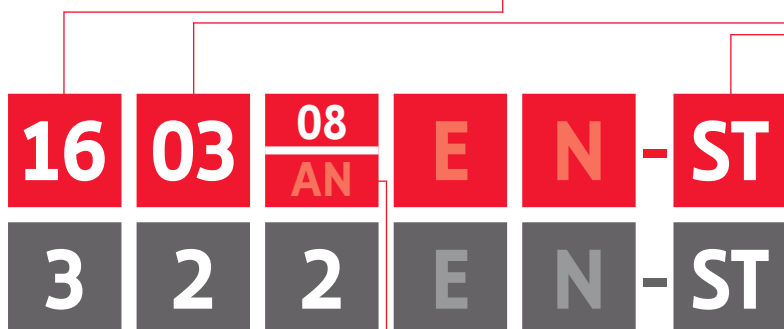
** Metric designation only
(Radius Designation is M0)

According to International Standard ISO 1832 - 2012(E)

"Indexable inserts for cutting tools - Designation"

| ISO | mm | ANSI | inch |
|-----|-------|------|-------|
| 01 | 1.59 | 1 | 0.062 |
| T1 | 1.98 | 1.2 | 0.078 |
| 02 | 2.38 | 1.5 | 0.094 |
| 03 | 3.18 | 2 | 0.125 |
| T3 | 3.97 | 2.5 | 0.156 |
| 04 | 4.76 | 3 | 0.188 |
| 05 | 5.56 | 3.5 | 0.219 |
| 06 | 6.35 | 4 | 0.250 |
| 07 | 7.94 | 5 | 0.312 |
| 09 | 9.52 | 6 | 0.375 |
| 12 | 12.70 | 8 | 0.500 |

6 - Insert thickness symbol



| 10 - Chipbreaker geometries | | | | | | |
|-----------------------------|----|----|----|----|----|--|
| FLAT | MF | GS | SF | LC | MS | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

NEGATIVE Chipbreakers

| | | | | | | | | |
|--|--|--|--|--|--|--|--|--|
| | | | | | | | | |
| | | | | | | | | |

POSITIVE Chipbreakers

| 7 - Insert corner symbol | | | |
|--------------------------|--------------|------|------|
| ISO | mm | inch | ANSI |
| 00 | Sharp nose | | 0 |
| 01 | 0.10 | .004 | 0.2 |
| 02 | 0.20 | .008 | 0.5 |
| 04 | 0.40 | .015 | 1 |
| 08 | 0.80 | .032 | 2 |
| 12 | 1.2 | .047 | 3 |
| 16 | 1.6 | .062 | 4 |
| 20 | 2.0 | .078 | 5 |
| 24 | 2.4 | .094 | 6 |
| 28 | 2.8 | .109 | 7 |
| 32 | 3.2 | .125 | 8 |
| 00 (inch or M0/metric) | Round insert | | 0 |

| 7.1* - Insert edges symbol | | | |
|---|---------|---|---------|
| For inserts having secondary edges two digits are used: | | | |
| 1 st digit is secondary edge | | 2 nd digit is secondary edges relief angle | |
| A | 45° | A | 3° |
| D | 60° | B | 5° |
| E | 75° | C | 7° |
| F | 85° | D | 15° |
| P | 90° | E | 20° |
| Z | special | F | 25° |
| | | G | 30° |
| | | N | 0° |
| | | P | 11° |
| | | Z | special |

*only when required.

| 8* - Cutting edge information | | |
|-------------------------------|-----------------------|--------|
| Shape | Honing | Symbol |
| | No honing | F |
| | With honing | E |
| | Chamfered No honing | T |
| | Chamfered with honing | S |

*only when required.

| 9* - Cutting direction | | |
|------------------------|-------|--------|
| Shape | Hand | Symbol |
| | Right | R |
| | Left | L |
| | None | N |

*only when required.

INSERTS RECOMENDATION

EXTERNAL MACHINING | MAQUINAÇÃO EXTERNA | MAQUINACIÓN EXTERNA

General Recommendation:

1. The choice of the insert shape depends of the operation
2. The insert shape should be selected to the required lead angle and the accessibility or versatility required of the tool.
3. Select the largest suitable point angle on the insert for strenght and economy.

| Operation | Longitudinal turning | Profiling | Facing | Plunging |
|-------------------|----------------------|-----------|--------|----------|
| Insert Shape | | | | |
| Rhombic 80° | ●● | | ● | |
| Rhombic 55° | ● | ●● | ● | |
| Parallelogram 55° | ● | ● | | ● |
| Round | ● | ● | ● | ●● |
| Square 90° | ● | | ●● | |
| Triangular 60° | ● | ● | ● | ● |
| Rhombic 35° | | ● | | |
| Trigon 80° | ● | | ● | |

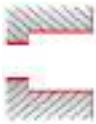
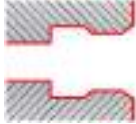




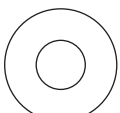
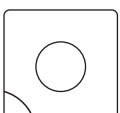

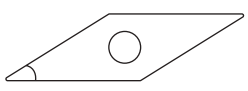

●● Recommended Insert Shape

● Alternative Insert Shape

INTERNAL MACHINING | MAQUINAÇÃO INTERNA | MAQUINACIÓN INTERNA

General Recommendation:

1. The choice of the insert shape depends of the operation
2. The insert shape should be selected to the required lead angle and the accessibility or versatility required of the tool.
3. Select the largest suitable point angle on the insert for strenght and economy.

| Operation | | Longitudinal turning | Profiling | Facing |
|---|---|---|--|---|
| Insert Shape | |  |  |  |
| |  | Rhombic 80° | ● | |
|  | Rhombic 55° | ● | ●● | ● |
|  | Parallelogram 55° | ●● | | |
|  | Round | ● | | ● |
|  | Square 90° | ● | | |
|  | Triangular 60° | ●● | ● | ● |
|  | Rhombic 35° | | ● | |
|  | Trigon 80° | ● | | ● |











●● Recommended Insert Shape

● Alternative Insert Shape





NEGATIVE TURNING Application Range Overview






- TURNING
- Insert selection
- Overview
- Negative inserts
- Positive inserts
- PCBN & PCD inserts
- Heavy turning
- External Toolholders
- Internal Toolholders
- Automatic Lathes
- Spare Parts
- Technical Data


P






| Fine finishing | Finishing | | Medium | Roughing | Heavy roughing |
|------------------|---|---|---|---|---|
| | MF | LC | MR | HR | |
| |  |  |  |  | |
| | | | PM | MA ^{NEW} | RP |
| | | |  |  |  |
| | | | | | 1 face |
| | | | MW | GR ^{NEW} | HZ |
| | | |  |  |  |
| | | | wiper | | 1 face |
| CVD Grades | | | | | |
| | PHG105 <small>P05-P10</small> | PHG115 <small>P10-P25</small> | PH5125 <small>P20-P35</small> | PHG125 <small>P20-P35</small> | PH5740 <small>P25-P45</small> |
| | | | | | PHG140 <small>P25-P45</small> |
| PVD Grades | | | | | |
| | PH7910 <small>P05-P10</small> | | | | |
| Continuous cut ← | | | → Interrupted cut | | |

M

| Fine finishing | Finishing | | Medium | Roughing | Heavy roughing |
|------------------|---|---|---|---|---|
| | MF | GS ^{NEW} | SF | SS | |
| |  |  |  |  | |
| | | MS | | RP | HY |
| | |  | |  |  |
| | | | | 1 face | 1 face |
| CVD Grades | | | | | |
| | PHS215 <small>M10-M25</small> | | PHS225 <small>M15-M30</small> | | PHS240 <small>M25-M45</small> |
| PVD Grades | | | | | |
| | PH7910 <small>M05-M10</small> | PHH910 ^{NEW} <small>M05-M10</small> | PH7920 <small>M10-M25</small> | PHH920 ^{NEW} <small>M30-M25</small> | |
| Continuous cut ← | | | → Interrupted cut | | |

| K | Fine finishing | Finishing | Medium | Roughing | Heavy roughing | |
|------------------------------------|----------------|--------------------------|---|--|---|---|
| | | | ST  | FLAT  | HR  | |
| | | | MW  | wiper | | HZ  |
| CVD Grades | | | | | | |
| | | PH5705 K05-K15 | | PH5320 K10-K25 | PH5740 K20-K40 | |
| Continuous cut ← → Interrupted cut | | | | | | |




| N | Fine finishing | Finishing | Medium | Roughing | Heavy roughing | |
|------------------------------------|-----------------|-----------|--|----------|----------------|--|
| | | | MS  | | | |
| | Uncoated Grades | | | | | |
| | | | PH0910 N01-N20 | | | |
| Continuous cut ← → Interrupted cut | | | | | | |

| S | Fine finishing | Finishing | Medium | Roughing | Heavy roughing | |
|------------------------------------|----------------|--|---|--|--|--|
| | | GS ^{NEW}  | SF  | SS  | | |
| | | | MS  | | DOMX ^{NEW}  | |
| PVD Grades | | | | | | |
| | | PH7910 S05-S10 | PHH910 ^{NEW} S10-S25 | PH7920 S10-S25 | PHH920 ^{NEW} S10-S25 | |
| Continuous cut ← → Interrupted cut | | | | | | |












POSITIVE TURNING Application Range Overview

- TURNING
- Insert selection
- Overview
- Negative inserts
- Positive inserts
- PCBN & PCD inserts
- Heavy turning
- External Toolholders
- Internal Toolholders
- Automatic Lathes
- Spare Parts
- Technical Data

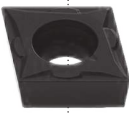
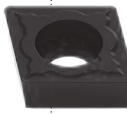
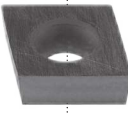




| | Fine finishing | Finishing | Medium | Roughing | | Heavy roughing | |
|------------------------------------|---|---|---|--|---|---|---|
| P 5° & 7° | FS  | FP  | MP  | RF  | RM  | | |
| | BO  | FW  <i>wiper</i> | MW  <i>wiper</i> | ST  | RR  | | |
| | CVD Grades | | | | | | |
| | | | PHG115 <small>P10-P25</small> | PH5125 <small>P20-P35</small> | PHG125 <small>P20-P35</small> | PHG140 <small>P25-P45</small> | PH5740 <small>P25-P45</small> |
| | PVD Grades | | | | | | |
| | PH7910 <small>P05-P10</small> | PH7920 <small>P10-P35</small> | | | | | |
| Continuous cut ← → Interrupted cut | | | | | | | |

| | Fine finishing | Finishing | Medium | Roughing | Heavy roughing | |
|-----------------|------------------------------------|---|---|---|---|--|
| P 11° | | 12  | 13  | FLAT  | | |
| | CVD Grades | | | | | |
| | | | PH5115 <small>P05-P20</small> | PH5125 <small>P20-P35</small> | PH5740 <small>P25-P45</small> | |
| | PVD Grades | | | | | |
| | Continuous cut ← → Interrupted cut | | | | | |

M
5° & 7°



| Fine finishing | Finishing | | Medium | Roughing | | Heavy roughing |
|---|---|---|--|---|---|--------------------------|
| FS  | FM  | LM  | MM  | RF  | RM  | |
| BO  | FW  | MW  | RCMT  | RR  | | |
| CVD Grades | | | | | | |
| | PHS215 M10-M25 | | | PHS225 M15-M30 | | PHS240 M25-M45 |
| PVD Grades | | | | | | |
| PH7910 M05-M10 | PHH910 M05-M10 ^{NEW} | | PH7920 M10-M25 | PHH920 M10-M25 ^{NEW} | | |
| Continuous cut ← | | | → Interrupted cut | | | |









K
5° & 7°

| Fine finishing | Finishing | | Medium | Roughing | Heavy roughing | |
|---|---|--|-------------------|---|----------------|--|
| FK  | MK  | FLAT  | | RM  | | |
| | FW  | MW  | | ST  | | |
| CVD Grades | | | | | | |
| | PH5705 K05-K15 | | | PH5320 K10-K25 | | |
| Uncoated Grades | | | | | | |
| | PH0705 K05-K15 | | | | | |
| Continuous cut ← | | | → Interrupted cut | | | |

POSITIVE TURNING

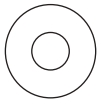
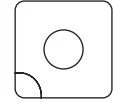
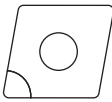

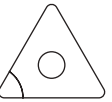
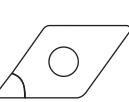
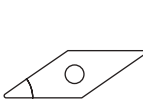
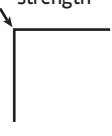



Application Range Overview | Vista geral de aplicações | Vista general de aplicaciones

| | | Fine finishing | Finishing | Medium | Roughing | Heavy roughing | |
|---|----|------------------|---|--|---|----------------|--|
| N | | | LN  | NF ^{NEW}  | PCD | | |
| | | Uncoated Grades | | | | | |
| | 7° | | PH0910 N01-N20 | | PDP410 ^{PCD} N01-N30 | | |
| | | Continuous cut ← | | | → Interrupted cut | | |

| | | Fine finishing | Finishing | Medium | Roughing | Heavy roughing | |
|---|---------|---|---|---|--|--|--|
| S | | FS  | FM  | LM  | MM  | GS ^{NEW}  | |
| | | BO  | FW  | MW  | wiper | wiper | |
| | 5° & 7° | PVD Grades | | | | | |
| | | PH7910 S05-S10 | PHH910 ^{NEW} S10-S25 | PH7920 S10-S25 | PHH920 ^{NEW} S10-S25 | | |
| | | Continuous cut ← | | | → Interrupted cut | | |

INSERT SHAPE SELECTION

Seleção de geometria para pastilha | Selección de geometria para plaquita

| Shape angle | | 90° | 80° | 80° | 60° | 55° | 35° | |
|-----------------------|---|---|---|---|--|---|---|---|
| Geometry shape code | R | S | C | W | T | D | V | |
| Geometry shape design |  |  |  |  |  |  |  | |
| Cutting edge strength |  | | | | | | | Accessibility  |
| Vibration tendency |  | | | | | | | Less power consumption Pc (kW)  |

INSERT SHAPE

The insert shape should be selected relative to the entering angle accessibility from tools requirements.

The largest possible nose angle should be selected to provide insert strength and reliability, however, this has to be balanced against the cut variation need to be performed.





































A large nose angle is strong, but requires more machine power and has a higher tendency for vibration.

A small nose angle is weaker and has a small cutting edge engagement, both of which can make it more sensitive to the heat effects.
















































Scale 1: indicates the cutting edge strength. The inserts to the left have larger nose angles and are correspondingly stronger. The right hand inserts have better versatility and accessibility.

Scale 2: indicates that vibration tendencies increase to the left side, while power requirements decrease to the right.

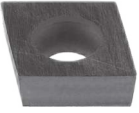












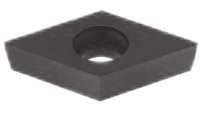


























NEGATIVE TURNING INSERTS OVERVIEW

| | | | | | | | | | | | | | | | | | |
|---------|------------------|----------|------------------|------------------|--------------------|---------------|----------------------|----------------------|------------------|-------------|----------------|---|---|--|---|--|--|
| TURNING | Insert selection | Overview | Negative inserts | Positive inserts | PCBN & PCD inserts | Heavy turning | External Toolholders | Internal Toolholders | Automatic Lathes | Spare Parts | Technical Data | <p>CNMA</p>  <p>Roughing</p> <p>Page C - 388 Rhombic 80°</p> | <p>CNMG-MF</p>  <p>Finishing</p> <p>Page C - 388 Rhombic 80°</p> | <p>CNMG-SF</p>  <p>Medium to Finishing</p> <p>Page C - 388 Rhombic 80°</p> | <p>CNMG-LC</p>  <p>Medium to Finishing</p> <p>Page C - 388 Rhombic 80°</p> | <p>CNMG-MS</p>  <p>Medium</p> <p>Page C - 388 Rhombic 80°</p> | <p>CNMG-GS</p>  <p>Medium</p> <p>Page C - 388 Rhombic 80°</p> |
| | | | | | | | | | | | | <p>CNMG-MR</p>  <p>Medium</p> <p>Page C - 390 Rhombic 80°</p> | <p>CNMG-PM</p>  <p>Medium</p> <p>Page C - 390 Rhombic 80°</p> | <p>CNMG-ST</p>  <p>Medium</p> <p>Page C - 390 Rhombic 80°</p> | <p>CNMG-MW</p>  <p>Medium wiper</p> <p>Page C - 390 Rhombic 80°</p> | <p>CNMG-SS</p>  <p>Roughing to Medium</p> <p>Page C - 392 Rhombic 80°</p> | <p>CNMG-MA</p>  <p>Medium to Roughing</p> <p>Page C - 392 Rhombic 80°</p> |
| | | | | | | | | | | | | <p>CNMG-HR</p>  <p>Roughing</p> <p>Page C - 392 Rhombic 80°</p> | <p>CNMM-RP</p>  <p>Roughing</p> <p>Page C - 394 Rhombic 80°</p> | <p>CNMG-GR</p>  <p>Roughing</p> <p>Page C - 394 Rhombic 80°</p> | <p>CNMM-HY</p>  <p>Heavy to Roughing</p> <p>Page C - 394 Rhombic 80°</p> | <p>CNMM-HZ</p>  <p>Heavy to Roughing</p> <p>Page C - 394 Rhombic 80°</p> | |
| | | | | | | | | | | | | <p>DNMA</p>  <p>Roughing</p> <p>Page C - 396 Rhombic 55°</p> | <p>DNMG-MF</p>  <p>Finishing</p> <p>Page C - 396 Rhombic 55°</p> | <p>DNMG-SF</p>  <p>Medium to Finishing</p> <p>Page C - 396 Rhombic 55°</p> | <p>DNMG-LC</p>  <p>Medium to Finishing</p> <p>Page C - 396 Rhombic 55°</p> | <p>DNMG-MS</p>  <p>Medium</p> <p>Page C - 398 Rhombic 55°</p> | <p>DNMG-GS</p>  <p>Medium</p> <p>Page C - 398 Rhombic 55°</p> |
| | | | | | | | | | | | | <p>DNMG-MR</p>  <p>Medium</p> <p>Page C - 398 Rhombic 55°</p> | <p>DNMG-PM</p>  <p>Medium</p> <p>Page C - 398 Rhombic 55°</p> | <p>DNMG-ST</p>  <p>Medium</p> <p>Page C - 400 Rhombic 55°</p> | <p>DNMG-MW</p>  <p>Medium wiper</p> <p>Page C - 402 Rhombic 55°</p> | <p>DNMG-SS</p>  <p>Roughing to Medium</p> <p>Page C - 402 Rhombic 55°</p> | <p>DNMG-HR</p>  <p>Roughing</p> <p>Page C - 402 Rhombic 55°</p> |
| | | | | | | | | | | | | <p>DNMM-RP</p>  <p>Roughing</p> <p>Page C - 402 Rhombic 55°</p> | <p>DNMX-02</p>  <p>Medium to Finishing</p> <p>Page C - 402 Rhombic 55°</p> | <p>DNMX-03</p>  <p>Medium</p> <p>Page C - 402 Rhombic 55°</p> | <p>DNMX-01</p>  <p>Roughing to Medium</p> <p>Page C - 402 Rhombic 55°</p> | | |
| | | | | | | | | | | | | <p>KNUX-01</p>  <p>Finishing</p> <p>Page C - 404 Parallelogram 55°</p> | <p>KNUX-02</p>  <p>Medium</p> <p>Page C - 404 Parallelogram 55°</p> | | | | |
| | | | | | | | | | | | | <p>RNMG-ST</p>  <p>Medium</p> <p>Page C - 406 Round R°</p> | | | | | |








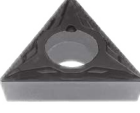



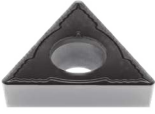
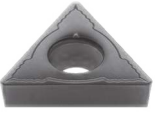






















Vista genérica de pastilhas de torneamento negativas
 Vista general de plaquitas de torneado negativas

| | | | | | |
|--|---|--|--|--|---|
| <p>SNMA</p>  <p>Roughing</p> <p>Page C - 408 Square 90°</p> | <p>SNMG-MF</p>  <p>Finishing</p> <p>Page C - 408 Square 90°</p> | <p>SNMG-SF</p>  <p>Medium to Finishing</p> <p>Page C - 408 Square 90°</p> | <p>SNMG-GS NEW</p>  <p>Medium</p> <p>Page C - 408 Square 90°</p> | <p>SNMG-MR</p>  <p>Medium</p> <p>Page C - 408 Square 90°</p> | <p>SNMG-PM</p>  <p>Medium</p> <p>Page C - 408 Square 90°</p> |
| <p>SNMG-ST</p>  <p>Medium</p> <p>Page C - 410 Square 90°</p> | <p>SNMG-SS</p>  <p>Roughing to Medium</p> <p>Page C - 410 Square 90°</p> | <p>SNMG-HR</p>  <p>Roughing</p> <p>Page C - 410 Square 90°</p> | <p>SNMM-RP</p>  <p>Roughing</p> <p>Page C - 410 Square 90°</p> | <p>SNMM-HY</p>  <p>Heavy to Roughing</p> <p>Page C - 412 Square 90°</p> | <p>SNMM-HZ</p>  <p>Heavy to Roughing</p> <p>Page C - 412 Square 90°</p> |
| <p>TNMA</p>  <p>Roughing</p> <p>Page C - 414 Triangular 60°</p> | <p>TNMG-MF</p>  <p>Finishing</p> <p>Page C - 414 Triangular 60°</p> | <p>TNMG-SF</p>  <p>Medium to Finishing</p> <p>Page C - 414 Triangular 60°</p> | <p>TNMG-LC</p>  <p>Medium to Finishing</p> <p>Page C - 414 Triangular 60°</p> | <p>TNMG-MS</p>  <p>Medium</p> <p>Page C - 414 Triangular 60°</p> | <p>TNMG-GS NEW</p>  <p>Medium</p> <p>Page C - 414 Triangular 60°</p> |
| <p>TNMG-MR</p>  <p>Medium</p> <p>Page C - 416 Triangular 60°</p> | <p>TNMG-PM</p>  <p>Medium</p> <p>Page C - 416 Triangular 60°</p> | <p>TNMG-ST</p>  <p>Medium</p> <p>Page C - 416 Triangular 60°</p> | <p>TNMG-MW</p>  <p>Medium wiper</p> <p>Page C - 418 Triangular 60°</p> | <p>TNMG-SS</p>  <p>Roughing to Medium</p> <p>Page C - 418 Triangular 60°</p> | <p>TNMG-HR</p>  <p>Roughing</p> <p>Page C - 418 Triangular 60°</p> |
| <p>TNMX-01</p>  <p>Medium to Finishing</p> <p>Page C - 418 Triangular 60°</p> | | <p>VNMA</p>  <p>Roughing</p> <p>Page C - 420 Rhombic 35°</p> | <p>VNMG-MF</p>  <p>Finishing</p> <p>Page C - 420 Rhombic 35°</p> | <p>VNMG-SF</p>  <p>Medium to Finishing</p> <p>Page C - 420 Rhombic 35°</p> | <p>VNMG-LC</p>  <p>Medium to Finishing</p> <p>Page C - 420 Rhombic 35°</p> |
| <p>VNMG-MS</p>  <p>Medium</p> <p>Page C - 420 Rhombic 35°</p> | <p>VNMG-GS NEW</p>  <p>Medium</p> <p>Page C - 420 Rhombic 35°</p> | <p>VNMG-MR</p>  <p>Medium</p> <p>Page C - 420 Rhombic 35°</p> | <p>VNMG-PM</p>  <p>Medium</p> <p>Page C - 420 Rhombic 35°</p> | <p>VNMG-ST</p>  <p>Medium</p> <p>Page C - 420 Rhombic 35°</p> | <p>VNMG-SS</p>  <p>Roughing to Medium</p> <p>Page C - 420 Rhombic 35°</p> |
| <p>WNMA</p>  <p>Roughing</p> <p>Page C - 422 Trigon 80°</p> | <p>WNMG-MF</p>  <p>Finishing</p> <p>Page C - 422 Trigon 80°</p> | <p>WNMG-SF</p>  <p>Medium to Finishing</p> <p>Page C - 422 Trigon 80°</p> | <p>WNMG-LC</p>  <p>Medium to Finishing</p> <p>Page C - 422 Trigon 80°</p> | <p>WNMG-MS</p>  <p>Medium</p> <p>Page C - 422 Trigon 80°</p> | <p>WNMG-GS NEW</p>  <p>Medium</p> <p>Page C - 422 Trigon 80°</p> |
| <p>WNMG-MR</p>  <p>Medium</p> <p>Page C - 424 Trigon 80°</p> | <p>WNMG-PM</p>  <p>Medium</p> <p>Page C - 424 Trigon 80°</p> | <p>WNMG-ST</p>  <p>Medium</p> <p>Page C - 424 Trigon 80°</p> | <p>WNMG-MW</p>  <p>Medium wiper</p> <p>Page C - 424 Trigon 80°</p> | <p>WNMG-SS</p>  <p>Roughing to Medium</p> <p>Page C - 424 Trigon 80°</p> | <p>WNMG-HR</p>  <p>Roughing</p> <p>Page C - 424 Trigon 80°</p> |

POSITIVE TURNING INSERTS OVERVIEW

| | | | | | | |
|--|---|---|---|--|---|---|
| | <p>CCMW</p>  <p>Finishing</p> <p>Page C - 426 Rhombic 80°</p> | <p>CCMT-FP</p>  <p>Finishing</p> <p>Page C - 426 Rhombic 80°</p> | <p>CCMT-BO</p>  <p>Finishing</p> <p>Page C - 426 Rhombic 80°</p> | <p>CCMT-FM</p>  <p>Finishing</p> <p>Page C - 426 Rhombic 80°</p> | <p>CCMT-FK</p>  <p>Finishing</p> <p>Page C - 426 Rhombic 80°</p> | <p>CCMT-FW</p>  <p>Finishing wiper</p> <p>Page C - 428 Rhombic 80°</p> |
| | <p>CCMT-LM</p>  <p>Medium to Finishing</p> <p>Page C - 428 Rhombic 80°</p> | <p>CCMT-MP</p>  <p>Medium</p> <p>Page C - 428 Rhombic 80°</p> | <p>CCMT-MM</p>  <p>Medium</p> <p>Page C - 428 Rhombic 80°</p> | <p>CCMT-MK</p>  <p>Medium</p> <p>Page C - 428 Rhombic 80°</p> | <p>CCMT-MW</p>  <p>Medium to Finishing wiper</p> <p>Page C - 428 Rhombic 80°</p> | |
| | <p>CCGT-FS</p>  <p>Finishing to Fine finishing</p> <p>Page C - 430 Rhombic 80°</p> | <p>CCGT-LN</p>  <p>Medium to Finishing</p> <p>Page C - 430 Rhombic 80°</p> | | | | |
| | <p>DCMW</p>  <p>Finishing</p> <p>Page C - 432 Rhombic 55°</p> | <p>DCMT-FP</p>  <p>Finishing</p> <p>Page C - 432 Rhombic 55°</p> | <p>DCMT-FM</p>  <p>Finishing</p> <p>Page C - 432 Rhombic 55°</p> | <p>DCMT-FK</p>  <p>Finishing</p> <p>Page C - 432 Rhombic 55°</p> | <p>DCMT-FW</p>  <p>Finishing wiper</p> <p>Page C - 432 Rhombic 55°</p> | <p>DCMT-LM</p>  <p>Medium to Finishing</p> <p>Page C - 432 Rhombic 55°</p> |
| | <p>DCMT-MP</p>  <p>Medium</p> <p>Page C - 432 Rhombic 55°</p> | <p>DCMT-MM</p>  <p>Medium</p> <p>Page C - 434 Rhombic 55°</p> | <p>DCMT-MK</p>  <p>Medium</p> <p>Page C - 434 Rhombic 55°</p> | <p>DCMT-MW</p>  <p>Medium to Finishing wiper</p> <p>Page C - 434 Rhombic 55°</p> | <p>DCGT-FS</p>  <p>Finishing to Fine finishing</p> <p>Page C - 434 Rhombic 55°</p> | <p>DCGT-LN</p>  <p>Medium to Finishing</p> <p>Page C - 434 Rhombic 55°</p> |
| | <p>RCMT-GS</p>  <p>Medium</p> <p>Page C - 436 Round R°</p> | <p>RCMT-CP</p>  <p>Medium</p> <p>Page C - 436 Round R°</p> | <p>RCMT-ST</p>  <p>Roughing to Medium</p> <p>Page C - 436 Round R°</p> | <p>RCMT-RF</p>  <p>Roughing to Medium</p> <p>Page C - 436 Round R°</p> | <p>RCMT-RM</p>  <p>Roughing to Medium</p> <p>Page C - 436 Round R°</p> | |
| | <p>RCMX-ST</p>  <p>Roughing to Medium</p> <p>Page C - 436 Round R°</p> | <p>RCMX-RM</p>  <p>Roughing to Medium</p> <p>Page C - 436 Round R°</p> | <p>RCMX-RR</p>  <p>Roughing to Medium</p> <p>Page C - 436 Round R°</p> | | <p>RCGT-LN</p>  <p>Finishing to Fine finishing</p> <p>Page C - 438 Round R°</p> | |
| | <p>SCMW</p>  <p>Finishing</p> <p>Page C - 440 Square 90°</p> | <p>SCMT-FP</p>  <p>Finishing</p> <p>Page C - 440 Square 90°</p> | <p>SCMT-FM</p>  <p>Finishing</p> <p>Page C - 440 Square 90°</p> | <p>SCMT-FK</p>  <p>Finishing</p> <p>Page C - 440 Square 90°</p> | <p>SCMT-MP</p>  <p>Medium</p> <p>Page C - 440 Square 90°</p> | <p>SCMT-MM</p>  <p>Medium</p> <p>Page C - 440 Square 90°</p> |

Vista genérica de pastilhas de torneamento positivas
 Vista general de plaquitas de torneado positivas

| | | | | | |
|--|---|---|--|--|--|
| <p>SCMT-MK</p>  <p>Medium</p> <p>Page C - 440 Square 90°</p> | <p>SCGT-LN</p>  <p>Medium to Finishing</p> <p>Page C - 440 Square 90°</p> | | <p>SPUN</p>  <p>Medium to Finishing</p> <p>Page C - 442 Square 90°</p> | <p>SPMR-12</p>  <p>Finishing to Fine finishing</p> <p>Page C - 442 Square 90°</p> | <p>SPMR-13</p>  <p>Medium</p> <p>Page C - 442 Square 90°</p> |
| <p>TCMW</p>  <p>Finishing</p> <p>Page C - 444 Triangular 60°</p> | <p>TCMT-FP</p>  <p>Finishing</p> <p>Page C - 444 Triangular 60°</p> | <p>TCMT-FM</p>  <p>Finishing</p> <p>Page C - 444 Triangular 60°</p> | <p>TCMT-FK</p>  <p>Finishing</p> <p>Page C - 446 Triangular 60°</p> | <p>TCMT-FW</p>  <p>Finishing wiper</p> <p>Page C - 446 Triangular 60°</p> | <p>TCMT-MP</p>  <p>Medium</p> <p>Page C - 446 Triangular 60°</p> |
| <p>TCMT-MM</p>  <p>Medium</p> <p>Page C - 448 Triangular 60°</p> | <p>TCMT-MK</p>  <p>Medium</p> <p>Page C - 448 Triangular 60°</p> | <p>TCMT-MW</p>  <p>Medium to Finishing wiper</p> <p>Page C - 448 Triangular 60°</p> | | <p>TCGT-FS</p>  <p>Finishing to Fine finishing</p> <p>Page C - 450 Triangular 60°</p> | <p>TCGT-LN</p>  <p>Medium to Finishing</p> <p>Page C - 450 Triangular 60°</p> |
| <p>TPUN</p>  <p>Medium to Finishing</p> <p>Page C - 452 Triangular 60°</p> | <p>TPMR-12</p>  <p>Finishing to Fine finishing</p> <p>Page C - 452 Triangular 60°</p> | <p>TPMR-13</p>  <p>Medium</p> <p>Page C - 452 Triangular 60°</p> | | | |
| <p>VBMW</p>  <p>Finishing</p> <p>Page C - 454 Rhombic 35°</p> | <p>VBMT-FP</p>  <p>Finishing</p> <p>Page C - 454 Rhombic 35°</p> | <p>VBMT-FM</p>  <p>Finishing</p> <p>Page C - 454 Rhombic 35°</p> | <p>VBMT-FK</p>  <p>Finishing</p> <p>Page C - 454 Rhombic 35°</p> | <p>VBMT-MP</p>  <p>Medium</p> <p>Page C - 454 Rhombic 35°</p> | <p>VBMT-MM</p>  <p>Medium</p> <p>Page C - 454 Rhombic 35°</p> |
| <p>VBMT-MK</p>  <p>Medium</p> <p>Page C - 454 Rhombic 35°</p> | | | | | |
| <p>VCMW</p>  <p>Finishing</p> <p>Page C - 456 Rhombic 35°</p> | <p>VCMT-FP</p>  <p>Finishing</p> <p>Page C - 456 Rhombic 35°</p> | <p>VCMT-FM</p>  <p>Finishing</p> <p>Page C - 456 Rhombic 35°</p> | <p>VCMT-FK</p>  <p>Finishing</p> <p>Page C - 456 Rhombic 35°</p> | <p>VCMT-MP</p>  <p>Medium</p> <p>Page C - 456 Rhombic 35°</p> | <p>VCMT-MM</p>  <p>Medium</p> <p>Page C - 456 Rhombic 35°</p> |
| <p>VCMT-MK</p>  <p>Medium</p> <p>Page C - 456 Rhombic 35°</p> | | <p>VCGT-FS</p>  <p>Finishing to Fine finishing</p> <p>Page C - 458 Rhombic 35°</p> | <p>VCGT-LN</p>  <p>Medium to Finishing</p> <p>Page C - 458 Rhombic 35°</p> | | |

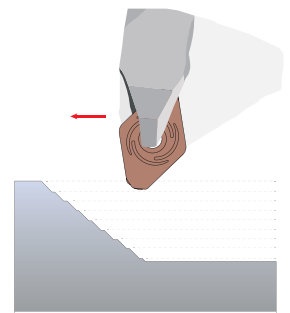
DOMX - THE REVOLUTION IN HRSA MEDIUM TO ROUGH TURNING

A revolução em torneamento de materiais termorresistentes | La revolución en el torneado de materiales exóticos

Designed especially for HRSA, the new DOMX combined with the latest PHH technology, offers exceptional performance in exotic materials machining. When your material has high Ni or Co content DOMX is the choice!

- First choice for **HRSA** medium to rough turning;
- 4 positive cutting edges on double sided negative insert.**

DOMX[®]



- Machine at 45° with a 93° holder;
- Up to +140% tool life improvement.**

APPLICATION
GUIDE

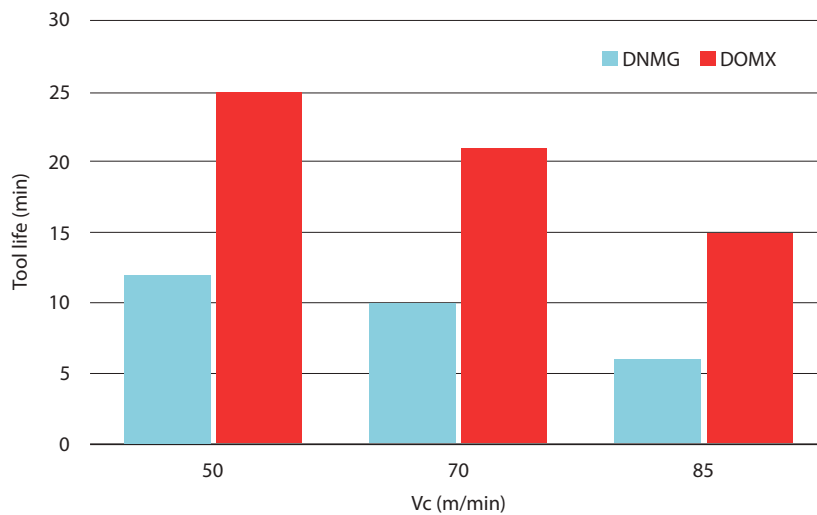
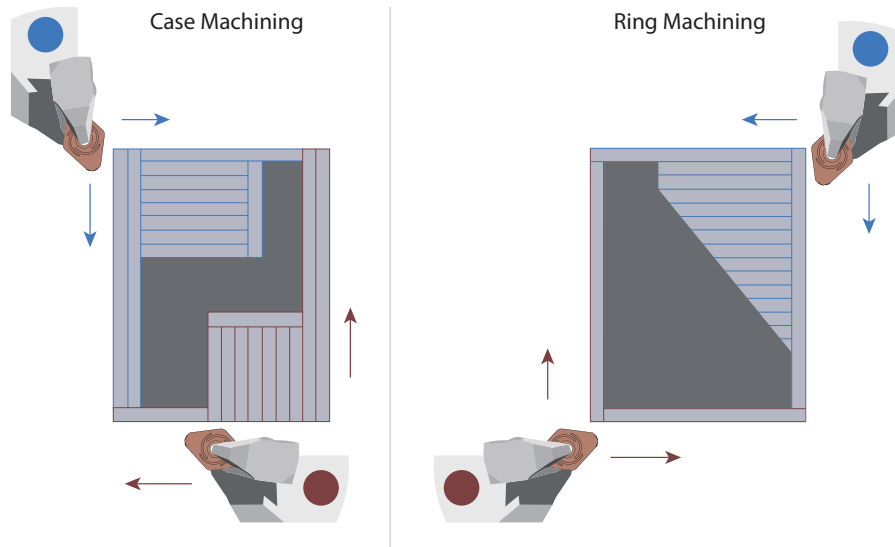


CHECK THE
VIDEO



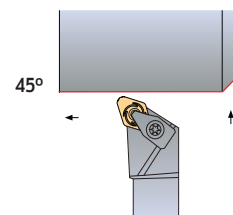
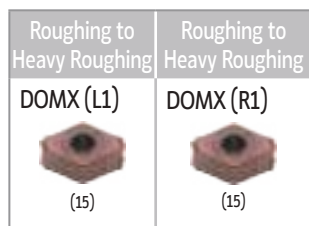
| Inserts Pastilhas Plaquetas | (1) Geometry code | (2) Grade code | S | | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | Technical drawing Desenho técnico Dibujo técnico | |
|---|-------------------------|-------------------|---|---|---|------|------|------|--|------|------|----------------|------|--|---|
| | | | PVD | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | | Max |
| | | | X6 | Y3 | | | | | | | | | | | |
|  | 1124595 | DOMX 1506R1-GS |  |  | 12,70 | 6,35 | 0,80 | 5,16 | 1,50 | 0,20 | 2,00 | 0,30 | 0,20 | 0,50 |  |
|  | 1124493 | DOMX 1506L1-GS |  |  | 12,70 | 6,35 | 0,80 | 5,16 | 1,50 | 0,20 | 2,00 | 0,30 | 0,20 | 0,50 |  |

This new insert (DOMX) can be used in several types of turning operations, from facing, external/internal turning to case and ring machining as seen in the examples below:

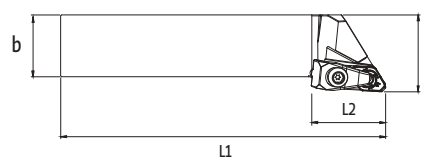
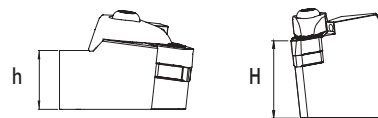


Tool life test – Inconel 625, ap 1,5mm, fn 0.15mm/r

(D) DIMPLE LOCK TOOLHOLDERS



Axial: -6,25°
Radial: -6,75°



| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------------|-----------------|----|-----|----|----|-------------|------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 182000900 | 182001200 | DDJN R/L 2020 K15-A-DX1 | 20 | 20 | 125 | 42 | 25 | DOMX 1506.. | 0,40 |  |  |
| 182001000 | 182001300 | DDJN R/L 2525 M15-A-DX1 | 25 | 25 | 150 | 42 | 32 | DOMX 1506.. | 0,75 |  |  |
| 182001100 | 182001400 | DDJN R/L 3232 P15-A-DX1 | 32 | 32 | 170 | 42 | 40 | DOMX 1506.. | 1,30 |  |  |

 Stock item | Produto de stock | Itens de stock



 Available under request | Disponível sobre consulta
Disponibile bajo consulta

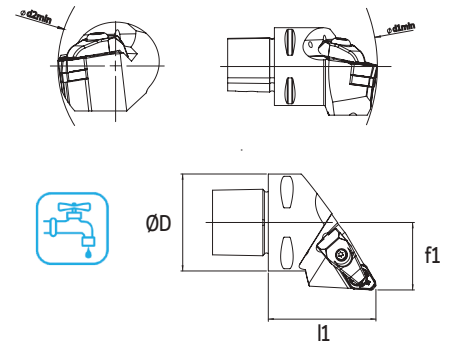
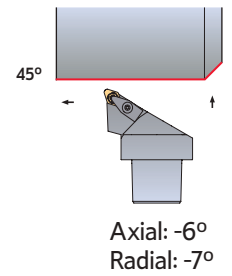
Insert order code = (1) Geometry Code + (2) Grade Code

SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Shim R | Shim L | Spring | Clamp | Clamp Screw | Wrench | Screw 1 | Screw 2 | Screw Allen |
|-------------------------|---|---|---|---|---|---|---|---|---|
| DDJN R/L 2020 K15-A-DX1 |  |  |  |  |  |  |  |  |  |
| DDJN R/L 2525 M15-A-DX1 | CD150503 | CD150502 | M09513 | GA07002 | D0602900 | SS40 | H0600475 | H1000875 | T1000875 |
| DDJN R/L 3232 P15-A-DX1 | CD150503 | CD150502 | M09513 | GA07002 | D0602900 | SS40 | - | H1000875 | - |

(D) DIMPLE LOCK TOOLHOLDERS

| | |
|---|---|
| Roughing to Heavy Roughing | Roughing to Heavy Roughing |
| DOMX (L1) | DOMX (R1) |
|  |  |
| (15) | (15) |



| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|---------------------------|-----------------|---------|---------|----|----|-------------|------|-------|---|
| R | L | | ØD | Ød1 min | Ød2 min | f1 | l1 | | | R | L |
| 182000100 | 182000500 | PSC40-DDJNR/L27055-15-DX1 | 40 | 110 | 145 | 27 | 55 | DOMX 1506.. | 0,42 | | |
| 182000200 | 182000600 | PSC50-DDJNR/L35060-15-DX1 | 50 | 110 | 165 | 35 | 60 | DOMX 1506.. | 0,80 | | |
| 182000300 | 182000700 | PSC63-DDJNR/L45065-15-DX1 | 63 | 110 | 190 | 45 | 65 | DOMX 1506.. | 1,10 | | |
| 182000400 | 182000800 | PSC80-DDJNR/L55080-15-DX1 | 80 | 110 | 250 | 55 | 80 | DOMX 1506.. | 2,74 | | |

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta
Disponível bajo consulta







Insert order code = (1) Geometry Code + (2) Grade Code

SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Shim R | Shim L | Shim Screw | Spring | Clamp | Clamp Screw | Wrench |
|---------------------------|---|---|---|---|---|---|---|
| PSC40-DDJNR/L27055-15-DX1 |  |  |  |  |  |  |  |
| PSC50-DDJNR/L35060-15-DX1 | CD150503 | CD150502 | T06010000 | M09513 | GA07002 | D0602900 | SS40 |
| PSC63-DDJNR/L45065-15-DX1 | CD150503 | CD150502 | T06010000 | M09513 | GA07002 | D0602900 | SS40 |
| PSC80-DDJNR/L55080-15-DX1 | CD150503 | CD150502 | T06010000 | M09513 | GA07002 | D0602900 | SS40 |

CN = RHOMBIC 80° NEGATIVE

RÔMBICA 80° NEGATIVA | RÓMBICA 80° NEGATIVA

| | | | P | | | | | | | | M | | | | K | | | N | S | | | | | | | | |
|---|-------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|
| | | | CVD | | | | | PVD | | | CVD | | | PVD | | CVD | UNC | PVD | | | | | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 | |
| Inserts Pastilhas Plaquitas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 | |
|  CNMA Roughing | 1120219 | CNMA 120404 | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1120220 | CNMA 120408 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1120221 | CNMA 120412 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1120223 | CNMA 120416 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1120224 | CNMA 160608 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1120225 | CNMA 160612 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121470 | CNMA 160616 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1120226 | CNMA 190612 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1120227 | CNMA 190616 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121471 | CNMA 190624 | | | | | | | | | | | | | | | | | | ⊗ | | | | | | | |
|  CNMG-MF Finishing | 1121472 | CNMG 090304-MF | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | 1121318 | CNMG 090308-MF | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | 1121320 | CNMG 09T304-MF | | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | | | |
| | 1121317 | CNMG 09T308-MF | | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | | | |
| | 1121478 | CNMG 120404-MF | ⊗ | | ⊗ | | ⊗ | | | ⊗ | | | | | | | | | | | | | | | | | |
| | 1121480 | CNMG 120408-MF | | | ⊗ | | ⊗ | | | ⊗ | | | | | | | | | | | | | | | | | |
| 1121482 | CNMG 120412-MF | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | | |
|  CNMG-SF Medium to Finishing | 1123747 | CNMG 120404-SF | | | | | | | | | | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | | | | | | ⊗ | ⊗ | ⊗ | ⊗ | |
| | 1123717 | CNMG 120408-SF | | | | | | | | | | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | | | | | | ⊗ | ⊗ | ⊗ | ⊗ | |
| | 1123748 | CNMG 120412-SF | | | | | | | | | | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | | | | | | ⊗ | ⊗ | ⊗ | ⊗ | |
|  CNMG-LC Medium to Finishing | 1122024 | CNMG 120404-LC | | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | 1122021 | CNMG 120408-LC | ⊗ | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | 1124029 | CNMG 120412-LC | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | |
|  CNMG-MS Medium | 1121479 | CNMG 120404-MS | | | | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | |
| | 1121481 | CNMG 120408-MS | | | | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | |
| | 1121483 | CNMG 120412-MS | | | | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | |
| | 1121486 | CNMG 120416-MS | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | ⊗ | | ⊗ | ⊗ | ⊗ | |
|  CNMG-GS Medium to Finishing | 1124514 | CNMG 120404-GS | | | | | | | | | | | | | | ⊗ | | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | |
| | 1124502 | CNMG 120408-GS | | | | | | | | | | | | | | ⊗ | | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | |
| | 1124515 | CNMG 120412-GS | | | | | | | | | | | | | | ⊗ | | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | |

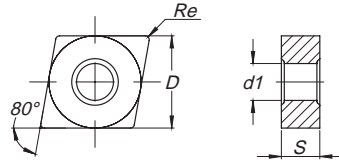
⊗ First choice | 1ª Escolha | 1ª Opción

⊗ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock

Insert Order Code: (1) Geometry code + (2) Grade code

⊗ Stock Items | Itens de stock





○ Available under request | Disponível sob consulta | Disponible bajo consulta



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|----------------|---|------|------|------|--|------|-------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| CNMA 120404 | CNMA 431 | 12,700 | 4,76 | 0,40 | 5,16 | 2,50 | 0,20 | 5,00 | 0,20 | 0,10 | 0,30 |
| CNMA 120408 | CNMA 432 | 12,700 | 4,76 | 0,80 | 5,16 | 4,00 | 0,20 | 8,00 | 0,35 | 0,15 | 0,60 |
| CNMA 120412 | CNMA 433 | 12,700 | 4,76 | 1,20 | 5,16 | 4,00 | 0,30 | 8,00 | 0,45 | 0,20 | 0,80 |
| CNMA 120416 | CNMA 434 | 12,700 | 4,76 | 1,60 | 5,16 | 4,00 | 0,30 | 8,00 | 0,55 | 0,20 | 1,00 |
| CNMA 160608 | CNMA 542 | 15,875 | 6,35 | 0,80 | 6,35 | 5,00 | 0,30 | 10,00 | 0,45 | 0,20 | 0,80 |
| CNMA 160612 | CNMA 543 | 15,875 | 6,35 | 1,20 | 6,35 | 5,00 | 0,30 | 10,00 | 0,45 | 0,20 | 0,80 |
| CNMA 160616 | CNMA 544 | 15,875 | 6,35 | 1,60 | 6,35 | 5,00 | 0,30 | 10,00 | 0,55 | 0,20 | 1,00 |
| CNMA 190612 | CNMA 643 | 19,050 | 6,35 | 1,20 | 7,94 | 6,00 | 0,30 | 12,00 | 0,45 | 0,20 | 0,80 |
| CNMA 190616 | CNMA 644 | 19,050 | 6,35 | 1,60 | 7,94 | 6,00 | 0,30 | 12,00 | 0,55 | 0,20 | 1,00 |
| CNMA 190624 | CNMA 646 | 19,050 | 6,35 | 2,40 | 7,94 | 6,00 | 0,40 | 12,00 | 0,60 | 0,20 | 1,40 |
| CNMG 090304-MF | CNMG 321-MF | 9,525 | 3,18 | 0,40 | 3,81 | 0,50 | 0,10 | 1,50 | 0,15 | 0,05 | 0,25 |
| CNMG 090308-MF | CNMG 322-MF | 9,525 | 3,18 | 0,80 | 3,81 | 0,55 | 0,10 | 1,50 | 0,20 | 0,10 | 0,40 |
| CNMG 09T304-MF | CNMG 32.51-MF | 9,525 | 3,97 | 0,40 | 3,81 | 0,50 | 0,10 | 1,50 | 0,15 | 0,05 | 0,25 |
| CNMG 09T308-MF | CNMG 32.52-MF | 9,525 | 3,97 | 0,80 | 3,81 | 0,55 | 0,10 | 1,50 | 0,20 | 0,10 | 0,40 |
| CNMG 120404-MF | CNMG 431-MF | 12,700 | 4,76 | 0,40 | 5,16 | 0,80 | 0,20 | 1,50 | 0,15 | 0,05 | 0,25 |
| CNMG 120408-MF | CNMG 432-MF | 12,700 | 4,76 | 0,80 | 5,16 | 1,00 | 0,25 | 1,50 | 0,20 | 0,10 | 0,40 |
| CNMG 120412-MF | CNMG 433-MF | 12,700 | 4,76 | 1,20 | 5,16 | 1,25 | 0,50 | 2,50 | 0,25 | 0,15 | 0,50 |
| CNMG 120404-SF | CNMG 431-SF | 12,700 | 4,76 | 0,40 | 5,16 | 1,50 | 0,60 | 3,00 | 0,15 | 0,10 | 0,23 |
| CNMG 120408-SF | CNMG 432-SF | 12,700 | 4,76 | 0,80 | 5,16 | 1,50 | 0,60 | 3,00 | 0,25 | 0,12 | 0,38 |
| CNMG 120412-SF | CNMG 433-SF | 12,700 | 4,76 | 1,20 | 5,16 | 1,50 | 0,60 | 3,00 | 0,35 | 0,15 | 0,55 |
| CNMG 120404-LC | CNMG 431-LC | 12,700 | 4,76 | 0,40 | 5,16 | 1,00 | 0,40 | 2,50 | 0,10 | 0,07 | 0,30 |
| CNMG 120408-LC | CNMG 432-LC | 12,700 | 4,76 | 0,80 | 5,16 | 1,50 | 0,40 | 2,50 | 0,15 | 0,10 | 0,40 |
| CNMG 120412-LC | CNMG 433-LC | 12,700 | 4,76 | 1,20 | 5,16 | 1,50 | 0,40 | 2,50 | 0,20 | 0,15 | 0,40 |
| CNMG 120404-MS | CNMG 431-MS | 12,700 | 4,76 | 0,40 | 5,16 | 1,50 | 0,20 | 3,60 | 0,15 | 0,10 | 0,20 |
| CNMG 120408-MS | CNMG 432-MS | 12,700 | 4,76 | 0,80 | 5,16 | 2,00 | 0,30 | 3,60 | 0,25 | 0,10 | 0,40 |
| CNMG 120412-MS | CNMG 433-MS | 12,700 | 4,76 | 1,20 | 5,16 | 2,40 | 0,40 | 3,60 | 0,30 | 0,15 | 0,60 |
| CNMG 120416-MS | CNMG 434-MS | 12,700 | 4,76 | 1,60 | 5,16 | 2,40 | 0,40 | 3,60 | 0,40 | 0,15 | 0,80 |
| CNMG 120404-GS | CNMG 431-GS | 12,700 | 4,76 | 0,40 | 5,16 | 1,50 | 0,15 | 2,50 | 0,20 | 0,10 | 0,30 |
| CNMG 120408-GS | CNMG 432-GS | 12,700 | 4,76 | 0,80 | 5,16 | 2,00 | 0,20 | 3,00 | 0,25 | 0,10 | 0,35 |
| CNMG 120412-GS | CNMG 433-GS | 12,700 | 4,76 | 1,20 | 5,16 | 2,50 | 0,30 | 4,00 | 0,30 | 0,10 | 0,45 |

CN = RHOMBIC 80° NEGATIVE

RÔMBICA 80° NEGATIVA | RÓMBICA 80° NEGATIVA

| | | | P | | | | | | | | M | | | | K | | | N | S | | | | | | | | | | |
|---|---|----------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|--|--|
| | | | CVD | | | | | | PVD | | CVD | | | PVD | | CVD | | | UNC | PVD | | | | | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 | | | |
| Inserts Pastilhas Plaquitas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 | | | |
|  Medium | 1121473 | CNMG 090304-MR | ⊗ | ⊗ | | ⊗ | | | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | | | |
| | 1121293 | CNMG 090308-MR | ⊗ | ⊗ | | ⊗ | | | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | | | |
| | 1121180 | CNMG 120404-MR | | | ⊗ | | ⊗ | | ⊗ | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | | |
| | 1121174 | CNMG 120408-MR | | | ⊗ | ⊗ | ⊗ | | ⊗ | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | | |
| | 1121198 | CNMG 120412-MR | ⊗ | ⊗ | | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | | |
| | 1121485 | CNMG 120416-MR | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | | |
| | 1121239 | CNMG 160608-MR | | | ⊗ | | ⊗ | | ⊗ | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | | |
| | 1121355 | CNMG 160612-MR | | | ⊗ | | ⊗ | | ⊗ | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | | |
| | 1121490 | CNMG 160616-MR | | | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | | |
| | 1121302 | CNMG 190612-MR | | | ⊗ | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | | |
| 1121301 | CNMG 190616-MR | | | ⊗ | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | | | |
|  Medium | 1123919 | CNMG 120404-PM | ⊗ | | ⊗ | | ⊗ | | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | | | |
| | 1123790 | CNMG 120408-PM | ⊗ | | ⊗ | | ⊗ | | | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | | |
| | 1123920 | CNMG 120412-PM | ⊗ | | ⊗ | | ⊗ | | | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | | |
| | 1123921 | CNMG 120416-PM | | | ⊗ | | ⊗ | | | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | | |
|  Medium | 1121344 | CNMG 120404-ST | | | | | | | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | | | |
| | 1121165 | CNMG 120408-ST | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | | |
| | 1121166 | CNMG 120412-ST | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | | |
| | 1121488 | CNMG 120416-ST | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | | |
| | 1121335 | CNMG 160608-ST | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | | |
| | 1121303 | CNMG 160612-ST | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | | |
| | 1121491 | CNMG 160616-ST | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | | |
| | 1121336 | CNMG 190612-ST | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | | |
| | 1121345 | CNMG 190616-ST | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | | |
| |  Medium Wiper | 1121339 | CNMG 120408-MW | | | ⊗ | | ⊗ | ⊗ | ⊗ | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | | |
| 1121191 | | CNMG 120412-MW | ⊗ | ⊗ | | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | | |

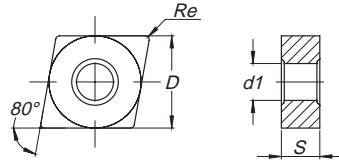
⊗ First choice | 1ª Escolha | 1ª Opción

⊗ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock

Insert Order Code: ⁽¹⁾ Geometry code + ⁽²⁾ Grade code

⊗ Stock Items | Itens de stock




○ Available under request | Disponível sob consulta | Disponible bajo consulta



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|----------------|---|------|------|------|--|------|------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| CNMG 090304-MR | CNMG 321-MR | 9,525 | 3,18 | 0,40 | 3,81 | 2,00 | 0,40 | 4,00 | 0,20 | 0,10 | 0,30 |
| CNMG 090308-MR | CNMG 322-MR | 9,525 | 3,18 | 0,80 | 3,81 | 2,00 | 0,50 | 4,00 | 0,30 | 0,15 | 0,50 |
| CNMG 120404-MR | CNMG 431-MR | 12,700 | 4,76 | 0,40 | 5,16 | 3,00 | 0,40 | 5,50 | 0,20 | 0,10 | 0,30 |
| CNMG 120408-MR | CNMG 432-MR | 12,700 | 4,76 | 0,80 | 5,16 | 3,00 | 0,50 | 5,50 | 0,30 | 0,15 | 0,50 |
| CNMG 120412-MR | CNMG 433-MR | 12,700 | 4,76 | 1,20 | 5,16 | 3,00 | 0,80 | 5,50 | 0,35 | 0,18 | 0,60 |
| CNMG 120416-MR | CNMG 434-MR | 12,700 | 4,76 | 1,60 | 5,16 | 3,00 | 1,00 | 5,50 | 0,40 | 0,23 | 0,65 |
| CNMG 160608-MR | CNMG 542-MR | 15,875 | 6,35 | 0,80 | 6,35 | 4,00 | 0,50 | 7,20 | 0,30 | 0,15 | 0,50 |
| CNMG 160612-MR | CNMG 543-MR | 15,875 | 6,35 | 1,20 | 6,35 | 4,00 | 0,80 | 7,20 | 0,35 | 0,18 | 0,60 |
| CNMG 160616-MR | CNMG 544-MR | 15,875 | 6,35 | 1,60 | 6,35 | 4,00 | 1,00 | 7,20 | 0,40 | 0,23 | 0,65 |
| CNMG 190612-MR | CNMG 643-MR | 19,050 | 6,35 | 1,20 | 7,94 | 4,00 | 0,80 | 8,60 | 0,35 | 0,18 | 0,60 |
| CNMG 190616-MR | CNMG 644-MR | 19,050 | 6,35 | 1,60 | 7,94 | 4,00 | 1,00 | 8,60 | 0,40 | 0,23 | 0,65 |
| CNMG 120404-PM | CNMG 431-PM | 12,700 | 4,76 | 0,40 | 5,16 | 3,00 | 0,40 | 5,50 | 0,20 | 0,10 | 0,30 |
| CNMG 120408-PM | CNMG 432-PM | 12,700 | 4,76 | 0,80 | 5,16 | 3,00 | 0,50 | 5,50 | 0,30 | 0,15 | 0,50 |
| CNMG 120412-PM | CNMG 433-PM | 12,700 | 4,76 | 1,20 | 5,16 | 3,00 | 0,80 | 5,50 | 0,35 | 0,18 | 0,60 |
| CNMG 120416-PM | CNMG 434-PM | 12,700 | 4,76 | 1,60 | 5,16 | 3,00 | 1,00 | 5,50 | 0,40 | 0,23 | 0,65 |
| CNMG 120404-ST | CNMG 431-ST | 12,700 | 4,76 | 0,40 | 5,16 | 2,50 | 0,20 | 5,00 | 0,22 | 0,15 | 0,26 |
| CNMG 120408-ST | CNMG 432-ST | 12,700 | 4,76 | 0,80 | 5,16 | 3,00 | 0,20 | 6,00 | 0,35 | 0,15 | 0,50 |
| CNMG 120412-ST | CNMG 433-ST | 12,700 | 4,76 | 1,20 | 5,16 | 3,00 | 0,30 | 6,00 | 0,40 | 0,15 | 0,60 |
| CNMG 120416-ST | CNMG 434-ST | 12,700 | 4,76 | 1,60 | 5,16 | 3,00 | 0,30 | 6,00 | 0,45 | 0,20 | 0,70 |
| CNMG 160608-ST | CNMG 542-ST | 15,875 | 6,35 | 0,80 | 6,35 | 4,00 | 0,20 | 8,00 | 0,35 | 0,15 | 0,50 |
| CNMG 160612-ST | CNMG 543-ST | 15,875 | 6,35 | 1,20 | 6,35 | 4,00 | 0,30 | 8,00 | 0,40 | 0,15 | 0,60 |
| CNMG 160616-ST | CNMG 544-ST | 15,875 | 6,35 | 1,60 | 6,35 | 4,00 | 0,30 | 8,00 | 0,45 | 0,20 | 0,70 |
| CNMG 190612-ST | CNMG 643-ST | 19,050 | 6,35 | 1,20 | 7,94 | 4,50 | 0,30 | 9,00 | 0,40 | 0,15 | 0,60 |
| CNMG 190616-ST | CNMG 644-ST | 19,050 | 6,35 | 1,60 | 7,94 | 4,50 | 0,30 | 9,00 | 0,45 | 0,20 | 0,70 |
| CNMG 120408-MW | CNMG 432-MW | 12,700 | 4,76 | 0,80 | 5,16 | 3,00 | 0,50 | 5,00 | 0,30 | 0,15 | 0,60 |
| CNMG 120412-MW | CNMG 433-MW | 12,700 | 4,76 | 1,20 | 5,16 | 3,50 | 0,80 | 6,00 | 0,50 | 0,20 | 0,90 |

CN = RHOMBIC 80° NEGATIVE

RÔMBICA 80° NEGATIVA | RÓMBICA 80° NEGATIVA

| | | | P | | | | | | | | M | | | | | | K | | | N | S | | | | | |
|--|-------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | | CVD | | | | | PVD | | | CVD | | | PVD | | | CVD | | | UNC | PVD | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 |
| Inserts Pastilhas Plaquetas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 |
|  CNMG-SS Roughing to Medium | 1121474 | CNMG 090304-SS | | | | | | | | | | | ⊗ | ⊗ | | | | | | | | | | | | |
| | 1121476 | CNMG 090308-SS | | | | | | | | | | | ⊗ | ⊗ | | | | | | | | | | | | |
| | 1121243 | CNMG 120404-SS | | | | | | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | | | | | | |
| | 1121201 | CNMG 120408-SS | | | | | | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | | | | | | |
| | 1121202 | CNMG 120412-SS | | | | | | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | | | | | | |
| | 1121487 | CNMG 120416-SS | | | | | | | | | | | ⊗ | | | | | | | | | | | | | |
| | 1121332 | CNMG 160608-SS | | | | | | | | | | | ⊗ | | | | | | | | | | | | | |
| | 1121333 | CNMG 160612-SS | | | | | | | | | | | | ⊗ | | | | | | | | | | | | |
| | 1121363 | CNMG 190612-SS | | | | | | | | | | | | ⊗ | | | | | | | | | | | | |
| | 1121364 | CNMG 190616-SS | | | | | | | | | | | | ⊗ | | | | | | | | | | | | |
|  CNMG-MA NEW Medium to Roughing | 1124504 | CNMG 160612-MA | | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | |
| | 1123785 | CNMG 160616-MA | | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | |
|  CNMG-HR Roughing | 1121193 | CNMG 120408-HR | ⊗ | | ⊗ | | ⊗ | | ⊗ | | | | | | | | | | | ⊗ | ⊗ | | | | | |
| | 1121192 | CNMG 120412-HR | ⊗ | | ⊗ | | ⊗ | | ⊗ | | | | | | | | | | | | ⊗ | ⊗ | | | | |
| | 1121484 | CNMG 120416-HR | | | ⊗ | | ⊗ | | | | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | |
| | 1121331 | CNMG 160608-HR | | | ⊗ | | ⊗ | | ⊗ | | | | | | | | | | | | ⊗ | ⊗ | | | | |
| | 1121358 | CNMG 160612-HR | | | ⊗ | | ⊗ | | ⊗ | | | | | | | | | | | | ⊗ | ⊗ | | | | |
| | 1121489 | CNMG 160616-HR | | | ⊗ | | ⊗ | | | | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | |
| | 1121359 | CNMG 190612-HR | | | ⊗ | | ⊗ | | ⊗ | | | | | | | | | | | | ⊗ | ⊗ | | | | |
| | 1121360 | CNMG 190616-HR | | ⊗ | ⊗ | | ⊗ | | ⊗ | | | | | | | | | | | | ⊗ | ⊗ | | | | |
| 1121636 | CNMG 250924-HR | | | | ⊗ | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | |

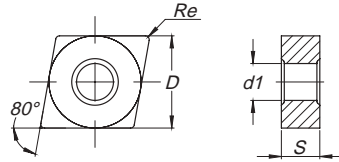
⊗ First choice | 1ª Escolha | 1ª Opción

⊗ Stock available until sold out | Stock disponible até acabar o stock | Stock disponible hasta acabar el stock

Insert Order Code: ⁽¹⁾Geometry code + ⁽²⁾Grade code

⊗ Stock Items | Itens de stock





○ Available under request | Disponível sob consulta | Disponible bajo consulta



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|----------------|---|------|------|------|--|------|-------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| CNMG 090304-SS | CNMG 321-SS | 9,525 | 3,18 | 0,40 | 3,81 | 2,00 | 0,50 | 2,50 | 0,20 | 0,10 | 0,25 |
| CNMG 090308-SS | CNMG 322-SS | 9,525 | 3,18 | 0,80 | 3,81 | 2,00 | 0,50 | 2,50 | 0,25 | 0,12 | 0,45 |
| CNMG 120404-SS | CNMG 431-SS | 12,700 | 4,76 | 0,40 | 5,16 | 3,00 | 0,50 | 5,70 | 0,20 | 0,10 | 0,25 |
| CNMG 120408-SS | CNMG 432-SS | 12,700 | 4,76 | 0,80 | 5,16 | 3,00 | 0,50 | 5,70 | 0,25 | 0,12 | 0,45 |
| CNMG 120412-SS | CNMG 433-SS | 12,700 | 4,76 | 1,20 | 5,16 | 3,00 | 0,50 | 5,70 | 0,30 | 0,15 | 0,60 |
| CNMG 120416-SS | CNMG 434-SS | 12,700 | 4,76 | 1,60 | 5,16 | 3,00 | 0,50 | 5,70 | 0,37 | 0,18 | 0,65 |
| CNMG 160608-SS | CNMG 542-SS | 15,875 | 6,35 | 0,80 | 6,35 | 4,00 | 0,50 | 7,20 | 0,25 | 0,12 | 0,45 |
| CNMG 160612-SS | CNMG 543-SS | 15,875 | 6,35 | 1,20 | 6,35 | 4,00 | 0,50 | 7,20 | 0,30 | 0,15 | 0,60 |
| CNMG 190612-SS | CNMG 643-SS | 19,050 | 6,35 | 1,20 | 7,94 | 4,00 | 0,50 | 8,50 | 0,30 | 0,15 | 0,60 |
| CNMG 190616-SS | CNMG 644-SS | 19,050 | 6,35 | 1,60 | 7,94 | 4,00 | 0,50 | 8,50 | 0,37 | 0,18 | 0,65 |
| CNMG 160612-MA | CNMG 543-MA | 15,875 | 6,35 | 1,20 | 6,35 | 4,00 | 1,50 | 8,00 | 0,40 | 0,20 | 0,65 |
| CNMG 160616-MA | CNMG 544-MA | 15,875 | 6,35 | 1,60 | 6,35 | 5,00 | 1,60 | 8,00 | 0,50 | 0,25 | 0,70 |
| CNMG 120408-HR | CNMG 432-HR | 12,700 | 4,76 | 0,80 | 5,16 | 4,00 | 1,00 | 7,00 | 0,35 | 0,20 | 0,55 |
| CNMG 120412-HR | CNMG 433-HR | 12,700 | 4,76 | 1,20 | 5,16 | 4,00 | 1,00 | 7,00 | 0,40 | 0,25 | 0,60 |
| CNMG 120416-HR | CNMG 434-HR | 12,700 | 4,76 | 1,60 | 5,16 | 4,00 | 1,50 | 7,00 | 0,50 | 0,32 | 0,75 |
| CNMG 160608-HR | CNMG 542-HR | 15,875 | 6,35 | 0,80 | 6,35 | 5,00 | 1,00 | 8,00 | 0,35 | 0,20 | 0,55 |
| CNMG 160612-HR | CNMG 543-HR | 15,875 | 6,35 | 1,20 | 6,35 | 5,00 | 1,00 | 8,00 | 0,40 | 0,25 | 0,60 |
| CNMG 160616-HR | CNMG 544-HR | 15,875 | 6,35 | 1,60 | 6,35 | 5,00 | 1,50 | 8,00 | 0,50 | 0,32 | 0,75 |
| CNMG 190612-HR | CNMG 643-HR | 19,050 | 6,35 | 1,20 | 7,94 | 5,50 | 2,00 | 10,00 | 0,40 | 0,25 | 0,70 |
| CNMG 190616-HR | CNMG 644-HR | 19,050 | 6,35 | 1,60 | 7,94 | 5,50 | 2,00 | 10,00 | 0,50 | 0,32 | 0,80 |
| CNMG 250924-HR | CNMG 866-HR | 25,400 | 9,52 | 2,40 | 9,12 | 6,00 | 2,00 | 15,00 | 0,60 | 0,40 | 1,00 |

CN = RHOMBIC 80° NEGATIVE

RÔMBICA 80° NEGATIVA | RÓMBICA 80° NEGATIVA

| | | | P | | | | | | | | M | | | | | | K | | | N | S | | | | | | | |
|---|-------------------------|----------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|--|
| | | | CVD | | | | | | | | PVD | | CVD | | | | | | PVD | | | CVD | UNC | PVD | | | | |
| | | | (2) Grade code | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 | | |
| Inserts Pastilhas Plaquetas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 | | |
|  CNMM-RP Roughing | 1124054 | CNMM 160608-RP | | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | | |
| | 1124055 | CNMM 160612-RP | | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | | |
| | 1124056 | CNMM 160616-RP | | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | | |
| CNMM-GR NEW  Roughing | 1124597 | CNMM 120408-GR | | | | | ⊗ | | | | | | | | | | | | | | | | | | | | | |
| | 1124596 | CNMM 120412-GR | | | | | ⊗ | | | | | | | | | | | | | | | | | | | | | |
| | 1121608 | CNMM 190612-HY | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | | |
| CNMM-HY  Heavy to Roughing | 1121252 | CNMM 190616-HY | | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | | |
| | 1121434 | CNMM 190624-HY | | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | |
| CNMM-HZ  Heavy to Roughing | 1121248 | CNMM 250924-HY | | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | 1121607 | CNMM 190612-HZ | | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | |
| | 1121251 | CNMM 190616-HZ | | | ⊗ | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | |
| | 1121435 | CNMM 190624-HZ | | | ⊗ | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | |
| 1121247 | CNMM 250924-HZ | | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | |

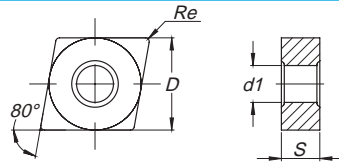
⊗ First choice | 1ª Escolha | 1ª Opción

⊗ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock

Insert Order Code: ⁽¹⁾ Geometry code + ⁽²⁾ Grade code

⊗ Stock items | Itens de stock





○ Available under request | Disponível sob consulta | Disponible bajo consulta



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|----------------|---|------|------|------|--|------|-------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| CNMM 160608-RP | CNMM 542-RP | 15,875 | 6,35 | 0,80 | 6,35 | 3,50 | 1,00 | 8,00 | 0,35 | 0,20 | 0,55 |
| CNMM 160612-RP | CNMM 543-RP | 15,875 | 6,35 | 1,20 | 6,35 | 3,50 | 1,00 | 8,00 | 0,25 | 0,25 | 0,60 |
| CNMM 160616-RP | CNMM 544-RP | 15,875 | 6,35 | 1,60 | 6,35 | 3,50 | 1,50 | 8,00 | 0,50 | 0,32 | 0,75 |
| CNMM 190612-RP | CNMM 643-RP | 19,050 | 6,35 | 1,20 | 7,94 | 5,50 | 2,00 | 10,00 | 0,40 | 0,25 | 0,70 |
| CNMM 190616-RP | CNMM 644-RP | 19,050 | 6,35 | 1,60 | 7,94 | 5,50 | 2,00 | 10,00 | 0,50 | 0,32 | 0,80 |
| CNMM 190624-RP | CNMM 646-RP | 19,050 | 6,35 | 2,40 | 7,94 | 6,00 | 2,00 | 12,00 | 0,60 | 0,35 | 1,20 |
| CNMM 120408-GR | CNMM 432-GR | 12,700 | 4,76 | 0,80 | 5,16 | 4,00 | 1,00 | 8,00 | 0,40 | 0,25 | 0,65 |
| CNMM 120412-GR | CNMM 433-GR | 12,700 | 4,76 | 1,20 | 5,16 | 5,00 | 1,50 | 8,50 | 0,50 | 0,30 | 0,70 |
| CNMM 190612-HY | CNMM 643-HY | 19,050 | 6,35 | 1,20 | 7,94 | 6,00 | 2,00 | 12,00 | 0,50 | 0,35 | 0,80 |
| CNMM 190616-HY | CNMM 644-HY | 19,050 | 6,35 | 1,60 | 7,94 | 6,00 | 2,00 | 12,00 | 0,60 | 0,35 | 1,00 |
| CNMM 190624-HY | CNMM 646-HY | 19,050 | 6,35 | 2,40 | 7,94 | 6,00 | 2,00 | 12,00 | 0,60 | 0,35 | 1,20 |
| CNMM 250924-HY | CNMM 866-HY | 25,400 | 9,52 | 2,40 | 9,12 | 8,00 | 2,50 | 15,00 | 0,70 | 0,40 | 1,40 |
| CNMM 190612-HZ | CNMM 643-HZ | 19,050 | 6,35 | 1,20 | 7,94 | 10,00 | 2,40 | 12,00 | 0,65 | 0,50 | 0,80 |
| CNMM 190616-HZ | CNMM 644-HZ | 19,050 | 6,35 | 1,60 | 7,94 | 10,00 | 2,40 | 12,00 | 0,80 | 0,50 | 1,10 |
| CNMM 190624-HZ | CNMM 646-HZ | 19,050 | 6,35 | 2,40 | 7,94 | 10,00 | 3,20 | 12,00 | 1,00 | 0,60 | 1,60 |
| CNMM 250924-HZ | CNMM 866-HZ | 25,400 | 9,52 | 2,40 | 9,12 | 10,00 | 3,20 | 17,00 | 1,00 | 0,60 | 1,60 |

DN = RHOMBIC 55° NEGATIVE

RÔMBICA 55° NEGATIVA | RÓMBICA 55° NEGATIVA

| | | | P | | | | | | | | M | | | | K | | | N | S | | | | | | | | | | |
|---|-------------------------|----------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----|----|--|
| | | | CVD | | | | | PVD | | | CVD | | | | PVD | | | CVD | UNC | PVD | | | | | | | | | |
| | | | (2) Grade code | | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 | |
| Inserts Pastilhas Plaquetas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 | | | |
|  DNMA Roughing | 1120975 | DNMA 110404 | | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1120312 | DNMA 150404 | | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1120313 | DNMA 150408 | | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1121178 | DNMA 150412 | | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1121496 | DNMA 150416 | | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1120314 | DNMA 150604 | | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1120315 | DNMA 150608 | | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1120316 | DNMA 150612 | | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1120317 | DNMA 150616 | | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
|  DNMG-MF Finishing | 1121497 | DNMG 110404-MF | | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1121499 | DNMG 110408-MF | | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121502 | DNMG 150404-MF | | ⊗ | ⊗ | ⊗ | ⊗ | | | ⊗ | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121504 | DNMG 150408-MF | | ⊗ | ⊗ | ⊗ | ⊗ | | | ⊗ | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121507 | DNMG 150412-MF | | ⊗ | ⊗ | ⊗ | ⊗ | | | ⊗ | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121515 | DNMG 150604-MF | | | ⊗ | ⊗ | ⊗ | | | ⊗ | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121516 | DNMG 150608-MF | | | ⊗ | ⊗ | ⊗ | | | ⊗ | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121517 | DNMG 150612-MF | | ⊗ | ⊗ | ⊗ | ⊗ | | | ⊗ | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
|  DNMG-SF Medium to Finishing | 1123749 | DNMG 110404-SF | | | | | | | | | | | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | |
| | 1123750 | DNMG 110408-SF | | | | | | | | | | | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | |
| | 1123751 | DNMG 150404-SF | | | | | | | | | | | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | |
| | 1123752 | DNMG 150408-SF | | | | | | | | | | | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | |
| | 1123753 | DNMG 150412-SF | | | | | | | | | | | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | |
| | 1123754 | DNMG 150604-SF | | | | | | | | | | | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | |
| | 1123755 | DNMG 150608-SF | | | | | | | | | | | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | |
| | 1123756 | DNMG 150612-SF | | | | | | | | | | | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | |
|  DNMG-LC Medium to Finishing | 1123662 | DNMG 150404-LC | | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | | | |
| | 1123663 | DNMG 150408-LC | | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | | | |
| | 1123664 | DNMG 150412-LC | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | | | |
| | 1122020 | DNMG 150604-LC | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | | | |
| | 1122007 | DNMG 150608-LC | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | | | |
| | 1123655 | DNMG 150612-LC | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | | | |

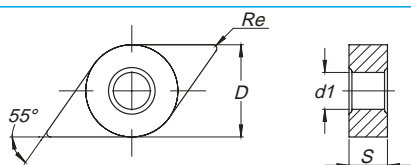
⊗ First choice | 1ª Escolha | 1ª Opción

⊗ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock

Insert Order Code: (1) Geometry code + (2) Grade code

⊗ Stock Items | Itens de stock





○ Available under request | Disponível sob consulta | Disponible bajo consulta



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|----------------|---|------|------|------|--|------|------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| DNMA 110404 | DNMA 331 | 9,525 | 4,76 | 0,40 | 3,81 | 2,00 | 0,20 | 3,50 | 0,15 | 0,10 | 0,30 |
| DNMA 150404 | DNMA 431 | 12,700 | 4,76 | 0,40 | 5,16 | 3,00 | 0,20 | 4,00 | 0,15 | 0,10 | 0,30 |
| DNMA 150408 | DNMA 432 | 12,700 | 4,76 | 0,80 | 5,16 | 3,00 | 0,20 | 6,00 | 0,35 | 0,15 | 0,60 |
| DNMA 150412 | DNMA 433 | 12,700 | 4,76 | 1,20 | 5,16 | 3,00 | 0,30 | 6,00 | 0,45 | 0,20 | 0,80 |
| DNMA 150416 | DNMA 434 | 12,700 | 4,76 | 1,60 | 5,16 | 3,00 | 0,30 | 6,00 | 0,55 | 0,20 | 1,00 |
| DNMA 150604 | DNMA 441 | 12,700 | 6,35 | 0,40 | 5,16 | 3,00 | 0,20 | 4,00 | 0,15 | 0,10 | 0,30 |
| DNMA 150608 | DNMA 442 | 12,700 | 6,35 | 0,80 | 5,16 | 3,00 | 0,20 | 6,00 | 0,35 | 0,15 | 0,60 |
| DNMA 150612 | DNMA 443 | 12,700 | 6,35 | 1,20 | 5,16 | 3,00 | 0,30 | 6,00 | 0,45 | 0,20 | 0,80 |
| DNMA 150616 | DNMA 444 | 12,700 | 6,35 | 1,60 | 5,16 | 3,00 | 0,30 | 6,00 | 0,55 | 0,20 | 1,00 |
| DNMG 110404-MF | DNMG 331-MF | 9,525 | 4,76 | 0,40 | 3,81 | 0,40 | 0,10 | 1,50 | 0,15 | 0,05 | 0,25 |
| DNMG 110408-MF | DNMG 332-MF | 9,525 | 4,76 | 0,80 | 3,81 | 0,40 | 0,10 | 1,50 | 0,20 | 0,10 | 0,40 |
| DNMG 150404-MF | DNMG 431-MF | 12,700 | 4,76 | 0,40 | 5,16 | 0,40 | 0,15 | 1,50 | 0,15 | 0,05 | 0,25 |
| DNMG 150408-MF | DNMG 432-MF | 12,700 | 4,76 | 0,80 | 5,16 | 0,40 | 0,20 | 1,50 | 0,20 | 0,10 | 0,40 |
| DNMG 150412-MF | DNMG 433-MF | 12,700 | 4,76 | 1,20 | 5,16 | 0,80 | 0,25 | 2,50 | 0,25 | 0,15 | 0,50 |
| DNMG 150604-MF | DNMG 441-MF | 12,700 | 6,35 | 0,40 | 5,16 | 0,40 | 0,10 | 1,50 | 0,15 | 0,05 | 0,25 |
| DNMG 150608-MF | DNMG 442-MF | 12,700 | 6,35 | 0,80 | 5,16 | 0,40 | 0,10 | 1,50 | 0,20 | 0,10 | 0,40 |
| DNMG 150612-MF | DNMG 443-MF | 12,700 | 6,35 | 1,20 | 5,16 | 0,80 | 0,20 | 2,50 | 0,25 | 0,15 | 0,50 |
| DNMG 110404-SF | DNMG 331-SF | 9,525 | 4,76 | 0,40 | 3,81 | 1,50 | 0,60 | 3,00 | 0,15 | 0,10 | 0,23 |
| DNMG 110408-SF | DNMG 332-SF | 9,525 | 4,76 | 0,80 | 3,81 | 1,50 | 0,60 | 3,00 | 0,25 | 0,12 | 0,38 |
| DNMG 150404-SF | DNMG 431-SF | 12,700 | 4,76 | 0,40 | 5,16 | 1,50 | 0,60 | 3,00 | 0,15 | 0,10 | 0,23 |
| DNMG 150408-SF | DNMG 432-SF | 12,700 | 4,76 | 0,80 | 5,16 | 1,50 | 0,60 | 3,00 | 0,25 | 0,12 | 0,38 |
| DNMG 150412-SF | DNMG 433-SF | 12,700 | 4,76 | 1,20 | 5,16 | 1,50 | 0,60 | 3,00 | 0,35 | 0,15 | 0,55 |
| DNMG 150604-SF | DNMG 441-SF | 12,700 | 6,35 | 0,40 | 5,16 | 1,50 | 0,60 | 3,00 | 0,15 | 0,10 | 0,23 |
| DNMG 150608-SF | DNMG 442-SF | 12,700 | 6,35 | 0,80 | 5,16 | 1,50 | 0,60 | 3,00 | 0,25 | 0,12 | 0,38 |
| DNMG 150612-SF | DNMG 443-SF | 12,700 | 6,35 | 1,20 | 5,16 | 1,50 | 0,60 | 3,00 | 0,35 | 0,15 | 0,55 |
| DNMG 150404-LC | DNMG 431-LC | 12,700 | 4,76 | 0,40 | 5,16 | 1,00 | 0,40 | 2,50 | 0,15 | 0,07 | 0,30 |
| DNMG 150408-LC | DNMG 432-LC | 12,700 | 4,76 | 0,80 | 5,16 | 1,50 | 0,40 | 2,50 | 0,20 | 0,10 | 0,40 |
| DNMG 150412-LC | DNMG 433-LC | 12,700 | 4,76 | 1,20 | 5,16 | 2,00 | 0,80 | 3,00 | 0,25 | 0,15 | 0,50 |
| DNMG 150604-LC | DNMG 441-LC | 12,700 | 6,35 | 0,40 | 5,16 | 1,50 | 0,40 | 3,00 | 0,15 | 0,07 | 0,30 |
| DNMG 150608-LC | DNMG 442-LC | 12,700 | 6,35 | 0,80 | 5,16 | 2,00 | 0,40 | 3,00 | 0,20 | 0,10 | 0,40 |
| DNMG 150612-LC | DNMG 443-LC | 12,700 | 6,35 | 1,20 | 5,16 | 2,50 | 0,80 | 3,50 | 0,25 | 0,15 | 0,50 |

DN = RHOMBIC 55° NEGATIVE

RÔMBICA 55° NEGATIVA | RÓMBICA 55° NEGATIVA

| | | | P | | | | | | | | M | | | | K | | | N | S | | | | | | | | |
|--|---|----------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|
| | | | CVD | | | | | PVD | | | CVD | | | PVD | | CVD | UNC | PVD | | | | | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 | |
| Inserts Pastilhas Plaquetas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 | |
|  DNMG-MS Medium | 1121503 | DNMG 150404-MS | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121505 | DNMG 150408-MS | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121509 | DNMG 150412-MS | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121513 | DNMG 150416-MS | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121927 | DNMG 150604-MS | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121928 | DNMG 150608-MS | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1122030 | DNMG 150612-MS | | | | | | | | | | | | | | | | | | | | | | | | | |
| |  DNMG-GS Medium to Finishing | 1124688 | DNMG 110404-GS | | | | | | | | | | | | | | | | | | | | | | | | |
| 1124689 | | DNMG 110408-GS | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1124511 | | DNMG 150404-GS | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1124512 | | DNMG 150408-GS | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1124513 | | DNMG 150412-GS | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1124682 | | DNMG 150604-GS | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1124683 | | DNMG 150608-GS | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1124684 | | DNMG 150612-GS | | | | | | | | | | | | | | | | | | | | | | | | | |
|  DNMG-MR Medium | 1121498 | DNMG 110404-MR | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121500 | DNMG 110408-MR | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121218 | DNMG 150404-MR | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121219 | DNMG 150408-MR | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121508 | DNMG 150412-MR | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121224 | DNMG 150604-MR | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121328 | DNMG 150608-MR | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121518 | DNMG 150612-MR | | | | | | | | | | | | | | | | | | | | | | | | | |
|  DNMG-PM Medium | 1123924 | DNMG 150404-PM | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1123916 | DNMG 150408-PM | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1123925 | DNMG 150412-PM | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1123926 | DNMG 150416-PM | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1124065 | DNMG 150604-PM | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1123777 | DNMG 150608-PM | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1124066 | DNMG 150612-PM | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1124082 | DNMG 150616-PM | | | | | | | | | | | | | | | | | | | | | | | | | |

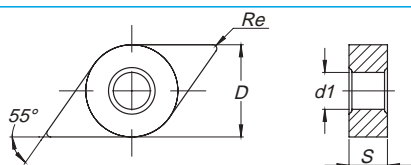
🔴 First choice | 1ª Escolha | 1ª Opción

🟩 Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock

Insert Order Code: ⁽¹⁾ Geometry code + ⁽²⁾ Grade code

🟦 Stock Items | Itens de stock


🟨 Available under request | Disponível sob consulta | Disponible bajo consulta



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|----------------|---|------|------|------|--|------|------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| DNMG 150404-MS | DNMG 431-MS | 12,700 | 4,76 | 0,40 | 5,16 | 1,50 | 0,20 | 3,60 | 0,15 | 0,10 | 0,20 |
| DNMG 150408-MS | DNMG 432-MS | 12,700 | 4,76 | 0,80 | 5,16 | 2,00 | 0,30 | 3,80 | 0,25 | 0,10 | 0,40 |
| DNMG 150412-MS | DNMG 433-MS | 12,700 | 4,76 | 1,20 | 5,16 | 2,50 | 0,40 | 4,00 | 0,30 | 0,15 | 0,60 |
| DNMG 150416-MS | DNMG 434-MS | 12,700 | 4,76 | 1,60 | 5,16 | 2,80 | 0,40 | 4,50 | 0,40 | 0,15 | 0,80 |
| DNMG 150604-MS | DNMG 441-MS | 12,700 | 6,35 | 0,40 | 5,16 | 1,50 | 0,20 | 3,60 | 0,15 | 0,10 | 0,20 |
| DNMG 150608-MS | DNMG 442-MS | 12,700 | 6,35 | 0,80 | 5,16 | 2,00 | 0,30 | 4,00 | 0,25 | 0,10 | 0,40 |
| DNMG 150612-MS | DNMG 443-MS | 12,700 | 6,35 | 1,20 | 5,16 | 2,80 | 0,40 | 4,50 | 0,30 | 0,15 | 0,60 |
| DNMG 110404-GS | DNMG 331-GS | 9,525 | 4,76 | 0,40 | 3,81 | 1,50 | 0,15 | 2,00 | 0,20 | 0,10 | 0,25 |
| DNMG 110408-GS | DNMG 332-GS | 9,525 | 4,76 | 0,80 | 3,81 | 2,00 | 0,20 | 2,50 | 0,25 | 0,10 | 0,30 |
| DNMG 150404-GS | DNMG 431-GS | 12,700 | 4,76 | 0,40 | 5,16 | 1,50 | 0,15 | 2,00 | 0,20 | 0,10 | 0,25 |
| DNMG 150408-GS | DNMG 432-GS | 12,700 | 4,76 | 0,80 | 5,16 | 2,00 | 0,20 | 2,50 | 0,25 | 0,10 | 0,30 |
| DNMG 150412-GS | DNMG 433-GS | 12,700 | 4,76 | 1,20 | 5,16 | 2,50 | 0,30 | 3,00 | 0,30 | 0,10 | 0,35 |
| DNMG 150604-GS | DNMG 441-GS | 12,700 | 6,35 | 0,40 | 5,16 | 1,50 | 0,15 | 2,00 | 0,20 | 0,10 | 0,25 |
| DNMG 150608-GS | DNMG 442-GS | 12,700 | 6,35 | 0,80 | 5,16 | 2,00 | 0,20 | 2,50 | 0,25 | 0,10 | 0,30 |
| DNMG 150612-GS | DNMG 443-GS | 12,700 | 6,35 | 1,20 | 5,16 | 2,50 | 0,30 | 3,00 | 0,30 | 0,10 | 0,35 |
| DNMG 110404-MR | DNMG 331-MR | 9,525 | 4,76 | 0,40 | 3,81 | 2,00 | 0,40 | 5,00 | 0,20 | 0,10 | 0,30 |
| DNMG 110408-MR | DNMG 332-MR | 9,525 | 4,76 | 0,80 | 3,81 | 2,00 | 0,50 | 5,00 | 0,30 | 0,15 | 0,50 |
| DNMG 150404-MR | DNMG 431-MR | 12,700 | 4,76 | 0,40 | 5,16 | 3,00 | 0,40 | 6,00 | 0,20 | 0,10 | 0,30 |
| DNMG 150408-MR | DNMG 432-MR | 12,700 | 4,76 | 0,80 | 5,16 | 3,00 | 0,50 | 6,00 | 0,30 | 0,15 | 0,50 |
| DNMG 150412-MR | DNMG 433-MR | 12,700 | 4,76 | 1,20 | 5,16 | 3,00 | 0,80 | 6,00 | 0,35 | 0,18 | 0,60 |
| DNMG 150604-MR | DNMG 441-MR | 12,700 | 6,35 | 0,40 | 5,16 | 3,00 | 0,40 | 6,00 | 0,20 | 0,10 | 0,30 |
| DNMG 150608-MR | DNMG 442-MR | 12,700 | 6,35 | 0,80 | 5,16 | 3,00 | 0,50 | 6,00 | 0,30 | 0,15 | 0,50 |
| DNMG 150612-MR | DNMG 443-MR | 12,700 | 6,35 | 1,20 | 5,16 | 3,00 | 0,80 | 6,00 | 0,35 | 0,18 | 0,60 |
| DNMG 150616-MR | DNMG 444-MR | 12,700 | 6,35 | 1,60 | 5,16 | 3,00 | 1,00 | 6,00 | 0,40 | 0,23 | 0,65 |
| DNMG 150404-PM | DNMG 431-PM | 12,700 | 4,76 | 0,40 | 5,16 | 3,00 | 0,40 | 6,00 | 0,20 | 0,10 | 0,30 |
| DNMG 150408-PM | DNMG 432-PM | 12,700 | 4,76 | 0,80 | 5,16 | 3,00 | 0,50 | 6,00 | 0,30 | 0,15 | 0,50 |
| DNMG 150412-PM | DNMG 433-PM | 12,700 | 4,76 | 1,20 | 5,16 | 3,00 | 0,80 | 6,00 | 0,35 | 0,18 | 0,60 |
| DNMG 150416-PM | DNMG 434-PM | 12,700 | 4,76 | 1,60 | 5,16 | 3,00 | 1,00 | 6,00 | 0,40 | 0,23 | 0,65 |
| DNMG 150604-PM | DNMG 441-PM | 12,700 | 6,35 | 0,40 | 5,16 | 2,50 | 0,50 | 5,00 | 0,25 | 0,15 | 0,40 |
| DNMG 150608-PM | DNMG 442-PM | 12,700 | 6,35 | 0,80 | 5,16 | 3,00 | 0,50 | 6,00 | 0,30 | 0,15 | 0,50 |
| DNMG 150612-PM | DNMG 443-PM | 12,700 | 6,35 | 1,20 | 5,16 | 3,50 | 0,50 | 7,00 | 0,35 | 0,20 | 0,60 |
| DNMG 150616-PM | DNMG 444-PM | 12,70 | 6,35 | 1,60 | 5,16 | 3,00 | 1,00 | 6,00 | 0,40 | 0,23 | 0,65 |

DN = RHOMBIC 55° NEGATIVE

RÔMBICA 55° NEGATIVA | RÓMBICA 55° NEGATIVA

| | | | P | | | | | | | | M | | | | | | K | | | N | S | | | | | | |
|--|-------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|
| | | | CVD | | | | | | PVD | | CVD | | | PVD | | | CVD | | | UNC | PVD | | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 | |
| Inserts Pastilhas Plaquetas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 | |
|  DNMG-ST Medium | 1121346 | DNMG 110404-ST | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1121347 | DNMG 110408-ST | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121255 | DNMG 150404-ST | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121256 | DNMG 150408-ST | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121512 | DNMG 150412-ST | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121514 | DNMG 150416-ST | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121257 | DNMG 150604-ST | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121258 | DNMG 150608-ST | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121521 | DNMG 150612-ST | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121523 | DNMG 150616-ST | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |

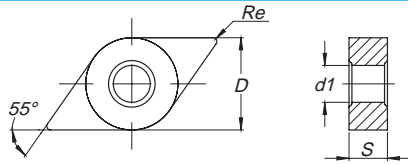
⊗ First choice | 1ª Escolha | 1ª Opción

⊗ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock

Insert Order Code: ⁽¹⁾Geometry code + ⁽²⁾Grade code

⊗ Stock Items | Itens de stock








○ Available under request | Disponível sob consulta | Disponible bajo consulta



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|----------------|---|------|------|------|--|------|------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| DNMG 110404-ST | DNMG 331-ST | 9,525 | 4,76 | 0,40 | 3,81 | 2,00 | 0,20 | 3,50 | 0,20 | 0,15 | 0,30 |
| DNMG 110408-ST | DNMG 332-ST | 9,525 | 4,76 | 0,80 | 3,81 | 2,00 | 0,20 | 3,50 | 0,35 | 0,15 | 0,50 |
| DNMG 150404-ST | DNMG 431-ST | 12,700 | 4,76 | 0,40 | 5,16 | 2,50 | 0,20 | 5,00 | 0,20 | 0,15 | 0,30 |
| DNMG 150408-ST | DNMG 432-ST | 12,700 | 4,76 | 0,80 | 5,16 | 2,50 | 0,50 | 5,00 | 0,35 | 0,15 | 0,50 |
| DNMG 150412-ST | DNMG 433-ST | 12,700 | 4,76 | 1,20 | 5,16 | 3,00 | 0,50 | 6,00 | 0,50 | 0,25 | 0,70 |
| DNMG 150416-ST | DNMG 434-ST | 12,700 | 4,76 | 1,60 | 5,16 | 3,00 | 0,30 | 6,00 | 0,60 | 0,25 | 1,00 |
| DNMG 150604-ST | DNMG 441-ST | 12,700 | 6,35 | 0,40 | 5,16 | 2,50 | 0,20 | 5,00 | 0,20 | 0,15 | 0,30 |
| DNMG 150608-ST | DNMG 442-ST | 12,700 | 6,35 | 0,80 | 5,16 | 2,50 | 0,20 | 5,00 | 0,35 | 0,15 | 0,50 |
| DNMG 150612-ST | DNMG 443-ST | 12,700 | 6,35 | 1,20 | 5,16 | 3,00 | 0,30 | 6,00 | 0,50 | 0,15 | 0,70 |
| DNMG 150616-ST | DNMG 444-ST | 12,700 | 6,35 | 1,60 | 5,16 | 3,00 | 0,30 | 6,00 | 0,60 | 0,25 | 1,00 |

DN = RHOMBIC 55° NEGATIVE

RÔMBICA 55° NEGATIVA | RÓMBICA 55° NEGATIVA

| | | | P | | | | | | | | M | | | | K | | | N | S | | | | | | | |
|---|-------------------------|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | | CVD | | | | | PVD | | | CVD | | | PVD | | CVD | UNC | PVD | | | | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 |
| Inserts Pastilhas Plaquitas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 |
|  | 1121374 | DNMG 150408-MW | ⊕ | ⊕ | ⊕ | ⊕ | ⊕ | ⊕ | | | | | | | | | | | ⊕ | ⊕ | ⊕ | | | | | |
| | 1121510 | DNMG 150412-MW | ⊕ | ⊕ | ⊕ | ⊕ | ⊕ | ⊕ | | | | | | | | | | | ⊕ | ⊕ | ⊕ | | | | | |
| | 1121375 | DNMG 150608-MW | | | ⊕ | | ⊕ | ⊕ | | | | | | | | | | | ⊕ | ⊕ | ⊕ | | | | | |
| | 1121519 | DNMG 150612-MW | ⊕ | ⊕ | ⊕ | ⊕ | ⊕ | ⊕ | | | | | | | | | | | ⊕ | ⊕ | ⊕ | | | | | |
|  | 1121501 | DNMG 110408-SS | | | | | | | | | | ⊕ | ⊕ | ⊕ | ⊕ | | | | | | | | ⊕ | | ⊕ | |
| | 1121291 | DNMG 150404-SS | | | | | | | | | | ⊕ | ⊕ | ⊕ | ⊕ | | | | | | | | ⊕ | | ⊕ | |
| | 1121292 | DNMG 150408-SS | | | | | | | | | | ⊕ | ⊕ | ⊕ | ⊕ | | | | | | | | ⊕ | | ⊕ | |
| | 1121511 | DNMG 150412-SS | | | | | | | | | | ⊕ | ⊕ | ⊕ | ⊕ | | | | | | | | ⊕ | | ⊕ | |
| | 1121284 | DNMG 150604-SS | | | | | | | | | | ⊕ | ⊕ | ⊕ | ⊕ | | | | | | | | ⊕ | | ⊕ | |
| | 1121285 | DNMG 150608-SS | | | | | | | | | | ⊕ | ⊕ | ⊕ | ⊕ | | | | | | | | ⊕ | | ⊕ | |
| | 1121520 | DNMG 150612-SS | | | | | | | | | | ⊕ | ⊕ | ⊕ | ⊕ | | | | | | | | ⊕ | | ⊕ | |
| | 1121287 | DNMG 150616-SS | | | | | | | | | | ⊕ | ⊕ | ⊕ | ⊕ | | | | | | | | ⊕ | | ⊕ | |
|  | 1121253 | DNMG 150408-HR | ⊕ | ⊕ | ⊕ | ⊕ | ⊕ | | ⊕ | | | | | | | | | | ⊕ | ⊕ | ⊕ | | | | | |
| | 1121506 | DNMG 150412-HR | ⊕ | ⊕ | | ⊕ | ⊕ | ⊕ | | | | | | | | | | | ⊕ | ⊕ | ⊕ | | | | | |
| | 1121254 | DNMG 150608-HR | | | ⊕ | | ⊕ | | ⊕ | | | | | | | | | | ⊕ | ⊕ | ⊕ | | | | | |
| | 1121362 | DNMG 150612-HR | ⊕ | ⊕ | | ⊕ | ⊕ | | ⊕ | | | | | | | | | | ⊕ | ⊕ | ⊕ | | | | | |
| | 1121340 | DNMG 150616-HR | ⊕ | ⊕ | ⊕ | ⊕ | ⊕ | | ⊕ | | | | | | | | | | ⊕ | ⊕ | ⊕ | | | | | |
|  | 1124205 | DNMM 150612-RP | | | ⊕ | | ⊕ | | | | | | | | | | | | | | | | | | | |
|  | 1120351 | DNMX 150604-L02 | ⊕ | ⊕ | ⊕ | ⊕ | ⊕ | | | | | | | | | | | | | | | | | | | |
| | 1120353 | DNMX 150604-R02 | ⊕ | ⊕ | ⊕ | ⊕ | ⊕ | | | | | | | | | | | | | | | | | | | |
| | 1120355 | DNMX 150608-L02 | ⊕ | ⊕ | ⊕ | ⊕ | ⊕ | | | | | | | | | | | | | | | | | | | |
| | 1120357 | DNMX 150608-R02 | | ⊕ | | ⊕ | ⊕ | | | | | | | | | | | | | | | | | | | |
|  | 1123983 | DNMX 150604-L03 | ⊕ | ⊕ | | ⊕ | ⊕ | | | | | | | | | | | | | | | | | | | |
| | 1123815 | DNMX 150604-R03 | ⊕ | ⊕ | | ⊕ | ⊕ | | | | | | | | | | | | | | | | | | | |
| | 1123796 | DNMX 150608-L03 | | ⊕ | | ⊕ | ⊕ | | | | | | | | | | | | | | | | | | | |
| | 1123795 | DNMX 150608-R03 | | ⊕ | | ⊕ | ⊕ | | | | | | | | | | | | | | | | | | | |
|  | 1120348 | DNMX 150408-L01 | | | ⊕ | | | | | | | | | | | | | | | | | | | | | |
| | 1120349 | DNMX 150408-R01 | | | ⊕ | | | | | | | | | | | | | | | | | | | | | |
| | 1120350 | DNMX 150604-L01 | ⊕ | ⊕ | ⊕ | | | | | | | | | | | | | | | | | | | | | |
| | 1120352 | DNMX 150604-R01 | ⊕ | ⊕ | | | | | | | | | | | | | | | | | | | | | | |
| | 1120354 | DNMX 150608-L01 | ⊕ | ⊕ | | | | | | | | | | | | | | | | | | | | | | |
| | 1120356 | DNMX 150608-R01 | | ⊕ | | | | | | | | | | | | | | | | | | | | | | |

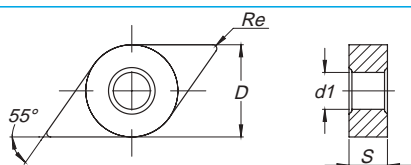
⊕ First choice | 1ª Escolha | 1ª Opción

⊕ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock

Insert Order Code: (1) Geometry code + (2) Grade code

⊕ Stock Items | Itens de stock



○ Available under request | Disponível sob consulta | Disponible bajo consulta



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|-----------------|----------------|---|------|------|------|--|------|------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| DNMG 150408-MW | DNMG 432-MW | 12,700 | 4,76 | 0,80 | 5,16 | 2,50 | 0,30 | 4,00 | 0,35 | 0,15 | 0,60 |
| DNMG 150412-MW | DNMG 433-MW | 12,700 | 4,76 | 1,20 | 5,16 | 3,00 | 0,50 | 5,00 | 0,50 | 0,25 | 0,90 |
| DNMG 150608-MW | DNMG 442-MW | 12,700 | 6,35 | 0,80 | 5,16 | 3,00 | 0,30 | 4,50 | 0,35 | 0,15 | 0,60 |
| DNMG 150612-MW | DNMG 443-MW | 12,700 | 6,35 | 1,20 | 5,16 | 3,50 | 0,50 | 5,50 | 0,50 | 0,25 | 0,90 |
| DNMG 110408-SS | DNMG 332-SS | 9,525 | 4,76 | 0,80 | 3,81 | 2,00 | 0,50 | 4,40 | 0,25 | 0,12 | 0,45 |
| DNMG 150404-SS | DNMG 431-SS | 12,700 | 4,76 | 0,40 | 5,16 | 3,00 | 0,30 | 6,00 | 0,25 | 0,10 | 0,30 |
| DNMG 150408-SS | DNMG 432-SS | 12,700 | 4,76 | 0,80 | 5,16 | 3,00 | 0,50 | 6,40 | 0,25 | 0,12 | 0,45 |
| DNMG 150412-SS | DNMG 433-SS | 12,700 | 4,76 | 1,20 | 5,16 | 3,00 | 0,50 | 6,40 | 0,30 | 0,15 | 0,60 |
| DNMG 150604-SS | DNMG 441-SS | 12,700 | 6,35 | 0,40 | 5,16 | 3,00 | 0,30 | 6,00 | 0,25 | 0,10 | 0,30 |
| DNMG 150608-SS | DNMG 442-SS | 12,700 | 6,35 | 0,80 | 5,16 | 3,00 | 0,50 | 6,40 | 0,25 | 0,12 | 0,45 |
| DNMG 150612-SS | DNMG 443-SS | 12,700 | 6,35 | 1,20 | 5,16 | 3,00 | 0,50 | 6,40 | 0,30 | 0,15 | 0,60 |
| DNMG 150616-SS | DNMG 444-SS | 12,700 | 6,35 | 1,60 | 5,16 | 3,00 | 0,50 | 6,40 | 0,50 | 0,20 | 1,00 |
| DNMG 150408-HR | DNMG 432-HR | 12,700 | 4,76 | 0,80 | 5,16 | 4,00 | 0,80 | 6,00 | 0,35 | 0,20 | 0,55 |
| DNMG 150412-HR | DNMG 433-HR | 12,700 | 4,76 | 1,20 | 5,16 | 4,00 | 1,00 | 6,00 | 0,40 | 0,25 | 0,70 |
| DNMG 150608-HR | DNMG 442-HR | 12,700 | 6,35 | 0,80 | 5,16 | 4,00 | 0,80 | 6,00 | 0,35 | 0,20 | 0,55 |
| DNMG 150612-HR | DNMG 443-HR | 12,700 | 6,35 | 1,20 | 5,16 | 4,00 | 1,00 | 6,00 | 0,40 | 0,25 | 0,70 |
| DNMG 150616-HR | DNMG 444-HR | 12,700 | 6,35 | 1,60 | 5,16 | 4,00 | 1,50 | 6,00 | 0,50 | 0,30 | 0,80 |
| DNMM 150612-RP | DNMM 443-RP | 12,700 | 6,35 | 1,20 | 5,16 | 4,00 | 1,00 | 6,00 | 0,40 | 0,25 | 0,70 |
| DNMX 150604-L02 | DNMX 441-L02 | 12,700 | 6,35 | 0,40 | 5,16 | 2,50 | 0,70 | 5,00 | 0,20 | 0,14 | 0,25 |
| DNMX 150604-R02 | DNMX 441-R02 | 12,700 | 6,35 | 0,40 | 5,16 | 2,50 | 0,70 | 5,00 | 0,20 | 0,14 | 0,25 |
| DNMX 150608-L02 | DNMX 442-L02 | 12,700 | 6,35 | 0,80 | 5,16 | 3,00 | 0,80 | 5,00 | 0,35 | 0,14 | 0,50 |
| DNMX 150608-R02 | DNMX 442-R02 | 12,700 | 6,35 | 0,80 | 5,16 | 3,00 | 0,80 | 5,00 | 0,35 | 0,14 | 0,50 |
| DNMX 150604-L03 | DNMX 441-L03 | 12,700 | 6,35 | 0,40 | 5,16 | 2,70 | 0,80 | 5,50 | 0,20 | 0,15 | 0,25 |
| DNMX 150604-R03 | DNMX 441-R03 | 12,700 | 6,35 | 0,40 | 5,16 | 2,70 | 0,80 | 5,50 | 0,20 | 0,15 | 0,25 |
| DNMX 150608-L03 | DNMX 442-L03 | 12,700 | 6,35 | 0,80 | 5,16 | 3,20 | 1,00 | 6,00 | 0,35 | 0,16 | 0,50 |
| DNMX 150608-R03 | DNMX 442-R03 | 12,700 | 6,35 | 0,80 | 5,16 | 3,20 | 1,00 | 6,00 | 0,35 | 0,16 | 0,50 |
| DNMX 150408-L01 | DNMX 432-L01 | 12,700 | 4,76 | 0,80 | 5,16 | 2,50 | 1,00 | 5,00 | 0,35 | 0,20 | 0,50 |
| DNMX 150408-R01 | DNMX 432-R01 | 12,700 | 4,76 | 0,80 | 5,16 | 2,50 | 1,00 | 5,00 | 0,35 | 0,20 | 0,50 |
| DNMX 150604-L01 | DNMX 441-L01 | 12,700 | 6,35 | 0,40 | 5,16 | 3,00 | 1,50 | 6,00 | 0,25 | 0,15 | 0,30 |
| DNMX 150604-R01 | DNMX 441-R01 | 12,700 | 6,35 | 0,40 | 5,16 | 3,00 | 1,50 | 6,00 | 0,25 | 0,15 | 0,30 |
| DNMX 150608-L01 | DNMX 442-L01 | 12,700 | 6,35 | 0,80 | 5,16 | 3,50 | 2,00 | 6,50 | 0,35 | 0,20 | 0,50 |
| DNMX 150608-R01 | DNMX 442-R01 | 12,700 | 6,35 | 0,80 | 5,16 | 3,50 | 2,00 | 6,50 | 0,35 | 0,20 | 0,50 |

KN = PARALLELOGRAM 55° NEGATIVE

PARALELOGRAMA 55° NEGATIVA | PARALELOGRAMO 55° NEGATIVA

| | | | P | | | | | | | | M | | | | K | | | N | S | | | | | | | |
|---|-------------------------|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | | CVD | | | | | PVD | | | CVD | | | | PVD | | | CVD | UNC | PVD | | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 |
| Inserts Pastilhas Plaquitas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 |
|  KNUX-01 Finishing | 1120368 | KNUX 160405-L01-PD | | | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | 1120371 | KNUX 160405-R01-PD | | | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | |
|  KNUX-02 Medium | 1120374 | KNUX 160410-L02 | | | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | 1120376 | KNUX 160410-R02 | | | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | |

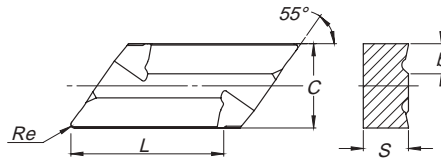
⊗ First choice | 1ª Escolha | 1ª Opción

⊕ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock

Insert Order Code: ⁽¹⁾Geometry code + ⁽²⁾Grade code

⊖ Stock items | Itens de stock


○ Available under request | Disponível sob consulta | Disponible bajo consulta



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|-----------------|-----------------|---|-------|-----|------|-----|--|------|------|-------------|------|------|
| | | L | C | Re | S | b | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| KNUX 160405-L01 | KNUX 160405-L01 | 16,50 | 9,525 | 0,5 | 4,76 | 2,5 | 3,00 | 1,00 | 6,00 | 0,30 | 0,20 | 0,35 |
| KNUX 160405-R01 | KNUX 160405-R01 | 16,50 | 9,525 | 0,5 | 4,76 | 2,5 | 3,00 | 1,00 | 6,00 | 0,30 | 0,20 | 0,35 |
| KNUX 160410-L02 | KNUX 160410-L02 | 16,50 | 9,525 | 1,0 | 4,76 | 3,2 | 4,00 | 1,50 | 6,00 | 0,50 | 0,40 | 0,70 |
| KNUX 160410-R02 | KNUX 160410-R02 | 16,50 | 9,525 | 1,0 | 4,76 | 3,2 | 4,00 | 1,50 | 6,00 | 0,50 | 0,40 | 0,70 |

RN = ROUND R° NEGATIVE

REDONDA R° NEGATIVA | REDONDA R° NEGATIVA

| | | | P | | | | | | | | M | | | | | | K | | | N | S | | | | | | |
|--|-------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|
| | | | CVD | | | | | | PVD | | CVD | | | PVD | | | CVD | | | UNC | PVD | | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 | |
| Inserts Pastilhas Plaquitas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PH5215 | PH5225 | PH5240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 | |
|  RNMG-ST Medium | 1120439 | RNMG 090300-ST | | | | | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | 1120440 | RNMG 120400-ST | | | | | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | 1120441 | RNMG 150600-ST | | | | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | 1120442 | RNMG 190600-ST | | | | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | 1120443 | RNMG 250900-ST | | ⊗ | | ⊗ | ⊗ | | | | | | | | | | | | | | ⊗ | | | | | | |

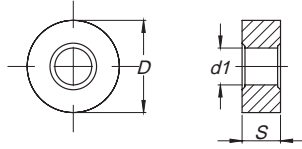
⊗ First choice | 1ª Escolha | 1ª Opción

⊗ Stock available until sold out | Stock disponible até acabar o stock | Stock disponible hasta acabar el stock

Insert Order Code: ⁽¹⁾Geometry code + ⁽²⁾Grade code

⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|----------------|---|------|----|------|--|------|-------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| RNMG 090300-ST | RNMG 320-ST | 9,525 | 3,18 | - | 3,18 | 2,30 | 0,90 | 4,50 | 0,30 | 0,10 | 0,90 |
| RNMG 120400-ST | RNMG 430-ST | 12,700 | 4,76 | - | 5,16 | 3,00 | 1,20 | 4,80 | 0,40 | 0,12 | 1,20 |
| RNMG 150600-ST | RNMG 540-ST | 15,875 | 6,35 | - | 6,35 | 3,80 | 1,50 | 7,50 | 0,50 | 0,15 | 1,50 |
| RNMG 190600-ST | RNMG 640-ST | 19,050 | 6,35 | - | 7,94 | 4,50 | 1,90 | 7,60 | 0,65 | 0,20 | 1,90 |
| RNMG 250900-ST | RNMG 860-ST | 25,400 | 9,52 | - | 9,12 | 6,30 | 2,50 | 10,00 | 0,80 | 0,25 | 2,50 |



TURNING

Insert selection

Overview

Negative inserts

Positive inserts

PCBN & PCD inserts

Heavy turning

External Toolholders

Internal Toolholders







Automatic Lathes

Spare Parts

Technical Data

SN = SQUARE 90° NEGATIVE

QUADRADA 90° NEGATIVA | ESQUADRA 90° NEGATIVA

| | | | P | | | | | | | | M | | | | K | | | N | S | | | | | | | | | |
|---|-------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|--|
| | | | CVD | | | | | PVD | | | CVD | | | | PVD | | | CVD | UNC | PVD | | | | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 | | |
| Inserts Pastilhas Plaquitas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 | | |
|  SNMA Roughing | 1121070 | SNMA 090304 | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | | |
| | 1120474 | SNMA 090308 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1120475 | SNMA 120404 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1120476 | SNMA 120408 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1120478 | SNMA 120412 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1120479 | SNMA 120416 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1120481 | SNMA 150412 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1121525 | SNMA 150612 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1120482 | SNMA 190612 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1120483 | SNMA 190616 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1120485 | SNMA 190624 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1120486 | SNMA 250724 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
|  SNMG-MF Finishing | 1121528 | SNMG 120404-MF | ⊗ | ⊗ | | ⊗ | | | ⊗ | | | | | | | | | | | | | | | | | | | |
| | 1121530 | SNMG 120408-MF | ⊗ | ⊗ | | ⊗ | | | ⊗ | | | | | | | | | | | | | | | | | | | |
| | 1121531 | SNMG 120412-MF | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | | | |
|  SNMG-SF Medium to Finishing | 1123874 | SNMG 120404-SF | | | | | | | | | ⊗ | ⊗ | | ⊗ | ○ | ⊗ | ○ | | | | | | ⊗ | ○ | ⊗ | ○ | | |
| | 1123875 | SNMG 120408-SF | | | | | | | | | | ⊗ | ⊗ | | ⊗ | ○ | ⊗ | ○ | | | | | ⊗ | ○ | ⊗ | ○ | | |
| | 1123876 | SNMG 120412-SF | | | | | | | | | | ⊗ | ⊗ | | ⊗ | ○ | ⊗ | ○ | | | | | ⊗ | ○ | ⊗ | ○ | | |
|  SNMG-GS Medium to Finishing | 1124556 | SNMG 120408-GS | | | | | | | | | | | | | | ⊗ | | ⊗ | | | | | ⊗ | ○ | ⊗ | ○ | | |
| | 1124557 | SNMG 120412-GS | | | | | | | | | | | | | | ⊗ | | ⊗ | | | | | ⊗ | ○ | ⊗ | ○ | | |
| | 1124558 | SNMG 120416-GS | | | | | | | | | | | | | | ⊗ | | ⊗ | | | | | ⊗ | ○ | ⊗ | ○ | | |
|  SNMG-MR Medium | 1121529 | SNMG 120404-MR | | | ⊗ | | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | 1121179 | SNMG 120408-MR | | | ⊗ | | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | 1121311 | SNMG 120412-MR | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | 1121357 | SNMG 120416-MR | | | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | 1121533 | SNMG 150608-MR | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | 1121536 | SNMG 150612-MR | | | ⊗ | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | |
| | 1121543 | SNMG 190612-MR | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | |
| 1121546 | SNMG 190616-MR | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | | |
|  SNMG-PM Medium | 1124083 | SNMG 120404-PM | ⊗ | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | | |
| | 1124084 | SNMG 120408-PM | ⊗ | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | | |
| | 1124085 | SNMG 120412-PM | ⊗ | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | | |

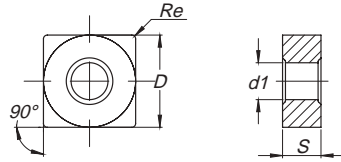
⊗ First choice | 1ª Escolha | 1ª Opción

⊗ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock

Insert Order Code: ⁽¹⁾ Geometry code + ⁽²⁾ Grade code

⊗ Stock Items | Itens de stock





○ Available under request | Disponível sob consulta | Disponible bajo consulta



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|----------------|---|------|------|------|--|------|-------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| SNMA 090304 | SNMA 321 | 9,525 | 3,18 | 0,40 | 3,81 | 2,50 | 0,20 | 4,50 | 0,20 | 0,15 | 0,30 |
| SNMA 090308 | SNMA 322 | 9,525 | 3,18 | 0,80 | 3,81 | 2,50 | 0,40 | 4,50 | 0,40 | 0,20 | 0,60 |
| SNMA 120404 | SNMA 431 | 12,700 | 4,76 | 0,40 | 5,16 | 4,00 | 0,20 | 8,00 | 0,20 | 0,15 | 0,30 |
| SNMA 120408 | SNMA 432 | 12,700 | 4,76 | 0,80 | 5,16 | 4,00 | 0,20 | 8,00 | 0,40 | 0,20 | 0,60 |
| SNMA 120412 | SNMA 433 | 12,700 | 4,76 | 1,20 | 5,16 | 4,00 | 0,30 | 8,00 | 0,45 | 0,20 | 0,80 |
| SNMA 120416 | SNMA 434 | 12,700 | 4,76 | 1,60 | 5,16 | 4,00 | 0,30 | 8,00 | 0,55 | 0,20 | 1,00 |
| SNMA 150412 | SNMA 533 | 15,875 | 4,76 | 1,20 | 6,35 | 5,00 | 0,30 | 9,00 | 0,45 | 0,20 | 0,80 |
| SNMA 150612 | SNMA 543 | 15,875 | 6,35 | 1,20 | 6,35 | 5,00 | 0,30 | 10,00 | 0,45 | 0,20 | 0,80 |
| SNMA 190612 | SNMA 643 | 19,050 | 6,35 | 1,20 | 7,94 | 6,00 | 0,30 | 12,00 | 0,45 | 0,20 | 0,80 |
| SNMA 190616 | SNMA 644 | 19,050 | 6,35 | 1,60 | 7,94 | 6,00 | 0,30 | 12,00 | 0,55 | 0,20 | 1,00 |
| SNMA 190624 | SNMA 646 | 19,050 | 6,35 | 2,40 | 7,94 | 6,00 | 0,30 | 12,00 | 0,60 | 0,20 | 1,20 |
| SNMA 250724 | SNMA 856 | 25,400 | 7,94 | 2,40 | 9,12 | 6,00 | 0,40 | 12,00 | 0,60 | 0,20 | 1,40 |
| SNMG 120404-MF | SNMG 431-MF | 12,700 | 4,76 | 0,40 | 5,16 | 0,40 | 0,15 | 1,50 | 0,10 | 0,05 | 0,25 |
| SNMG 120408-MF | SNMG 432-MF | 12,700 | 4,76 | 0,80 | 5,16 | 0,50 | 0,20 | 1,50 | 0,20 | 0,10 | 0,40 |
| SNMG 120412-MF | SNMG 433-MF | 12,700 | 4,76 | 1,20 | 5,16 | 0,80 | 0,25 | 2,50 | 0,30 | 0,20 | 0,60 |
| SNMG 120404-SF | SNMG 431-SF | 12,700 | 4,76 | 0,40 | 5,16 | 2,00 | 1,00 | 4,00 | 0,15 | 0,10 | 0,23 |
| SNMG 120408-SF | SNMG 432-SF | 12,700 | 4,76 | 0,80 | 5,16 | 2,00 | 1,00 | 4,00 | 0,20 | 0,12 | 0,38 |
| SNMG 120412-SF | SNMG 433-SF | 12,700 | 4,76 | 1,20 | 5,16 | 2,50 | 1,00 | 4,00 | 0,25 | 0,15 | 0,55 |
| SNMG 120408-GS | SNMG 432-GS | 12,700 | 4,76 | 0,80 | 5,16 | 2,00 | 0,20 | 3,00 | 0,30 | 0,15 | 0,40 |
| SNMG 120412-GS | SNMG 433-GS | 12,700 | 4,76 | 1,20 | 5,16 | 2,50 | 0,50 | 3,50 | 0,35 | 0,20 | 0,50 |
| SNMG 120416-GS | SNMG 434-GS | 12,700 | 4,76 | 1,60 | 5,16 | 3,00 | 0,50 | 4,00 | 0,40 | 0,20 | 0,50 |
| SNMG 120404-MR | SNMG 431-MR | 12,700 | 4,76 | 0,40 | 5,16 | 3,00 | 0,40 | 6,00 | 0,20 | 0,10 | 0,30 |
| SNMG 120408-MR | SNMG 432-MR | 12,700 | 4,76 | 0,80 | 5,16 | 3,00 | 0,50 | 6,00 | 0,30 | 0,15 | 0,50 |
| SNMG 120412-MR | SNMG 433-MR | 12,700 | 4,76 | 1,20 | 5,16 | 3,00 | 0,80 | 6,00 | 0,35 | 0,18 | 0,60 |
| SNMG 120416-MR | SNMG 434-MR | 12,700 | 4,76 | 1,60 | 5,16 | 3,00 | 1,00 | 6,00 | 0,40 | 0,23 | 0,65 |
| SNMG 150608-MR | SNMG 542-MR | 15,875 | 6,35 | 0,80 | 6,35 | 4,00 | 0,60 | 7,50 | 0,30 | 0,15 | 0,50 |
| SNMG 150612-MR | SNMG 543-MR | 15,875 | 6,35 | 1,20 | 6,35 | 4,00 | 0,80 | 7,50 | 0,35 | 0,18 | 0,60 |
| SNMG 190612-MR | SNMG 643-MR | 19,050 | 6,35 | 1,20 | 7,94 | 5,00 | 0,80 | 9,00 | 0,35 | 0,18 | 0,60 |
| SNMG 190616-MR | SNMG 644-MR | 19,050 | 6,35 | 1,60 | 7,94 | 5,00 | 1,00 | 9,00 | 0,40 | 0,23 | 0,65 |
| SNMG 120404-PM | SNMG 431-PM | 12,70 | 4,76 | 0,40 | 5,16 | 3,00 | 0,40 | 6,00 | 0,20 | 0,10 | 0,30 |
| SNMG 120408-PM | SNMG 432-PM | 12,70 | 4,76 | 0,80 | 5,16 | 3,00 | 0,50 | 6,00 | 0,30 | 0,15 | 0,50 |
| SNMG 120412-PM | SNMG 433-PM | 12,70 | 4,76 | 1,20 | 5,16 | 3,00 | 0,80 | 6,00 | 0,35 | 0,18 | 0,60 |

SN = SQUARE 90° NEGATIVE

QUADRADA 90° NEGATIVA | ESQUADRA 90° NEGATIVA

| | | | P | | | | | | | | M | | | | K | | | N | S | | | | | | | | |
|---|-------------------------|----------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|
| | | | CVD | | | | | PVD | | | CVD | | | | PVD | | CVD | UNC | PVD | | | | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 | |
| Inserts Pastilhas Plaquetas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 | |
|  Medium | SNMG-ST | 1121338 | SNMG 090308-ST | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | | 1121241 | SNMG 120404-ST | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | | 1121181 | SNMG 120408-ST | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | | 1121310 | SNMG 120412-ST | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | | 1121242 | SNMG 120416-ST | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | | 1121544 | SNMG 190612-ST | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121548 | SNMG 190616-ST | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
|  Roughing to Medium | SNMG-SS | 1121526 | SNMG 090304-SS | | | | | | | | | | | ⊗ | | ⊗ | | | | | | | ⊗ | | ⊗ | | |
| | | 1121527 | SNMG 090308-SS | | | | | | | | | | | | ⊗ | | ⊗ | | | | | | | ⊗ | | ⊗ | |
| | | 1121365 | SNMG 120404-SS | | | | | | | | | | ⊗ | | ⊗ | | ⊗ | | | | | | | ⊗ | | ⊗ | |
| | | 1121315 | SNMG 120408-SS | | | | | | | | | | ⊗ | | ⊗ | | ⊗ | | | | | | | ⊗ | | ⊗ | |
| | | 1121366 | SNMG 120412-SS | | | | | | | | | | ⊗ | | ⊗ | | ⊗ | | | | | | | ⊗ | | ⊗ | |
| | | 1121532 | SNMG 120416-SS | | | | | | | | | | ⊗ | | ⊗ | | ⊗ | | | | | | | ⊗ | | ⊗ | |
| | | 1121534 | SNMG 150608-SS | | | | | | | | | | ⊗ | | ⊗ | | ⊗ | | | | | | | ⊗ | | ⊗ | |
| | | 1121537 | SNMG 150612-SS | | | | | | | | | | ⊗ | | ⊗ | | ⊗ | | | | | | | ⊗ | | ⊗ | |
| | 1121547 | SNMG 190616-SS | | | | | | | | | | ⊗ | | ⊗ | | ⊗ | | | | | | | ⊗ | | ⊗ | | |
|  Roughing | SNMG-HR | 1121194 | SNMG 120408-HR | ⊗ | ⊗ | ⊗ | ⊗ | | ⊗ | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | |
| | | 1121195 | SNMG 120412-HR | ⊗ | ⊗ | | ⊗ | | ⊗ | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | |
| | | 1121361 | SNMG 120416-HR | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | |
| | | 1121535 | SNMG 150612-HR | | | | ⊗ | | ⊗ | | | | | | | | | | | | | | ⊗ | | | | |
| | | 1121539 | SNMG 150616-HR | | | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | ⊗ | | | | |
| | | 1121542 | SNMG 190612-HR | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | |
| | | 1121545 | SNMG 190616-HR | | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | ⊗ | | | | |
| | | 1124184 | SNMG 250724-HR | | | | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | 1121638 | SNMG 250924-HR | | | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | ⊗ | | | | | |
|  Roughing | SNMM-RP | 1124057 | SNMM 150608-RP | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | | 1124058 | SNMM 150612-RP | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | | 1124059 | SNMM 150616-RP | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | | 1124001 | SNMM 190612-RP | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | | 1124002 | SNMM 190616-RP | ⊗ | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | | 1124003 | SNMM 190624-RP | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | |

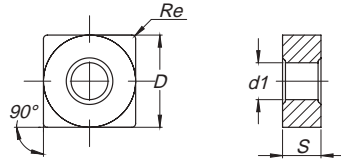
⊗ First choice | 1ª Escolha | 1ª Opción

⊗ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock

Insert Order Code: (1) Geometry code + (2) Grade code

⊗ Stock Items | Itens de stock




○ Available under request | Disponível sob consulta | Disponible bajo consulta



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|----------------|---|------|------|------|--|------|-------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| SNMG 090308-ST | SNMG 322-ST | 9,525 | 3,18 | 0,80 | 3,81 | 2,50 | 0,20 | 4,50 | 0,35 | 0,15 | 0,50 |
| SNMG 120404-ST | SNMG 431-ST | 12,700 | 4,76 | 0,40 | 5,16 | 3,00 | 0,20 | 6,00 | 0,20 | 0,15 | 0,30 |
| SNMG 120408-ST | SNMG 432-ST | 12,700 | 4,76 | 0,80 | 5,16 | 3,00 | 0,20 | 6,00 | 0,35 | 0,15 | 0,50 |
| SNMG 120412-ST | SNMG 433-ST | 12,700 | 4,76 | 1,20 | 5,16 | 3,00 | 0,30 | 6,00 | 0,40 | 0,15 | 0,60 |
| SNMG 120416-ST | SNMG 434-ST | 12,700 | 4,76 | 1,60 | 5,16 | 3,00 | 0,30 | 6,00 | 0,45 | 0,20 | 0,70 |
| SNMG 190612-ST | SNMG 643-ST | 19,050 | 6,35 | 1,20 | 7,94 | 4,50 | 0,30 | 9,00 | 0,40 | 0,15 | 0,60 |
| SNMG 190616-ST | SNMG 644-ST | 19,050 | 6,35 | 1,60 | 7,94 | 4,50 | 0,30 | 9,00 | 0,45 | 0,20 | 0,70 |
| SNMG 090304-SS | SNMG 321-SS | 9,525 | 3,18 | 0,40 | 3,81 | 2,00 | 0,50 | 4,50 | 0,20 | 0,10 | 0,30 |
| SNMG 090308-SS | SNMG 322-SS | 9,525 | 3,18 | 0,80 | 3,81 | 2,00 | 0,50 | 4,50 | 0,25 | 0,12 | 0,45 |
| SNMG 120404-SS | SNMG 431-SS | 12,700 | 4,76 | 0,40 | 5,16 | 3,00 | 0,50 | 6,40 | 0,20 | 0,12 | 0,30 |
| SNMG 120408-SS | SNMG 432-SS | 12,700 | 4,76 | 0,80 | 5,16 | 3,00 | 0,50 | 6,40 | 0,25 | 0,12 | 0,45 |
| SNMG 120412-SS | SNMG 433-SS | 12,700 | 4,76 | 1,20 | 5,16 | 3,00 | 0,50 | 6,40 | 0,30 | 0,15 | 0,60 |
| SNMG 120416-SS | SNMG 434-SS | 12,700 | 4,76 | 1,60 | 5,16 | 3,00 | 0,50 | 6,40 | 0,45 | 0,15 | 0,80 |
| SNMG 150608-SS | SNMG 542-SS | 15,875 | 6,35 | 0,80 | 6,35 | 4,00 | 0,50 | 8,00 | 0,25 | 0,12 | 0,45 |
| SNMG 150612-SS | SNMG 543-SS | 15,875 | 6,35 | 1,20 | 6,35 | 4,00 | 0,50 | 8,00 | 0,30 | 0,15 | 0,60 |
| SNMG 190616-SS | SNMG 644-SS | 19,050 | 6,35 | 1,60 | 7,94 | 4,00 | 0,50 | 8,00 | 0,45 | 0,15 | 0,80 |
| SNMG 120408-HR | SNMG 432-HR | 12,700 | 4,76 | 0,80 | 5,16 | 4,00 | 0,80 | 7,00 | 0,35 | 0,20 | 0,55 |
| SNMG 120412-HR | SNMG 433-HR | 12,700 | 4,76 | 1,20 | 5,16 | 4,00 | 1,00 | 7,00 | 0,40 | 0,25 | 0,70 |
| SNMG 120416-HR | SNMG 434-HR | 12,700 | 4,76 | 1,60 | 5,16 | 4,00 | 1,50 | 7,00 | 0,50 | 0,32 | 0,80 |
| SNMG 150612-HR | SNMG 543-HR | 15,875 | 6,35 | 1,20 | 6,35 | 4,00 | 1,00 | 8,00 | 0,40 | 0,25 | 0,70 |
| SNMG 150616-HR | SNMG 544-HR | 15,875 | 6,35 | 1,60 | 6,35 | 4,00 | 1,50 | 8,00 | 0,50 | 0,32 | 0,80 |
| SNMG 190612-HR | SNMG 643-HR | 19,050 | 6,35 | 1,20 | 7,94 | 5,00 | 1,00 | 10,00 | 0,40 | 0,25 | 0,70 |
| SNMG 190616-HR | SNMG 644-HR | 19,050 | 6,35 | 1,60 | 7,94 | 5,00 | 1,50 | 10,00 | 0,50 | 0,32 | 0,80 |
| SNMG 250724-HR | SNMG 856-HR | 25,400 | 7,94 | 2,40 | 9,12 | 6,00 | 2,00 | 15,00 | 1,00 | 0,40 | 1,20 |
| SNMG 250924-HR | SNMG 866-HR | 25,400 | 9,52 | 2,40 | 9,12 | 6,00 | 2,00 | 15,00 | 1,00 | 0,40 | 1,20 |
| SNMM 150608-RP | SNMG 542-RP | 15,875 | 6,35 | 0,80 | 6,35 | 4,00 | 1,00 | 8,00 | 0,30 | 0,15 | 0,50 |
| SNMM 150612-RP | SNMG 543-RP | 15,875 | 6,35 | 1,20 | 6,35 | 4,00 | 1,00 | 8,00 | 0,40 | 0,25 | 0,70 |
| SNMM 150616-RP | SNMG 544-RP | 15,875 | 6,35 | 1,60 | 6,35 | 4,00 | 1,00 | 8,00 | 0,50 | 0,35 | 0,90 |
| SNMM 190612-RP | SNMM 643-RP | 19,050 | 6,35 | 1,20 | 7,94 | 5,50 | 2,00 | 12,00 | 0,60 | 0,30 | 0,85 |
| SNMM 190616-RP | SNMM 644-RP | 19,050 | 6,35 | 1,60 | 7,94 | 6,00 | 2,00 | 12,00 | 0,60 | 0,35 | 1,00 |
| SNMM 190624-RP | SNMM 646-RP | 19,050 | 6,35 | 2,40 | 7,94 | 6,00 | 2,00 | 12,00 | 0,80 | 0,50 | 1,50 |

SN = SQUARE 90° NEGATIVE

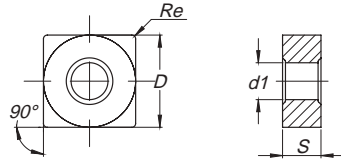
QUADRADA 90° NEGATIVA | ESQUADRA 90° NEGATIVA

| | | | P | | | | | | | | M | | | | K | | | N | S | | | | | | | | |
|---|-------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|
| | | | CVD | | | | | PVD | | CVD | | | PVD | | CVD | | | UNC | PVD | | | | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 | |
| Inserts Pastilhas Plaquetas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 | |
|  SNMM-HY Heavy to Roughing | 1121606 | SNMM 190612-HY | | | ⊗ | | ⊗ | ⊗ | | | | | | ⊗ | | | | | | | | | | | | | |
| | 1121250 | SNMM 190616-HY | | | ⊗ | | ⊗ | ⊗ | | | | | | ⊗ | | | | | | | | | | | | | |
| | 1121452 | SNMM 190624-HY | | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | ⊗ | | | | | | | | | | | | | |
|  SNMM-HZ Heavy to Roughing | 1121605 | SNMM 190612-HZ | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121249 | SNMM 190616-HZ | | ⊗ | ⊗ | | ⊗ | ⊗ | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
|  SNMM-HZ Heavy to Roughing | 1121440 | SNMM 190624-HZ | | ⊗ | ⊗ | | ⊗ | ⊗ | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121158 | SNMM 250724-HZ | | | ⊗ | | ⊗ | | ⊗ | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1123786 | SNMM 250732-HZ | | | | ⊗ | ⊗ | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121159 | SNMM 250924-HZ | | ⊗ | ⊗ | ⊗ | ⊗ | | ⊗ | | | | | | | | | | | ⊗ | ⊗ | | | | | | |

⊗ First choice | 1ª Escolha | 1ª Opción
 ⊗ Stock Itens | Itens de stock

⊗ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock
 ○ Available under request | Disponível sob consulta | Disponible bajo consulta







Insert Order Code: ⁽¹⁾ Geometry code + ⁽²⁾ Grade code



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|----------------|---|------|------|------|--|------|-------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| SNMM 190612-HY | SNMM 643-HY | 19,050 | 6,35 | 1,20 | 7,94 | 6,00 | 2,00 | 12,00 | 0,60 | 0,35 | 0,90 |
| SNMM 190616-HY | SNMM 644-HY | 19,050 | 6,35 | 1,60 | 7,94 | 6,00 | 2,00 | 12,00 | 0,60 | 0,35 | 1,20 |
| SNMM 190624-HY | SNMM 646-HY | 19,050 | 6,35 | 2,40 | 7,94 | 6,00 | 2,00 | 12,00 | 1,00 | 0,60 | 1,60 |
| SNMM 250724-HY | SNMM 856-HY | 25,400 | 7,94 | 2,40 | 9,12 | 8,50 | 2,50 | 15,00 | 1,00 | 0,60 | 1,60 |
| SNMM 250924-HY | SNMM 866-HY | 25,400 | 9,52 | 2,40 | 9,12 | 8,50 | 3,00 | 15,00 | 1,00 | 0,60 | 1,60 |
| SNMM 190612-HZ | SNMM 643-HZ | 19,050 | 6,35 | 1,20 | 7,94 | 10,00 | 2,40 | 13,00 | 0,60 | 0,35 | 0,90 |
| SNMM 190616-HZ | SNMM 644-HZ | 19,050 | 6,35 | 1,60 | 7,94 | 10,00 | 2,40 | 13,00 | 0,60 | 0,35 | 1,20 |
| SNMM 190624-HZ | SNMM 646-HZ | 19,050 | 6,35 | 2,40 | 7,94 | 10,00 | 3,20 | 13,00 | 1,00 | 0,60 | 1,60 |
| SNMM 250724-HZ | SNMM 856-HZ | 25,400 | 7,94 | 2,40 | 9,12 | 10,00 | 3,20 | 17,00 | 1,00 | 0,60 | 1,60 |
| SNMM 250732-HZ | SNMM 858-HZ | 25,400 | 7,94 | 3,20 | 9,12 | 10,00 | 3,20 | 17,00 | 1,20 | 0,80 | 1,80 |
| SNMM 250924-HZ | SNMM 866-HZ | 25,400 | 9,52 | 2,40 | 9,12 | 10,00 | 3,20 | 17,00 | 1,00 | 0,60 | 1,60 |

TN = TRIANGULAR 60° NEGATIVE

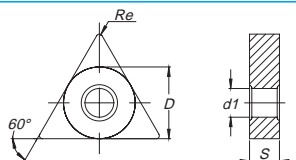
TRIANGULAR 60° NEGATIVA | TRIANGULAR 60° NEGATIVA

| | | | P | | | | | | | | M | | | | | | K | | | N | S | | | | | | | |
|---|-------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---|--|
| | | | CVD | | | | | PVD | | | CVD | | | PVD | | | CVD | | | UNC | PVD | | | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 | | |
| Inserts Pastilhas Plaquitas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 | | |
|  TNMA Roughing | 1120624 | TNMA 110304 | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | | |
| | 1120625 | TNMA 110308 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1120626 | TNMA 160304 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1120627 | TNMA 160308 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1120629 | TNMA 160404 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1120630 | TNMA 160408 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1120632 | TNMA 160412 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1121921 | TNMA 160416 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1120634 | TNMA 220404 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1120635 | TNMA 220408 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1120636 | TNMA 220412 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1120637 | TNMA 220416 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1121554 | TNMA 270608 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1121555 | TNMA 270612 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1120639 | TNMA 270616 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| 1120640 | TNMA 330724 | | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | | |
|  TNMG-MF Finishing | 1121556 | TNMG 160404-MF | ⊗ | | ⊗ | | | | | ⊗ | | | | | | | | | | | | | | | | | | |
| | 1121558 | TNMG 160408-MF | ⊗ | ⊗ | ⊗ | | | | | ⊗ | | | | | | | | | | | | | | | | | | |
| | 1121560 | TNMG 160412-MF | | ⊗ | ⊗ | | | | | ⊗ | | | | | | | | | | | | | | | | | | |
| | 1121369 | TNMG 220408-MF | | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | | | | |
|  TNMG-SF Medium to Finishing | 1123757 | TNMG 160404-SF | | | | | | | | | | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | |
| | 1123719 | TNMG 160408-SF | | | | | | | | | | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | |
| | 1123758 | TNMG 160412-SF | | | | | | | | | | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | |
| | 1124070 | TNMG 220404-SF | | | | | | | | | | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | |
| | 1123759 | TNMG 220408-SF | | | | | | | | | | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | |
| | 1124028 | TNMG 220412-SF | | | | | | | | | | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | |
|  TNMG-LC Medium to Finishing | 1123638 | TNMG 160404-LC | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | | | | |
| | 1122025 | TNMG 160408-LC | | ⊗ | ⊗ | | | | | ⊗ | | | | | | | | | | | | | | | | | | |
| | 1123656 | TNMG 160412-LC | | | ⊗ | ⊗ | | | | ⊗ | | | | | | | | | | | | | | | | | | |
| | 1123660 | TNMG 220408-LC | | ⊗ | ⊗ | ⊗ | | | | ⊗ | | | | | | | | | | | | | | | | | | |
| | 1123657 | TNMG 220412-LC | | ⊗ | ⊗ | ⊗ | | | | ⊗ | | | | | | | | | | | | | | | | | | |
|  TNMG-MS Medium | 1121557 | TNMG 160404-MS | | | | | | | | | | | | | | | | ⊗ | | | | ⊗ | | | ⊗ | | | |
| | 1121559 | TNMG 160408-MS | | | | | | | | | | | | | | | | | ⊗ | | | | ⊗ | | | ⊗ | | |
| | 1121561 | TNMG 160412-MS | | | | | | | | | | | | | | | | | ⊗ | | | | ⊗ | | | ⊗ | | |
|  TNMG-GS Medium to Finishing | 1124508 | TNMG 160404-GS | | | | | | | | | | | | | | | | ⊗ | | ⊗ | | | | ⊗ | | ⊗ | | |
| | 1124509 | TNMG 160408-GS | | | | | | | | | | | | | | | | | ⊗ | | ⊗ | | | | ⊗ | | ⊗ | |
| | 1124510 | TNMG 160412-GS | | | | | | | | | | | | | | | | | ⊗ | | ⊗ | | | | ⊗ | | ⊗ | |

⊗ First choice | 1ª Escolha | 1ª Opción
 ⊕ Stock Items | Itens de stock

⊕ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock
 ○ Available under request | Disponível sob consulta | Disponible bajo consulta




Insert Order Code: ⁽¹⁾ Geometry code + ⁽²⁾ Grade code



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|----------------|---|------|------|------|--|------|-------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| TNMA 110304 | TNMA 221 | 6,350 | 3,18 | 0,40 | 2,26 | 2,00 | 0,15 | 4,00 | 0,20 | 0,10 | 0,30 |
| TNMA 110308 | TNMA 222 | 6,350 | 3,18 | 0,80 | 2,26 | 2,00 | 0,15 | 4,00 | 0,35 | 0,15 | 0,60 |
| TNMA 160304 | TNMA 321 | 9,525 | 3,18 | 0,40 | 3,81 | 2,50 | 0,20 | 5,00 | 0,20 | 0,10 | 0,30 |
| TNMA 160308 | TNMA 322 | 9,525 | 3,18 | 0,80 | 3,81 | 2,50 | 0,20 | 5,00 | 0,35 | 0,15 | 0,60 |
| TNMA 160404 | TNMA 331 | 9,525 | 4,76 | 0,40 | 3,81 | 2,50 | 0,20 | 5,00 | 0,20 | 0,10 | 0,30 |
| TNMA 160408 | TNMA 332 | 9,525 | 4,76 | 0,80 | 3,81 | 3,50 | 0,20 | 7,00 | 0,35 | 0,15 | 0,60 |
| TNMA 160412 | TNMA 333 | 9,525 | 4,76 | 1,20 | 3,81 | 3,50 | 0,30 | 7,00 | 0,45 | 0,20 | 0,80 |
| TNMA 160416 | TNMA 334 | 9,525 | 4,76 | 1,60 | 3,81 | 3,50 | 0,30 | 7,00 | 0,55 | 0,20 | 1,00 |
| TNMA 220404 | TNMA 431 | 12,700 | 4,76 | 0,40 | 5,16 | 4,00 | 0,20 | 10,00 | 0,20 | 0,10 | 0,30 |
| TNMA 220408 | TNMA 432 | 12,700 | 4,76 | 0,80 | 5,16 | 5,00 | 0,20 | 10,00 | 0,35 | 0,15 | 0,60 |
| TNMA 220412 | TNMA 433 | 12,700 | 4,76 | 1,20 | 5,16 | 5,00 | 0,30 | 10,00 | 0,45 | 0,20 | 0,80 |
| TNMA 220416 | TNMA 434 | 12,700 | 4,76 | 1,60 | 5,16 | 5,00 | 0,30 | 10,00 | 0,55 | 0,20 | 1,00 |
| TNMA 270608 | TNMA 542 | 15,875 | 6,35 | 0,80 | 6,35 | 5,00 | 0,30 | 12,00 | 0,35 | 0,15 | 0,60 |
| TNMA 270612 | TNMA 543 | 15,875 | 6,35 | 1,20 | 6,35 | 5,00 | 0,30 | 12,00 | 0,45 | 0,20 | 0,80 |
| TNMA 270616 | TNMA 544 | 15,875 | 6,35 | 1,60 | 6,35 | 5,00 | 0,30 | 12,00 | 0,55 | 0,20 | 1,00 |
| TNMA 330724 | TNMA 656 | 19,050 | 7,94 | 2,40 | 7,94 | 6,50 | 0,30 | 15,00 | 0,60 | 0,30 | 2,00 |
| TNMG 160404-MF | TNMG 331-MF | 9,525 | 4,76 | 0,40 | 3,81 | 0,40 | 0,10 | 1,50 | 0,15 | 0,05 | 0,25 |
| TNMG 160408-MF | TNMG 332-MF | 9,525 | 4,76 | 0,80 | 3,81 | 0,40 | 0,10 | 1,50 | 0,20 | 0,10 | 0,40 |
| TNMG 160412-MF | TNMG 333-MF | 9,525 | 4,76 | 1,20 | 3,81 | 1,00 | 0,20 | 2,50 | 0,30 | 0,15 | 0,60 |
| TNMG 220408-MF | TNMG 432-MF | 12,700 | 4,76 | 0,80 | 5,16 | 1,50 | 0,25 | 2,50 | 0,20 | 0,10 | 0,40 |
| TNMG 160404-SF | TNMG 331-SF | 9,525 | 4,76 | 0,40 | 3,81 | 1,50 | 0,60 | 3,00 | 0,15 | 0,10 | 0,23 |
| TNMG 160408-SF | TNMG 332-SF | 9,525 | 4,76 | 0,80 | 3,81 | 1,50 | 0,60 | 3,00 | 0,25 | 0,12 | 0,38 |
| TNMG 160412-SF | TNMG 333-SF | 9,525 | 4,76 | 1,20 | 3,81 | 1,50 | 0,60 | 3,00 | 0,35 | 0,15 | 0,55 |
| TNMG 220404-SF | TNMG 431-SF | 12,700 | 4,76 | 0,40 | 5,16 | 1,50 | 0,60 | 3,00 | 0,20 | 0,10 | 0,35 |
| TNMG 220408-SF | TNMG 432-SF | 12,700 | 4,76 | 0,80 | 5,16 | 1,50 | 0,60 | 3,00 | 0,25 | 0,12 | 0,40 |
| TNMG 220412-SF | TNMG 433-SF | 12,700 | 4,76 | 1,20 | 5,16 | 1,50 | 0,60 | 3,00 | 0,35 | 0,15 | 0,55 |
| TNMG 160404-LC | TNMG 331-LC | 9,525 | 4,76 | 0,40 | 3,81 | 1,00 | 0,40 | 2,50 | 0,15 | 0,07 | 0,30 |
| TNMG 160408-LC | TNMG 332-LC | 9,525 | 4,76 | 0,80 | 3,81 | 1,50 | 0,40 | 2,50 | 0,20 | 0,10 | 0,40 |
| TNMG 160412-LC | TNMG 333-LC | 9,525 | 4,76 | 1,20 | 3,81 | 2,00 | 0,80 | 3,00 | 0,25 | 0,15 | 0,50 |
| TNMG 220408-LC | TNMG 432-LC | 12,700 | 4,76 | 0,80 | 5,16 | 2,00 | 0,40 | 3,00 | 0,20 | 0,10 | 0,40 |
| TNMG 220412-LC | TNMG 433-LC | 12,700 | 4,76 | 1,20 | 5,16 | 2,50 | 0,80 | 3,50 | 0,25 | 0,15 | 0,50 |
| TNMG 160404-MS | TNMG 331-MS | 9,525 | 4,76 | 0,40 | 3,81 | 2,00 | 0,30 | 3,80 | 0,15 | 0,10 | 0,20 |
| TNMG 160408-MS | TNMG 332-MS | 9,525 | 4,76 | 0,80 | 3,81 | 2,00 | 0,30 | 3,80 | 0,25 | 0,10 | 0,40 |
| TNMG 160412-MS | TNMG 333-MS | 9,525 | 4,76 | 1,20 | 3,81 | 2,00 | 0,40 | 3,80 | 0,30 | 0,15 | 0,60 |
| TNMG 160404-GS | TNMG 331-GS | 9,525 | 4,76 | 0,40 | 3,81 | 2,00 | 0,15 | 3,00 | 0,20 | 0,10 | 0,30 |
| TNMG 160408-GS | TNMG 332-GS | 9,525 | 4,76 | 0,80 | 3,81 | 2,50 | 0,20 | 3,00 | 0,25 | 0,10 | 0,30 |
| TNMG 160412-GS | TNMG 333-GS | 9,525 | 4,76 | 1,20 | 3,81 | 3,00 | 0,30 | 3,50 | 0,30 | 0,15 | 0,35 |

TN = TRIANGULAR 60° NEGATIVE

TRIANGULAR 60° NEGATIVA | TRIANGULAR 60° NEGATIVA

| | | | P | | | | | | | | M | | | | | | K | | | N | S | | | | | |
|--|-------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | | CVD | | | | | | PVD | | CVD | | | PVD | | | CVD | | | UNC | PVD | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 |
| Inserts Pastilhas Plaquetas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 |
|  TNMG-MR Medium | 1122000 | TNMG 160308-MR | | ⊕ | ⊕ | ⊕ | ⊕ | | | | | | | | | | | | | | | | | | | |
| | 1121281 | TNMG 160404-MR | | | ⊕ | | ⊕ | ⊕ | | | | | | | | | | | | | | | | | | |
| | 1121269 | TNMG 160408-MR | | | ⊕ | | ⊕ | | ⊕ | | | | | | | | | | | | | | | | | |
| | 1121282 | TNMG 160412-MR | | ⊕ | ⊕ | | ⊕ | | ⊕ | | | | | | | | | | | | | | | | | |
| | 1121625 | TNMG 220404-MR | | ⊕ | ⊕ | | ⊕ | | ⊕ | | | | | | | | | | | | | | | | | |
| | 1121305 | TNMG 220408-MR | | | ⊕ | | ⊕ | ⊕ | ⊕ | | | | | | | | | | | | | | | | | |
| | 1121307 | TNMG 220412-MR | | ⊕ | ⊕ | | ⊕ | ⊕ | ⊕ | | | | | | | | | | | | | | | | | |
| | 1121564 | TNMG 220416-MR | | | | ⊕ | ⊕ | ⊕ | ⊕ | | | | | | | | | | | | | | | | | |
|  TNMG-PM Medium | 1123991 | TNMG 160404-PM | ⊕ | | ⊕ | | ⊕ | | | | | | | | | | | | | | | | | | | |
| | 1123917 | TNMG 160408-PM | ⊕ | | ⊕ | | ⊕ | | | | | | | | | | | | | | | | | | | |
| | 1123992 | TNMG 160412-PM | ⊕ | | ⊕ | | ⊕ | | | | | | | | | | | | | | | | | | | |
| | 1123993 | TNMG 160416-PM | | | ⊕ | | ⊕ | | | | | | | | | | | | | | | | | | | |
| | 1123922 | TNMG 220404-PM | | | ⊕ | | ⊕ | | | | | | | | | | | | | | | | | | | |
| | 1123923 | TNMG 220408-PM | | | ⊕ | | ⊕ | | | | | | | | | | | | | | | | | | | |
| | 1123994 | TNMG 220412-PM | | | ⊕ | | ⊕ | | | | | | | | | | | | | | | | | | | |
| | 1123995 | TNMG 220416-PM | | | ⊕ | | ⊕ | | | | | | | | | | | | | | | | | | | |
|  TNMG-ST Medium | 1121210 | TNMG 110308-ST | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121211 | TNMG 160304-ST | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121212 | TNMG 160308-ST | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121294 | TNMG 160404-ST | | | | | | | | | | | | | | | | | | ⊕ | ⊕ | | | | | |
| | 1121268 | TNMG 160408-ST | | | | | | | | | | | | | | | | | | ⊕ | ⊕ | | | | | |
| | 1121348 | TNMG 160412-ST | | | | | | | | | | | | | | | | | | ⊕ | ⊕ | | | | | |
| | 1121563 | TNMG 160416-ST | | | | | | | | | | | | | | | | | | ⊕ | ⊕ | | | | | |
| | 1121349 | TNMG 220404-ST | | | | | | | | | | | | | | | | | | ⊕ | ⊕ | | | | | |
| | 1121350 | TNMG 220408-ST | | | | | | | | | | | | | | | | | | ⊕ | ⊕ | | | | | |
| | 1121354 | TNMG 220412-ST | | | | | | | | | | | | | | | | | | ⊕ | ⊕ | | | | | |
| 1121351 | TNMG 220416-ST | | | | | | | | | | | | | | | | | | ⊕ | ⊕ | | | | | | |

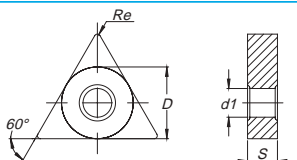
⊕ First choice | 1ª Escolha | 1ª Opción

⊕ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock

Insert Order Code: ⁽¹⁾ Geometry code + ⁽²⁾ Grade code

⊕ Stock items | Itens de stock





○ Available under request | Disponível sob consulta | Disponible bajo consulta



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|----------------|---|------|------|------|--|------|------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| TNMG 160308-MR | TNMG 322-MR | 9,525 | 3,18 | 0,80 | 3,81 | 2,80 | 0,30 | 5,00 | 0,30 | 0,15 | 0,50 |
| TNMG 160404-MR | TNMG 331-MR | 9,525 | 4,76 | 0,40 | 3,81 | 3,00 | 0,40 | 5,00 | 0,20 | 0,10 | 0,30 |
| TNMG 160408-MR | TNMG 332-MR | 9,525 | 4,76 | 0,80 | 3,81 | 3,00 | 0,50 | 5,00 | 0,30 | 0,15 | 0,50 |
| TNMG 160412-MR | TNMG 333-MR | 9,525 | 4,76 | 1,20 | 3,81 | 3,00 | 0,80 | 5,00 | 0,35 | 0,18 | 0,60 |
| TNMG 220404-MR | TNMG 431-MR | 12,700 | 4,76 | 0,40 | 5,16 | 4,00 | 0,40 | 6,60 | 0,20 | 0,10 | 0,30 |
| TNMG 220408-MR | TNMG 432-MR | 12,700 | 4,76 | 0,80 | 5,16 | 4,00 | 0,50 | 6,60 | 0,30 | 0,15 | 0,50 |
| TNMG 220412-MR | TNMG 433-MR | 12,700 | 4,76 | 1,20 | 5,16 | 4,00 | 0,80 | 6,60 | 0,35 | 0,18 | 0,60 |
| TNMG 220416-MR | TNMG 434-MR | 12,700 | 4,76 | 1,60 | 5,16 | 4,00 | 1,00 | 6,60 | 0,40 | 0,23 | 0,70 |
| TNMG 160404-PM | TNMG 331-PM | 9,525 | 4,76 | 0,40 | 3,81 | 3,00 | 0,40 | 5,00 | 0,20 | 0,10 | 0,30 |
| TNMG 160408-PM | TNMG 332-PM | 9,525 | 4,76 | 0,80 | 3,81 | 3,00 | 0,50 | 5,00 | 0,30 | 0,15 | 0,50 |
| TNMG 160412-PM | TNMG 333-PM | 9,525 | 4,76 | 1,20 | 3,81 | 3,00 | 0,80 | 5,00 | 0,35 | 0,18 | 0,60 |
| TNMG 160416-PM | TNMG 334-PM | 9,525 | 4,76 | 1,60 | 3,81 | 3,00 | 1,00 | 5,00 | 0,40 | 0,23 | 0,65 |
| TNMG 220404-PM | TNMG 431-PM | 12,700 | 4,76 | 0,40 | 5,16 | 4,00 | 0,40 | 6,60 | 0,20 | 0,10 | 0,30 |
| TNMG 220408-PM | TNMG 432-PM | 12,700 | 4,76 | 0,80 | 5,16 | 4,00 | 0,50 | 6,60 | 0,30 | 0,15 | 0,50 |
| TNMG 220412-PM | TNMG 433-PM | 12,700 | 4,76 | 1,20 | 5,16 | 4,00 | 0,80 | 6,60 | 0,35 | 0,18 | 0,60 |
| TNMG 220416-PM | TNMG 434-PM | 12,700 | 4,76 | 1,60 | 5,16 | 4,00 | 1,00 | 6,60 | 0,40 | 0,23 | 0,60 |
| TNMG 110308-ST | TNMG 222-ST | 6,350 | 3,18 | 0,80 | 2,26 | 2,00 | 0,15 | 4,50 | 0,35 | 0,15 | 0,50 |
| TNMG 160304-ST | TNMG 321-ST | 9,525 | 3,18 | 0,40 | 3,81 | 3,00 | 0,20 | 5,50 | 0,22 | 0,15 | 0,30 |
| TNMG 160308-ST | TNMG 322-ST | 9,525 | 3,18 | 0,80 | 3,81 | 3,00 | 0,20 | 5,50 | 0,35 | 0,15 | 0,50 |
| TNMG 160404-ST | TNMG 331-ST | 9,525 | 4,76 | 0,40 | 3,81 | 3,00 | 0,20 | 5,50 | 0,22 | 0,15 | 0,30 |
| TNMG 160408-ST | TNMG 332-ST | 9,525 | 4,76 | 0,80 | 3,81 | 3,00 | 0,20 | 5,50 | 0,35 | 0,15 | 0,50 |
| TNMG 160412-ST | TNMG 333-ST | 9,525 | 4,76 | 1,20 | 3,81 | 3,00 | 0,30 | 5,50 | 0,40 | 0,15 | 0,60 |
| TNMG 160416-ST | TNMG 334-ST | 9,525 | 4,76 | 1,60 | 3,81 | 3,00 | 0,30 | 5,50 | 0,40 | 0,15 | 0,60 |
| TNMG 220404-ST | TNMG 431-ST | 12,700 | 4,76 | 0,40 | 5,16 | 4,00 | 0,20 | 8,00 | 0,22 | 0,15 | 0,30 |
| TNMG 220408-ST | TNMG 432-ST | 12,700 | 4,76 | 0,80 | 5,16 | 4,00 | 0,20 | 8,00 | 0,35 | 0,15 | 0,50 |
| TNMG 220412-ST | TNMG 433-ST | 12,700 | 4,76 | 1,20 | 5,16 | 4,00 | 0,30 | 8,00 | 0,40 | 0,15 | 0,60 |
| TNMG 220416-ST | TNMG 434-ST | 12,700 | 4,76 | 1,60 | 5,16 | 4,00 | 0,30 | 8,00 | 0,45 | 0,20 | 0,70 |

TN = TRIANGULAR 60° NEGATIVE

TRIANGULAR 60° NEGATIVA | TRIANGULAR 60° NEGATIVA

| | | | P | | | | | | | | M | | | | | | K | | | N | S | | | | | | |
|---|-------------------------|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|
| | | | CVD | | | | | PVD | | | CVD | | | PVD | | | CVD | | | UNC | PVD | | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 | |
| Inserts Pastilhas Plaquitas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 | |
|  TNMG-MW Medium Wiper | 1121376 | TNMG 160408-MW | | | ⊗ | | ⊗ | ⊗ | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121343 | TNMG 160412-MW | | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
|  TNMG-SS Roughing to Medium | 1121289 | TNMG 160404-SS | | | | | | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | ⊗ | | | | | | ⊗ | | ⊗ | | |
| | 1121271 | TNMG 160408-SS | | | | | | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | ⊗ | | | | | | ⊗ | | ⊗ | | |
| | 1121290 | TNMG 160412-SS | | | | | | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | ⊗ | | | | | | ⊗ | | ⊗ | | |
| | 1121330 | TNMG 220408-SS | | | | | | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | ⊗ | | | | | | ⊗ | | ⊗ | | |
| | 1121368 | TNMG 220412-SS | | | | | | | | | | | ⊗ | | | | ⊗ | | | | | | ⊗ | | ⊗ | | |
|  TNMG-HR Roughing | 1121270 | TNMG 160408-HR | ⊗ | | ⊗ | | ⊗ | | ⊗ | ○ | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1121283 | TNMG 160412-HR | | ⊗ | ⊗ | | ⊗ | | ⊗ | ○ | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121306 | TNMG 220408-HR | | | ⊗ | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | |
| | 1121308 | TNMG 220412-HR | | ⊗ | ⊗ | | ⊗ | | ⊗ | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121309 | TNMG 220416-HR | | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | |
|  TNMX-01 Medium to Finishing | 1121567 | TNMG 270612-HR | | | | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | |
| | 1121570 | TNMG 270616-HR | | | | | | | ⊗ | | | | | | | | | | | | | | | | | | |
| | 1121631 | TNMG 330924-HR | | | | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | |
| | 1121004 | TNMX 160404-L01 | | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | 1120713 | TNMX 160404-R01 | | ⊗ | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | 1121005 | TNMX 160408-L01 | | ⊗ | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | 1121006 | TNMX 160408-R01 | | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | |

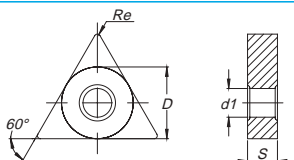
⊗ First choice | 1ª Escolha | 1ª Opción

⊗ Stock available until sold out | Stock disponible até acabar o stock | Stock disponible hasta acabar el stock

Insert Order Code: ⁽¹⁾Geometry code + ⁽²⁾Grade code

⊗ Stock Items | Itens de stock






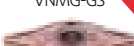




○ Available under request | Disponível sob consulta | Disponible bajo consulta



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|-----------------|----------------|---|------|------|------|--|------|-------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| TNMG 160408-MW | TNMG 332-MW | 9,525 | 4,76 | 0,80 | 3,81 | 2,00 | 0,50 | 4,50 | 0,35 | 0,15 | 0,60 |
| TNMG 160412-MW | TNMG 333-MW | 9,525 | 4,76 | 1,20 | 3,81 | 2,50 | 0,50 | 5,00 | 0,50 | 0,25 | 0,90 |
| TNMG 160404-SS | TNMG 331-SS | 9,525 | 4,76 | 0,40 | 3,81 | 2,00 | 0,50 | 4,00 | 0,20 | 0,10 | 0,30 |
| TNMG 160408-SS | TNMG 332-SS | 9,525 | 4,76 | 0,80 | 3,81 | 3,00 | 0,50 | 4,80 | 0,25 | 0,12 | 0,45 |
| TNMG 160412-SS | TNMG 333-SS | 9,525 | 4,76 | 1,20 | 3,81 | 3,00 | 0,50 | 4,80 | 0,30 | 0,15 | 0,60 |
| TNMG 220408-SS | TNMG 432-SS | 12,700 | 4,76 | 0,80 | 5,16 | 4,00 | 0,50 | 6,60 | 0,25 | 0,12 | 0,45 |
| TNMG 220412-SS | TNMG 433-SS | 12,700 | 4,76 | 1,20 | 5,16 | 4,00 | 0,50 | 6,60 | 0,30 | 0,15 | 0,60 |
| TNMG 160408-HR | TNMG 332-HR | 9,525 | 4,76 | 0,80 | 3,81 | 3,00 | 0,80 | 6,00 | 0,35 | 0,20 | 0,55 |
| TNMG 160412-HR | TNMG 333-HR | 9,525 | 4,76 | 1,20 | 3,81 | 3,00 | 1,00 | 6,00 | 0,40 | 0,25 | 0,70 |
| TNMG 220408-HR | TNMG 432-HR | 12,700 | 4,76 | 0,80 | 5,16 | 4,00 | 0,80 | 6,50 | 0,35 | 0,20 | 0,55 |
| TNMG 220412-HR | TNMG 433-HR | 12,700 | 4,76 | 1,20 | 5,16 | 4,00 | 1,00 | 7,00 | 0,40 | 0,25 | 0,70 |
| TNMG 220416-HR | TNMG 434-HR | 12,700 | 4,76 | 1,60 | 5,16 | 4,00 | 1,50 | 7,00 | 0,60 | 0,25 | 0,90 |
| TNMG 270612-HR | TNMG 543-HR | 15,875 | 6,35 | 1,20 | 6,35 | 6,00 | 2,00 | 10,00 | 0,40 | 0,25 | 0,70 |
| TNMG 270616-HR | TNMG 544-HR | 15,875 | 6,35 | 1,60 | 6,35 | 6,00 | 2,00 | 10,00 | 0,60 | 0,35 | 0,90 |
| TNMG 330924-HR | TNMG 666-HR | 19,050 | 9,52 | 2,40 | 7,94 | 7,00 | 2,00 | 12,00 | 0,80 | 0,40 | 1,20 |
| TNMX 160404-L01 | TNMX 331-L01 | 9,525 | 4,76 | 0,40 | 3,81 | 2,50 | 1,00 | 3,50 | 0,15 | 0,12 | 0,30 |
| TNMX 160404-R01 | TNMX 331-R01 | 9,525 | 4,76 | 0,40 | 3,81 | 2,50 | 1,00 | 3,50 | 0,15 | 0,12 | 0,30 |
| TNMX 160408-L01 | TNMX 332-L01 | 9,525 | 4,76 | 0,80 | 3,81 | 2,50 | 1,30 | 3,50 | 0,30 | 0,15 | 0,50 |
| TNMX 160408-R01 | TNMX 332-R01 | 9,525 | 4,76 | 0,80 | 3,81 | 2,50 | 1,30 | 3,50 | 0,30 | 0,15 | 0,50 |

VN = RHOMBIC 35° NEGATIVE

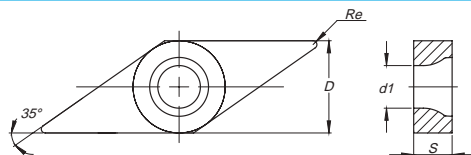
RÔMBICA 35° NEGATIVA | RÓMBICA 35° NEGATIVA

| | | | P | | | | | | | | M | | | | K | | | N | S | | | | | | | |
|---|-------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | | CVD | | | | | PVD | | | CVD | | | PVD | | CVD | UNC | PVD | | | | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 |
| Inserts Pastilhas Plaquetas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PH5215 | PH5225 | PH5240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 |
|  VNMA Roughing | 1120819 | VNMA 160404 | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121077 | VNMA 160408 | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
|  VNMG-MF Finishing | 1123635 | VNMG 160404-MF | | | ⊗ | | ⊗ | | | ⊗ | | | | | | | | | | | | | | | | |
| | 1123636 | VNMG 160408-MF | ⊗ | | ⊗ | | ⊗ | | | ⊗ | | | | | | | | | | | | | | | | |
|  VNMG-SF Medium to Finishing | 1123760 | VNMG 160404-SF | | | | | | | | | | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | | | | | | ⊗ | ⊗ | ⊗ | ⊗ |
| | 1123761 | VNMG 160408-SF | | | | | | | | | | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | | | | | | ⊗ | ⊗ | ⊗ | ⊗ |
| | 1123762 | VNMG 160412-SF | | | | | | | | | | ⊗ | ⊗ | | ⊗ | ⊗ | ⊗ | | | | | | ⊗ | ⊗ | ⊗ | ⊗ |
|  VNMG-LC Medium to Finishing | 1123659 | VNMG 160408-LC | | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | |
|  VNMG-MS Medium to Finishing | 1121579 | VNMG 160404-MS | | | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | |
| | 1121580 | VNMG 160408-MS | | | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | |
|  VNMG-GS Medium to Finishing | 1124562 | VNMG 160404-GS | | | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | ⊗ | ⊗ | ⊗ | |
| | 1124563 | VNMG 160408-GS | | | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | ⊗ | ⊗ | ⊗ | |
| | 1124564 | VNMG 160412-GS | | | | | | | | | | | | | ⊗ | ⊗ | ⊗ | | | | | | ⊗ | ⊗ | ⊗ | |
|  VNMG-MR Medium | 1121278 | VNMG 160404-MR | | | ⊗ | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | |
| | 1121279 | VNMG 160408-MR | | | ⊗ | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | |
| | 1121581 | VNMG 220408-MR | | | ⊗ | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | |
|  VNMG-PM Medium | 1124086 | VNMG 160404-PM | ⊗ | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | |
| | 1124087 | VNMG 160408-PM | ⊗ | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | |
|  VNMG-ST Medium | 1121276 | VNMG 160404-ST | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121277 | VNMG 160408-ST | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
|  VNMG-SS Roughing to Medium | 1121367 | VNMG 160404-SS | | | | | | | | | | | ⊗ | | ⊗ | ⊗ | | | | | | | ⊗ | | ⊗ | |
| | 1121295 | VNMG 160408-SS | | | | | | | | | | | ⊗ | | ⊗ | ⊗ | | | | | | | ⊗ | | ⊗ | |

⊗ First choice | 1ª Escolha | 1ª Opción
 ⊗ Stock Items | Itens de stock

⊗ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock
 ○ Available under request | Disponível sob consulta | Disponible bajo consulta







Insert Order Code: ⁽¹⁾ Geometry code + ⁽²⁾ Grade code



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|----------------|---|------|------|------|--|------|------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| VNMA 160404 | VNMA 331 | 9,525 | 4,76 | 0,40 | 3,81 | 0,20 | 0,10 | 3,30 | 0,15 | 0,08 | 0,25 |
| VNMA 160408 | VNMA 332 | 9,525 | 4,76 | 0,80 | 3,81 | 0,20 | 0,10 | 3,30 | 0,30 | 0,10 | 0,50 |
| VNMG 160404-MF | VNMG 331-MF | 9,525 | 4,76 | 0,40 | 3,81 | 0,50 | 0,15 | 1,50 | 0,15 | 0,05 | 0,25 |
| VNMG 160408-MF | VNMG 332-MF | 9,525 | 4,76 | 0,80 | 3,81 | 0,80 | 0,20 | 1,50 | 0,20 | 0,10 | 0,40 |
| VNMG 160404-SF | VNMG 331-SF | 9,525 | 4,76 | 0,40 | 3,81 | 1,50 | 0,60 | 3,00 | 0,15 | 0,10 | 0,23 |
| VNMG 160408-SF | VNMG 332-SF | 9,525 | 4,76 | 0,80 | 3,81 | 1,50 | 0,60 | 3,00 | 0,25 | 0,12 | 0,38 |
| VNMG 160412-SF | VNMG 333-SF | 9,525 | 4,76 | 1,20 | 3,81 | 1,50 | 0,60 | 3,00 | 0,35 | 0,15 | 0,55 |
| VNMG 160408-LC | VNMG 332-LC | 9,525 | 4,76 | 0,80 | 3,81 | 1,00 | 0,35 | 2,00 | 0,12 | 0,08 | 0,35 |
| VNMG 160404-MS | VNMG 331-MS | 9,525 | 4,76 | 0,40 | 3,81 | 2,00 | 0,20 | 4,00 | 0,15 | 0,10 | 0,20 |
| VNMG 160408-MS | VNMG 332-MS | 9,525 | 4,76 | 0,80 | 3,81 | 2,50 | 0,20 | 4,00 | 0,25 | 0,15 | 0,40 |
| VNMG 160404-GS | VNMG 331-GS | 9,525 | 4,76 | 0,40 | 3,81 | 1,50 | 0,15 | 2,00 | 0,20 | 0,08 | 0,25 |
| VNMG 160408-GS | VNMG 332-GS | 9,525 | 4,76 | 0,80 | 3,81 | 2,00 | 0,20 | 2,50 | 0,25 | 0,10 | 0,30 |
| VNMG 160412-GS | VNMG 333-GS | 9,525 | 4,76 | 1,20 | 3,81 | 2,50 | 0,30 | 3,00 | 0,30 | 0,12 | 0,35 |
| VNMG 160404-MR | VNMG 331-MR | 9,525 | 4,76 | 0,40 | 3,81 | 3,00 | 1,00 | 4,00 | 0,25 | 0,10 | 0,30 |
| VNMG 160408-MR | VNMG 332-MR | 9,525 | 4,76 | 0,80 | 3,81 | 3,00 | 1,00 | 4,00 | 0,30 | 0,15 | 0,50 |
| VNMG 220408-MR | VNMG 432-MR | 12,700 | 4,76 | 0,80 | 5,16 | 4,00 | 1,50 | 5,00 | 0,35 | 0,15 | 0,50 |
| VNMG 160404-PM | VNMG 331-PM | 9,525 | 4,76 | 0,40 | 3,81 | 3,00 | 1,00 | 4,00 | 0,25 | 0,10 | 0,30 |
| VNMG 160408-PM | VNMG 332-PM | 9,525 | 4,76 | 0,80 | 3,81 | 3,00 | 1,00 | 4,00 | 0,30 | 0,15 | 0,50 |
| VNMG 160404-ST | VNMG 331-ST | 9,525 | 4,76 | 0,40 | 3,81 | 2,00 | 0,20 | 3,50 | 0,30 | 0,15 | 0,40 |
| VNMG 160408-ST | VNMG 332-ST | 9,525 | 4,76 | 0,80 | 3,81 | 2,00 | 0,30 | 3,50 | 0,35 | 0,15 | 0,50 |
| VNMG 160404-SS | VNMG 331-SS | 9,525 | 4,76 | 0,40 | 3,81 | 1,50 | 0,50 | 4,00 | 0,20 | 0,10 | 0,30 |
| VNMG 160408-SS | VNMG 332-SS | 9,525 | 4,76 | 0,80 | 3,81 | 2,00 | 0,50 | 4,00 | 0,25 | 0,12 | 0,45 |

WN = TRIGON 80° NEGATIVE

TRIGONAL 80° NEGATIVA | TRIGONA 80° NEGATIVA

| | | | P | | | | | | | | M | | | | | | K | | | N | S | | | | | | |
|---|-------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|
| | | | CVD | | | | | PVD | | | CVD | | | PVD | | | CVD | | | UNC | PVD | | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 | |
| Inserts Pastilhas Plaquetas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 | |
|  WNMA Roughing | 1122002 | WNMA 060408 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1120834 | WNMA 080404 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1120835 | WNMA 080408 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121076 | WNMA 080412 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121582 | WNMA 080416 | | | | | | | | | | | | | | | | | | | | | | | | | |
|  WNMG-MF Finishing | 1121205 | WNMG 06T304-MF | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121206 | WNMG 06T308-MF | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121586 | WNMG 06T312-MF | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121207 | WNMG 060404-MF | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121208 | WNMG 060408-MF | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121583 | WNMG 060412-MF | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121213 | WNMG 080404-MF | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121214 | WNMG 080408-MF | | | | | | | | | | | | | | | | | | | | | | | | | |
|  WNMG-SF Medium to Finishing | 1123763 | WNMG 060404-SF | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1123764 | WNMG 060408-SF | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1123765 | WNMG 060412-SF | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1123766 | WNMG 080404-SF | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1123721 | WNMG 080408-SF | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1123767 | WNMG 080412-SF | | | | | | | | | | | | | | | | | | | | | | | | | |
|  WNMG-LC Medium to Finishing | 1123658 | WNMG 080408-LC | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  WNMG-MS Medium | 1121910 | WNMG 060404-MS | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121911 | WNMG 060408-MS | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1124574 | WNMG 080404-MS | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121588 | WNMG 080408-MS | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121590 | WNMG 080412-MS | | | | | | | | | | | | | | | | | | | | | | | | | |
|  WNMG-GS Medium to Finishing | 1124690 | WNMG 060404-GS | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1124691 | WNMG 060408-GS | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1124559 | WNMG 080404-GS | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1124560 | WNMG 080408-GS | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1124561 | WNMG 080412-GS | | | | | | | | | | | | | | | | | | | | | | | | | |

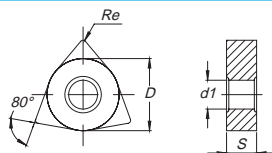
⊗ First choice | 1ª Escolha | 1ª Opción

⊗ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock

Insert Order Code: (1) Geometry code + (2) Grade code

⊗ Stock Items | Itens de stock







○ Available under request | Disponível sob consulta | Disponible bajo consulta



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|----------------|---|------|------|------|--|------|------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| WNMA 060408 | WNMA 332 | 9,525 | 4,76 | 0,80 | 3,81 | 2,50 | 0,20 | 4,00 | 0,35 | 0,15 | 0,60 |
| WNMA 080404 | WNMA 431 | 12,700 | 4,76 | 0,40 | 5,16 | 2,80 | 0,20 | 5,00 | 0,22 | 0,15 | 0,30 |
| WNMA 080408 | WNMA 432 | 12,700 | 4,76 | 0,80 | 5,16 | 3,00 | 0,20 | 5,00 | 0,35 | 0,15 | 0,60 |
| WNMA 080412 | WNMA 433 | 12,700 | 4,76 | 1,20 | 5,16 | 3,00 | 0,30 | 5,00 | 0,45 | 0,20 | 0,80 |
| WNMA 080416 | WNMA 434 | 12,700 | 4,76 | 1,60 | 5,16 | 3,00 | 0,30 | 5,00 | 0,55 | 0,20 | 1,00 |
| WNMG 06T304-MF | WNMG 32.51-MF | 9,525 | 3,97 | 0,40 | 3,81 | 0,40 | 0,10 | 1,50 | 0,15 | 0,05 | 0,30 |
| WNMG 06T308-MF | WNMG 32.52-MF | 9,525 | 3,97 | 0,80 | 3,81 | 0,40 | 0,10 | 1,50 | 0,20 | 0,10 | 0,40 |
| WNMG 06T312-MF | WNMG 32.53-MF | 9,525 | 3,97 | 1,20 | 3,81 | 0,40 | 0,15 | 1,50 | 0,30 | 0,15 | 0,60 |
| WNMG 060404-MF | WNMG 331-MF | 9,525 | 4,76 | 0,40 | 3,81 | 0,40 | 0,10 | 1,50 | 0,15 | 0,05 | 0,30 |
| WNMG 060408-MF | WNMG 332-MF | 9,525 | 4,76 | 0,80 | 3,81 | 0,40 | 0,10 | 1,50 | 0,20 | 0,10 | 0,40 |
| WNMG 060412-MF | WNMG 333-MF | 9,525 | 4,76 | 1,20 | 3,81 | 0,40 | 0,15 | 1,50 | 0,30 | 0,15 | 0,60 |
| WNMG 080404-MF | WNMG 431-MF | 12,700 | 4,76 | 0,40 | 5,16 | 0,60 | 0,10 | 2,00 | 0,15 | 0,05 | 0,30 |
| WNMG 080408-MF | WNMG 432-MF | 12,700 | 4,76 | 0,80 | 5,16 | 0,60 | 0,10 | 2,00 | 0,20 | 0,10 | 0,40 |
| WNMG 080412-MF | WNMG 433-MF | 12,700 | 4,76 | 1,20 | 5,16 | 0,60 | 0,15 | 2,00 | 0,30 | 0,15 | 0,60 |
| WNMG 060404-SF | WNMG 331-SF | 9,525 | 4,76 | 0,40 | 3,81 | 1,50 | 0,60 | 3,00 | 0,15 | 0,10 | 0,23 |
| WNMG 060408-SF | WNMG 332-SF | 9,525 | 4,76 | 0,80 | 3,81 | 1,50 | 0,60 | 3,00 | 0,25 | 0,12 | 0,38 |
| WNMG 060412-SF | WNMG 333-SF | 9,525 | 4,76 | 1,20 | 3,81 | 1,50 | 0,60 | 3,00 | 0,35 | 0,15 | 0,55 |
| WNMG 080404-SF | WNMG 431-SF | 12,700 | 4,76 | 0,40 | 5,16 | 1,50 | 0,60 | 3,00 | 0,15 | 0,10 | 0,23 |
| WNMG 080408-SF | WNMG 432-SF | 12,700 | 4,76 | 0,80 | 5,16 | 1,50 | 0,60 | 3,00 | 0,25 | 0,12 | 0,38 |
| WNMG 080412-SF | WNMG 433-SF | 12,700 | 4,76 | 1,20 | 5,16 | 1,50 | 0,60 | 3,00 | 0,35 | 0,15 | 0,55 |
| WNMG 080408-LC | WNMG 432-LC | 12,700 | 4,76 | 0,40 | 5,16 | 1,50 | 0,40 | 2,50 | 0,15 | 0,10 | 0,35 |
| WNMG 060404-MS | WNMG 331-MS | 9,525 | 4,76 | 0,40 | 3,81 | 1,20 | 0,30 | 2,20 | 0,15 | 0,10 | 0,20 |
| WNMG 060408-MS | WNMG 332-MS | 9,525 | 4,76 | 0,80 | 3,81 | 1,20 | 0,30 | 2,20 | 0,25 | 0,20 | 0,40 |
| WNMG 080404-MS | WNMG 431-MS | 12,700 | 4,76 | 0,40 | 5,16 | 2,50 | 0,70 | 4,00 | 0,15 | 0,10 | 0,30 |
| WNMG 080408-MS | WNMG 432-MS | 12,700 | 4,76 | 0,80 | 5,16 | 2,50 | 0,70 | 4,00 | 0,25 | 0,20 | 0,40 |
| WNMG 080412-MS | WNMG 433-MS | 12,700 | 4,76 | 1,20 | 5,16 | 2,50 | 1,00 | 4,00 | 0,30 | 0,25 | 0,55 |
| WNMG 060404-GS | WNMG 331-GS | 9,525 | 4,76 | 0,40 | 3,81 | 2,00 | 0,15 | 2,50 | 0,20 | 0,10 | 0,30 |
| WNMG 060408-GS | WNMG 332-GS | 9,525 | 4,76 | 0,80 | 3,81 | 2,50 | 0,25 | 3,00 | 0,25 | 0,10 | 0,35 |
| WNMG 080404-GS | WNMG 431-GS | 12,700 | 4,76 | 0,40 | 5,16 | 2,00 | 0,15 | 2,50 | 0,20 | 0,10 | 0,30 |
| WNMG 080408-GS | WNMG 432-GS | 12,700 | 4,76 | 0,80 | 5,16 | 2,50 | 0,25 | 3,00 | 0,25 | 0,10 | 0,35 |
| WNMG 080412-GS | WNMG 433-GS | 12,700 | 4,76 | 1,20 | 5,16 | 3,00 | 0,30 | 3,50 | 0,30 | 0,15 | 0,40 |

WN = TRIGON 80° NEGATIVE

TRIGONAL 80° NEGATIVA | TRIGONA 80° NEGATIVA

| | | | P | | | | | | | | M | | | | K | | | N | S | | | | | | | |
|---|-------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | | CVD | | | | | PVD | | | CVD | | | PVD | | CVD | UNC | PVD | | | | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 |
| Inserts Pastilhas Plaquetas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 |
|  WNUMG-MR Medium | 1121262 | WNMG 06T304-MR | ⊗ | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | 1121167 | WNMG 06T308-MR | ⊗ | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | 1121587 | WNMG 06T312-MR | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | 1121240 | WNMG 060404-MR | ⊗ | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | 1121168 | WNMG 060408-MR | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | 1121584 | WNMG 060412-MR | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | 1121356 | WNMG 080404-MR | | | ⊗ | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | |
| | 1121327 | WNMG 080408-MR | | | ⊗ | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | |
| | 1121261 | WNMG 080412-MR | | | ⊗ | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | |
| 1121592 | WNMG 080416-MR | | | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | |
|  WNUMG-PM Medium | 1124088 | WNMG 060404-PM | | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | |
| | 1124089 | WNMG 060408-PM | | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | |
| | 1123988 | WNMG 080404-PM | | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | |
| | 1123918 | WNMG 080408-PM | | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | |
| | 1123989 | WNMG 080412-PM | | | ⊗ | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | |
| 1123990 | WNMG 080416-PM | | | ⊗ | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | |
|  WNUMG-ST Medium | 1121162 | WNMG 080404-ST | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121163 | WNMG 080408-ST | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121164 | WNMG 080412-ST | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121593 | WNMG 080416-ST | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
|  WNUMG-MW Medium Wiper | 1121370 | WNMG 060408-MW | ⊗ | ⊗ | | ⊗ | | ⊗ | | | | | | | | | | | | ⊗ | | | | | | |
| | 1121585 | WNMG 060412-MW | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | ⊗ | ⊗ | | | | | |
| | 1121372 | WNMG 080408-MW | | | ⊗ | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | ⊗ | ⊗ | | | | | |
| | 1121371 | WNMG 080412-MW | | | ⊗ | | ⊗ | ⊗ | ⊗ | | | | | | | | | | | ⊗ | ⊗ | | | | | |
|  WNUMG-SS Roughing to Medium | 1121321 | WNMG 06T304-SS | | | | | | | | | | | | | | | | | | | | | | | ⊗ | |
| | 1121324 | WNMG 06T308-SS | | | | | | | | | | | | | | | | | | | | | | | ⊗ | |
| | 1121322 | WNMG 060404-SS | | | | | | | | | | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | |
| | 1121325 | WNMG 060408-SS | | | | | | | | | | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | |
| | 1121323 | WNMG 080404-SS | | | | | | | | | | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | |
| | 1121326 | WNMG 080408-SS | | | | | | | | | | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | |
| | 1121591 | WNMG 080412-SS | | | | | | | | | | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | |
|  WNUMG-HR Roughing | 1121127 | WNMG 080408-HR | ⊗ | | ⊗ | | ⊗ | | ⊗ | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121128 | WNMG 080412-HR | ⊗ | ⊗ | ⊗ | | ⊗ | | ⊗ | | | | | | | | | | ⊗ | ⊗ | | | | | | |

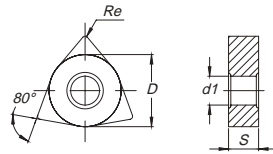
⊗ First choice | 1ª Escolha | 1ª Opción

⊗ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock

Insert Order Code: (1) Geometry code + (2) Grade code

⊗ Stock Items | Itens de stock

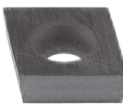




○ Available under request | Disponível sob consulta | Disponible bajo consulta



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|----------------|---|------|------|------|--|------|------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| WNMG 06T304-MR | WNMG 32.51-MR | 9,525 | 3,97 | 0,40 | 3,81 | 2,00 | 0,50 | 3,00 | 0,22 | 0,10 | 0,30 |
| WNMG 06T308-MR | WNMG 32.52-MR | 9,525 | 3,97 | 0,80 | 3,81 | 2,00 | 0,50 | 3,00 | 0,30 | 0,15 | 0,50 |
| WNMG 06T312-MR | WNMG 32.53-MR | 9,525 | 3,97 | 1,20 | 3,81 | 2,00 | 0,80 | 3,00 | 0,35 | 0,18 | 0,60 |
| WNMG 060404-MR | WNMG 331-MR | 9,525 | 4,76 | 0,40 | 3,81 | 2,00 | 0,50 | 3,00 | 0,22 | 0,10 | 0,30 |
| WNMG 060408-MR | WNMG 332-MR | 9,525 | 4,76 | 0,80 | 3,81 | 2,00 | 0,50 | 3,00 | 0,30 | 0,15 | 0,50 |
| WNMG 060412-MR | WNMG 333-MR | 9,525 | 4,76 | 1,20 | 3,81 | 2,00 | 0,80 | 3,00 | 0,35 | 0,18 | 0,60 |
| WNMG 080404-MR | WNMG 431-MR | 12,700 | 4,76 | 0,40 | 5,16 | 2,50 | 0,50 | 4,00 | 0,22 | 0,10 | 0,30 |
| WNMG 080408-MR | WNMG 432-MR | 12,700 | 4,76 | 0,80 | 5,16 | 2,50 | 0,50 | 4,00 | 0,30 | 0,15 | 0,50 |
| WNMG 080412-MR | WNMG 433-MR | 12,700 | 4,76 | 1,20 | 5,16 | 2,50 | 0,80 | 4,00 | 0,35 | 0,18 | 0,60 |
| WNMG 080416-MR | WNMG 434-MR | 12,700 | 4,76 | 1,60 | 5,16 | 3,00 | 1,00 | 4,00 | 0,40 | 0,23 | 0,65 |
| WNMG 060404-PM | WNMG 331-PM | 9,525 | 4,76 | 0,40 | 3,81 | 2,50 | 0,50 | 3,00 | 0,22 | 0,10 | 0,30 |
| WNMG 060408-PM | WNMG 332-PM | 9,525 | 7,76 | 0,80 | 3,81 | 2,50 | 0,50 | 3,00 | 0,30 | 0,15 | 0,50 |
| WNMG 080404-PM | WNMG 431-PM | 12,700 | 4,76 | 0,40 | 5,16 | 2,50 | 0,50 | 4,00 | 0,22 | 0,10 | 0,30 |
| WNMG 080408-PM | WNMG 432-PM | 12,700 | 4,76 | 0,80 | 5,16 | 2,50 | 0,50 | 4,00 | 0,30 | 0,15 | 0,50 |
| WNMG 080412-PM | WNMG 433-PM | 12,700 | 4,76 | 1,20 | 5,16 | 2,50 | 0,80 | 4,00 | 0,35 | 0,18 | 0,60 |
| WNMG 080416-PM | WNMG 434-PM | 12,700 | 4,76 | 1,60 | 5,16 | 3,00 | 1,00 | 4,50 | 0,35 | 0,20 | 0,65 |
| WNMG 080404-ST | WNMG 431-ST | 12,700 | 4,76 | 0,40 | 5,16 | 2,50 | 0,20 | 5,00 | 0,22 | 0,15 | 0,30 |
| WNMG 080408-ST | WNMG 432-ST | 12,700 | 4,76 | 0,80 | 5,16 | 2,50 | 0,20 | 5,00 | 0,35 | 0,15 | 0,50 |
| WNMG 080412-ST | WNMG 433-ST | 12,700 | 4,76 | 1,20 | 5,16 | 2,50 | 0,30 | 5,00 | 0,40 | 0,15 | 0,60 |
| WNMG 080416-ST | WNMG 434-ST | 12,700 | 4,76 | 1,60 | 5,16 | 2,50 | 0,30 | 5,00 | 0,45 | 0,20 | 0,70 |
| WNMG 060408-MW | WNMG 332-MW | 9,525 | 4,76 | 0,80 | 3,81 | 1,50 | 0,50 | 3,50 | 0,30 | 0,15 | 0,60 |
| WNMG 060412-MW | WNMG 333-MW | 9,525 | 4,76 | 1,20 | 3,81 | 1,50 | 0,80 | 3,50 | 0,50 | 0,20 | 0,90 |
| WNMG 080408-MW | WNMG 432-MW | 12,700 | 4,76 | 0,80 | 5,16 | 3,00 | 0,50 | 5,00 | 0,30 | 0,15 | 0,60 |
| WNMG 080412-MW | WNMG 433-MW | 12,700 | 4,76 | 1,20 | 5,16 | 3,50 | 0,80 | 6,00 | 0,50 | 0,20 | 0,90 |
| WNMG 06T304-SS | WNMG 32.51-SS | 9,525 | 3,97 | 0,40 | 3,81 | 2,00 | 0,50 | 3,00 | 0,20 | 0,12 | 0,30 |
| WNMG 06T308-SS | WNMG 32.52-SS | 9,525 | 3,97 | 0,80 | 3,81 | 2,00 | 0,50 | 3,00 | 0,25 | 0,12 | 0,45 |
| WNMG 060404-SS | WNMG 331-SS | 9,525 | 4,76 | 0,40 | 3,81 | 2,00 | 0,50 | 3,00 | 0,20 | 0,12 | 0,30 |
| WNMG 060408-SS | WNMG 332-SS | 9,525 | 4,76 | 0,80 | 3,81 | 2,00 | 0,50 | 3,00 | 0,25 | 0,12 | 0,45 |
| WNMG 080404-SS | WNMG 431-SS | 12,700 | 4,76 | 0,40 | 5,16 | 2,00 | 0,50 | 3,00 | 0,20 | 0,12 | 0,30 |
| WNMG 080408-SS | WNMG 432-SS | 12,700 | 4,76 | 0,80 | 5,16 | 2,50 | 0,50 | 4,00 | 0,25 | 0,12 | 0,45 |
| WNMG 080412-SS | WNMG 433-SS | 12,700 | 4,76 | 1,20 | 5,16 | 2,50 | 0,50 | 4,00 | 0,30 | 0,15 | 0,60 |
| WNMG 080408-HR | WNMG 432-HR | 12,700 | 4,76 | 0,80 | 5,16 | 4,00 | 0,80 | 5,00 | 0,35 | 0,20 | 0,55 |
| WNMG 080412-HR | WNMG 433-HR | 12,700 | 4,76 | 1,20 | 5,16 | 4,00 | 1,50 | 5,00 | 0,40 | 0,25 | 0,70 |

CC = RHOMBIC 80° POSITIVE

RÔMBICA 80° POSITIVA | RÓMBICA 80° POSITIVA

| | | | P | | | | | | | | M | | | | K | | | N | S | | | | | | | | |
|---|-------------------------|----------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|
| | | | CVD | | | | | | PVD | | CVD | | | PVD | | CVD | UNC | PVD | | | | | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 | |
| Inserts Pastilhas Plaquitas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 | |
|  | CCMW | 1120206 | CCMW 060204 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1120212 | CCMW 09T304 | | | | | | | | | | | | | | | | | | | | | | | | |
| | Finishing | 1120214 | CCMW 120404 | | | | | | | | | | | | | | | | | | | | | | | | |
|  | CCMT-FP | 1121655 | CCMT 060202-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121658 | CCMT 060204-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| | Finishing | 1121690 | CCMT 09T302-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121666 | CCMT 09T304-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121652 | CCMT 09T308-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121665 | CCMT 120404-FP | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | CCMT-BO | 1121620 | CCMT 060202-BO | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121621 | CCMT 060204-BO | | | | | | | | | | | | | | | | | | | | | | | | |
| | Finishing | 1124090 | CCMT 060208-BO | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1124091 | CCMT 09T302-BO | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121601 | CCMT 09T304-BO | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121622 | CCMT 09T308-BO | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121624 | CCMT 120404-BO | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121623 | CCMT 120408-BO | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | CCMT-FM | 1121654 | CCMT 060202-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121657 | CCMT 060204-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| | Finishing | 1121689 | CCMT 09T302-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121692 | CCMT 09T304-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121651 | CCMT 09T308-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121664 | CCMT 120404-FM | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | CCMT-FK | 1121653 | CCMT 060202-FK | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121656 | CCMT 060204-FK | | | | | | | | | | | | | | | | | | | | | | | | |
| | Finishing | 1121688 | CCMT 09T302-FK | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121691 | CCMT 09T304-FK | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121663 | CCMT 120404-FK | | | | | | | | | | | | | | | | | | | | | | | | |

⊗ First choice | 1ª Escolha | 1ª Opción

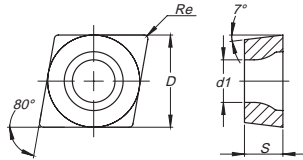
⊕ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock

Insert Order Code: ⁽¹⁾ Geometry code + ⁽²⁾ Grade code

⊖ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta





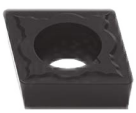

RELIEF ANGLE 7°



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|-----------------|---|------|------|------|--|------|------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| CCMW 060204 | CCMW 21.51 | 6,350 | 2,38 | 0,40 | 2,80 | 1,50 | 0,05 | 3,00 | 0,20 | 0,08 | 0,26 |
| CCMW 09T304 | CCMW 32.51 | 9,525 | 3,97 | 0,40 | 4,40 | 2,30 | 0,05 | 4,50 | 0,20 | 0,08 | 0,26 |
| CCMW 120404 | CCMW 431 | 12,700 | 4,76 | 0,40 | 5,50 | 3,10 | 0,05 | 6,00 | 0,20 | 0,08 | 0,26 |
| CCMT 060202-FP | CCMT 21.50.5-FP | 6,350 | 2,38 | 0,20 | 2,80 | 0,30 | 0,06 | 1,70 | 0,06 | 0,03 | 0,11 |
| CCMT 060204-FP | CCMT 21.51-FP | 6,350 | 2,38 | 0,40 | 2,80 | 0,30 | 0,10 | 1,70 | 0,08 | 0,05 | 0,17 |
| CCMT 09T302-FP | CCMT 32.50.5-FP | 9,525 | 3,97 | 0,20 | 4,40 | 0,35 | 0,08 | 2,00 | 0,08 | 0,04 | 0,13 |
| CCMT 09T304-FP | CCMT 32.51-FP | 9,525 | 3,97 | 0,40 | 4,40 | 0,35 | 0,11 | 2,00 | 0,11 | 0,06 | 0,23 |
| CCMT 09T308-FP | CCMT 32.52-FP | 9,525 | 3,97 | 0,80 | 4,40 | 0,35 | 0,15 | 2,00 | 0,20 | 0,08 | 0,45 |
| CCMT 120404-FP | CCMT 431-FP | 12,700 | 4,76 | 0,40 | 5,50 | 0,42 | 0,14 | 2,40 | 0,14 | 0,07 | 0,27 |
| CCMT 060202-BO | CCMT 21.50.5-BO | 6,350 | 2,38 | 0,20 | 2,80 | 0,50 | 0,30 | 1,00 | 0,08 | 0,05 | 0,13 |
| CCMT 060204-BO | CCMT 21.51-BO | 6,350 | 2,38 | 0,40 | 2,80 | 0,50 | 0,30 | 1,00 | 0,13 | 0,08 | 0,20 |
| CCMT 060208-BO | CCMT 21.52-BO | 6,350 | 2,38 | 0,80 | 2,80 | 0,50 | 0,30 | 1,00 | 0,20 | 0,10 | 0,30 |
| CCMT 09T302-BO | CCMT 32.50.5-BO | 9,525 | 3,97 | 0,20 | 4,40 | 0,80 | 0,40 | 1,20 | 0,12 | 0,07 | 0,20 |
| CCMT 09T304-BO | CCMT 32.51-BO | 9,525 | 3,97 | 0,40 | 4,40 | 0,80 | 0,50 | 1,20 | 0,13 | 0,08 | 0,20 |
| CCMT 09T308-BO | CCMT 32.52-BO | 9,525 | 3,97 | 0,80 | 4,40 | 0,80 | 0,50 | 1,20 | 0,20 | 0,10 | 0,30 |
| CCMT 120404-BO | CCMT 431-BO | 12,700 | 4,76 | 0,40 | 5,50 | 1,00 | 0,50 | 1,50 | 0,13 | 0,08 | 0,20 |
| CCMT 120408-BO | CCMT 432-BO | 12,700 | 4,76 | 0,80 | 5,50 | 1,00 | 0,50 | 1,50 | 0,20 | 0,10 | 0,30 |
| CCMT 060202-FM | CCMT 21.50.5-FM | 6,350 | 2,38 | 0,20 | 2,80 | 0,30 | 0,06 | 1,70 | 0,06 | 0,03 | 0,11 |
| CCMT 060204-FM | CCMT 21.51-FM | 6,350 | 2,38 | 0,40 | 2,80 | 0,30 | 0,10 | 1,70 | 0,08 | 0,05 | 0,17 |
| CCMT 09T302-FM | CCMT 32.50.5-FM | 9,525 | 3,97 | 0,20 | 4,40 | 0,35 | 0,08 | 2,00 | 0,08 | 0,04 | 0,13 |
| CCMT 09T304-FM | CCMT 32.51-FM | 9,525 | 3,97 | 0,40 | 4,40 | 0,35 | 0,11 | 2,00 | 0,11 | 0,06 | 0,23 |
| CCMT 09T308-FM | CCMT 32.52-FM | 9,525 | 3,97 | 0,80 | 4,40 | 0,35 | 0,15 | 2,00 | 0,20 | 0,08 | 0,45 |
| CCMT 120404-FM | CCMT 431-FM | 12,700 | 4,76 | 0,40 | 5,50 | 0,42 | 0,14 | 2,40 | 0,14 | 0,07 | 0,27 |
| CCMT 060202-FK | CCMT 21.50.5-FK | 6,350 | 2,38 | 0,20 | 2,80 | 0,30 | 0,06 | 1,70 | 0,06 | 0,03 | 0,11 |
| CCMT 060204-FK | CCMT 21.51-FK | 6,350 | 2,38 | 0,40 | 2,80 | 0,30 | 0,10 | 1,70 | 0,08 | 0,05 | 0,17 |
| CCMT 09T302-FK | CCMT 32.50.5-FK | 9,525 | 3,97 | 0,20 | 4,40 | 0,35 | 0,08 | 2,00 | 0,08 | 0,04 | 0,13 |
| CCMT 09T304-FK | CCMT 32.51-FK | 9,525 | 3,97 | 0,40 | 4,40 | 0,35 | 0,11 | 2,00 | 0,11 | 0,06 | 0,23 |
| CCMT 120404-FK | CCMT 431-FK | 12,700 | 4,76 | 0,40 | 5,50 | 0,42 | 0,14 | 2,40 | 0,14 | 0,07 | 0,27 |

CC = RHOMBIC 80° POSITIVE

RÔMBICA 80° POSITIVA | RÓMBICA 80° POSITIVA

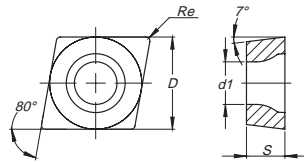
| | | | P | | | | | | | | M | | | | K | | | N | S | | | | | | | | | |
|---|----------------------|----------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|--|
| | | | CVD | | | | | PVD | | | CVD | | | PVD | | CVD | UNC | PVD | | | | | | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 | | |
| Inserts Pastilhas Plaquetas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 | | |
|  Finishing Wiper | CCMT-FW | 1121398 | CCMT 060204-FW | | | ⊗ | | | | | ⊗ | | | | | | | | ⊗ | | | | | | | | | |
| | | 1121743 | CCMT 060208-FW | | | ⊗ | | | | | ⊗ | | | | | | | | ⊗ | | | | | | | | | |
| | | 1121399 | CCMT 09T304-FW | | ⊗ | ⊗ | | | | | ⊗ | | | | | | | | | ⊗ | | | | | | | | |
| | | 1121744 | CCMT 09T308-FW | | ⊗ | ⊗ | | | | | ⊗ | | | | | | | | | ⊗ | | | | | | | | |
|  Medium to Finishing | CCMT-LM | 1123801 | CCMT 060204-LM | | | | | | | | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | |
| | | 1123773 | CCMT 09T304-LM | | | | | | | | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | |
| | | 1123804 | CCMT 120404-LM | | | | | | | | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | |
|  Medium | CCMT-MP | 1121697 | CCMT 060204-MP | | | ⊗ | | | | | ⊗ | | | | | | | | | | | | | | | | | |
| | | 1121661 | CCMT 060208-MP | | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121700 | CCMT 09T304-MP | | | ⊗ | | | | | ⊗ | | | | | | | | | | | | | | | | | |
| | | 1121687 | CCMT 09T308-MP | | | ⊗ | | | | | ⊗ | | | | | | | | | | | | | | | | | |
| | | 1121719 | CCMT 120404-MP | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | | | | | | | | | | | | | | | | |
| | | 1121722 | CCMT 120408-MP | | | ⊗ | | | | | ⊗ | | | | | | | | | | | | | | | | | |
|  Medium | CCMT-MM | 1121696 | CCMT 060204-MM | | | | | | | | | ⊗ | | | ⊗ | ⊗ | ⊗ | | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | |
| | | 1121660 | CCMT 060208-MM | | | | | | | | | ⊗ | | | | ⊗ | ⊗ | ⊗ | | | | | | ⊗ | ⊗ | ⊗ | | |
| | | 1121699 | CCMT 09T304-MM | | | | | | | | | ⊗ | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | |
| | | 1121686 | CCMT 09T308-MM | | | | | | | | | ⊗ | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | |
| | | 1121718 | CCMT 120404-MM | | | | | | | | | ⊗ | | | | ⊗ | ⊗ | ⊗ | | | | | | ⊗ | ⊗ | ⊗ | | |
| | | 1121721 | CCMT 120408-MM | | | | | | | | | ⊗ | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | | |
| | | 1121723 | CCMT 120412-MM | | | | | | | | | ⊗ | | | | ⊗ | ⊗ | ⊗ | | | | | | ⊗ | ⊗ | ⊗ | | |
|  Medium | CCMT-MK | 1121695 | CCMT 060204-MK | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | | |
| | | 1121659 | CCMT 060208-MK | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | | 1121698 | CCMT 09T304-MK | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | | 1121685 | CCMT 09T308-MK | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | | 1121717 | CCMT 120404-MK | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
|  Medium to Finishing Wiper | CCMT-MW | 1121462 | CCMT 060208-MW | | ⊗ | ⊗ | | | | | ⊗ | | | | | | | | | ⊗ | | | | | | | | |
| | | 1121400 | CCMT 09T304-MW | | ⊗ | ⊗ | | | | | ⊗ | | | | | | | | | ⊗ | | | | | | | | |
| | | 1121411 | CCMT 09T308-MW | | ⊗ | ⊗ | | | | | ⊗ | | | | | | | | | ⊗ | | | | | | | | |
| | | 1121412 | CCMT 120404-MW | | ⊗ | ⊗ | | | | | ⊗ | | | | | | | | | ⊗ | | | | | | | | |
| | | 1121413 | CCMT 120408-MW | | ⊗ | ⊗ | | | | | ⊗ | | | | | | | | | ⊗ | | | | | | | | |

⊗ First choice | 1ª Escolha | 1ª Opción
⊕ Stock Items | Itens de stock

⊕ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock
○ Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: (1) Geometry code + (2) Grade code



RELIEF ANGLE 7°



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|----------------|---|------|------|------|--|------|------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| CCMT 060204-FW | CCMT 21.51-FW | 6,350 | 2,38 | 0,40 | 2,80 | 0,80 | 0,30 | 2,00 | 0,12 | 0,05 | 0,30 |
| CCMT 060208-FW | CCMT 21.52-FW | 6,350 | 2,38 | 0,80 | 2,80 | 0,80 | 0,30 | 2,00 | 0,15 | 0,09 | 0,35 |
| CCMT 09T304-FW | CCMT 32.51-FW | 9,525 | 3,97 | 0,40 | 4,40 | 1,00 | 0,30 | 3,00 | 0,20 | 0,07 | 0,30 |
| CCMT 09T308-FW | CCMT 32.52-FW | 9,525 | 3,97 | 0,80 | 4,40 | 1,00 | 0,30 | 3,00 | 0,25 | 0,12 | 0,50 |
| CCMT 060204-LM | CCMT 21.51-LM | 6,350 | 2,38 | 0,40 | 2,80 | 0,50 | 0,20 | 2,00 | 0,10 | 0,08 | 0,20 |
| CCMT 09T304-LM | CCMT 32.51-LM | 9,525 | 3,97 | 0,40 | 4,40 | 0,50 | 0,25 | 2,50 | 0,15 | 0,10 | 0,30 |
| CCMT 120404-LM | CCMT 431-LM | 12,700 | 4,76 | 0,40 | 5,50 | 0,80 | 0,30 | 3,00 | 0,18 | 0,12 | 0,35 |
| CCMT 060204-MP | CCMT 21.51-MP | 6,350 | 2,38 | 0,40 | 2,80 | 0,64 | 0,20 | 2,40 | 0,11 | 0,06 | 0,17 |
| CCMT 060208-MP | CCMT 21.52-MP | 6,350 | 2,38 | 0,80 | 2,80 | 0,64 | 0,40 | 2,40 | 0,18 | 0,08 | 0,35 |
| CCMT 09T304-MP | CCMT 32.51-MP | 9,525 | 3,97 | 0,40 | 4,40 | 0,64 | 0,25 | 3,00 | 0,15 | 0,08 | 0,23 |
| CCMT 09T308-MP | CCMT 32.52-MP | 9,525 | 3,97 | 0,80 | 4,40 | 0,80 | 0,50 | 3,00 | 0,20 | 0,10 | 0,40 |
| CCMT 120404-MP | CCMT 431-MP | 12,700 | 4,76 | 0,40 | 5,50 | 0,96 | 0,30 | 3,60 | 0,18 | 0,09 | 0,27 |
| CCMT 120408-MP | CCMT 432-MP | 12,700 | 4,76 | 0,80 | 5,50 | 0,96 | 0,60 | 3,60 | 0,24 | 0,12 | 0,45 |
| CCMT 120412-MP | CCMT 433-MP | 12,700 | 4,76 | 1,20 | 5,50 | 0,96 | 0,72 | 3,60 | 0,35 | 0,14 | 0,60 |
| CCMT 060204-MM | CCMT 21.51-MM | 6,350 | 2,38 | 0,40 | 2,80 | 0,64 | 0,20 | 2,40 | 0,11 | 0,06 | 0,17 |
| CCMT 060208-MM | CCMT 21.52-MM | 6,350 | 2,38 | 0,80 | 2,80 | 0,64 | 0,40 | 2,40 | 0,18 | 0,08 | 0,35 |
| CCMT 09T304-MM | CCMT 32.51-MM | 9,525 | 3,97 | 0,40 | 4,40 | 0,64 | 0,25 | 3,00 | 0,15 | 0,08 | 0,23 |
| CCMT 09T308-MM | CCMT 32.52-MM | 9,525 | 3,97 | 0,80 | 4,40 | 0,80 | 0,50 | 3,00 | 0,20 | 0,10 | 0,40 |
| CCMT 120404-MM | CCMT 431-MM | 12,700 | 4,76 | 0,40 | 5,50 | 0,96 | 0,30 | 3,60 | 0,18 | 0,09 | 0,27 |
| CCMT 120408-MM | CCMT 432-MM | 12,700 | 4,76 | 0,80 | 5,50 | 0,96 | 0,60 | 3,60 | 0,24 | 0,12 | 0,45 |
| CCMT 120412-MM | CCMT 433-MM | 12,700 | 4,76 | 1,20 | 5,50 | 0,96 | 0,72 | 3,60 | 0,35 | 0,14 | 0,60 |
| CCMT 060204-MK | CCMT 21.51-MK | 6,350 | 2,38 | 0,40 | 2,80 | 0,64 | 0,20 | 2,40 | 0,11 | 0,06 | 0,17 |
| CCMT 060208-MK | CCMT 21.52-MK | 6,350 | 2,38 | 0,80 | 2,80 | 0,64 | 0,40 | 2,40 | 0,18 | 0,08 | 0,35 |
| CCMT 09T304-MK | CCMT 32.51-MK | 9,525 | 3,97 | 0,40 | 4,40 | 0,64 | 0,25 | 3,00 | 0,15 | 0,08 | 0,23 |
| CCMT 09T308-MK | CCMT 32.52-MK | 9,525 | 3,97 | 0,80 | 4,40 | 0,80 | 0,50 | 3,00 | 0,20 | 0,10 | 0,40 |
| CCMT 120404-MK | CCMT 431-MK | 12,700 | 4,76 | 0,40 | 5,50 | 0,96 | 0,30 | 3,60 | 0,18 | 0,09 | 0,27 |
| CCMT 120408-MK | CCMT 432-MK | 12,700 | 4,76 | 0,80 | 5,50 | 0,96 | 0,60 | 3,60 | 0,24 | 0,12 | 0,45 |
| CCMT 060208-MW | CCMT 21.52-MW | 6,350 | 2,38 | 0,80 | 2,80 | 1,20 | 0,50 | 2,50 | 0,20 | 0,10 | 0,40 |
| CCMT 09T304-MW | CCMT 32.51-MW | 9,525 | 3,97 | 0,40 | 4,40 | 1,50 | 0,50 | 4,00 | 0,25 | 0,12 | 0,40 |
| CCMT 09T308-MW | CCMT 32.52-MW | 9,525 | 3,97 | 0,80 | 4,40 | 1,50 | 0,70 | 4,00 | 0,30 | 0,15 | 0,50 |
| CCMT 120404-MW | CCMT 431-MW | 12,700 | 4,76 | 0,40 | 5,50 | 2,00 | 0,50 | 4,00 | 0,25 | 0,15 | 0,40 |
| CCMT 120408-MW | CCMT 432-MW | 12,700 | 4,76 | 0,80 | 5,50 | 2,00 | 0,70 | 4,00 | 0,30 | 0,15 | 0,50 |

CC = RHOMBIC 80° POSITIVE

RÔMBICA 80° POSITIVA | RÓMBICA 80° POSITIVA

| | | | P | | | | | | | | M | | | | K | | | N | S | | | | | | | | |
|---|-------------------------|----------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|
| | | | CVD | | | | | PVD | | | CVD | | | PVD | | CVD | | | UNC | PVD | | | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 | |
| Inserts Pastilhas Plaquitas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 | |
|  | CCGT-FS | 1121725 | CCGT 060201-FS | | | | | | | ⊗ | ⊗ | | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | |
| | | 1121726 | CCGT 060202-FS | | | | | | | ⊗ | ⊗ | | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | |
| | | 1121727 | CCGT 060204-FS | | | | | | | ⊗ | ⊗ | | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | |
| Finishing to Fine Finishing | | 1121455 | CCGT 09T301-FS | | | | | | | ⊗ | ⊗ | | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | |
| | | 1121456 | CCGT 09T302-FS | | | | | | | ⊗ | ⊗ | | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | |
| | | 1121457 | CCGT 09T304-FS | | | | | | | ⊗ | ⊗ | | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | |
|  | CCGT-LN | 1121884 | CCGT 060202-LN | | | | | | | | | | | | ⊗ | | | | | | | ⊗ | ⊗ | | | | |
| | | 1121885 | CCGT 060204-LN | | | | | | | | | | | | ⊗ | | | | | | | | ⊗ | ⊗ | | | |
| | Medium to Finishing | 1121887 | CCGT 09T302-LN | | | | | | | | | | | | | | | | | | | | ⊗ | | | | |
| Positive inserts | | 1121887 | CCGT 09T304-LN | | | | | | | | | | | | ⊗ | | | | | | | | ⊗ | ⊗ | | | |
| | | 1121888 | CCGT 09T308-LN | | | | | | | | | | | | | | | | | | | | ⊗ | | | | |
| | | 1123679 | CCGT 120402-LN | | | | | | | | | | | | | | | | | | | | ⊗ | | | | |
| | | 1123681 | CCGT 120404-LN | | | | | | | | | | | | | | | | | | | | ⊗ | | | | |
| PCBN & PCD inserts | | 1123682 | CCGT 120408-LN | | | | | | | | | | | | | | | | | | | | ⊗ | | | | |

⊗ First choice | 1ª Escolha | 1ª Opción

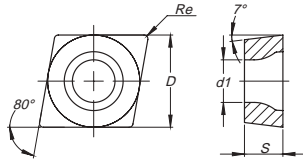
⊗ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock

Insert Order Code: ⁽¹⁾ Geometry code + ⁽²⁾ Grade code

⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

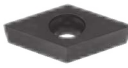






RELIEF ANGLE 7°



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|-----------------|---|------|------|------|--|------|------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| CCGT 060201-FS | CCGT 21.50.2-FS | 6,350 | 2,38 | 0,10 | 2,80 | 0,30 | 0,10 | 1,00 | 0,03 | 0,01 | 0,06 |
| CCGT 060202-FS | CCGT 21.50.5-FS | 6,350 | 2,38 | 0,20 | 2,80 | 0,50 | 0,10 | 1,50 | 0,07 | 0,02 | 0,12 |
| CCGT 060204-FS | CCGT 21.51-FS | 6,350 | 2,38 | 0,40 | 2,80 | 0,80 | 0,15 | 1,50 | 0,20 | 0,08 | 0,25 |
| CCGT 09T301-FS | CCGT 32.50.2-FS | 9,525 | 3,97 | 0,10 | 4,40 | 0,50 | 0,10 | 1,50 | 0,03 | 0,01 | 0,06 |
| CCGT 09T302-FS | CCGT 32.50.5-FS | 9,525 | 3,97 | 0,20 | 4,40 | 1,00 | 0,10 | 2,00 | 0,07 | 0,02 | 0,12 |
| CCGT 09T304-FS | CCGT 32.51-FS | 9,525 | 3,97 | 0,40 | 4,40 | 1,25 | 0,15 | 2,50 | 0,15 | 0,08 | 0,25 |
| CCGT 060202-LN | CCGT 21.50.5-LN | 6,350 | 2,38 | 0,20 | 2,80 | 1,00 | 0,05 | 3,00 | 0,07 | 0,05 | 0,12 |
| CCGT 060204-LN | CCGT 21.51-LN | 6,350 | 2,38 | 0,40 | 2,80 | 1,55 | 0,10 | 3,00 | 0,15 | 0,10 | 0,20 |
| CCGT 09T302-LN | CCGT 32.50.5-LN | 9,525 | 3,97 | 0,20 | 4,40 | 1,53 | 0,05 | 3,00 | 0,07 | 0,05 | 0,12 |
| CCGT 09T304-LN | CCGT 32.51-LN | 9,525 | 3,97 | 0,40 | 4,40 | 2,55 | 0,10 | 5,00 | 0,16 | 0,10 | 0,22 |
| CCGT 09T308-LN | CCGT 32.52-LN | 9,525 | 3,97 | 0,80 | 4,40 | 2,55 | 0,10 | 5,00 | 0,22 | 0,15 | 0,45 |
| CCGT 120402-LN | CCGT 430.5-LN | 12,700 | 4,76 | 0,20 | 5,50 | 2,03 | 0,05 | 4,00 | 0,07 | 0,05 | 0,12 |
| CCGT 120404-LN | CCGT 431-LN | 12,700 | 4,76 | 0,40 | 5,50 | 2,55 | 0,10 | 5,00 | 0,17 | 0,10 | 0,26 |
| CCGT 120408-LN | CCGT 432-LN | 12,700 | 4,76 | 0,80 | 5,50 | 2,80 | 0,10 | 5,50 | 0,25 | 0,15 | 0,50 |

DC = RHOMBIC 55° POSITIVE

RÔMBICA 55° POSITIVA | RÓMBICA 55° POSITIVA

| | | | P | | | | | | | | M | | | | | | K | | | N | S | | | | | |
|---|-------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | | CVD | | | | | | PVD | | CVD | | | PVD | | | CVD | | | UNC | PVD | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 |
| Inserts Pastilhas Plaquetas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 |
|  DCMW Finishing | 1120302 | DCMW 070202 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1120303 | DCMW 070204 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121422 | DCMW 070208 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1120304 | DCMW 11T302 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1120305 | DCMW 11T304 | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1120306 | DCMW 11T308 | | | | | | | | | | | | | | | | | | | | | | | | |
|  DCMT-FP Finishing | 1121675 | DCMT 070202-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121678 | DCMT 070204-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121668 | DCMT 11T302-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121711 | DCMT 11T304-FP | | | | | | | | | | | | | | | | | | | | | | | | |
|  DCMT-FM Finishing | 1121674 | DCMT 070202-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121677 | DCMT 070204-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121667 | DCMT 11T302-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121710 | DCMT 11T304-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121712 | DCMT 11T308-FM | | | | | | | | | | | | | | | | | | | | | | | | |
|  DCMT-FK Finishing | 1121673 | DCMT 070202-FK | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121676 | DCMT 070204-FK | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121714 | DCMT 11T302-FK | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121709 | DCMT 11T304-FK | | | | | | | | | | | | | | | | | | | | | | | | |
|  DCMT-FW Finishing Wiper | 1121749 | DCMT 070204-FW | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121750 | DCMT 070208-FW | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121745 | DCMT 11T304-FW | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121755 | DCMT 11T308-FW | | | | | | | | | | | | | | | | | | | | | | | | |
|  DCMT-LM Medium to Finishing | 1123802 | DCMT 11T304-LM | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1123803 | DCMT 11T308-LM | | | | | | | | | | | | | | | | | | | | | | | | |
|  DCMT-MP Medium | 1121681 | DCMT 070204-MP | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121684 | DCMT 070208-MP | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121648 | DCMT 11T304-MP | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121706 | DCMT 11T308-MP | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121708 | DCMT 11T312-MP | | | | | | | | | | | | | | | | | | | | | | | | |

⊗ First choice | 1ª Escolha | 1ª Opción

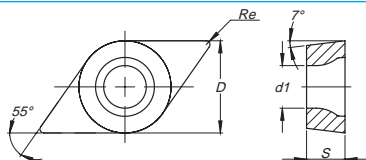
⊗ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock

Insert Order Code: (1) Geometry code + (2) Grade code

⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta






RELIEF ANGLE 7°



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|-----------------|---|------|------|------|--|------|------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| DCMW 070202 | DCMW 21.50.5 | 6,350 | 2,38 | 0,20 | 2,80 | 1,60 | 0,05 | 3,20 | 0,10 | 0,04 | 0,13 |
| DCMW 070204 | DCMW 21.51 | 6,350 | 2,38 | 0,40 | 2,80 | 1,60 | 0,05 | 3,20 | 0,20 | 0,08 | 0,26 |
| DCMW 070208 | DCMW 21.52 | 6,350 | 2,38 | 0,80 | 2,80 | 1,60 | 0,05 | 3,20 | 0,40 | 0,16 | 0,53 |
| DCMW 11T302 | DCMW 32.50.5 | 9,525 | 3,97 | 0,20 | 4,40 | 2,40 | 0,05 | 4,80 | 0,10 | 0,04 | 0,13 |
| DCMW 11T304 | DCMW 32.51 | 9,525 | 3,97 | 0,40 | 4,40 | 2,40 | 0,05 | 4,80 | 0,20 | 0,08 | 0,26 |
| DCMW 11T308 | DCMW 32.52 | 9,525 | 3,97 | 0,80 | 4,40 | 2,40 | 0,05 | 4,80 | 0,40 | 0,16 | 0,53 |
| DCMW 150404 | DCMW 431 | 12,700 | 4,76 | 0,40 | 5,50 | 2,80 | 0,10 | 5,50 | 0,20 | 0,10 | 0,26 |
| DCMT 070202-FP | DCMT 21.50.5-FP | 6,350 | 2,38 | 0,20 | 2,80 | 0,26 | 0,06 | 1,50 | 0,06 | 0,03 | 0,11 |
| DCMT 070204-FP | DCMT 21.51-FP | 6,350 | 2,38 | 0,40 | 2,80 | 0,26 | 0,08 | 1,50 | 0,08 | 0,05 | 0,17 |
| DCMT 11T302-FP | DCMT 32.50.5-FP | 9,525 | 3,97 | 0,20 | 4,40 | 0,35 | 0,08 | 2,00 | 0,08 | 0,04 | 0,15 |
| DCMT 11T304-FP | DCMT 32.51-FP | 9,525 | 3,97 | 0,40 | 4,40 | 0,35 | 0,11 | 2,00 | 0,11 | 0,06 | 0,23 |
| DCMT 11T308-FP | DCMT 32.52-FP | 9,525 | 3,97 | 0,80 | 4,40 | 0,35 | 0,15 | 2,00 | 0,15 | 0,08 | 0,30 |
| DCMT 070202-FM | DCMT 21.50.5-FM | 6,350 | 2,38 | 0,20 | 2,80 | 0,26 | 0,06 | 1,50 | 0,06 | 0,03 | 0,11 |
| DCMT 070204-FM | DCMT 21.51-FM | 6,350 | 2,38 | 0,40 | 2,80 | 0,26 | 0,08 | 1,50 | 0,08 | 0,05 | 0,17 |
| DCMT 11T302-FM | DCMT 32.50.5-FM | 9,525 | 3,97 | 0,20 | 4,40 | 0,35 | 0,08 | 2,00 | 0,08 | 0,04 | 0,15 |
| DCMT 11T304-FM | DCMT 32.51-FM | 9,525 | 3,97 | 0,40 | 4,40 | 0,35 | 0,11 | 2,00 | 0,11 | 0,06 | 0,23 |
| DCMT 11T308-FM | DCMT 32.52-FM | 9,525 | 3,97 | 0,80 | 4,40 | 0,35 | 0,15 | 2,00 | 0,15 | 0,08 | 0,30 |
| DCMT 070202-FK | DCMT 21.50.5-FK | 6,350 | 2,38 | 0,20 | 2,80 | 0,26 | 0,06 | 1,50 | 0,06 | 0,03 | 0,11 |
| DCMT 070204-FK | DCMT 21.51-FK | 6,350 | 2,38 | 0,40 | 2,80 | 0,26 | 0,08 | 1,50 | 0,08 | 0,05 | 0,17 |
| DCMT 11T302-FK | DCMT 32.50.5-FK | 9,525 | 3,97 | 0,20 | 4,40 | 0,35 | 0,08 | 2,00 | 0,08 | 0,04 | 0,15 |
| DCMT 11T304-FK | DCMT 32.51-FK | 9,525 | 3,97 | 0,40 | 4,40 | 0,35 | 0,11 | 2,00 | 0,11 | 0,06 | 0,23 |
| DCMT 070204-FW | DCMT 21.51-FW | 6,350 | 2,38 | 0,40 | 2,80 | 0,70 | 0,30 | 2,00 | 0,12 | 0,05 | 0,25 |
| DCMT 070208-FW | DCMT 21.52-FW | 6,350 | 2,38 | 0,80 | 2,80 | 0,70 | 0,30 | 2,00 | 0,15 | 0,09 | 0,35 |
| DCMT 11T304-FW | DCMT 32.51-FW | 9,525 | 3,97 | 0,40 | 4,40 | 1,00 | 0,30 | 3,00 | 0,20 | 0,07 | 0,30 |
| DCMT 11T308-FW | DCMT 32.52-FW | 9,525 | 3,97 | 0,80 | 4,40 | 1,00 | 0,30 | 3,00 | 0,25 | 0,12 | 0,40 |
| DCMT 11T304-LM | DCMT 32.51-LM | 9,525 | 3,97 | 0,40 | 4,40 | 0,50 | 0,15 | 2,50 | 0,15 | 0,08 | 0,25 |
| DCMT 11T308-LM | DCMT 32.52-LM | 9,525 | 3,97 | 0,80 | 4,40 | 0,50 | 0,20 | 2,50 | 0,20 | 0,10 | 0,35 |
| DCMT 070204-MP | DCMT 21.51-MP | 6,350 | 2,38 | 0,40 | 2,80 | 0,60 | 0,19 | 2,25 | 0,11 | 0,06 | 0,17 |
| DCMT 070208-MP | DCMT 21.52-MP | 6,350 | 2,38 | 0,80 | 2,80 | 0,60 | 0,38 | 2,25 | 0,20 | 0,08 | 0,35 |
| DCMT 11T304-MP | DCMT 32.51-MP | 9,525 | 3,97 | 0,40 | 4,40 | 0,80 | 0,25 | 3,00 | 0,15 | 0,08 | 0,23 |
| DCMT 11T308-MP | DCMT 32.52-MP | 9,525 | 3,97 | 0,80 | 4,40 | 0,80 | 0,50 | 3,00 | 0,25 | 0,10 | 0,40 |
| DCMT 11T312-MP | DCMT 32.53-MP | 9,525 | 3,97 | 1,20 | 4,40 | 0,80 | 0,60 | 3,00 | 0,35 | 0,12 | 0,60 |

DC = RHOMBIC 55° POSITIVE

RÔMBICA 55° POSITIVA | RÓMBICA 55° POSITIVA

| | | | P | | | | | | | | M | | | | K | | | N | S | | | | | | | | |
|--|-------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---|
| | | | CVD | | | | | | PVD | | CVD | | | PVD | | CVD | UNC | PVD | | | | | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 | |
| Inserts Pastilhas Plaquetas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 | |
|  DCMT-MM Medium | 1121680 | DCMT 070204-MM | | | | | | | | | | ⊗ | | | ⊗ | ⊗ | ⊗ | | | | | | ⊗ | ⊗ | ⊗ | ⊗ | |
| | 1121683 | DCMT 070208-MM | | | | | | | | | | ⊗ | | | | ⊗ | ⊗ | ⊗ | | | | | | ⊗ | ⊗ | ⊗ | |
| | 1121647 | DCMT 11T304-MM | | | | | | | | | | ⊗ | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | |
| | 1121705 | DCMT 11T308-MM | | | | | | | | | | ⊗ | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | |
| | 1121707 | DCMT 11T312-MM | | | | | | | | | | ⊗ | | | | ⊗ | ⊗ | ⊗ | | | | | | ⊗ | ⊗ | ⊗ | |
|  DCMT-MK Medium | 1121679 | DCMT 070204-MK | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1121682 | DCMT 070208-MK | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1121646 | DCMT 11T304-MK | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1121704 | DCMT 11T308-MK | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
| | 1121955 | DCMT 11T312-MK | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | | |
|  DCMT-MW Medium to Finishing Wiper | 1121414 | DCMT 11T304-MW | | ⊗ | ⊗ | | | | | | ⊗ | | | | | | | ⊗ | | ⊗ | | | | | | ⊗ | |
| | 1121756 | DCMT 11T308-MW | | ⊗ | ⊗ | | | | | | ⊗ | | | | | | | | ⊗ | | ⊗ | | | | | | ⊗ |
|  DCGT-FS Finishing to Fine Finishing | 1121747 | DCGT 070201-FS | | | | | | | | ⊗ | ⊗ | | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | |
| | 1121748 | DCGT 070202-FS | | | | | | | | ⊗ | ⊗ | | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | |
| | 1121872 | DCGT 070204-FS | | | | | | | | ⊗ | ⊗ | | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | |
| | 1121873 | DCGT 11T301-FS | | | | | | | | ⊗ | ⊗ | | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | |
| | 1121874 | DCGT 11T302-FS | | | | | | | | ⊗ | ⊗ | | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | |
| | 1121875 | DCGT 11T304-FS | | | | | | | | ⊗ | ⊗ | | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ | |
| 1124101 | DCGT 11T308-FS | | | | | | | | | ⊗ | | | | | | | ⊗ | | | | | | | ⊗ | | | |
|  DCGT-LN Medium to Finishing | 1121900 | DCGT 070202-LN | | | | | | | | | | | | | ⊗ | | | | | | | ⊗ | ⊗ | | | | |
| | 1121901 | DCGT 070204-LN | | | | | | | | | | | | | ⊗ | | | | | | | | ⊗ | ⊗ | | | |
| | 1111540 | DCGT 11T302-LN | | | | | | | | | | | | | ⊗ | | | | | | | | ⊗ | ⊗ | | | |
| | 1111534 | DCGT 11T304-LN | | | | | | | | | | | | | ⊗ | | | | | | | | ⊗ | ⊗ | | | |
| | 1121904 | DCGT 11T308-LN | | | | | | | | | | | | | ⊗ | | | | | | | | ⊗ | ⊗ | | | |
| | 1124004 | DCGT 11T312-LN | | | | | | | | | | | | | | ⊗ | | | | | | | ⊗ | ⊗ | | | |

⊗ First choice | 1ª Escolha | 1ª Opción

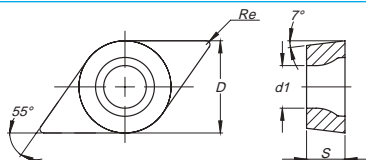
⊗ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock

Insert Order Code: (1) Geometry code + (2) Grade code

⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta




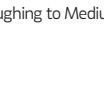





RELIEF ANGLE 7°



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|-----------------|---|------|------|------|--|------|------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| DCMT 070204-MM | DCMT 21.51-MM | 6,350 | 2,38 | 0,40 | 2,80 | 0,60 | 0,19 | 2,25 | 0,11 | 0,06 | 0,17 |
| DCMT 070208-MM | DCMT 21.52-MM | 6,350 | 2,38 | 0,80 | 2,80 | 0,60 | 0,38 | 2,25 | 0,20 | 0,08 | 0,35 |
| DCMT 11T304-MM | DCMT 32.51-MM | 9,525 | 3,97 | 0,40 | 4,40 | 0,80 | 0,25 | 3,00 | 0,15 | 0,08 | 0,23 |
| DCMT 11T308-MM | DCMT 32.52-MM | 9,525 | 3,97 | 0,80 | 4,40 | 0,80 | 0,50 | 3,00 | 0,25 | 0,10 | 0,40 |
| DCMT 11T312-MM | DCMT 32.53-MM | 9,525 | 3,97 | 1,20 | 4,40 | 0,80 | 0,60 | 3,00 | 0,35 | 0,12 | 0,60 |
| DCMT 070204-MK | DCMT 21.51-MK | 6,350 | 2,38 | 0,40 | 2,80 | 0,60 | 0,19 | 2,25 | 0,11 | 0,06 | 0,17 |
| DCMT 070208-MK | DCMT 21.52-MK | 6,350 | 2,38 | 0,80 | 2,80 | 0,60 | 0,38 | 2,25 | 0,20 | 0,08 | 0,35 |
| DCMT 11T304-MK | DCMT 32.51-MK | 9,525 | 3,97 | 0,40 | 4,40 | 0,80 | 0,25 | 3,00 | 0,15 | 0,08 | 0,23 |
| DCMT 11T308-MK | DCMT 32.52-MK | 9,525 | 3,97 | 0,80 | 4,40 | 0,80 | 0,50 | 3,00 | 0,25 | 0,10 | 0,40 |
| DCMT 11T312-MK | DCMT 32.53-MK | 9,525 | 3,97 | 1,20 | 4,40 | 0,80 | 0,50 | 3,00 | 0,35 | 0,12 | 0,60 |
| DCMT 11T304-MW | DCMT 32.51-MW | 9,525 | 3,97 | 0,40 | 4,40 | 1,50 | 0,50 | 4,00 | 0,25 | 0,12 | 0,40 |
| DCMT 11T308-MW | DCMT 32.52-MW | 9,525 | 3,97 | 0,80 | 4,40 | 1,50 | 0,50 | 4,00 | 0,30 | 0,15 | 0,50 |
| DCGT 070201-FS | DCGT 21.50.2-FS | 6,350 | 2,38 | 0,10 | 2,80 | 0,30 | 0,10 | 1,00 | 0,03 | 0,01 | 0,06 |
| DCGT 070202-FS | DCGT 21.50.5-FS | 6,350 | 2,38 | 0,20 | 2,80 | 0,50 | 0,10 | 1,50 | 0,07 | 0,02 | 0,12 |
| DCGT 070204-FS | DCGT 21.51-FS | 6,350 | 2,38 | 0,40 | 2,80 | 0,80 | 0,15 | 1,50 | 0,15 | 0,08 | 0,25 |
| DCGT 11T301-FS | DCGT 32.50.2-FS | 9,525 | 3,97 | 0,10 | 4,40 | 0,50 | 0,10 | 1,50 | 0,03 | 0,01 | 0,06 |
| DCGT 11T302-FS | DCGT 32.50.5-FS | 9,525 | 3,97 | 0,20 | 4,40 | 1,00 | 0,10 | 2,00 | 0,07 | 0,02 | 0,12 |
| DCGT 11T304-FS | DCGT 32.51-FS | 9,525 | 3,97 | 0,40 | 4,40 | 1,50 | 0,15 | 3,00 | 0,15 | 0,08 | 0,25 |
| DCGT 11T308-FS | DCGT 32.52-FS | 9,525 | 3,97 | 0,80 | 4,40 | 2,00 | 0,20 | 3,50 | 0,18 | 0,10 | 0,30 |
| DCGT 070202-LN | DCGT 21.50.5-LN | 6,350 | 2,38 | 0,20 | 2,80 | 1,00 | 0,05 | 3,00 | 0,07 | 0,05 | 0,12 |
| DCGT 070204-LN | DCGT 21.51-LN | 6,350 | 2,38 | 0,40 | 2,80 | 2,05 | 0,10 | 4,00 | 0,15 | 0,10 | 0,20 |
| DCGT 11T302-LN | DCGT 32.50.5-LN | 9,525 | 3,97 | 0,20 | 4,40 | 2,03 | 0,05 | 4,00 | 0,07 | 0,05 | 0,12 |
| DCGT 11T304-LN | DCGT 32.51-LN | 9,525 | 3,97 | 0,40 | 4,40 | 2,55 | 0,10 | 5,00 | 0,16 | 0,10 | 0,22 |
| DCGT 11T308-LN | DCGT 32.52-LN | 9,525 | 3,97 | 0,80 | 4,40 | 2,55 | 0,10 | 5,00 | 0,22 | 0,15 | 0,50 |
| DCGT 11T312-LN | DCGT 32.53-LN | 9,525 | 3,97 | 1,20 | 4,40 | 2,70 | 0,15 | 5,00 | 0,35 | 0,15 | 0,70 |

RC = ROUND R° POSITIVE

REDONDA R° POSITIVA | REDONDA R° POSITIVA

| | | | P | | | | | | | | M | | | | K | | | N | S | | | | | | | | |
|--|-------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|
| | | | CVD | | | | | PVD | | | CVD | | | | PVD | | CVD | UNC | PVD | | | | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 | |
| Inserts Pastilhas Plaquetas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 | |
|  RCMT-GS Medium to Finishing | NEW 1124495 | RCMT 0803M0-GS | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1124496 | RCMT 1003M0-GS | | | | | | | | | | | | | | | | | | | | | | | | | |
|  RCMT-CP Medium | 1120384 | RCMT 0602M0-CP | | | | | | | | | | | | | | | | | | | | | | | | | |
|  RCMT-ST Roughing to Medium | 1120385 | RCMT 0803M0-ST | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1120386 | RCMT 1003M0-ST | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1120387 | RCMT 10T3M0-ST | | | | | | | | | | | | | | | | | | | | | | | | | |
|  Roughing to Medium | 1120388 | RCMT 1204M0-ST | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1120389 | RCMT 1606M0-ST | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1120390 | RCMT 2006M0-ST | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  RCMT-RF Roughing to Medium | 1123848 | RCMT 2507M0-RF | | | | | | | | | | | | | | | | | | | | | | | | | |
|  RCMT-RM Roughing to Medium | 1123856 | RCMT 2006M0-RM | | | | | | | | | | | | | | | | | | | | | | | | | |
|  RCMX-ST Roughing to Medium | 1121425 | RCMX 1003M0-ST | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121426 | RCMX 1204M0-ST | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121427 | RCMX 1606M0-ST | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121428 | RCMX 2006M0-ST | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121429 | RCMX 2507M0-ST | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1121430 | RCMX 3209M0-ST | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  RCMX-RM Roughing to Medium | 1123678 | RCMX 3209M0-RM | | | | | | | | | | | | | | | | | | | | | | | | | |
|  RCMX-RR Roughing to Medium | 1123667 | RCMX 2507M0-RR | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1123666 | RCMX 3209M0-RR | | | | | | | | | | | | | | | | | | | | | | | | | |

⊗ First choice | 1ª Escolha | 1ª Opción

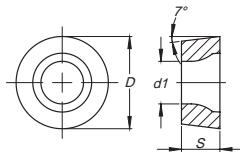
⊕ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock

Insert Order Code: ⁽¹⁾ Geometry code + ⁽²⁾ Grade code

⊖ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta


RELIEF ANGLE 7°




| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|----------------|---|------|----|------|--|------|-------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| RCMT 0803M0-GS | RCMT 0803M0-GS | 8,00 | 3,18 | - | 3,40 | 2,00 | 0,50 | 3,00 | 0,25 | 0,15 | 0,40 |
| RCMT 1003M0-GS | RCMT 1003M0-GS | 10,00 | 3,18 | - | 3,40 | 3,00 | 0,75 | 4,00 | 0,30 | 0,15 | 0,45 |
| RCMT 0602M0-CP | RCMT 0602M0-CP | 6,00 | 2,38 | - | 2,80 | 1,50 | 0,50 | 2,40 | 0,15 | 0,04 | 0,17 |
| RCMT 0803M0-ST | RCMT 0803M0-ST | 8,00 | 3,18 | - | 3,40 | 2,00 | 0,80 | 3,20 | 0,20 | 0,10 | 0,80 |
| RCMT 1003M0-ST | RCMT 1003M0-ST | 10,00 | 3,18 | - | 3,40 | 2,50 | 1,00 | 4,00 | 0,25 | 0,12 | 1,00 |
| RCMT 10T3M0-ST | RCMT 10T3M0-ST | 10,00 | 3,97 | - | 4,40 | 2,50 | 1,00 | 4,00 | 0,25 | 0,16 | 1,40 |
| RCMT 1204M0-ST | RCMT 1204M0-ST | 12,00 | 4,76 | - | 4,40 | 3,00 | 1,20 | 4,80 | 0,30 | 0,20 | 1,80 |
| RCMT 1606M0-ST | RCMT 1606M0-ST | 16,00 | 6,35 | - | 5,50 | 3,50 | 1,60 | 6,40 | 0,37 | 0,25 | 2,30 |
| RCMT 2006M0-ST | RCMT 2006M0-ST | 20,00 | 6,35 | - | 6,50 | 4,00 | 2,00 | 8,00 | 0,45 | 0,30 | 3,00 |
| RCMT 2507M0-RF | RCMT 2507M0-RF | 25,00 | 7,94 | - | 7,20 | 6,30 | 2,50 | 10,00 | 0,79 | 0,25 | 2,50 |
| RCMT 2006M0-RM | RCMT 2006M0-RM | 20,00 | 6,35 | - | 6,50 | 4,00 | 2,00 | 8,00 | 0,45 | 0,13 | 0,63 |
| RCMX 1003M0-ST | RCMX 1003M0-ST | 10,00 | 3,18 | - | 3,60 | 2,50 | 1,00 | 4,00 | 0,32 | 0,10 | 1,00 |
| RCMX 1204M0-ST | RCMX 1204M0-ST | 12,00 | 4,76 | - | 4,20 | 3,00 | 1,20 | 4,80 | 0,38 | 0,12 | 1,20 |
| RCMX 1606M0-ST | RCMX 1606M0-ST | 16,00 | 6,35 | - | 5,20 | 4,00 | 1,60 | 6,40 | 0,51 | 0,16 | 1,60 |
| RCMX 2006M0-ST | RCMX 2006M0-ST | 20,00 | 6,35 | - | 6,50 | 5,00 | 2,00 | 8,00 | 0,63 | 0,20 | 2,00 |
| RCMX 2507M0-ST | RCMX 2507M0-ST | 25,00 | 7,94 | - | 7,20 | 6,30 | 2,50 | 10,00 | 0,79 | 0,25 | 2,50 |
| RCMX 3209M0-ST | RCMX 3209M0-ST | 32,00 | 9,52 | - | 9,50 | 8,00 | 3,20 | 12,80 | 1,01 | 0,32 | 3,20 |
| RCMX 3209M0-RM | RCMX 3209M0-RM | 32,00 | 9,52 | - | 9,50 | 6,50 | 3,20 | 13,00 | 1,80 | 0,80 | 2,50 |
| RCMX 2507M0-RR | RCMX 2507M0-RR | 25,00 | 7,94 | - | 7,20 | 5,00 | 3,20 | 8,00 | 1,80 | 0,80 | 2,50 |
| RCMX 3209M0-RR | RCMX 3209M0-RR | 32,00 | 9,52 | - | 9,50 | 6,50 | 3,20 | 13,00 | 1,80 | 0,80 | 2,50 |

RC = ROUND R° POSITIVE


REDONDA R° POSITIVA | REDONDA R° POSITIVA

| | | | P | | | | | | | | M | | | | | | K | | | N | S | | | | | | | |
|--|-------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|--|
| | | | CVD | | | | | | PVD | | CVD | | | PVD | | | CVD | | | UNC | PVD | | | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 | | |
| Inserts Pastilhas Plaquitas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PH5215 | PH5225 | PH5240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 | | |
|  <p>RCGT-LN Finishing to Fine Finishing</p> | 1124005 | RCGT 0602M0-LN | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1124006 | RCGT 0803M0-LN | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1124007 | RCGT 1003M0-LN | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1123684 | RCGT 1204M0-LN | | | | | | | | | | | | | | | | | | | | | | | | | | |

 First choice | 1ª Escolha | 1ª Opción

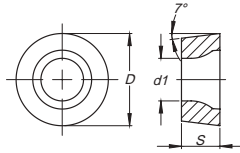
 Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock

Insert Order Code: ⁽¹⁾Geometry code + ⁽²⁾Grade code

 Stock Items | Itens de stock

 Available under request | Disponível sob consulta | Disponible bajo consulta









RELIEF ANGLE 7°



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|----------------|---|------|----|------|--|------|------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| RCGT 0602M0-LN | RCGT 0602M0-LN | 6,00 | 2,38 | - | 2,80 | 1,25 | 0,50 | 2,00 | 0,13 | 0,05 | 0,20 |
| RCGT 0803M0-LN | RCGT 0803M0-LN | 8,00 | 3,18 | - | 3,40 | 1,50 | 0,50 | 2,50 | 0,15 | 0,05 | 0,25 |
| RCGT 1003M0-LN | RCGT 1003M0-LN | 10,00 | 3,18 | - | 4,40 | 2,00 | 1,00 | 3,00 | 0,20 | 0,10 | 0,30 |
| RCGT 1204M0-LN | RCGT 1204M0-LN | 12,00 | 4,76 | - | 4,40 | 2,25 | 1,00 | 3,50 | 0,23 | 0,10 | 0,35 |

SC = SQUARE 90° POSITIVE

QUADRADA 90° POSITIVA | ESCUADRA 90° POSITIVA

| | | | P | | | | | | | | M | | | | | | K | | | N | S | | | | | | |
|---|-------------------------|----------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|
| | | | CVD | | | | | | | | PVD | | CVD | | | | PVD | | CVD | UNC | PVD | | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 | |
| Inserts Pastilhas Plaquetas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 | |
|  | SCMW | 1120469 | SCMW 09T304 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1120470 | SCMW 09T308 | | | | | | | | | | | | | | | | | | | | | | | | |
| | Finishing | 1120472 | SCMW 120408 | | | | | | | | | | | | | | | | | | | | | | | | |
|  | SCMT-FP | 1121759 | SCMT 09T304-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| | Finishing | 1121765 | SCMT 09T308-FP | | | | | | | | | | | | | | | | | | | | | | | | |
|  | SCMT-FM | 1121758 | SCMT 09T304-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| | Finishing | 1121764 | SCMT 09T308-FM | | | | | | | | | | | | | | | | | | | | | | | | |
|  | SCMT-FK | 1121757 | SCMT 09T304-FK | | | | | | | | | | | | | | | | | | | | | | | | |
| | Finishing | 1121763 | SCMT 09T308-FK | | | | | | | | | | | | | | | | | | | | | | | | |
|  | SCMT-MP | 1121762 | SCMT 09T304-MP | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121768 | SCMT 09T308-MP | | | | | | | | | | | | | | | | | | | | | | | | |
| | Medium | 1121770 | SCMT 120404-MP | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121783 | SCMT 120408-MP | | | | | | | | | | | | | | | | | | | | | | | | |
|  | SCMT-MM | 1121761 | SCMT 09T304-MM | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121767 | SCMT 09T308-MM | | | | | | | | | | | | | | | | | | | | | | | | |
| | Medium | 1121769 | SCMT 120404-MM | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121782 | SCMT 120408-MM | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121784 | SCMT 120412-MM | | | | | | | | | | | | | | | | | | | | | | | | |
|  | SCMT-MK | 1121760 | SCMT 09T304-MK | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121766 | SCMT 09T308-MK | | | | | | | | | | | | | | | | | | | | | | | | |
| | Medium | 1121781 | SCMT 120408-MK | | | | | | | | | | | | | | | | | | | | | | | | |
|  | SCGT-LN | 1124008 | SCGT 09T304-LN | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1124009 | SCGT 09T308-LN | | | | | | | | | | | | | | | | | | | | | | | | |
| | Medium to Finishing | 1124743 | SCGT 120402-LN | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1124010 | SCGT 120404-LN | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1123685 | SCGT 120408-LN | | | | | | | | | | | | | | | | | | | | | | | | |

🔴 First choice | 1ª Escolha | 1ª Opción

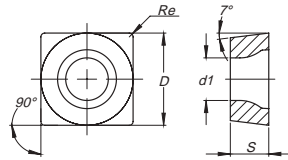
🟩 Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock

Insert Order Code: ⁽¹⁾ Geometry code + ⁽²⁾ Grade code

🟦 Stock Items | Itens de stock

🟨 Available under request | Disponível sob consulta | Disponible bajo consulta




RELIEF ANGLE 7°



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|----------------|---|------|------|------|--|------|------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| SCMW 09T304 | SCMW 32.51 | 9,525 | 3,97 | 0,40 | 4,40 | 2,40 | 0,05 | 4,70 | 0,20 | 0,08 | 0,26 |
| SCMW 09T308 | SCMW 32.52 | 9,525 | 3,97 | 0,80 | 4,40 | 2,40 | 0,05 | 4,70 | 0,40 | 0,16 | 0,53 |
| SCMW 120408 | SCMW 432 | 12,700 | 4,76 | 0,80 | 5,50 | 3,20 | 0,05 | 6,30 | 0,40 | 0,16 | 0,53 |
| SCMT 09T304-FP | SCMT 32.51-FP | 9,525 | 3,97 | 0,40 | 4,40 | 0,35 | 0,11 | 2,00 | 0,11 | 0,06 | 0,23 |
| SCMT 09T308-FP | SCMT 32.52-FP | 9,525 | 3,97 | 0,80 | 4,40 | 0,35 | 0,15 | 2,00 | 0,15 | 0,08 | 0,30 |
| SCMT 09T304-FM | SCMT 32.51-FM | 9,525 | 3,97 | 0,40 | 4,40 | 0,35 | 0,11 | 2,00 | 0,11 | 0,06 | 0,23 |
| SCMT 09T308-FM | SCMT 32.52-FM | 9,525 | 3,97 | 0,80 | 4,40 | 0,35 | 0,15 | 2,00 | 0,15 | 0,08 | 0,30 |
| SCMT 09T304-FK | SCMT 32.51-FK | 9,525 | 3,97 | 0,40 | 4,40 | 0,35 | 0,11 | 2,00 | 0,11 | 0,06 | 0,23 |
| SCMT 09T308-FK | SCMT 32.52-FK | 9,525 | 3,97 | 0,80 | 4,40 | 0,35 | 0,15 | 2,00 | 0,15 | 0,08 | 0,30 |
| SCMT 09T304-MP | SCMT 32.51-MP | 9,525 | 3,97 | 0,40 | 4,40 | 0,80 | 0,25 | 3,00 | 0,15 | 0,08 | 0,23 |
| SCMT 09T308-MP | SCMT 32.52-MP | 9,525 | 3,97 | 0,80 | 4,40 | 0,80 | 0,50 | 3,00 | 0,25 | 0,10 | 0,40 |
| SCMT 120404-MP | SCMT 431-MP | 12,700 | 4,76 | 0,40 | 5,50 | 0,96 | 0,30 | 3,60 | 0,18 | 0,09 | 0,27 |
| SCMT 120408-MP | SCMT 432-MP | 12,700 | 4,76 | 0,80 | 5,50 | 0,96 | 0,60 | 3,60 | 0,25 | 0,12 | 0,45 |
| SCMT 120412-MP | SCMT 433-MP | 12,700 | 4,76 | 1,20 | 5,50 | 0,96 | 0,72 | 3,60 | 0,35 | 0,14 | 0,60 |
| SCMT 09T304-MM | SCMT 32.51-MM | 9,525 | 3,97 | 0,40 | 4,40 | 0,80 | 0,25 | 3,00 | 0,15 | 0,08 | 0,23 |
| SCMT 09T308-MM | SCMT 32.52-MM | 9,525 | 3,97 | 0,80 | 4,40 | 0,80 | 0,50 | 3,00 | 0,25 | 0,10 | 0,40 |
| SCMT 120404-MM | SCMT 431-MM | 12,700 | 4,76 | 0,40 | 5,50 | 0,96 | 0,30 | 3,60 | 0,18 | 0,09 | 0,27 |
| SCMT 120408-MM | SCMT 432-MM | 12,700 | 4,76 | 0,80 | 5,50 | 0,96 | 0,60 | 3,60 | 0,25 | 0,12 | 0,45 |
| SCMT 120412-MM | SCMT 433-MM | 12,700 | 4,76 | 1,20 | 5,50 | 0,96 | 0,72 | 3,60 | 0,35 | 0,14 | 0,60 |
| SCMT 09T304-MK | SCMT 32.51-MK | 9,525 | 3,97 | 0,40 | 4,40 | 0,80 | 0,25 | 3,00 | 0,15 | 0,08 | 0,23 |
| SCMT 09T308-MK | SCMT 32.52-MK | 9,525 | 3,97 | 0,80 | 4,40 | 0,80 | 0,50 | 3,00 | 0,25 | 0,10 | 0,40 |
| SCMT 120408-MK | SCMT 432-MK | 12,700 | 4,76 | 0,80 | 5,50 | 0,96 | 0,60 | 3,60 | 0,25 | 0,12 | 0,45 |
| SCGT 09T304-LN | SCGT 32.51-LN | 9,525 | 3,97 | 0,40 | 4,40 | 2,05 | 0,10 | 4,00 | 0,16 | 0,10 | 0,26 |
| SCGT 09T308-LN | SCGT 32.52-LN | 9,525 | 3,97 | 0,80 | 4,40 | 2,55 | 0,10 | 5,00 | 0,22 | 0,15 | 0,40 |
| SCGT 120402-LN | SCGT 430.5-LN | 12,700 | 4,76 | 0,20 | 5,50 | 2,50 | 0,10 | 4,50 | 0,15 | 0,08 | 0,25 |
| SCGT 120404-LN | SCGT 431-LN | 12,700 | 4,76 | 0,40 | 5,50 | 2,55 | 0,10 | 5,00 | 0,20 | 0,10 | 0,26 |
| SCGT 120408-LN | SCGT 432-LN | 12,700 | 4,76 | 0,80 | 5,50 | 2,55 | 0,10 | 5,00 | 0,30 | 0,15 | 0,50 |

SP = SQUARE 90° POSITIVE

QUADRADA 90° POSITIVA | ESCUADRA 90° POSITIVA

| | | | P | | | | | | | | M | | | | K | | | N | S | | | | | | | | |
|---|-------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|
| | | | CVD | | | | | PVD | CVD | | | PVD | | CVD | | | UNC | PVD | | | | | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 | |
| Inserts Pastilhas Plaquitas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 | |
|  SPUN Medium to Finishing | 1120580 | SPUN 120304 | | | | ⊗ | | | | | | | | | | | | | | | | | | | | | |
| | 1120581 | SPUN 120308 | | | | ⊗ | | | | | | | | | | | | | | | | | | | | | |
| | 1120583 | SPUN 120312 | | | | ⊗ | | | | | | | | | | | | | | | | | | | | | |
|  SPMR-12 Finishing to Fine Finishing | 1120561 | SPMR 090308-12 | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | | |
| | 1120563 | SPMR 120304-12 | | ⊗ | | | | | | | | | | | | | | | | | | | | | | | |
| | 1120565 | SPMR 120308-12 | | ⊗ | | | | | | | | | | | | | | | | | | | | | | | |
|  SPMR-13 Medium | 1120560 | SPMR 090304-13 | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | | |
| | 1120562 | SPMR 090308-13 | | ⊗ | | | | | | | | | | | | | | | | | | | | | | | |
| | 1120564 | SPMR 120304-13 | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | | |
| | 1120566 | SPMR 120308-13 | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | | |
| | 1120567 | SPMR 120312-13 | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | | |

⊗ First choice | 1ª Escolha | 1ª Opción

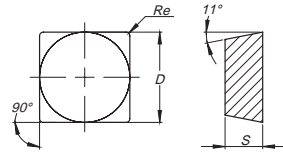
⊗ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock

Insert Order Code: ⁽¹⁾Geometry code + ⁽²⁾Grade code

⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

RELIEF ANGLE 11°



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|----------------|---|------|------|----|--|------|------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| SPUN 120304 | SPUN 421 | 12,700 | 3,18 | 0,40 | - | 3,00 | 1,00 | 5,00 | 0,20 | 0,10 | 0,30 |
| SPUN 120308 | SPUN 422 | 12,700 | 3,18 | 0,80 | - | 3,00 | 1,00 | 5,00 | 0,25 | 0,15 | 0,40 |
| SPUN 120312 | SPUN 423 | 12,700 | 3,18 | 1,20 | - | 3,00 | 1,00 | 5,00 | 0,35 | 0,20 | 0,50 |
| SPMR 090308-12 | SPMR 322-12 | 9,525 | 3,18 | 0,80 | - | 1,00 | 0,30 | 2,00 | 0,20 | 0,10 | 0,30 |
| SPMR 120304-12 | SPMR 421-12 | 12,700 | 3,18 | 0,40 | - | 1,30 | 0,50 | 2,00 | 0,15 | 0,08 | 0,25 |
| SPMR 120308-12 | SPMR 422-12 | 12,700 | 3,18 | 0,80 | - | 1,30 | 0,50 | 2,00 | 0,22 | 0,10 | 0,30 |
| SPMR 090304-13 | SPMR 321-13 | 9,525 | 3,18 | 0,40 | - | 2,20 | 1,00 | 3,50 | 0,10 | 0,05 | 0,20 |
| SPMR 090308-13 | SPMR 322-13 | 9,525 | 3,18 | 0,80 | - | 2,20 | 1,00 | 3,50 | 0,25 | 0,10 | 0,40 |
| SPMR 120304-13 | SPMR 421-13 | 12,700 | 3,18 | 0,40 | - | 2,60 | 1,50 | 4,00 | 0,10 | 0,07 | 0,20 |
| SPMR 120308-13 | SPMR 422-13 | 12,700 | 3,18 | 0,80 | - | 2,60 | 1,50 | 4,00 | 0,30 | 0,20 | 0,40 |
| SPMR 120312-13 | SPMR-423-13 | 12,700 | 3,18 | 1,20 | - | 2,60 | 1,50 | 4,00 | 0,40 | 0,25 | 0,55 |

TC = TRIANGULAR 60° POSITIVE

TRIANGULAR 60° POSITIVA | TRIANGULAR 60° POSITIVA

| | | | P | | | | | | | | M | | | | | | K | | | N | S | | | | | | |
|---|-------------------------|----------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|
| | | | CVD | | | | | | PVD | | CVD | | | PVD | | | CVD | | | UNC | PVD | | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 | |
| Inserts Pastilhas Plaquitas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 | |
|  | TCMW | 1120620 | TCMW 110204 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1120622 | TCMW 16T304 | | | | | | | | | | | | | | | | | | | | | | | | |
| | Finishing | 1120623 | TCMW 16T308 | | | | | | | | | | | | | | | | | | | | | | | | |
|  | TCMT-FP | 1121788 | TCMT 06T102-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121798 | TCMT 06T104-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121801 | TCMT 06T108-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| | Finishing | 1121804 | TCMT 090202-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121807 | TCMT 090204-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121961 | TCMT 110202-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121962 | TCMT 110204-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121963 | TCMT 110208-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121669 | TCMT 110302-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121816 | TCMT 110304-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121823 | TCMT 110308-FP | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121832 | TCMT 16T304-FP | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | TCMT-FM | 1121787 | TCMT 06T102-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121797 | TCMT 06T104-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1123637 | TCMT 06T108-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| | Finishing | 1121803 | TCMT 090202-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121806 | TCMT 090204-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121960 | TCMT 110202-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121958 | TCMT 110204-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121959 | TCMT 110208-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121881 | TCMT 110302-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121815 | TCMT 110304-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121822 | TCMT 110308-FM | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121831 | TCMT 16T304-FM | | | | | | | | | | | | | | | | | | | | | | | | | |

⊕ First choice | 1ª Escolha | 1ª Opción

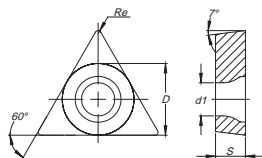
⊖ Stock available until sold out | Stock disponible hasta acabar el stock

Insert Order Code: (1) Geometry code + (2) Grade code

⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta




RELIEF ANGLE 7°



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|-------------------|---|------|------|------|--|------|------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| TCMW 110204 | TCMW 21.51 | 6,350 | 2,38 | 0,40 | 2,80 | 1,50 | 0,05 | 3,10 | 0,20 | 0,08 | 0,26 |
| TCMW 16T304 | TCMW 32.51 | 9,525 | 3,97 | 0,40 | 4,40 | 2,30 | 0,05 | 4,70 | 0,20 | 0,08 | 0,26 |
| TCMW 16T308 | TCMW 32.52 | 9,525 | 3,97 | 0,80 | 4,40 | 2,30 | 0,05 | 4,70 | 0,40 | 0,16 | 0,53 |
| TCMT 06T102-FP | TCMT 1.21.20.5-FP | 3,970 | 1,98 | 0,20 | 2,15 | 0,26 | 0,06 | 1,50 | 0,06 | 0,03 | 0,11 |
| TCMT 06T104-FP | TCMT 1.21.21-FP | 3,970 | 1,98 | 0,40 | 2,15 | 0,26 | 0,08 | 1,50 | 0,08 | 0,05 | 0,17 |
| TCMT 06T108-FP | TCMT 1.21.22-FP | 3,970 | 1,98 | 0,80 | 2,15 | 0,26 | 0,11 | 1,50 | 0,11 | 0,06 | 0,23 |
| TCMT 090202-FP | TCMT 1.81.50.5-FP | 5,560 | 2,38 | 0,20 | 2,50 | 0,30 | 0,06 | 1,70 | 0,06 | 0,03 | 0,13 |
| TCMT 090204-FP | TCMT 1.81.51-FP | 5,560 | 2,38 | 0,40 | 2,50 | 0,30 | 0,10 | 1,70 | 0,10 | 0,05 | 0,19 |
| TCMT 110202-FP | TCMT 21.50.5-FP | 6,350 | 2,38 | 0,20 | 2,80 | 0,30 | 0,06 | 1,70 | 0,06 | 0,03 | 0,13 |
| TCMT 110204-FP | TCMT 21.51-FP | 6,350 | 2,38 | 0,40 | 2,80 | 0,30 | 0,10 | 1,70 | 0,10 | 0,05 | 0,19 |
| TCMT 110208-FP | TCMT 21.52-FP | 6,350 | 2,38 | 0,80 | 2,80 | 0,30 | 0,13 | 1,70 | 0,13 | 0,07 | 0,26 |
| TCMT 110302-FP | TCMT 220.5-FP | 6,350 | 3,18 | 0,20 | 2,80 | 0,30 | 0,06 | 1,70 | 0,06 | 0,03 | 0,13 |
| TCMT 110304-FP | TCMT 221-FP | 6,350 | 3,18 | 0,40 | 2,80 | 0,30 | 0,10 | 1,70 | 0,10 | 0,05 | 0,19 |
| TCMT 110308-FP | TCMT 222-FP | 6,350 | 3,18 | 0,80 | 2,80 | 0,30 | 0,13 | 1,70 | 0,13 | 0,07 | 0,26 |
| TCMT 16T304-FP | TCMT 32.51-FP | 9,525 | 3,97 | 0,40 | 4,40 | 0,35 | 0,11 | 2,00 | 0,11 | 0,06 | 0,23 |
| TCMT 06T102-FM | TCMT 1.21.20.5-FM | 3,970 | 1,98 | 0,20 | 2,15 | 0,26 | 0,06 | 1,50 | 0,06 | 0,03 | 0,11 |
| TCMT 06T104-FM | TCMT 1.21.21-FM | 3,970 | 1,98 | 0,40 | 2,15 | 0,26 | 0,08 | 1,50 | 0,08 | 0,05 | 0,17 |
| TCMT 06T108-FM | TCMT 1.21.22-FM | 3,970 | 1,98 | 0,80 | 2,15 | 0,26 | 0,11 | 1,50 | 0,11 | 0,06 | 0,23 |
| TCMT 090202-FM | TCMT 1.81.50.5-FM | 5,560 | 2,38 | 0,20 | 2,50 | 0,30 | 0,06 | 1,70 | 0,06 | 0,03 | 0,13 |
| TCMT 090204-FM | TCMT 1.81.51-FM | 5,560 | 2,38 | 0,40 | 2,50 | 0,30 | 0,10 | 1,70 | 0,10 | 0,05 | 0,19 |
| TCMT 110202-FM | TCMT 21.50.5-FM | 6,350 | 2,38 | 0,20 | 2,80 | 0,30 | 0,06 | 1,70 | 0,06 | 0,03 | 0,13 |
| TCMT 110204-FM | TCMT 21.51-FM | 6,350 | 2,38 | 0,40 | 2,80 | 0,30 | 0,10 | 1,70 | 0,10 | 0,05 | 0,19 |
| TCMT 110208-FM | TCMT 21.52-FM | 6,350 | 2,38 | 0,80 | 2,80 | 0,30 | 0,13 | 1,70 | 0,13 | 0,07 | 0,26 |
| TCMT 110302-FM | TCMT 220.5-FM | 6,350 | 3,18 | 0,20 | 2,80 | 0,30 | 0,06 | 1,70 | 0,06 | 0,03 | 0,13 |
| TCMT 110304-FM | TCMT 221-FM | 6,350 | 3,18 | 0,40 | 2,80 | 0,30 | 0,10 | 1,70 | 0,10 | 0,05 | 0,19 |
| TCMT 110308-FM | TCMT 222-FM | 6,350 | 3,18 | 0,80 | 2,80 | 0,30 | 0,13 | 1,70 | 0,13 | 0,07 | 0,26 |
| TCMT 16T304-FM | TCMT 32.51-FM | 9,525 | 3,97 | 0,40 | 4,40 | 0,35 | 0,11 | 2,00 | 0,11 | 0,06 | 0,23 |

TC = TRIANGULAR 60° POSITIVE

TRIANGULAR 60° POSITIVA | TRIANGULAR 60° POSITIVA

| | | | P | | | | | | | | M | | | | | | K | | | N | S | | | | | | | |
|--|-------------------------|----------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|--|
| | | | CVD | | | | | | PVD | | CVD | | | PVD | | | CVD | | | UNC | PVD | | | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 | | |
| Inserts Pastilhas Plaquitas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 | | |
|  Finishing | TCMT-FK | 1121786 | TCMT 06T102-FK | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121789 | TCMT 06T104-FK | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121800 | TCMT 06T108-FK | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1123668 | TCMT 090202-FK | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121805 | TCMT 090204-FK | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121956 | TCMT 110202-FK | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121957 | TCMT 110204-FK | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121813 | TCMT 110302-FK | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121814 | TCMT 110304-FK | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121830 | TCMT 16T304-FK | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  Finishing Wiper | TCMT-FW | 1121808 | TCMT 090204-FW | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121809 | TCMT 090208-FW | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121964 | TCMT 110204-FW | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121965 | TCMT 110208-FW | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121817 | TCMT 110304-FW | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121824 | TCMT 110308-FW | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121833 | TCMT 16T304-FW | | | | | | | | | | | | | | | | | | | | | | | | | |
|  Medium | TCMT-MP | 1121703 | TCMT 090204-MP | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121812 | TCMT 090208-MP | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121970 | TCMT 110204-MP | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121971 | TCMT 110208-MP | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121972 | TCMT 110212-MP | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121820 | TCMT 110304-MP | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121827 | TCMT 110308-MP | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121829 | TCMT 110312-MP | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121836 | TCMT 16T304-MP | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121840 | TCMT 16T308-MP | | | | | | | | | | | | | | | | | | | | | | | | | |
| Spare Parts | | 1121844 | TCMT 16T312-MP | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121849 | TCMT 220408-MP | | | | | | | | | | | | | | | | | | | | | | | | | |

⊕ First choice | 1ª Escolha | 1ª Opción

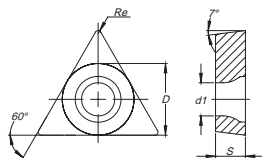
⊕ Stock available until sold out | Stock disponible até acabar o stock | Stock disponible hasta acabar el stock

Insert Order Code: ⁽¹⁾ Geometry code + ⁽²⁾ Grade code

⊖ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta




RELIEF ANGLE 7°



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|-------------------|---|------|------|------|--|------|------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| TCMT 06T102-FK | TCMT 1.21.20.5-FK | 3,970 | 1,98 | 0,20 | 2,15 | 0,26 | 0,06 | 1,50 | 0,06 | 0,03 | 0,11 |
| TCMT 06T104-FK | TCMT 1.21.21-FK | 3,970 | 1,98 | 0,40 | 2,15 | 0,26 | 0,08 | 1,50 | 0,08 | 0,05 | 0,17 |
| TCMT 06T108-FK | TCMT 1.21.22-FK | 3,970 | 1,98 | 0,80 | 2,15 | 0,26 | 0,11 | 1,50 | 0,11 | 0,06 | 0,23 |
| TCMT 090202-FK | TCMT 1.81.50.5-FK | 5,560 | 2,38 | 0,20 | 2,50 | 0,30 | 0,06 | 1,70 | 0,06 | 0,03 | 0,13 |
| TCMT 090204-FK | TCMT 1.81.51-FK | 5,560 | 2,38 | 0,40 | 2,50 | 0,30 | 0,10 | 1,70 | 0,10 | 0,05 | 0,19 |
| TCMT 110202-FK | TCMT 21.50.5-FK | 6,350 | 2,38 | 0,20 | 2,80 | 0,30 | 0,06 | 1,70 | 0,06 | 0,03 | 0,13 |
| TCMT 110204-FK | TCMT 21.51-FK | 6,350 | 2,38 | 0,40 | 2,80 | 0,30 | 0,10 | 1,70 | 0,10 | 0,05 | 0,19 |
| TCMT 110302-FK | TCMT 220.5-FK | 6,350 | 3,18 | 0,20 | 2,80 | 0,30 | 0,06 | 1,70 | 0,06 | 0,03 | 0,13 |
| TCMT 110304-FK | TCMT 221-FK | 6,350 | 3,18 | 0,40 | 2,80 | 0,30 | 0,10 | 1,70 | 0,10 | 0,05 | 0,19 |
| TCMT 16T304-FK | TCMT 32.51-FK | 9,525 | 3,97 | 0,40 | 4,40 | 0,35 | 0,11 | 2,00 | 0,11 | 0,06 | 0,23 |
| TCMT 090204-FW | TCMT 1.81.51-FW | 5,560 | 2,38 | 0,40 | 2,50 | 0,70 | 0,30 | 2,00 | 0,12 | 0,05 | 0,30 |
| TCMT 090208-FW | TCMT 1.81.52-FW | 5,560 | 2,38 | 0,80 | 2,50 | 0,70 | 0,30 | 2,00 | 0,25 | 0,10 | 0,35 |
| TCMT 110204-FW | TCMT 21.51-FW | 6,350 | 2,38 | 0,40 | 2,80 | 1,00 | 0,30 | 2,50 | 0,20 | 0,07 | 0,30 |
| TCMT 110208-FW | TCMT 21.52-FW | 6,350 | 2,38 | 0,80 | 2,80 | 1,00 | 0,30 | 2,50 | 0,25 | 0,12 | 0,40 |
| TCMT 110304-FW | TCMT 221-FW | 6,350 | 3,18 | 0,40 | 2,80 | 1,00 | 0,30 | 2,50 | 0,20 | 0,07 | 0,30 |
| TCMT 110308-FW | TCMT 222-FW | 6,350 | 3,18 | 0,80 | 2,80 | 1,00 | 0,30 | 2,50 | 0,25 | 0,12 | 0,40 |
| TCMT 16T304-FW | TCMT 32.51-FW | 9,525 | 3,97 | 0,40 | 4,40 | 1,20 | 0,30 | 3,50 | 0,20 | 0,07 | 0,35 |
| TCMT 16T308-FW | TCMT 32.52-FW | 9,525 | 3,97 | 0,80 | 4,40 | 1,20 | 0,30 | 3,50 | 0,25 | 0,12 | 0,50 |
| TCMT 090204-MP | TCMT 1.81.51-MP | 5,560 | 2,38 | 0,40 | 2,50 | 0,60 | 0,19 | 2,25 | 0,11 | 0,06 | 0,17 |
| TCMT 090208-MP | TCMT 1.81.52-MP | 5,560 | 2,38 | 0,80 | 2,50 | 0,60 | 0,38 | 2,25 | 0,15 | 0,08 | 0,23 |
| TCMT 110204-MP | TCMT 21.51-MP | 6,350 | 2,38 | 0,40 | 2,80 | 0,67 | 0,21 | 2,50 | 0,13 | 0,06 | 0,19 |
| TCMT 110208-MP | TCMT 21.52-MP | 6,350 | 2,38 | 0,80 | 2,80 | 0,67 | 0,42 | 2,50 | 0,17 | 0,09 | 0,26 |
| TCMT 110212-MP | TCMT 21.53-MP | 6,350 | 2,38 | 1,20 | 2,80 | 0,67 | 0,50 | 2,50 | 0,20 | 0,10 | 0,40 |
| TCMT 110304-MP | TCMT 221-MP | 6,350 | 3,18 | 0,40 | 2,80 | 0,67 | 0,21 | 2,50 | 0,13 | 0,06 | 0,19 |
| TCMT 110308-MP | TCMT 222-MP | 6,350 | 3,18 | 0,80 | 2,80 | 0,67 | 0,42 | 2,50 | 0,20 | 0,09 | 0,40 |
| TCMT 110312-MP | TCMT 223-MP | 6,350 | 3,18 | 1,20 | 2,80 | 0,67 | 0,50 | 2,50 | 0,30 | 0,10 | 0,50 |
| TCMT 16T304-MP | TCMT 32.51-MP | 9,525 | 3,97 | 0,40 | 4,40 | 0,80 | 0,25 | 3,00 | 0,15 | 0,08 | 0,25 |
| TCMT 16T308-MP | TCMT 32.52-MP | 9,525 | 3,97 | 0,80 | 4,40 | 0,80 | 0,50 | 3,00 | 0,22 | 0,10 | 0,45 |
| TCMT 16T312-MP | TCMT 32.53-MP | 9,525 | 3,97 | 1,20 | 4,40 | 0,80 | 0,60 | 3,00 | 0,35 | 0,12 | 0,60 |
| TCMT 220408-MP | TCMT 432-MP | 12,700 | 4,76 | 0,80 | 5,50 | 0,96 | 0,60 | 3,60 | 0,25 | 0,12 | 0,45 |

TC = TRIANGULAR 60° POSITIVE

TRIANGULAR 60° POSITIVA | TRIANGULAR 60° POSITIVA

| | | | P | | | | | | | | M | | | | K | | | N | S | | | | | | | |
|---|-------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | | CVD | | | | | PVD | | | CVD | | | PVD | CVD | | | UNC | PVD | | | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 |
| Inserts Pastilhas Plaquitas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 |
|  Medium | 1121702 | TCMT 090204-MM | | | | | | | | | | ⊗ | | | | ⊗ | ⊗ | | | | | | | ⊗ | ⊗ | ⊗ |
| | 1121811 | TCMT 090208-MM | | | | | | | | | | ⊗ | | | | ⊗ | ⊗ | | | | | | | ⊗ | ⊗ | ⊗ |
| | 1121968 | TCMT 110204-MM | | | | | | | | | | ⊗ | | | ⊗ | ⊗ | ⊗ | | | | | | ⊗ | ⊗ | ⊗ | ⊗ |
| | 1121969 | TCMT 110208-MM | | | | | | | | | | ⊗ | | | | ⊗ | ⊗ | | | | | | | ⊗ | ⊗ | ⊗ |
| | 1121819 | TCMT 110304-MM | | | | | | | | | | ⊗ | | | | | ⊗ | | | | | | | | ⊗ | |
| | 1121826 | TCMT 110308-MM | | | | | | | | | | ⊗ | | | | | ⊗ | | | | | | | | ⊗ | |
| | 1121835 | TCMT 16T304-MM | | | | | | | | | | ⊗ | | | | ⊗ | ⊗ | ⊗ | | | | | | ⊗ | ⊗ | ⊗ |
| | 1121839 | TCMT 16T308-MM | | | | | | | | | | ⊗ | | | ⊗ | ⊗ | ⊗ | | | | | | ⊗ | ⊗ | ⊗ | ⊗ |
| | 1121843 | TCMT 16T312-MM | | | | | | | | | | ⊗ | | | | ⊗ | ⊗ | | | | | | | ⊗ | ⊗ | ⊗ |
| | 1121848 | TCMT 220408-MM | | | | | | | | | | ⊗ | | | | | | ⊗ | | | | | | | ⊗ | |
|  Medium | 1121701 | TCMT 090204-MK | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121810 | TCMT 090208-MK | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121966 | TCMT 110204-MK | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121967 | TCMT 110208-MK | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121818 | TCMT 110304-MK | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121825 | TCMT 110308-MK | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121834 | TCMT 16T304-MK | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121838 | TCMT 16T308-MK | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121842 | TCMT 16T312-MK | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
| | 1121847 | TCMT 220408-MK | | | | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | | |
|  Medium to Finishing Wiper | 1121974 | TCMT 110208-MW | | ⊗ | ⊗ | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | ⊗ | |
| | 1121828 | TCMT 110308-MW | | ⊗ | ⊗ | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | ⊗ | |
| | 1121841 | TCMT 16T308-MW | | ⊗ | ⊗ | | | | | | | | | | | | | | ⊗ | ⊗ | | | | | ⊗ | |

⊗ First choice | 1ª Escolha | 1ª Opción

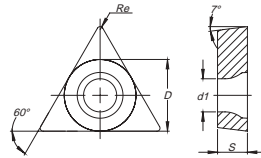
⊗ Stock available until sold out | Stock disponible até acabar o stock | Stock disponible hasta acabar el stock

Insert Order Code: (1) Geometry code + (2) Grade code

⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta



RELIEF ANGLE 7°



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|-----------------|---|------|------|------|--|------|------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| TCMT 090204-MM | TCMT 1.81.51-MM | 5,560 | 2,38 | 0,40 | 2,50 | 0,60 | 0,19 | 2,25 | 0,11 | 0,06 | 0,17 |
| TCMT 090208-MM | TCMT 1.81.52-MM | 5,560 | 2,38 | 0,80 | 2,50 | 0,60 | 0,38 | 2,25 | 0,15 | 0,08 | 0,23 |
| TCMT 110204-MM | TCMT 21.51-MM | 6,350 | 2,38 | 0,40 | 2,80 | 0,67 | 0,21 | 2,50 | 0,13 | 0,06 | 0,19 |
| TCMT 110208-MM | TCMT 21.52-MM | 6,350 | 2,38 | 0,80 | 2,80 | 0,67 | 0,42 | 2,50 | 0,17 | 0,09 | 0,26 |
| TCMT 110304-MM | TCMT 221-MM | 6,350 | 3,18 | 0,40 | 2,80 | 0,67 | 0,21 | 2,50 | 0,13 | 0,06 | 0,19 |
| TCMT 110308-MM | TCMT 222-MM | 6,350 | 3,18 | 0,80 | 2,80 | 0,67 | 0,42 | 2,50 | 0,20 | 0,09 | 0,40 |
| TCMT 16T304-MM | TCMT 32.51-MM | 9,525 | 3,97 | 0,40 | 4,40 | 0,80 | 0,25 | 3,00 | 0,15 | 0,08 | 0,23 |
| TCMT 16T308-MM | TCMT 32.52-MM | 9,525 | 3,97 | 0,80 | 4,40 | 0,80 | 0,50 | 3,00 | 0,22 | 0,10 | 0,45 |
| TCMT 16T312-MM | TCMT 32.53-MM | 9,525 | 3,97 | 1,20 | 4,40 | 0,80 | 0,60 | 3,00 | 0,35 | 0,12 | 0,60 |
| TCMT 220408-MM | TCMT 432-MM | 12,700 | 4,76 | 0,80 | 5,50 | 0,96 | 0,60 | 3,60 | 0,25 | 0,12 | 0,45 |
| TCMT 090204-MK | TCMT 1.81.51-MK | 5,560 | 2,38 | 0,40 | 2,50 | 0,60 | 0,19 | 2,25 | 0,11 | 0,06 | 0,17 |
| TCMT 090208-MK | TCMT 1.81.52-MK | 5,560 | 2,38 | 0,80 | 2,50 | 0,60 | 0,38 | 2,25 | 0,15 | 0,08 | 0,23 |
| TCMT 110204-MK | TCMT 21.51-MK | 6,350 | 2,38 | 0,40 | 2,80 | 0,67 | 0,21 | 2,50 | 0,13 | 0,06 | 0,19 |
| TCMT 110208-MK | TCMT 21.52-MK | 6,350 | 2,38 | 0,80 | 2,80 | 0,67 | 0,42 | 2,50 | 0,17 | 0,09 | 0,26 |
| TCMT 110304-MK | TCMT 221-MK | 6,350 | 3,18 | 0,40 | 2,80 | 0,67 | 0,21 | 2,50 | 0,13 | 0,06 | 0,19 |
| TCMT 110308-MK | TCMT 222-MK | 6,350 | 3,18 | 0,80 | 2,80 | 0,67 | 0,42 | 2,50 | 0,20 | 0,09 | 0,40 |
| TCMT 16T304-MK | TCMT 32.51-MK | 9,525 | 3,97 | 0,40 | 4,40 | 0,80 | 0,25 | 3,00 | 0,15 | 0,08 | 0,23 |
| TCMT 16T308-MK | TCMT 32.52-MK | 9,525 | 3,97 | 0,80 | 4,40 | 0,80 | 0,50 | 3,00 | 0,22 | 0,10 | 0,45 |
| TCMT 16T312-MK | TCMT 32.53-MK | 9,525 | 3,97 | 1,20 | 4,40 | 0,80 | 0,60 | 3,00 | 0,35 | 0,12 | 0,60 |
| TCMT 220408-MK | TCMT 432-MK | 12,700 | 4,76 | 0,80 | 5,50 | 0,96 | 0,60 | 3,60 | 0,25 | 0,12 | 0,45 |
| TCMT 110208-MW | TCMT 21.52-MW | 6,350 | 2,38 | 0,80 | 2,80 | 1,20 | 0,50 | 3,00 | 0,30 | 0,15 | 0,50 |
| TCMT 110308-MW | TCMT 222-MW | 6,350 | 3,18 | 0,80 | 2,80 | 1,20 | 0,50 | 3,00 | 0,30 | 0,15 | 0,50 |
| TCMT 16T308-MW | TCMT 32.52-MW | 9,525 | 3,97 | 0,80 | 4,40 | 1,50 | 0,50 | 4,00 | 0,30 | 0,15 | 0,50 |

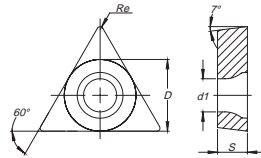
TC = TRIANGULAR 60° POSITIVE

TRIANGULAR 60° POSITIVA | TRIANGULAR 60° POSITIVA

| | | | P | | | | | | | | M | | | | K | | | N | S | | | | | | | |
|--|-------------------------|----------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | | CVD | | | | | PVD | | | CVD | | | PVD | | CVD | UNC | PVD | | | | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 |
| Inserts Pastilhas Plaquitas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 |
|  <p>Finishing to Fine Finishing</p> | TCGT-FS | 1123865 | TCGT 090202-FS | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1123866 | TCGT 090204-FS | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1123867 | TCGT 110201-FS | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1123868 | TCGT 110202-FS | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1123869 | TCGT 110204-FS | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1123870 | TCGT 110301-FS | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1123871 | TCGT 110302-FS | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1123872 | TCGT 110304-FS | | | | | | | | | | | | | | | | | | | | | | | |
|  <p>Medium to Finishing</p> | TCGT-LN | 1124011 | TCGT 090202-LN | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1123683 | TCGT 090204-LN | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121895 | TCGT 110202-LN | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121896 | TCGT 110204-LN | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1124012 | TCGT 110208-LN | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121897 | TCGT 16T302-LN | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121898 | TCGT 16T304-LN | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121899 | TCGT 16T308-LN | | | | | | | | | | | | | | | | | | | | | | | |
| | 1124013 | TCGT 16T312-LN | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1124014 | TCGT 16T316-LN | | | | | | | | | | | | | | | | | | | | | | | | |

⊗ First choice | 1ª Escolha | 1ª Opción
 ⊗ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock
 Insert Order Code: ⁽¹⁾ Geometry code + ⁽²⁾ Grade code
⊗ Stock Items | Itens de stock
 ○ Available under request | Disponível sob consulta | Disponible bajo consulta




RELIEF ANGLE 7°



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|-------------------|---|------|------|------|--|------|------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| TCGT 090202-FS | TCGT 1.81.50.5-FS | 5,560 | 2,38 | 0,20 | 2,50 | 0,50 | 0,10 | 1,50 | 0,07 | 0,02 | 0,12 |
| TCGT 090204-FS | TCGT 1.81.51-FS | 5,560 | 2,38 | 0,40 | 2,50 | 1,00 | 0,50 | 2,00 | 0,15 | 0,08 | 0,25 |
| TCGT 110201-FS | TCGT 21.50.2-FS | 6,350 | 2,38 | 0,10 | 2,80 | 0,30 | 0,10 | 1,00 | 0,03 | 0,01 | 0,08 |
| TCGT 110202-FS | TCGT 21.50.5-FS | 6,350 | 2,38 | 0,20 | 2,80 | 0,50 | 0,10 | 1,50 | 0,07 | 0,02 | 0,12 |
| TCGT 110204-FS | TCGT 21.51-FS | 6,350 | 2,38 | 0,40 | 2,80 | 1,30 | 0,30 | 2,50 | 0,15 | 0,08 | 0,25 |
| TCGT 110301-FS | TCGT 220.2-FS | 9,525 | 3,18 | 0,10 | 2,80 | 0,30 | 0,10 | 1,00 | 0,03 | 0,01 | 0,08 |
| TCGT 110302-FS | TCGT 220.5-FS | 9,525 | 3,18 | 0,20 | 2,80 | 0,50 | 0,10 | 1,50 | 0,07 | 0,02 | 0,12 |
| TCGT 110304-FS | TCGT 221-FS | 9,525 | 3,18 | 0,40 | 2,80 | 1,30 | 0,50 | 2,50 | 0,15 | 0,08 | 0,25 |
| TCGT 090202-LN | TCGT 1.81.50.5-LN | 5,560 | 2,38 | 0,20 | 2,50 | 1,00 | 0,05 | 2,50 | 0,10 | 0,07 | 0,15 |
| TCGT 090204-LN | TCGT 1.81.51-LN | 5,560 | 2,38 | 0,40 | 2,50 | 1,00 | 0,05 | 2,50 | 0,15 | 0,10 | 0,20 |
| TCGT 110202-LN | TCGT 21.50.5-LN | 6,350 | 2,38 | 0,20 | 2,80 | 2,03 | 0,05 | 4,00 | 0,12 | 0,07 | 0,15 |
| TCGT 110204-LN | TCGT 21.51-LN | 6,350 | 2,38 | 0,40 | 2,80 | 2,05 | 0,10 | 4,00 | 0,15 | 0,10 | 0,20 |
| TCGT 110208-LN | TCGT 21.52-LN | 6,350 | 2,38 | 0,80 | 2,80 | 2,05 | 0,10 | 4,00 | 0,25 | 0,15 | 0,50 |
| TCGT 16T302-LN | TCGT 32.50.5-LN | 9,525 | 3,97 | 0,20 | 4,40 | 2,53 | 0,05 | 5,00 | 0,10 | 0,07 | 0,15 |
| TCGT 16T304-LN | TCGT 32.51-LN | 9,525 | 3,97 | 0,40 | 4,40 | 2,80 | 0,10 | 5,50 | 0,15 | 0,10 | 0,20 |
| TCGT 16T308-LN | TCGT 32.52-LN | 9,525 | 3,97 | 0,80 | 4,40 | 2,80 | 0,10 | 5,50 | 0,25 | 0,15 | 0,50 |
| TCGT 16T312-LN | TCGT 32.53-LN | 9,525 | 3,97 | 1,20 | 4,40 | 3,00 | 0,15 | 5,50 | 0,45 | 0,15 | 0,70 |
| TCGT 16T316-LN | TCGT 32.54-LN | 9,525 | 3,97 | 1,60 | 4,40 | 3,00 | 0,15 | 5,50 | 0,65 | 0,20 | 0,90 |

TP = TRIANGULAR 60° POSITIVE

TRIANGULAR 60° POSITIVA | TRIANGULAR 60° POSITIVA

| | | | P | | | | | | | | M | | | | K | | | N | S | | | | | | | | |
|--|-------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|
| | | | CVD | | | | | PVD | | | CVD | | | PVD | | CVD | | | UNC | PVD | | | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 | |
| Inserts Pastilhas Plaquitas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 | |
|  TPUN Medium to Finishing | 1120765 | TPUN 160304 | | | | ⊗ | | ⊗ | | | ⊗ | | | | | | | | | | | | | | | | |
| | 1120766 | TPUN 160308 | | | | ⊗ | | ⊗ | | | ⊗ | | | | | | | | | | | | | | | | |
| | 1120770 | TPUN 160312 | | | | ⊗ | | ⊗ | | | ⊗ | | | | | | | | | | | | | | | | |
| | 1120777 | TPUN 220404 | | | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | |
| | 1120779 | TPUN 220408 | | | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | |
| | 1120783 | TPUN 220412 | | | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | |
|  TPMR-12 Finishing to Fine Finishing | 1120740 | TPMR 110304-12 | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | | |
| | 1120743 | TPMR 110308-12 | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | | |
| | 1120745 | TPMR 160304-12 | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | | |
| | 1120748 | TPMR 160308-12 | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | | |
|  TPMR-13 Medium | 1120734 | TPMR 090204-13 | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | | |
| | 1120741 | TPMR 110304-13 | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | | |
| | 1120744 | TPMR 110308-13 | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | | |
| | 1120746 | TPMR 160304-13 | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | | |
| | 1120749 | TPMR 160308-13 | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | | |
| | 1120752 | TPMR 160312-13 | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | | |
| | 1120753 | TPMR 220408-13 | | ⊗ | | ⊗ | | | | | | | | | | | | | | | | | | | | | |

⊗ First choice | 1ª Escolha | 1ª Opción

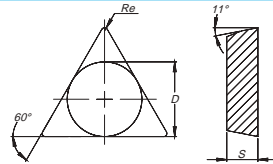
⊗ Stock available until sold out | Stock disponible até acabar o stock | Stock disponible hasta acabar el stock

Insert Order Code: ⁽¹⁾ Geometry code + ⁽²⁾ Grade code

⊗ Stock items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta








RELIEF ANGLE 11°



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|-----------------|---|------|------|----|--|------|------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| TPUN 160304 | TPUN 321 | 9,525 | 3,18 | 0,40 | - | 3,50 | 1,00 | 5,00 | 0,15 | 0,10 | 0,30 |
| TPUN 160308 | TPUN 322 | 9,525 | 3,18 | 0,80 | - | 3,50 | 1,00 | 5,00 | 0,30 | 0,15 | 0,40 |
| TPUN 160312 | TPUN 323 | 9,525 | 3,18 | 1,20 | - | 3,50 | 1,50 | 5,00 | 0,35 | 0,20 | 0,50 |
| TPUN 220404 | TPUN 431 | 12,700 | 4,76 | 0,40 | - | 4,50 | 1,50 | 7,00 | 0,15 | 0,10 | 0,30 |
| TPUN 220408 | TPUN 432 | 12,700 | 4,76 | 0,80 | - | 4,50 | 1,50 | 7,00 | 0,30 | 0,15 | 0,40 |
| TPUN 220412 | TPUN 433 | 12,700 | 4,76 | 1,20 | - | 4,50 | 1,50 | 7,00 | 0,35 | 0,20 | 0,50 |
| TPMR 110304-12 | TPMR 221-12 | 6,350 | 3,18 | 0,40 | - | 0,90 | 0,30 | 1,50 | 0,10 | 0,05 | 0,20 |
| TPMR 110308-12 | TPMR 222-12 | 6,350 | 3,18 | 0,80 | - | 0,90 | 0,30 | 1,50 | 0,20 | 0,05 | 0,35 |
| TPMR 160304-12 | TPMR 321-12 | 9,525 | 3,18 | 0,40 | - | 1,30 | 0,50 | 2,00 | 0,12 | 0,08 | 0,20 |
| TPMR 160308-12 | TPMR 322-12 | 9,525 | 3,18 | 0,80 | - | 1,50 | 0,50 | 3,00 | 0,22 | 0,08 | 0,35 |
| TPMR 090204-13 | TPMR 1.81.51-13 | 5,560 | 2,38 | 0,40 | - | 1,00 | 0,20 | 1,50 | 0,10 | 0,08 | 0,20 |
| TPMR 110304-13 | TPMR 221-13 | 6,350 | 3,18 | 0,40 | - | 2,00 | 1,00 | 3,00 | 0,12 | 0,10 | 0,20 |
| TPMR 110308-13 | TPMR 222-13 | 6,350 | 3,18 | 0,80 | - | 2,00 | 1,00 | 3,00 | 0,25 | 0,13 | 0,40 |
| TPMR 160304-13 | TPMR 321-13 | 9,525 | 3,18 | 0,40 | - | 3,00 | 1,00 | 5,00 | 0,15 | 0,10 | 0,20 |
| TPMR 160308-13 | TPMR 322-13 | 9,525 | 3,18 | 0,80 | - | 3,00 | 1,00 | 5,00 | 0,30 | 0,13 | 0,40 |
| TPMR 160312-13 | TPMR 323-13 | 9,525 | 3,18 | 1,20 | - | 3,00 | 1,00 | 5,00 | 0,40 | 0,15 | 0,55 |
| TPMR 220408-13 | TPMR 432-13 | 12,700 | 4,76 | 0,80 | - | 5,00 | 1,50 | 7,00 | 0,30 | 0,15 | 0,40 |

VB = RHOMBIC 35° POSITIVE

RÔMBICA 35° POSITIVA | RÓMBICA 35° POSITIVA

| | | | P | | | | | | | | M | | | | | | K | | | N | S | | | | | | |
|---|-------------------------|---|----------------|---------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|
| | | | CVD | | | | | PVD | | | CVD | | | PVD | | | CVD | | | UNC | PVD | | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 | |
| Inserts Pastilhas Plaquetas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 | |
|  | VBWM | 1120804 | VBWM 160404 | | | | | | | | | | | | | | | | | | | | | | | | |
| | Finishing | 1120805 | VBWM 160408 | | | | | | | | | | | | | | | | | | | | | | | | |
|  | VBMT-FP | 1121852 | VBMT 110302-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| | Finishing | 1121855 | VBMT 110304-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121858 | VBMT 110308-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121859 | VBMT 110312-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121862 | VBMT 160402-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121865 | VBMT 160404-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121670 | VBMT 160408-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121793 | VBMT 160412-FP | | | | | | | | | | | | | | | | | | | | | | | | |
|  | VBMT-FM | 1121851 | VBMT 110302-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| | Finishing | 1121854 | VBMT 110304-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121857 | VBMT 110308-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121861 | VBMT 160402-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121864 | VBMT 160404-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121870 | VBMT 160408-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121792 | VBMT 160412-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| | |  | VBMT-FK | 1121850 | VBMT 110302-FK | | | | | | | | | | | | | | | | | | | | | | |
| Finishing | 1121853 | | VBMT 110304-FK | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121856 | | VBMT 110308-FK | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121860 | | VBMT 160402-FK | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121863 | | VBMT 160404-FK | | | | | | | | | | | | | | | | | | | | | | | | |
| 1121869 | VBMT 160408-FK | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | VBMT-MP | 1121868 | VBMT 160404-MP | | | | | | | | | | | | | | | | | | | | | | | | |
| | Medium | 1121791 | VBMT 160408-MP | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121796 | VBMT 160412-MP | | | | | | | | | | | | | | | | | | | | | | | | |
|  | VBMT-MM | 1121867 | VBMT 160404-MM | | | | | | | | | | | | | | | | | | | | | | | | |
| | Medium | 1121790 | VBMT 160408-MM | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121795 | VBMT 160412-MM | | | | | | | | | | | | | | | | | | | | | | | | |
|  | VBMT-MK | 1121866 | VBMT 160404-MK | | | | | | | | | | | | | | | | | | | | | | | | |
| | Medium | 1121871 | VBMT 160408-MK | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1121794 | VBMT 160412-MK | | | | | | | | | | | | | | | | | | | | | | | | |

⊗ First choice | 1ª Escolha | 1ª Opción

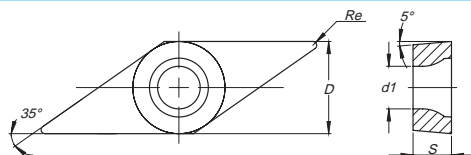
⊕ Stock available until sold out | Stock disponible até acabar o stock | Stock disponible hasta acabar el stock

Insert Order Code: (1) Geometry code + (2) Grade code

⊖ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

RELIEF ANGLE 5°










| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|----------------|---|------|------|------|--|------|------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| VBWM 160404 | VBWM 331 | 9,525 | 4,76 | 0,40 | 4,40 | 2,30 | 0,05 | 4,70 | 0,20 | 0,10 | 0,26 |
| VBWM 160408 | VBWM 332 | 9,525 | 4,76 | 0,80 | 4,40 | 2,30 | 0,05 | 4,70 | 0,40 | 0,16 | 0,53 |
| VBMT 110302-FP | VBMT 220.5-FP | 6,350 | 3,18 | 0,20 | 2,80 | 0,30 | 0,06 | 1,70 | 0,06 | 0,03 | 0,13 |
| VBMT 110304-FP | VBMT 221-FP | 6,350 | 3,18 | 0,40 | 2,80 | 0,30 | 0,10 | 1,70 | 0,10 | 0,05 | 0,19 |
| VBMT 110308-FP | VBMT 222-FP | 6,350 | 3,18 | 0,80 | 2,80 | 0,30 | 0,13 | 1,70 | 0,13 | 0,07 | 0,26 |
| VBMT 110312-FP | VBMT 223-FP | 6,350 | 3,18 | 1,20 | 2,80 | 0,30 | 0,13 | 1,70 | 0,15 | 0,08 | 0,31 |
| VBMT 160402-FP | VBMT 330.5-FP | 9,525 | 4,76 | 0,20 | 4,40 | 0,32 | 0,07 | 1,80 | 0,07 | 0,04 | 0,14 |
| VBMT 160404-FP | VBMT 331-FP | 9,525 | 4,76 | 0,40 | 4,40 | 0,32 | 0,10 | 1,80 | 0,10 | 0,05 | 0,20 |
| VBMT 160408-FP | VBMT 332-FP | 9,525 | 4,76 | 0,80 | 4,40 | 0,32 | 0,14 | 1,80 | 0,14 | 0,07 | 0,27 |
| VBMT 160412-FP | VBMT 333-FP | 9,525 | 4,76 | 1,20 | 4,40 | 0,32 | 0,14 | 1,80 | 0,16 | 0,09 | 0,32 |
| VBMT 110302-FM | VBMT 220.5-FM | 6,350 | 3,18 | 0,20 | 2,80 | 0,30 | 0,06 | 1,70 | 0,06 | 0,03 | 0,13 |
| VBMT 110304-FM | VBMT 221-FM | 6,350 | 3,18 | 0,40 | 2,80 | 0,30 | 0,10 | 1,70 | 0,10 | 0,05 | 0,19 |
| VBMT 110308-FM | VBMT 222-FM | 6,350 | 3,18 | 0,80 | 2,80 | 0,30 | 0,13 | 1,70 | 0,13 | 0,07 | 0,26 |
| VBMT 160402-FM | VBMT 330.5-FM | 9,525 | 4,76 | 0,20 | 4,40 | 0,32 | 0,07 | 1,80 | 0,07 | 0,04 | 0,14 |
| VBMT 160404-FM | VBMT 331-FM | 9,525 | 4,76 | 0,40 | 4,40 | 0,32 | 0,10 | 1,80 | 0,10 | 0,05 | 0,20 |
| VBMT 160408-FM | VBMT 332-FM | 9,525 | 4,76 | 0,80 | 4,40 | 0,32 | 0,14 | 1,80 | 0,14 | 0,07 | 0,27 |
| VBMT 160412-FM | VBMT 333-FM | 9,525 | 4,76 | 1,20 | 4,40 | 0,32 | 0,14 | 1,80 | 0,16 | 0,09 | 0,32 |
| VBMT 110302-FK | VBMT 220.5-FK | 6,350 | 3,18 | 0,20 | 2,80 | 0,30 | 0,06 | 1,70 | 0,06 | 0,03 | 0,13 |
| VBMT 110304-FK | VBMT 221-FK | 6,350 | 3,18 | 0,40 | 2,80 | 0,30 | 0,10 | 1,70 | 0,10 | 0,05 | 0,19 |
| VBMT 110308-FK | VBMT 222-FK | 6,350 | 3,18 | 0,80 | 2,80 | 0,30 | 0,13 | 1,70 | 0,13 | 0,07 | 0,26 |
| VBMT 160402-FK | VBMT 330.5-FK | 9,525 | 4,76 | 0,20 | 4,40 | 0,32 | 0,07 | 1,80 | 0,07 | 0,04 | 0,14 |
| VBMT 160404-FK | VBMT 331-FK | 9,525 | 4,76 | 0,40 | 4,40 | 0,32 | 0,10 | 1,80 | 0,10 | 0,05 | 0,20 |
| VBMT 160408-FK | VBMT 332-FK | 9,525 | 4,76 | 0,80 | 4,40 | 0,32 | 0,14 | 1,80 | 0,14 | 0,07 | 0,27 |
| VBMT 160404-MP | VBMT 331-MP | 9,525 | 4,76 | 0,40 | 4,40 | 0,72 | 0,23 | 2,70 | 0,14 | 0,07 | 0,20 |
| VBMT 160408-MP | VBMT 332-MP | 9,525 | 4,76 | 0,80 | 4,40 | 0,72 | 0,45 | 2,70 | 0,18 | 0,09 | 0,27 |
| VBMT 160412-MP | VBMT 333-MP | 9,525 | 4,76 | 1,20 | 4,40 | 0,72 | 0,54 | 2,70 | 0,22 | 0,11 | 0,32 |
| VBMT 160404-MM | VBMT 331-MM | 9,525 | 4,76 | 0,40 | 4,40 | 0,72 | 0,23 | 2,70 | 0,14 | 0,07 | 0,20 |
| VBMT 160408-MM | VBMT 332-MM | 9,525 | 4,76 | 0,80 | 4,40 | 0,72 | 0,45 | 2,70 | 0,18 | 0,09 | 0,27 |
| VBMT 160412-MM | VBMT 333-MM | 9,525 | 4,76 | 1,20 | 4,40 | 0,72 | 0,54 | 2,70 | 0,22 | 0,11 | 0,32 |
| VBMT 160404-MK | VBMT 331-MK | 9,525 | 4,76 | 0,40 | 4,40 | 0,72 | 0,23 | 2,70 | 0,14 | 0,07 | 0,20 |
| VBMT 160408-MK | VBMT 332-MK | 9,525 | 4,76 | 0,80 | 4,40 | 0,72 | 0,45 | 2,70 | 0,18 | 0,09 | 0,27 |
| VBMT 160412-MK | VBMT 333-MK | 9,525 | 4,76 | 1,20 | 4,40 | 0,72 | 0,54 | 2,70 | 0,22 | 0,11 | 0,32 |

TURNING
Insert selection
Overview
Negative inserts
Positive inserts
PCBN & PCD inserts
Heavy turning
External Toolholders
Internal Toolholders
Automatic Lathes
Spare Parts
Technical Data

VC = RHOMBIC 35° POSITIVE

RÔMBICA 35° POSITIVA | RÓMBICA 35° POSITIVA

| | | | P | | | | | | | | M | | | | | | K | | | N | S | | | | | |
|---|-------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | | CVD | | | | | PVD | | | CVD | | | PVD | | | CVD | | | UNC | PVD | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 |
| Inserts Pastilhas Plaquitas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 |
| VCMTW | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | 1120816 | VCMTW 160404 | | | | | | | | | | | | | | | | | | | | | | | | |
| Finishing | | | | | | | | | | | | | | | | | | | | | | | | | | |
| VCMT-FP | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | 1121776 | VCMT 110302-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121779 | VCMT 110304-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| Finishing | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121977 | VCMT 160402-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121978 | VCMT 160404-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121979 | VCMT 160408-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121980 | VCMT 160412-FP | | | | | | | | | | | | | | | | | | | | | | | | |
| VCMT-FM | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | 1121775 | VCMT 110302-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121778 | VCMT 110304-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| Finishing | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121981 | VCMT 160402-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121982 | VCMT 160404-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121983 | VCMT 160408-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121984 | VCMT 160412-FM | | | | | | | | | | | | | | | | | | | | | | | | |
| VCMT-FK | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | 1121777 | VCMT 110304-FK | | | | | | | | | | | | | | | | | | | | | | | | |
| Finishing | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121985 | VCMT 160402-FK | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121986 | VCMT 160404-FK | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121987 | VCMT 160408-FK | | | | | | | | | | | | | | | | | | | | | | | | |
| VCMT-MP | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | 1121754 | VCMT 110304-MP | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121752 | VCMT 110308-MP | | | | | | | | | | | | | | | | | | | | | | | | |
| Medium | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121988 | VCMT 160404-MP | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121989 | VCMT 160408-MP | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121990 | VCMT 160412-MP | | | | | | | | | | | | | | | | | | | | | | | | |
| VCMT-MM | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | 1121780 | VCMT 110304-MM | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121751 | VCMT 110308-MM | | | | | | | | | | | | | | | | | | | | | | | | |
| Medium | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121991 | VCMT 160404-MM | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121992 | VCMT 160408-MM | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121993 | VCMT 160412-MM | | | | | | | | | | | | | | | | | | | | | | | | |
| VCMT-MK | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | 1121753 | VCMT 110308-MK | | | | | | | | | | | | | | | | | | | | | | | | |
| Medium | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121994 | VCMT 160404-MK | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121995 | VCMT 160408-MK | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1121996 | VCMT 160412-MK | | | | | | | | | | | | | | | | | | | | | | | | |

⊕ First choice | 1ª Escolha | 1ª Opción

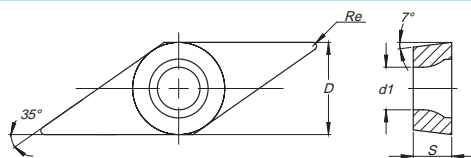
⊕ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock

Insert Order Code: ⁽¹⁾ Geometry code + ⁽²⁾ Grade code

⊖ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta



RELIEF ANGLE 7°



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|----------------|---|------|------|------|--|------|------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| VCMW 160404 | VCMW 331 | 9,525 | 4,76 | 0,40 | 4,40 | 2,30 | 0,05 | 4,70 | 0,20 | 0,08 | 0,26 |
| VCMT 110302-FP | VCMT 220.5-FP | 6,350 | 3,18 | 0,20 | 2,80 | 0,30 | 0,07 | 1,50 | 0,07 | 0,03 | 0,13 |
| VCMT 110304-FP | VCMT 221-FP | 6,350 | 3,18 | 0,40 | 2,80 | 0,30 | 0,10 | 1,50 | 0,10 | 0,05 | 0,20 |
| VCMT 160402-FP | VCMT 330.5-FP | 9,525 | 4,76 | 0,20 | 4,40 | 0,32 | 0,07 | 1,80 | 0,07 | 0,04 | 0,14 |
| VCMT 160404-FP | VCMT 331-FP | 9,525 | 4,76 | 0,40 | 4,40 | 0,32 | 0,10 | 1,80 | 0,10 | 0,05 | 0,20 |
| VCMT 160408-FP | VCMT 332-FP | 9,525 | 4,76 | 0,80 | 4,40 | 0,32 | 0,14 | 1,80 | 0,14 | 0,07 | 0,27 |
| VCMT 160412-FP | VCMT 333-FP | 9,525 | 4,76 | 1,20 | 4,40 | 0,32 | 0,14 | 1,80 | 0,16 | 0,09 | 0,32 |
| VCMT 110302-FM | VCMT 220.5-FM | 6,350 | 3,18 | 0,20 | 2,80 | 0,30 | 0,07 | 1,50 | 0,07 | 0,03 | 0,13 |
| VCMT 110304-FM | VCMT 221-FM | 6,350 | 3,18 | 0,40 | 2,80 | 0,30 | 0,10 | 1,50 | 0,10 | 0,05 | 0,20 |
| VCMT 160402-FM | VCMT 330.5-FM | 9,525 | 4,76 | 0,20 | 4,40 | 0,32 | 0,07 | 1,80 | 0,07 | 0,04 | 0,14 |
| VCMT 160404-FM | VCMT 331-FM | 9,525 | 4,76 | 0,40 | 4,40 | 0,32 | 0,10 | 1,80 | 0,10 | 0,05 | 0,20 |
| VCMT 160408-FM | VCMT 332-FM | 9,525 | 4,76 | 0,80 | 4,40 | 0,32 | 0,14 | 1,80 | 0,14 | 0,07 | 0,27 |
| VCMT 160412-FM | VCMT 333-FM | 9,525 | 4,76 | 1,20 | 4,40 | 0,32 | 0,14 | 1,80 | 0,16 | 0,09 | 0,32 |
| VCMT 110304-FK | VCMT 221-FK | 6,350 | 3,18 | 0,40 | 2,80 | 0,30 | 0,10 | 1,50 | 0,10 | 0,05 | 0,20 |
| VCMT 160402-FK | VCMT 330.5-FK | 9,525 | 4,76 | 0,20 | 4,40 | 0,32 | 0,07 | 1,80 | 0,07 | 0,04 | 0,14 |
| VCMT 160404-FK | VCMT 331-FK | 9,525 | 4,76 | 0,40 | 4,40 | 0,32 | 0,10 | 1,80 | 0,10 | 0,05 | 0,20 |
| VCMT 160408-FK | VCMT 332-FK | 9,525 | 4,76 | 0,80 | 4,40 | 0,32 | 0,14 | 1,80 | 0,14 | 0,07 | 0,27 |
| VCMT 110304-MP | VCMT 221-MP | 6,350 | 3,18 | 0,40 | 2,80 | 0,77 | 0,31 | 2,55 | 0,15 | 0,10 | 0,25 |
| VCMT 110308-MP | VCMT 222-MP | 6,350 | 3,18 | 0,80 | 2,80 | 0,77 | 0,61 | 2,55 | 0,20 | 0,13 | 0,33 |
| VCMT 160404-MP | VCMT 331-MP | 9,525 | 4,76 | 0,40 | 4,40 | 0,72 | 0,23 | 2,70 | 0,14 | 0,07 | 0,20 |
| VCMT 160408-MP | VCMT 332-MP | 9,525 | 4,76 | 0,80 | 4,40 | 0,72 | 0,45 | 2,70 | 0,18 | 0,09 | 0,27 |
| VCMT 160412-MP | VCMT 333-MP | 9,525 | 4,76 | 1,20 | 4,40 | 0,72 | 0,54 | 2,70 | 0,22 | 0,11 | 0,32 |
| VCMT 110304-MM | VCMT 221-MM | 6,350 | 3,18 | 0,40 | 2,80 | 0,77 | 0,31 | 2,55 | 0,15 | 0,10 | 0,25 |
| VCMT 110308-MM | VCMT 222-MM | 6,350 | 3,18 | 0,80 | 2,80 | 0,77 | 0,61 | 2,55 | 0,20 | 0,13 | 0,33 |
| VCMT 160404-MM | VCMT 331-MM | 9,525 | 4,76 | 0,40 | 4,40 | 0,72 | 0,23 | 2,70 | 0,14 | 0,07 | 0,20 |
| VCMT 160408-MM | VCMT 332-MM | 9,525 | 4,76 | 0,80 | 4,40 | 0,72 | 0,45 | 2,70 | 0,18 | 0,09 | 0,27 |
| VCMT 160412-MM | VCMT 333-MM | 9,525 | 4,76 | 1,20 | 4,40 | 0,72 | 0,54 | 2,70 | 0,22 | 0,11 | 0,32 |
| VCMT 110308-MK | VCMT 222-MK | 6,350 | 3,18 | 0,80 | 2,80 | 0,77 | 0,61 | 2,55 | 0,20 | 0,13 | 0,33 |
| VCMT 160404-MK | VCMT 331-MK | 9,525 | 4,76 | 0,40 | 4,40 | 0,72 | 0,23 | 2,70 | 0,14 | 0,07 | 0,20 |
| VCMT 160408-MK | VCMT 332-MK | 9,525 | 4,76 | 0,80 | 4,40 | 0,72 | 0,45 | 2,70 | 0,18 | 0,09 | 0,27 |
| VCMT 160412-MK | VCMT 333-MK | 9,525 | 4,76 | 1,20 | 4,40 | 0,72 | 0,54 | 2,70 | 0,22 | 0,11 | 0,32 |

VC = RHOMBIC 35° POSITIVE

RÔMBICA 35° POSITIVA | RÓMBICA 35° POSITIVA

| | | | P | | | | | | | | M | | | | K | | | N | S | | | | | | | |
|--|-------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | | CVD | | | | | PVD | | | CVD | | | PVD | | CVD | UNC | PVD | | | | | | | | |
| | | (2) Grade code | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | U4 | U5 | V6 | G1 | X6 | G4 | Y3 | L5 | L6 | L9 | 10 | G1 | X6 | G4 | Y3 |
| Inserts Pastilhas Plaquitas | (1) Geometry code | ISO Reference | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PHS215 | PHS225 | PHS240 | PH7910 | PHH910 | PH7920 | PHH920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PHH910 | PH7920 | PHH920 |
|  VCGT-FS Finishing to Fine Finishing | 1123861 | VCGT 110301-FS | | | | | | | | ⊗ | ⊗ | | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ |
| | 1123862 | VCGT 110302-FS | | | | | | | | ⊗ | ⊗ | | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ |
| | 1123863 | VCGT 110304-FS | | | | | | | | ⊗ | ⊗ | | | | ⊗ | ⊗ | ⊗ | ⊗ | | | | | ⊗ | ⊗ | ⊗ | ⊗ |
|  VCGT-LN Medium to Finishing | 1123689 | VCGT 110301-LN | | | | | | | | | | | | | | | | | | | | ⊗ | | | | |
| | 1121889 | VCGT 110302-LN | | | | | | | | | | | | | | | | | | | | ⊗ | | | | |
| | 1121890 | VCGT 110304-LN | | | | | | | | | | | | | | | | | | | | ⊗ | | | | |
| | 1121891 | VCGT 110308-LN | | | | | | | | | | | | | | | | | | | | ⊗ | | | | |
| | 1124015 | VCGT 130302-LN | | | | | | | | | | | | | | | | | | | | ⊗ | | | | |
| | 1124016 | VCGT 130304-LN | | | | | | | | | | | | | | | | | | | | ⊗ | | | | |
| | 1124677 | VCGT 130308-LN | | | | | | | | | | | | | | | | | | | | ⊗ | | | | |
| | 1111878 | VCGT 160402-LN | | | | | | | | | | | | | | | | | | | | ⊗ | | | | |
| | 1111533 | VCGT 160404-LN | | | | | | | | | | | | | | | | | ⊗ | | | ⊗ | | ⊗ | | |
| | 1121893 | VCGT 160408-LN | | | | | | | | | | | | | | | | ⊗ | | | | ⊗ | | ⊗ | | |
| 1121894 | VCGT 160412-LN | | | | | | | | | | | | | | | | | | | | ⊗ | | ⊗ | | | |
| 1121929 | VCGT 220530-LN | | | | | | | | | | | | | | | | | | | | ⊗ | | | | | |

⊗ First choice | 1ª Escolha | 1ª Opción

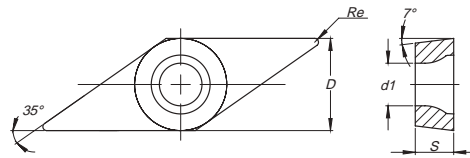
⊗ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock

Insert Order Code: ⁽¹⁾ Geometry code + ⁽²⁾ Grade code

⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

RELIEF ANGLE 7°



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|-----------------|---|------|------|------|--|------|------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| VCGT 110301-FS | VCGT 220.2-FS | 6,350 | 3,18 | 0,10 | 2,80 | 0,30 | 0,10 | 1,00 | 0,03 | 0,01 | 0,08 |
| VCGT 110302-FS | VCGT 220.5-FS | 6,350 | 3,18 | 0,20 | 2,80 | 0,50 | 0,10 | 1,50 | 0,07 | 0,02 | 0,12 |
| VCGT 110304-FS | VCGT 221-FS | 6,350 | 3,18 | 0,40 | 2,80 | 1,00 | 0,30 | 2,50 | 0,15 | 0,08 | 0,25 |
| VCGT 110301-LN | VCGT 220.2-LN | 6,350 | 3,18 | 0,10 | 2,80 | 1,53 | 0,05 | 3,00 | 0,04 | 0,02 | 0,06 |
| VCGT 110302-LN | VCGT 220.5-LN | 6,350 | 3,18 | 0,20 | 2,80 | 1,53 | 0,05 | 3,00 | 0,07 | 0,05 | 0,12 |
| VCGT 110304-LN | VCGT 221-LN | 6,350 | 3,18 | 0,40 | 2,80 | 1,53 | 0,05 | 3,00 | 0,15 | 0,10 | 0,25 |
| VCGT 110308-LN | VCGT 222-LN | 6,350 | 3,18 | 0,80 | 2,80 | 1,53 | 0,05 | 3,00 | 0,22 | 0,15 | 0,45 |
| VCGT 130302-LN | VCGT 2.520.5-LN | 7,940 | 3,18 | 0,20 | 3,40 | 2,00 | 0,10 | 4,00 | 0,07 | 0,05 | 0,12 |
| VCGT 130304-LN | VCGT 2.521-LN | 7,940 | 3,18 | 0,40 | 3,40 | 2,00 | 0,10 | 4,00 | 0,15 | 0,10 | 0,25 |
| VCGT 130308-LN | VCGT 2.522-LN | 7,940 | 3,18 | 0,80 | 3,40 | 2,50 | 0,15 | 4,50 | 0,18 | 0,10 | 0,30 |
| VCGT 160402-LN | VCGT 330.5-LN | 9,525 | 4,76 | 0,20 | 4,40 | 2,30 | 0,10 | 5,00 | 0,07 | 0,05 | 0,12 |
| VCGT 160404-LN | VCGT 331-LN | 9,525 | 4,76 | 0,40 | 4,40 | 2,55 | 0,10 | 5,00 | 0,15 | 0,10 | 0,25 |
| VCGT 160408-LN | VCGT 332-LN | 9,525 | 4,76 | 0,80 | 4,40 | 2,55 | 0,10 | 5,00 | 0,22 | 0,15 | 0,45 |
| VCGT 160412-LN | VCGT 333-LN | 9,525 | 4,76 | 1,20 | 4,40 | 2,55 | 0,10 | 5,00 | 0,40 | 0,15 | 0,60 |
| VCGT 220530-LN | VCGT 43.57.5-LN | 12,700 | 5,56 | 3,00 | 5,50 | 3,55 | 0,10 | 7,00 | 0,80 | 0,15 | 1,60 |



TURNING

Insert selection

Overview

Negative inserts

Positive inserts

PCBN & PCD inserts

Heavy turning

External Toolholders

Internal Toolholders

Automatic Lathes

Spare Parts

Technical Data





PCBN (Polycrystalline-Cubic-Boron-Nitride) is not found in nature, it is a synthetic material which is the result of an high temperature and high pressure process (HTHP). When PCBN tips are brazed to a carbide insert a powerful cutting tool is born.

PCBN insert excel in the finishing and semi-finishing process of hardened steels (45-68 HRC) as well as hard cast iron and heat-resistant super alloys (HRSA).

Grades description:

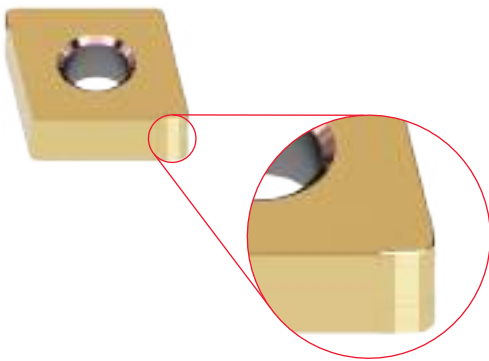
| Grade | Code | Characteristics | Application |
|--------|------|---|--|
| PBY603 | Y5 | Low PCBN content grade with medium grain size and ceramic binder. Great wear and abrasion resistance | <ul style="list-style-type: none"> For continuously and lightly interrupted cutting of Hardened Steel (H01-H10); Finishing abrasive high strength cast irons; Can also be used to machine HRSA (S01-S10). |
| PBY620 | Y4 | Low PCBN content grade with medium grain size which provides enhanced crater and flank wear resistance with an excellent balance of toughness | <ul style="list-style-type: none"> For moderately to heavily interrupted turning of all hardened steels (H10-H20). |
| PBH920 | S4 | High PCBN with excellent abrasion resistance. | <ul style="list-style-type: none"> For machining all types of cast iron (K01-K30); First choice for machining ferrous powder metals; Can also be used to machine HRSA (S20-S30). |
| PBY930 | W3 | High abrasive Wear resistance High impact toughness | <ul style="list-style-type: none"> For Cast Iron with high Niquel and Chrome content (pumps and engine blocks) |
| PBY940 | W4 | High fracture toughness High thermal conductivity | <ul style="list-style-type: none"> For Alloy steels with high content of Cr, grey cast irons and hardened steels with Ni |



The insert geometry and edge preparation are extremely important in hard part turning since they have a significant influence on tool life and productivity. Palbit product range includes standard and wiper inserts. The standard nose radius generates the lowest cutting forces and has the lowest stability requirements while wiper gives an unbeatable combination of high productivity and excellent surface finish.

A large nose radius provides a greater edge strength and therefore extended tool life. For this reason, it is advised to use the largest allowed nose radius to each process requirements.

WIPER INSERT || Pastilha wiper | Plaquita wiper



Wiper inserts provide two possibilities for process improvement:

- Improved surface finish with standard cutting data;
- Maintained surface finish at substantially higher feed rate.

| | Standard ($r_{\epsilon} = 0,8\text{mm}$) | Wiper ($r_{\epsilon} = 0,8\text{mm}$) |
|-----------------------------|--|---|
| Insert type | | |
| Surface Roughness (R_a) | 0,81 μm | 0,42 μm |

Note:

This values were achieved with the next cutting conditions:

H Steel HRC60 | $V_c = 130 \text{ m/min}$ | $f_n = 0,12 \text{ mm/rev}$ | $a_p = 0,2 \text{ mm}$ | $\lambda = 2,5 \text{ mm}$ / ISO 4287

FORMULAS FOR SURFACE ROUGHNESS CALCULATION

Fórmulas para calculo da rugosidade da superfície | Fórmulas para calcular la rugosidad de la superficie

$$R_a = 0,032 \times \frac{f_n^2}{r_{\epsilon}} \times 1000 \text{ } \mu\text{m}$$

$$R_t = 3,91 \times R_a \text{ } \mu\text{m}$$

R_a - Mean Surface Roughness (μm)

R_t - Roughness Total Height (μm)

f_n - Feed Rate (mm/rev)

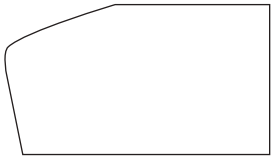
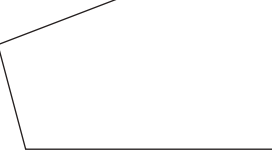


r_{ϵ} - Insert Radius (mm)

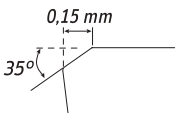

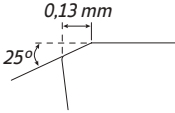

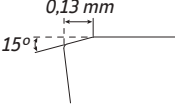

EDGE PREPARATION SELECTION

Seleção da preparação de aresta | Selección de la preparación de arista

The most important criteria for the stability and cutting edge tool-life is to define the correct cutting edge preparation. Its choice is mainly required in order to achieve the best economical result.

Edge preparation:

| | | |
|--|--|--|
| Cutting forces Edge strength ↑ ↓ - | S-Land  | S – Preparation with chamfer and honing - Standard <ul style="list-style-type: none"> - First choice for hard part turning; - Stronger edge than T-land, with more resistance to chipping and fracture, resulting in more predictable tool life; - Generates consistent surface finish; - Critical in interrupted cutting and when using large depth of cut; - Feed rate must be greater than hone size. |
| | T-Land  | T – Preparation with chamfer <ul style="list-style-type: none"> - T-land is a common edge preparation for PCBN; - Preferred choice for cast iron; - Good alternative to S-land in hard part turning when reduced cutting forces and tighter tolerances are required. |
| | E-Land  | E – Preparation with edge honing <ul style="list-style-type: none"> - Recommended for HRSA finishing operation; - Honing helps strengthen the edge, giving resistance to chipping and fracturing; - Feed rates must be greater than the hone size to allow actual cutting action to take place and prevent rubbing. |
| | F-Land  | F – Preparation without honing <ul style="list-style-type: none"> - Sharp cutting edge; - F - Standard is a common edge preparation for PCD; - Recommended for aluminium or other non-ferrous materials. |

| Honing Types | Specifications |
|---|---|
| S3515 For interrupted machining |   Difficult Conditions |
| S2513 For general purpose machining |   Average Conditions |
| S1513 For stable continuous machining |   Good Conditions |

Note: Based on our experience sometimes it is necessary to define edge preparation during several tests to provide the best possible solution for each application.

CHIP-BREAKER TAILOR-MADE

Quebra- aparas personalizados | Rompevirutas personalizados

Our laser machining and grinding machining technology can reach a wide range of tailor-made solutions. The chip-breakers can be customized according to our customer's needs and still remain with a high cutting edge quality.

PCBN RECOMMENDED CUTTING DATA

Condições de corte recomendadas para PCBN | Datos de corte recomendadas para PCBN

| Workpiece material | Recommend grade for PCBN | | | VC (m/min) | |
|--|--------------------------|--------|--------|-------------|------------|
| | PBH920 | PBY603 | PBY620 | | |
| Hardened Steel (HRC 45-68) Tool-Steel, Case Hardened Steel, Continuous Cut (high Economy without Coolants) | | ⊗ | | Semi-finish | 80 - 200 |
| | | | | Finish | 80 - 180 |
| Hardened Steel (HRC 45-68) Tool-Steel, Case Hardened Steel, Interrupted Cut (recommended without Coolants) | ○ | | ⊗ | Semi-finish | 70 - 180 |
| | | | | Finish | 70 - 160 |
| Grey Cast Iron | ⊗ | | | Semi-finish | 500 - 1000 |
| | | | | Finish | 600 - 2000 |
| High Temperature Alloys (Inconel, Waspoly, Hasteloy) Exotic and High Nickel + Cobalt basis | ⊗ | ⊗ | | Finish | 50 - 300 |

⊗ Recommended ○ Second choice

NEGATIVE INSERTS OVERVIEW

Vista genérica pastilhas negativas | Visión general de plaquitas negativas

| | | | | | | | | |
|---------------|---|---|---|--|---|---|-----------|---|
| SINGLE TIP | CNGA Z1 | DNGA Z1 | | | | | SOLID CBN | RNGN S ^{NEW} |
| |  |  | | | | | |  |
| | Size 12 | Size 15 | | | | | | Size 06 09 12 |
| | Page 468 | | | | | | | Page 471 |
| MULTIPLE TIPS | CNGA Z2 Z4 | DNGA Z2 Z4 | SNGA Z4 | TNGA Z3 Z6 | VNGA Z2 | WNGA Z3 Z6 | | |
| |  |  |  |  |  |  | | |
| | Size 12 | Size 11 15 | Size 12 | Size 16 | Size 16 | Size 08 | | |
| | Page 469 | Page 470 | Page 471 | Page 472 | Page 473 | Page 473 | | |

ISO PCBN INSERTS CODE KEY

| | | | |
|---|--|---|---------|
| H | | M | |
| O | | V | |
| P | | W | |
| S | | L | |
| T | | A | |
| C | | B | |
| D | | K | |
| E | | R | |
| F | | X | Special |

1- Insert shape symbol

| Symbol | m (mm) | d (mm) | s (mm) |
|--------|-------------|-------------|--------|
| A | ±0.005 | ±0.025 | ±0.025 |
| F | ±0.005 | ±0.013 | ±0.025 |
| C | ±0.013 | ±0.025 | ±0.025 |
| H | ±0.013 | ±0.013 | ±0.025 |
| E | ±0.025 | ±0.025 | ±0.025 |
| G | ±0.025 | ±0.025 | ±0.13 |
| J | ±0.005 | ±0.05~±0.13 | ±0.025 |
| K* | ±0.013 | ±0.05~±0.13 | ±0.025 |
| L* | ±0.025 | ±0.05~±0.13 | ±0.025 |
| M* | ±0.08~±0.20 | ±0.05~±0.13 | ±0.13 |
| N* | ±0.08~±0.20 | ±0.05~±0.13 | ±0.025 |
| U* | ±0.13~±0.38 | ±0.08~±0.25 | ±0.13 |

Triangular inserts with a facet (secondary cutting edge)

| Detailed dimension of M class insert Insert height Tolerances (mm) | | | | | |
|---|-------|-------|-------|-------|-------|
| Inscribed circle | | | | | |
| 6.35 | ±0.08 | - | - | - | - |
| 9.525 | ±0.08 | ±0.08 | ±0.11 | ±0.10 | ±0.13 |
| 12.70 | ±0.13 | ±0.13 | ±0.13 | ±0.15 | - |
| 15.875 | ±0.15 | ±0.15 | ±0.15 | ±0.18 | - |
| 19.05 | ±0.15 | ±0.15 | ±0.15 | ±0.18 | - |
| 25.40 | - | ±0.18 | - | - | - |
| 31.75 | - | ±0.25 | - | - | - |

| Inscribed circle Tolerances (mm) | | | | | |
|----------------------------------|-------|-------|-------|-------|-------|
| Inscribed circle | | | | | |
| 6.35 | ±0.05 | - | - | - | - |
| 9.525 | ±0.05 | ±0.05 | ±0.05 | ±0.05 | ±0.05 |
| 12.70 | ±0.08 | ±0.08 | ±0.08 | ±0.08 | ±0.08 |
| 15.875 | ±0.10 | ±0.10 | ±0.10 | ±0.10 | ±0.10 |
| 19.05 | - | - | - | - | ±0.10 |
| 25.40 | - | ±0.13 | - | - | ±0.10 |
| 31.75 | - | ±0.20 | - | - | ±0.12 |

3 - Tolerances symbol

As a rule, the sides of these inserts are as sintered. Tolerance differs with insert size, for the accuracy of class M, refer to the table on the right.

| A | B | C | D | E |
|---|---|---|---|-----------------------|
| | | | | |
| F | G | N | P | O |
| | | | | Other clearance angle |

2 - Normal clearance symbol

| | | | | |
|------|----------|----------|----------|----------|
| ISO | C | N | G | A |
| ANSI | C | N | G | A |

| 4 - Insert symbol | | | | | | | | | |
|-------------------|-----------|--------------------------------------|-------------------------|-------|--------|--------------|------------|---------------------------|------------|
| symbol | Type | Hole type | Chipbreaker | Shape | symbol | Type | Hole type | Chipbreaker | Shape |
| W | with hole | Round hole one countersink (40°-60°) | Without chipbreaker | | G | with hole | Round hole | Chipbreaker on both sides | |
| T | | | Chipbreaker on one side | | N | without hole | - | Without chipbreaker | |
| A | with hole | Round hole | Without chipbreaker | | R | without hole | - | Chipbreaker on one side | |
| M | | | Chipbreaker on one side | | X | - | - | - | On request |

Sistema de codificação para pastilhas de PCBN
Codificación para plaquitas de plaquitas de PCBN

| R's | 35° V's | 55° D's | 80° C's | 90° S's | 60° T's | 80° W's | IC | | ANSI |
|------|------------|------------|------------|------------|------------|------------|--------|-------|--------|
| | | | | | | | mm | inch | Symbol |
| - | 06 | 04 | - | 03 | 06 | 02 | 3,97 | 5/32 | 1,20 |
| - | 08 | 05 | 04 | 04 | 08 | L3 | 4,76 | 3/16 | 1,50 |
| - | 09 | 06 | 05 | 05 | 09 | 03 | 5,56 | 7/32 | 1,80 |
| 06** | - | - | - | - | - | - | 6,00 | 0,236 | |
| 06* | 11 | 07 | 06 | 06 | 11 | 04 | 6,35 | 1/4 | 2,00 |
| 07* | 13 | 09 | 08 | 07 | 13 | 05 | 7,94 | 5/16 | 2,50 |
| 08* | - | - | - | - | - | - | 8,00 | 0,315 | |
| 09* | 16 | 11 | 09 | 09 | 16 | 06 | 9,525 | 3/8 | 3,00 |
| 10** | - | - | - | - | - | - | 10,00 | 0,394 | |
| 12** | - | - | - | - | - | - | 12,00 | 0,472 | |
| 12* | 22 | 15 | 12 | 12 | 22 | 08 | 12,70 | 1/2 | 4,00 |
| 15* | 27 | 19 | 16 | 15 | 27 | 10 | 15,875 | 5/8 | 5,00 |
| 16** | - | - | - | - | - | - | 16,00 | 0,63 | |
| 19* | 33 | 23 | 19 | 19 | 33 | 13 | 19,05 | 3/4 | 6,00 |
| 20** | - | - | - | - | - | - | 20,00 | 0,787 | |
| 25** | - | - | - | - | - | - | 25,00 | 0,984 | |
| 25* | 44 | 31 | 25 | 25 | 44 | 17 | 25,40 | 1,00 | 8,00 |
| 31* | 54 | 38 | 32 | 31 | 54 | 21 | 31,75 | 1 1/4 | 10,00 |
| 32** | - | - | - | - | - | - | 32,00 | 1,26 | |

* ANSI designation only
(Radius Designation is R0)

** Metric designation only
(Radius Designation is M0)

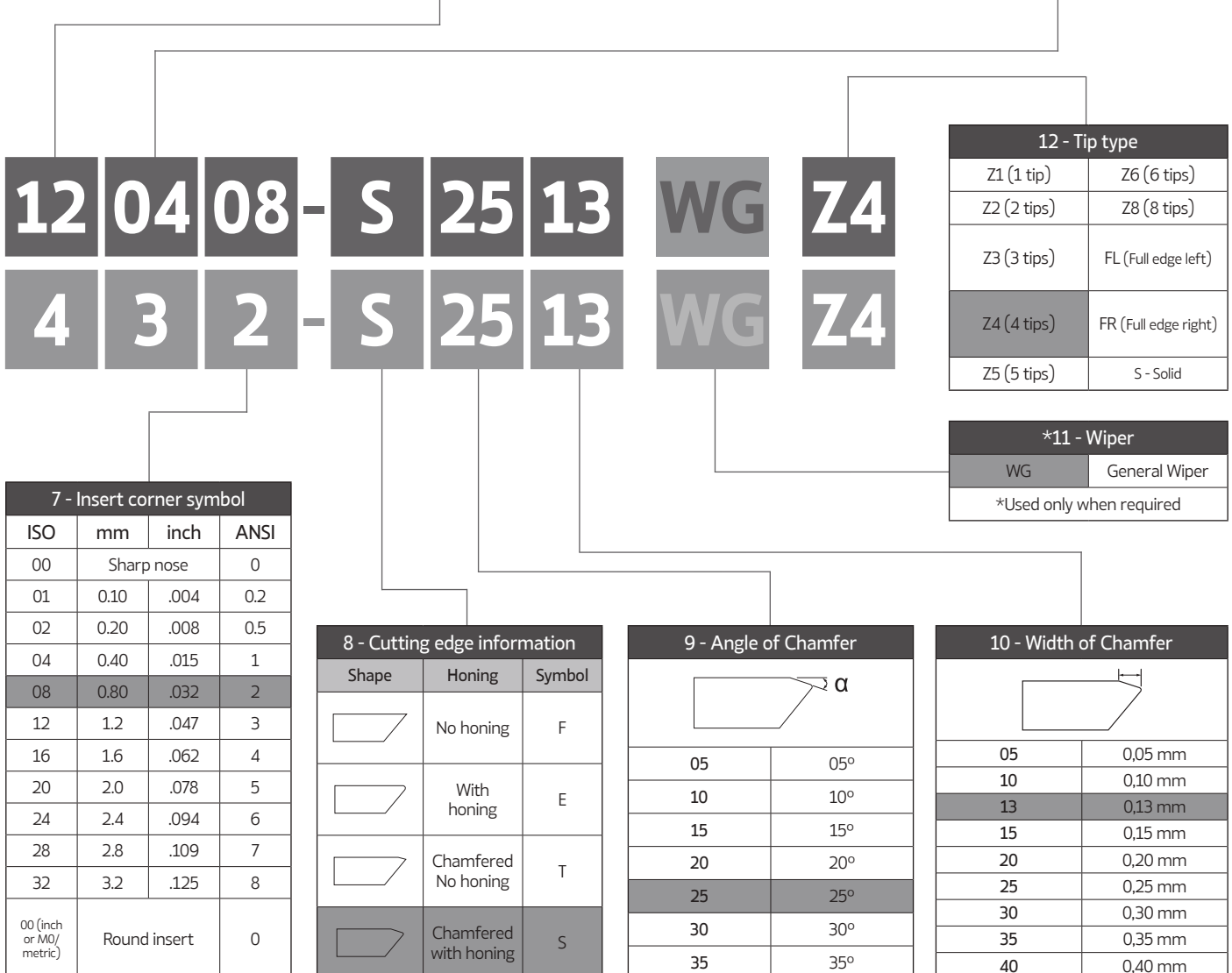
According to International Standard ISO 1832 - 2012(E)

"Indexable inserts for cutting tools - Designation"

| ISO | mm | ANSI | inch |
|-----|-------|------|-------|
| 01 | 1.59 | 1 | 0.062 |
| T1 | 1.98 | 1.2 | 0.078 |
| 02 | 2.38 | 1.5 | 0.094 |
| 03 | 3.18 | 2 | 0.125 |
| T3 | 3.97 | 2.5 | 0.156 |
| 04 | 4.76 | 3 | 0.188 |
| 05 | 5.56 | 3.5 | 0.219 |
| 06 | 6.35 | 4 | 0.250 |
| 07 | 7.94 | 5 | 0.312 |
| 09 | 9.52 | 6 | 0.375 |
| 12 | 12.70 | 8 | 0.500 |

5 - Insert size symbol

6 - Insert thickness symbol



| 7 - Insert corner symbol | | | |
|--------------------------|--------------|------|------|
| ISO | mm | inch | ANSI |
| 00 | Sharp nose | | 0 |
| 01 | 0.10 | .004 | 0.2 |
| 02 | 0.20 | .008 | 0.5 |
| 04 | 0.40 | .015 | 1 |
| 08 | 0.80 | .032 | 2 |
| 12 | 1.2 | .047 | 3 |
| 16 | 1.6 | .062 | 4 |
| 20 | 2.0 | .078 | 5 |
| 24 | 2.4 | .094 | 6 |
| 28 | 2.8 | .109 | 7 |
| 32 | 3.2 | .125 | 8 |
| 00 (inch or M0/metric) | Round insert | | 0 |

| 8 - Cutting edge information | | |
|------------------------------|-----------------------|--------|
| Shape | Honing | Symbol |
| | No honing | F |
| | With honing | E |
| | Chamfered No honing | T |
| | Chamfered with honing | S |

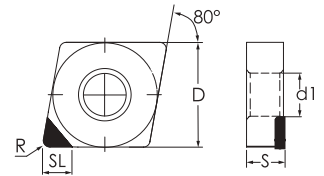
| 9 - Angle of Chamfer | |
|----------------------|-----|
| 05 | 05° |
| 10 | 10° |
| 15 | 15° |
| 20 | 20° |
| 25 | 25° |
| 30 | 30° |
| 35 | 35° |

| 10 - Width of Chamfer | |
|-----------------------|---------|
| 05 | 0,05 mm |
| 10 | 0,10 mm |
| 13 | 0,13 mm |
| 15 | 0,15 mm |
| 20 | 0,20 mm |
| 25 | 0,25 mm |
| 30 | 0,30 mm |
| 35 | 0,35 mm |
| 40 | 0,40 mm |


| *11 - Wiper | |
|--------------------------|---------------|
| WG | General Wiper |
| *Used only when required | |

| 12 - Tip type | |
|---------------|----------------------|
| Z1 (1 tip) | Z6 (6 tips) |
| Z2 (2 tips) | Z8 (8 tips) |
| Z3 (3 tips) | FL (Full edge left) |
| Z4 (4 tips) | FR (Full edge right) |
| Z5 (5 tips) | S - Solid |

CN - RHOMBIC 80° NEGATIVE RÔMBICA 80° NEGATIVA | RÓMBICA 80° NEGATIVA



CNGA Z1 | CNGA Z2 | CNGA Z4

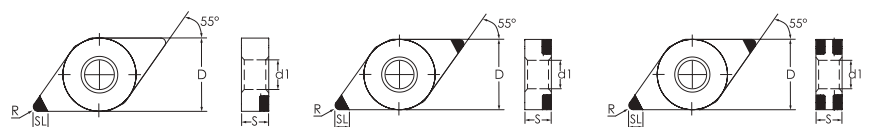
| | (1) Geometry code | ISO Reference | ANSI Reference | K | | | H | | | Dimensions Dimensões Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | |
|---|-------------------|----------------------|-------------------|--------|--------|--------|---|-------|------|---|------|------|------|------|------|--|------|------|-----------|-----|-----|
| | | | | S4 | Y5 | Y4 | | | | Z | D | S | R | d1 | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | PBH920 | PBY603 | PBY620 | | | | | | | | | | | | | | | |
|  | 1124300 | CNGA 120404-S2513 Z1 | CNGA 431-S2513 Z1 | ○ | | | 1 | 12,70 | 4,76 | 0,40 | 5,16 | 2,50 | 0,15 | 0,08 | 0,50 | 0,08 | 0,05 | 0,20 | | | |
| | 1124111 | CNGA 120408-S2513 Z1 | CNGA 432-S2513 Z1 | ⊗ | | | 1 | 12,70 | 4,76 | 0,80 | 5,16 | 2,00 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 | | | |
| | 1124301 | CNGA 120412-S2513 Z1 | CNGA 433-S2513 Z1 | ○ | | | 1 | 12,70 | 4,76 | 1,20 | 5,16 | 2,30 | 0,25 | 0,08 | 0,50 | 0,12 | 0,08 | 0,30 | | | |

⊗ Stock Items | Itens de stock


○ Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: (1)Geometry code + (2)Grade code

DN - RHOMBIC 55° NEGATIVE RÔMBICA 55° NEGATIVA | RÓMBICA 55° NEGATIVA



DNGA Z1 | DNGA Z2 | DNGA Z4

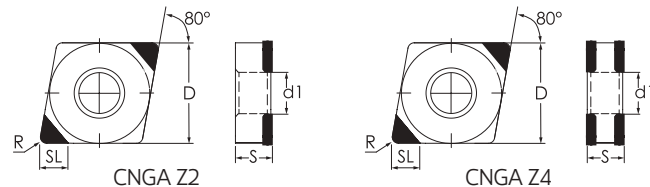
| | (1) Geometry code | ISO Reference | ANSI Reference | K | | | H | | | Dimensions Dimensões Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | |
|---|-------------------|----------------------|-------------------|--------|--------|--------|---|-------|------|---|------|------|------|------|------|--|------|------|-----------|-----|-----|
| | | | | S4 | Y5 | Y4 | | | | Z | D | S | R | d1 | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | PBH920 | PBY603 | PBY620 | | | | | | | | | | | | | | | |
|  | 1124306 | DNGA 150404-S2513 Z1 | DNGA 431-S2513 Z1 | ○ | | ○ | 1 | 12,70 | 4,76 | 0,40 | 5,16 | 2,50 | 0,15 | 0,08 | 0,50 | 0,08 | 0,05 | 0,20 | | | |
| | 1124112 | DNGA 150408-S2513 Z1 | DNGA 432-S2513 Z1 | ⊗ | | ○ | 1 | 12,70 | 4,76 | 0,80 | 5,16 | 2,50 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 | | | |
| | 1124536 | DNGA 150412-S2513 Z1 | DNGA 433-S2513 Z1 | ○ | | ○ | 1 | 12,70 | 4,76 | 1,20 | 5,16 | 2,20 | 0,25 | 0,08 | 0,50 | 0,12 | 0,08 | 0,30 | | | |

⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: (1)Geometry code + (2)Grade code

CN - RHOMBIC 80° NEGATIVE
RÔMBICA 80° NEGATIVA | RÓMBICA 80° NEGATIVA



CNGA Z2 | CNGA Z4

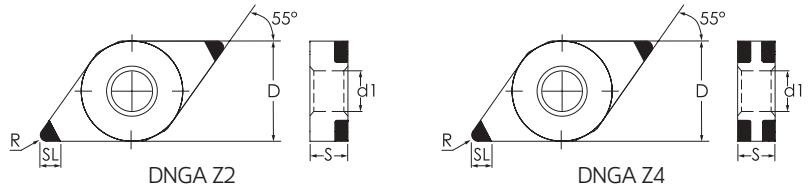
| | (1) Geometry code | (2) Grade code | | K | | | H | | | Dimensions Dimensões Dimensiones (mm) | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | |
|--|-------------------|-------------------------|----------------------|--------|--------|--------|---|-------|------|--|------|------|------------|------|--|--------------|------|------|--|
| | | ISO Reference | ANSI Reference | S4 | Y5 | Y4 | Z | D | S | R | d1 | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max | |
| | | | | PBH920 | PBY603 | PBY620 | | | | | | | | | | | | | |
| | 1124344 | CNGA 120404-S2513 Z2 | CNGA 431-S2513 Z2 | ⊗ | ⊗ | ⊗ | 2 | 12,70 | 4,76 | 0,40 | 5,16 | 2,50 | 0,15 | 0,08 | 0,40 | 0,08 | 0,05 | 0,20 | |
| | 1124175 | CNGA 120408-S2513 Z2 | CNGA 432-S2513 Z2 | ⊗ | ⊗ | ⊗ | 2 | 12,70 | 4,76 | 0,80 | 5,16 | 2,40 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 | |
| | 1124568 | CNGA 120408-S3515 Z2 | CNGA 432-S3515 Z2 | | | ○ | 2 | 12,70 | 4,76 | 0,80 | 5,16 | 2,40 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 | |
| | 1124468 | CNGA 120412-S2513 Z2 | CNGA 433-S2513 Z2 | ⊗ | ⊗ | ⊗ | 2 | 12,70 | 4,76 | 1,20 | 5,16 | 2,30 | 0,25 | 0,08 | 0,50 | 0,12 | 0,08 | 0,30 | |
| | 1124569 | CNGA 120412-S3515 Z2 | CNGA 433-S3515 Z2 | | | ○ | 2 | 12,70 | 4,76 | 1,20 | 5,16 | 2,30 | 0,25 | 0,08 | 0,50 | 0,12 | 0,08 | 0,30 | |
| | 1124474 | CNGA 120404-S2513 Z4 | CNGA 431-S2513 Z4 | | ⊗ | ○ | 4 | 12,70 | 4,76 | 0,40 | 5,16 | 2,50 | 0,15 | 0,08 | 0,40 | 0,08 | 0,05 | 0,20 | |
| | 1124134 | CNGA 120408-S2513 Z4 | CNGA 432-S2513 Z4 | | ⊗ | ○ | 4 | 12,70 | 4,76 | 0,80 | 5,16 | 2,40 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 | |
| | 1124570 | CNGA 120408-S3515 Z4 | CNGA 432-S3515 Z4 | | | ○ | 4 | 12,70 | 4,76 | 0,80 | 5,16 | 2,40 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 | |
| | 1124475 | CNGA 120412-S2513 Z4 | CNGA 433-S2513 Z4 | | ⊗ | ○ | 4 | 12,70 | 4,76 | 1,20 | 5,16 | 2,30 | 0,25 | 0,08 | 0,50 | 0,12 | 0,08 | 0,30 | |
| | 1124571 | CNGA 120412-S3515 Z4 | CNGA 433-S3515 Z4 | | | ○ | 4 | 12,70 | 4,76 | 1,20 | 5,16 | 2,30 | 0,25 | 0,08 | 0,50 | 0,12 | 0,08 | 0,30 | |
| | 1124534 | CNGA 120404-S1513 WG Z4 | CNGA 431-S1513 WG Z4 | | ○ | ○ | 4 | 12,70 | 4,76 | 0,40 | 5,16 | 2,40 | 0,15 | 0,08 | 0,50 | 0,08 | 0,05 | 0,20 | |
| | 1124535 | CNGA 120404-S2513 WG Z4 | CNGA 431-S2513 WG Z4 | | ○ | ○ | 4 | 12,70 | 4,76 | 0,40 | 5,16 | 2,40 | 0,15 | 0,08 | 0,50 | 0,08 | 0,05 | 0,20 | |
| | 1124517 | CNGA 120408-S1513 WG Z4 | CNGA 432-S1513 WG Z4 | | ⊗ | ○ | 4 | 12,70 | 4,76 | 0,80 | 5,16 | 2,40 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 | |
| | 1124518 | CNGA 120408-S2513 WG Z4 | CNGA 432-S2513 WG Z4 | | ⊗ | ⊗ | 4 | 12,70 | 4,76 | 0,80 | 5,16 | 2,40 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 | |

⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: (1) Geometry code + (2) Grade code

DN - RHOMBIC 55° NEGATIVE
RÔMBICA 55° NEGATIVA | RÓMBICA 55° NEGATIVA



DNGA Z2 | DNGA Z4

| | (1) Geometry code | (2) Grade code | ANSI Reference | K | | | H | | | Dimensions Dimensões Dimensiones (mm) | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | |
|---------|----------------------|----------------------|-------------------|--------|--------|--------|-------|-------|------|--|------|------|------------|------|--|--------------|------|------|--|
| | | | | S4 | Y5 | Y4 | Z | D | S | R | d1 | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max | |
| | | | | PBH920 | PBY603 | PBY620 | | | | | | | | | | | | | |
| | 1124616 | DNGA 110404-S2513 Z2 | DNGA 331-S2513 Z2 | | ⊗ | | 2 | 9,525 | 4,76 | 0,4 | 3,81 | 2,5 | 0,1 | 0,08 | 0,4 | 0,08 | 0,05 | 0,2 | |
| | 1124615 | DNGA 110408-S2513 Z2 | DNGA 332-S2513 Z2 | | ⊗ | | 2 | 9,525 | 4,76 | 0,8 | 3,81 | 2,0 | 0,15 | 0,08 | 0,4 | 0,1 | 0,08 | 0,3 | |
| | 1124617 | DNGA 110412-S2513 Z2 | DNGA 333-S2513 Z2 | | ⊗ | | 2 | 9,525 | 4,76 | 1,2 | 3,81 | 2,0 | 0,2 | 0,08 | 0,4 | 0,15 | 0,08 | 0,3 | |
| | 1124482 | DNGA 150404-S2513 Z2 | DNGA 431-S2513 Z2 | | ⊗ | ⊗ | 2 | 12,70 | 4,76 | 0,40 | 5,16 | 2,50 | 0,15 | 0,08 | 0,50 | 0,08 | 0,05 | 0,20 | |
| | 1124483 | DNGA 150408-S2513 Z2 | DNGA 432-S2513 Z2 | | ⊗ | ⊗ | 2 | 12,70 | 4,76 | 0,80 | 5,16 | 2,10 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 | |
| | 1124537 | DNGA 150412-S2513 Z2 | DNGA 433-S2513 Z2 | | ○ | ○ | 2 | 12,70 | 4,76 | 1,20 | 5,16 | 2,20 | 0,25 | 0,08 | 0,50 | 0,12 | 0,08 | 0,30 | |
| | 1124348 | DNGA 150604-S2513 Z2 | DNGA 441-S2513 Z2 | | ⊗ | ⊗ | 2 | 12,70 | 6,35 | 0,40 | 5,16 | 2,50 | 0,15 | 0,08 | 0,50 | 0,08 | 0,05 | 0,20 | |
| | 1124177 | DNGA 150608-S2513 Z2 | DNGA 442-S2513 Z2 | | ⊗ | ⊗ | 2 | 12,70 | 6,35 | 0,80 | 5,16 | 2,10 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 | |
| | 1124572 | DNGA 150608-S3515 Z2 | DNGA 442-S3515 Z2 | | | ○ | 2 | 12,70 | 6,35 | 0,80 | 5,16 | 2,10 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 | |
| | 1124377 | DNGA 150612-S2513 Z2 | DNGA 443-S2513 Z2 | | ⊗ | ⊗ | 2 | 12,70 | 6,35 | 1,20 | 5,16 | 2,00 | 0,25 | 0,08 | 0,50 | 0,12 | 0,08 | 0,30 | |
| 1124573 | DNGA 150612-S3515 Z2 | DNGA 443-S3515 Z2 | | | ○ | 2 | 12,70 | 6,35 | 1,20 | 5,16 | 2,00 | 0,25 | 0,08 | 0,50 | 0,12 | 0,08 | 0,30 | | |
| | 1124479 | DNGA 150604-S2513 Z4 | DNGA 441-S2513 Z4 | | ⊗ | | 4 | 12,70 | 6,35 | 0,40 | 5,16 | 2,50 | 0,15 | 0,08 | 0,40 | 0,08 | 0,05 | 0,20 | |
| | 1124133 | DNGA 150608-S2513 Z4 | DNGA 442-S2513 Z4 | | ⊗ | | 4 | 12,70 | 6,35 | 0,80 | 5,16 | 2,10 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 | |
| | 1124575 | DNGA 150608-S3515 Z4 | DNGA 442-S3515 Z4 | | | ○ | 4 | 12,70 | 6,35 | 0,80 | 5,16 | 2,10 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 | |
| | 1124480 | DNGA 150612-S2513 Z4 | DNGA 443-S2513 Z4 | | ⊗ | | 4 | 12,70 | 6,35 | 1,20 | 5,16 | 2,00 | 0,25 | 0,08 | 0,50 | 0,12 | 0,08 | 0,30 | |
| | 1124576 | DNGA 150612-S3515 Z4 | DNGA 443-S3515 Z4 | | | ○ | 4 | 12,70 | 6,35 | 1,20 | 5,16 | 2,00 | 0,25 | 0,08 | 0,50 | 0,12 | 0,08 | 0,30 | |


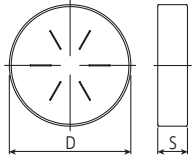
⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: (1) Geometry code + (2) Grade code

RNGN | SOLID CBN

NEW

| | (1) Geometry code | (2) Grade code | | W3 | W4 | Dimensions Dimensões Dimensiones (mm) | | Cutting conditions Condições de corte Condiciones de corte | | | | | | Drawing |
|---|----------------------|---------------------|------------------|-------|-------|--|------|--|------|-----|--------------|------|-----|---|
| | | ISO Reference | ANSI Reference | PB930 | PB940 | D | S | ap (mm) | Min | Max | fn (mm/r) | Min | Max | |
| | | | | | | | | | | | | | | |
|  | 1124631 | RNGN 060300-S2020 S | RNGN 220-S2020 S | ○ | ⊗ | 6,35 | 3,18 | 0,15 | 0,08 | 0,5 | 0,12 | 0,08 | 0,3 |  |
| | 1124630 | RNGN 090300-S2020 S | RNGN 320-S2020 S | ○ | ⊗ | 9,53 | 3,18 | 0,2 | 0,08 | 0,5 | 0,15 | 0,08 | 0,3 | |
| | 1124629 | RNGN 120300-S2020 S | RNGN 420-S2020 S | ○ | ⊗ | 12,70 | 3,18 | 0,3 | 0,08 | 0,5 | 0,2 | 0,08 | 0,3 | |
| | 1124699 | RNGN 120400-S2020 S | RNGN 430-S2020 S | ○ | ⊗ | 12,70 | 4,76 | 0,3 | 0,08 | 0,5 | 0,2 | 0,08 | 0,3 | |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

REGROUNING INSERTS

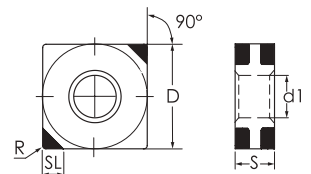
| Repair Code | (2) Grade code Reference Referência Referencia | W3 | W4 | Final Dimensions (mm) | | Raw Material |
|-------------|---|-------|-------|-----------------------|------|---------------------|
| | | PB930 | PB940 | D | S | |
| | | | | | | |
| 3120072 | RNGN 06(2.18)00-S2020S(0603) | ○ | ○ | 6,35 | 2,18 | RNGN 060300-S2020 S |
| 3120058 | RNGN 060200-S2020 S (0903) | ○ | ○ | 6,35 | 2,38 | RNGN 090300-S2020 S |
| 3120068 | RNGN 060300-S2020 S (0903) | ○ | ○ | 6,35 | 3,18 | RNGN 090300-S2020 S |
| 3120071 | RNGN 060300-S2020 S (1203) | ○ | ○ | 6,35 | 3,18 | RNGN 120300-S2020 S |
| 3120057 | RNGN 090300-S2020 S (1203) | ○ | ○ | 9,53 | 3,18 | RNGN 120300-S2020 S |
| 3120070 | RNGN 090400-S2020 S (1204) | ○ | ○ | 9,53 | 4,76 | RNGN 120400-S2020 S |
| 3120056 | RNGN 120300-S2020 S (1204) | ○ | ○ | 12,70 | 3,18 | RNGN 120400-S2020 S |

⊗ Stock item | Produto de stock | Itens de stock


○ Available under request | Disponível sobre consulta
Disponível bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

SN = SQUARE 90° NEGATIVE
QUADRADA 90° NEGATIVA | ESQUADRA 90° NEGATIVA



SNGA Z4

| | (1) Geometry code | (2) Grade code | | | Dimensions Dimensões Dimensiones (mm) | | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | |
|---|----------------------|----------------------|-------------------|----|--|---|-------|------|------|------|------|--|------|------|--------------|------|------|
| | | ISO Reference | ANSI Reference | K | H | Z | D | S | R | d1 | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | S4 | Y5 | | | | | | | | | | | | |
|  | 1124178 | SNGA 120404-S2513 Z4 | SNGA 431-S2513 Z4 | ○ | ⊗ | 4 | 12,70 | 4,76 | 0,40 | 5,16 | 2,40 | 0,15 | 0,08 | 0,40 | 0,08 | 0,05 | 0,20 |
| | 1124538 | SNGA 120404-T2513 Z4 | SNGA 431-T2513 Z4 | ○ | ○ | 4 | 12,70 | 4,76 | 0,40 | 5,16 | 2,40 | 0,15 | 0,08 | 0,40 | 0,08 | 0,05 | 0,20 |
| | 1124354 | SNGA 120408-S2513 Z4 | SNGA 432-S2513 Z4 | ○ | ⊗ | 4 | 12,70 | 4,76 | 0,80 | 5,16 | 2,00 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 |
| | 1124577 | SNGA 120408-S3515 Z4 | SNGA 432-S3515 Z4 | ○ | ○ | 4 | 12,70 | 4,76 | 0,80 | 5,16 | 2,00 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 |
| | 1124433 | SNGA 120408-T2513 Z4 | SNGA 432-T2513 Z4 | ⊗ | ○ | 4 | 12,70 | 4,76 | 0,80 | 5,16 | 2,00 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 |
| | 1124539 | SNGA 120412-S2513 Z4 | SNGA 433-S2513 Z4 | ○ | ⊗ | 4 | 12,70 | 4,76 | 1,20 | 5,16 | 2,30 | 0,25 | 0,08 | 0,50 | 0,12 | 0,08 | 0,30 |
| | 1124578 | SNGA 120412-S3515 Z4 | SNGA 433-S3515 Z4 | ○ | ○ | 4 | 12,70 | 4,76 | 1,20 | 5,16 | 2,30 | 0,25 | 0,08 | 0,50 | 0,12 | 0,08 | 0,30 |
| | 1124540 | SNGA 120412-T2513 Z4 | SNGA 433-T2513 Z4 | ○ | ○ | 4 | 12,70 | 4,76 | 1,20 | 5,16 | 2,30 | 0,25 | 0,08 | 0,50 | 0,12 | 0,08 | 0,30 |

⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

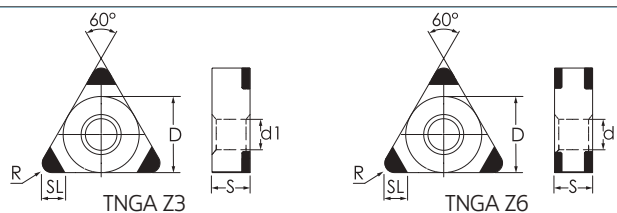
Insert Order Code: (1) Geometry code + (2) Grade code

C
TURNING
Insert selection
Overview
Negative inserts
Positive inserts
PCBN & PCD inserts
Heavy turning
External Toolholders
Internal Toolholders
Automatic Lathes
Spare Parts
Technical Data

NEGATIVE INSERTS

TN - TRIANGULAR 60° NEGATIVE

TRIANGULAR 60° NEGATIVA | TRIANGULAR 60° NEGATIVA



TNGA Z3 | TNGA Z6

| | (1) Geometry code | (2) Grade code | ANSI Reference | K | | | H | | | Dimensions Dimensões Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | |
|---|-------------------|----------------------|--------------------|--------|--------|--------|---|------|------|--|------|------|------------|------|------|--|------|------|--|--|--|
| | | | | S4 | Y5 | Y4 | Z | D | S | R | d1 | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max | | | |
| | | | | PBH920 | PBY603 | PBY620 | | | | | | | | | | | | | | | |
|  | 1124357 | TNGA 160404-S2513 Z3 | TNGA 3431-S2513 Z3 | ○ | ⊗ | ⊗ | 3 | 9,53 | 4,76 | 0,40 | 3,81 | 2,30 | 0,15 | 0,08 | 0,50 | 0,08 | 0,05 | 0,20 | | | |
| | 1124179 | TNGA 160408-S2513 Z3 | TNGA 332-S2513 Z3 | ○ | ⊗ | ⊗ | 3 | 9,53 | 4,76 | 0,80 | 3,81 | 2,00 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 | | | |
| | 1124579 | TNGA 160408-S3515 Z3 | TNGA 332-S3515 Z3 | | | ○ | 3 | 9,53 | 4,76 | 0,80 | 3,81 | 2,00 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 | | | |
| | 1124469 | TNGA 160412-S2513 Z3 | TNGA 333-S2513 Z3 | ○ | ⊗ | ⊗ | 3 | 9,53 | 4,76 | 1,20 | 3,81 | 2,00 | 0,25 | 0,08 | 0,60 | 0,12 | 0,08 | 0,30 | | | |
| | 1124746 | TNGA 160412-S3515 Z3 | TNGA 333-S3515 Z3 | | | ⊗ | 3 | 9,53 | 4,76 | 1,20 | 3,81 | 2,00 | 0,25 | 0,08 | 0,60 | 0,12 | 0,08 | 0,30 | | | |
| | 1124603 | TNGA 160416-S2513 Z3 | TNGA 334-S2513 Z3 | | ⊗ | ⊗ | 3 | 9,53 | 4,76 | 1,6 | 3,81 | 3,00 | 0,30 | 0,08 | 0,70 | 0,14 | 0,10 | 0,35 | | | |
| | 1124604 | TNGA 160420-S2513 Z3 | TNGA 335-S2513 Z3 | ⊗ | | | 3 | 9,53 | 4,73 | 2,0 | 3,81 | 3,00 | 0,35 | 0,10 | 0,55 | 0,16 | 0,10 | 0,40 | | | |
|  | 1124477 | TNGA 160404-S2513 Z6 | TNGA 331-S2513 Z6 | ⊗ | ⊗ | ○ | 6 | 9,53 | 4,76 | 0,40 | 3,81 | 2,30 | 0,15 | 0,08 | 0,50 | 0,08 | 0,05 | 0,20 | | | |
| | 1124097 | TNGA 160408-S2513 Z6 | TNGA 332-S2513 Z6 | ⊗ | ⊗ | ○ | 6 | 9,53 | 4,76 | 0,80 | 3,81 | 2,00 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 | | | |
| | 1124581 | TNGA 160408-S3515 Z6 | TNGA 332-S3515 Z6 | | | ○ | 6 | 9,53 | 4,76 | 0,80 | 3,81 | 2,00 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 | | | |
| | 1124478 | TNGA 160412-S2513 Z6 | TNGA 333-S2513 Z6 | | ⊗ | ○ | 6 | 9,53 | 4,76 | 1,20 | 3,81 | 2,00 | 0,25 | 0,08 | 0,60 | 0,12 | 0,08 | 0,30 | | | |
| | 1124582 | TNGA 160412-S3515 Z6 | TNGA 333-S3515 Z6 | | | ○ | 6 | 9,53 | 4,76 | 1,20 | 3,81 | 2,00 | 0,25 | 0,08 | 0,60 | 0,12 | 0,08 | 0,30 | | | |

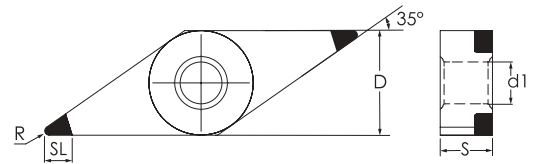
⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta


Insert Order Code: (1) Geometry code + (2) Grade code

VN - RHOMBIC 35° NEGATIVE

RÔMBICA 35° NEGATIVA | RÓMBICA 35° NEGATIVA



VNGA Z2

| | (1) Geometry code | (2) Grade code | | | Dimensions Dimensões Dimensiones (mm) | | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | | |
|--|-------------------|----------------------|-------------------|-----|---|----|---|------|------|------|------|--|---------|------|-----------|------|---------|------|
| | | ISO Reference | ANSI Reference | K H | | | Z | D | S | R | d1 | SL | ap (mm) | | fn (mm/r) | | Min Max | |
| | | | | S4 | Y5 | Y4 | | | | | | | Min | Max | Min | Max | | |
|  | 1124163 | VNGA 160404-S2513 Z2 | VNGA 431-S2513 Z2 | ○ | ⊗ | ⊗ | 2 | 9,53 | 4,76 | 0,80 | 3,81 | 2,00 | 0,15 | 0,08 | 0,50 | 0,08 | 0,05 | 0,20 |
| | 1124098 | VNGA 160408-S2513 Z2 | VNGA 432-S2513 Z2 | ○ | ⊗ | ⊗ | 2 | 9,53 | 4,76 | 0,40 | 3,81 | 2,80 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 |
| | 1124470 | VNGA 160412-S2513 Z2 | VNGA 433-S2513 Z2 | ○ | ⊗ | ⊗ | 2 | 9,53 | 4,76 | 1,20 | 3,81 | 1,90 | 0,25 | 0,08 | 0,50 | 0,12 | 0,08 | 0,30 |

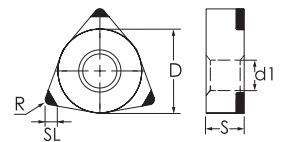
⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta



Insert Order Code: (1) Geometry code + (2) Grade code

WN - TRIGON 80° NEGATIVE

TRIGONAL 80° NEGATIVA | TRIGONA 80° NEGATIVA



WNGA Z3 | WNGA Z6

| | (1) Geometry code | (2) Grade code | | | Dimensions Dimensões Dimensiones (mm) | | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | | |
|---|-------------------|----------------------|-------------------|-----|---|----|---|-------|------|------|------|--|---------|------|-----------|------|---------|------|
| | | ISO Reference | ANSI Reference | K H | | | Z | D | S | R | d1 | SL | ap (mm) | | fn (mm/r) | | Min Max | |
| | | | | S4 | Y5 | Y4 | | | | | | | Min | Max | Min | Max | | |
|  | 1124471 | WNGA 080404-S2513 Z3 | WNGA 431-S2513 Z3 | ○ | ⊗ | ⊗ | 3 | 12,70 | 4,76 | 0,40 | 5,16 | 2,30 | 0,15 | 0,08 | 0,40 | 0,08 | 0,05 | 0,20 |
| | 1124472 | WNGA 080408-S2513 Z3 | WNGA 432-S2513 Z3 | ○ | ⊗ | ⊗ | 3 | 12,70 | 4,76 | 0,80 | 5,16 | 2,00 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 |
| | 1124583 | WNGA 080408-S3515 Z3 | WNGA 432-S3515 Z3 | | | ○ | 3 | 12,70 | 4,76 | 0,80 | 5,16 | 2,00 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 |
| | 1124473 | WNGA 080412-S2513 Z3 | WNGA 433-S2513 Z3 | ○ | ⊗ | ⊗ | 3 | 12,70 | 4,76 | 1,20 | 5,16 | 2,00 | 0,25 | 0,08 | 0,60 | 0,12 | 0,08 | 0,30 |
| | 1124584 | WNGA 080412-S3515 Z3 | WNGA 433-S3515 Z3 | | | ○ | 3 | 12,70 | 4,76 | 1,20 | 5,16 | 2,00 | 0,25 | 0,08 | 0,60 | 0,12 | 0,08 | 0,30 |
|  | 1124589 | WNGA 080404-S2513 Z6 | WNGA 431-S2513 Z6 | | | ○ | 6 | 12,70 | 4,76 | 1,20 | 5,16 | 2,00 | 0,25 | 0,08 | 0,40 | 0,12 | 0,08 | 0,30 |
| | 1124588 | WNGA 080408-S2513 Z6 | WNGA 432-S2513 Z6 | | | ○ | 6 | 12,70 | 4,76 | 0,80 | 5,16 | 2,00 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 |
| | 1124585 | WNGA 080408-S3515 Z6 | WNGA 432-S3515 Z6 | | | ○ | 6 | 12,70 | 4,76 | 0,80 | 5,16 | 2,00 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 |
| | 1124587 | WNGA 080412-S2513 Z6 | WNGA 433-S2513 Z6 | | | ○ | 6 | 12,70 | 4,76 | 0,40 | 5,16 | 2,30 | 0,15 | 0,08 | 0,60 | 0,08 | 0,05 | 0,20 |
| | 1124586 | WNGA 080412-S3515 Z6 | WNGA 433-S3515 Z6 | | | ○ | 6 | 12,70 | 4,76 | 1,20 | 5,16 | 2,00 | 0,25 | 0,08 | 0,60 | 0,12 | 0,08 | 0,30 |




⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

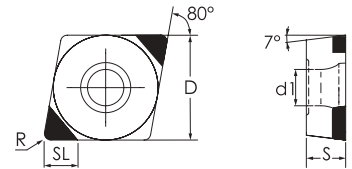
Insert Order Code: (1) Geometry code + (2) Grade code

POSITIVE INSERTS OVERVIEW

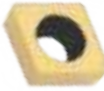
Vista genérica pastilhas positivas | Visión general de plaquitas positivas

| | | | | | |
|---------------|---|---|---|--|---|
| SINGLE TIP | TPGW Z1 | | | | |
| |  | | | | |
| | Size 11 Page 476 | | | | |
| MULTIPLE TIPS | CCGW Z2 | DCGW Z2 | TCGW TPGW Z3 | VBGW Z2 | VCGW Z2 |
| |  |  |  |  |  |
| | Size 06 09 | Size 07 11 | Size 09 11 | Size 11 16 | Size 16 |
| | Page 474 | Page 475 | Page 476 | Page 477 | Page 477 |

CC - RHOMBIC 80° POSITIVE
RÔMBICA 80° POSITIVA | RÓMBICA 80° POSITIVA



CCGW Z2

| | (1) Geometry code | (2) Grade code | | H | | Dimensions / Dimensões / Dimensiones (mm) | | | | | | Cutting conditions / Condições de corte / Condiciones de corte | | | | | |
|---|-------------------|-------------------------|--------------------------|--------|--------|---|------|------|-----|-----|-----|--|------|------|-----------|------|------|
| | | ISO Reference | ANSI Reference | Y5 | Y4 | Z | D | S | R | d1 | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | PBY603 | PBY620 | | | | | | | | | | | | |
|  | 1124605 | CCGW 060202-S1513 Z2 | CCGW 21.50.5-S1513 Z2 | ⊗ | ⊗ | 2 | 6,35 | 2,38 | 0,2 | 2,8 | 2,0 | 0,15 | 0,05 | 0,20 | 0,08 | 0,05 | 0,20 |
| | 1124635 | CCGW 060202-S2513 Z2 | CCGW 21.50.5-S2513 Z2 | ⊗ | ⊗ | 2 | 6,35 | 2,38 | 0,2 | 2,8 | 2,4 | 0,15 | 0,05 | 0,20 | 0,08 | 0,05 | 0,20 |
| | 1124606 | CCGW 060204-S1513 Z2 | CCGW 21.51-S1513 Z2 | ⊗ | ⊗ | 2 | 6,35 | 2,38 | 0,4 | 2,8 | 2,0 | 0,15 | 0,05 | 0,40 | 0,08 | 0,05 | 0,25 |
| | 1124555 | CCGW 060204-S2513 Z2 | CCGW 21.51-S2513 Z2 | ⊗ | ⊗ | 2 | 6,35 | 2,38 | 0,4 | 2,8 | 2,0 | 0,15 | 0,05 | 0,40 | 0,08 | 0,05 | 0,25 |
| | 1124607 | CCGW 060208-S1513 Z2 | CCGW 21.52-S1513 Z2 | ⊗ | ⊗ | 2 | 6,35 | 2,38 | 0,8 | 2,8 | 2,0 | 0,2 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 |
| | 1124636 | CCGW 060208-S2513 Z2 | CCGW 21.52-S2513 Z2 | ⊗ | ⊗ | 2 | 6,35 | 2,38 | 0,8 | 2,8 | 2,4 | 0,2 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 |
| | 1124638 | CCGW 09T302-S2513 Z2 | CCGW 32.50.5-S2513 Z2 | ⊗ | ⊗ | 2 | 9,53 | 3,97 | 0,2 | 4,4 | 2,5 | 0,15 | 0,05 | 0,20 | 0,08 | 0,05 | 0,20 |
| | 1124640 | CCGW 09T304-S2513 Z2 | CCGW 32.51-S2513 Z2 | ⊗ | ⊗ | 2 | 9,53 | 3,97 | 0,4 | 4,4 | 2,5 | 0,20 | 0,08 | 0,40 | 0,10 | 0,05 | 0,25 |
| | 1124632 | CCGW 09T308-S2513 Z2 | CCGW 32.52-S2513 Z2 | ○ | ○ | 2 | 9,53 | 3,97 | 0,8 | 4,4 | 2,5 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 |
| | 1124637 | CCGW 09T302-S2513 WG Z2 | CCGW 32.50.5-S2513 WG Z2 | ⊗ | ○ | 2 | 9,53 | 3,97 | 0,2 | 4,4 | 2,4 | 0,15 | 0,05 | 0,20 | 0,08 | 0,05 | 0,20 |
| | 1124639 | CCGW 09T304-S2513 WG Z2 | CCGW 32.51-S2513 WG Z2 | ○ | ⊗ | 2 | 9,53 | 3,97 | 0,4 | 4,4 | 2,4 | 0,20 | 0,08 | 0,40 | 0,10 | 0,05 | 0,25 |
| | 1124641 | CCGW 09T308-S2513 WG Z2 | CCGW 32.52-S2513 WG Z2 | ⊗ | ⊗ | 2 | 9,53 | 3,97 | 0,8 | 4,4 | 2,4 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 |
| | 1124608 | CCGW 09T302-S1513 Z2 | CCGW 32.50.5-S1513 Z2 | ⊗ | ⊗ | 2 | 9,53 | 3,97 | 0,2 | 4,4 | 2,0 | 0,15 | 0,05 | 0,20 | 0,08 | 0,05 | 0,20 |
| | 1124609 | CCGW 09T304-S1513 Z2 | CCGW 32.51-S1513 Z2 | ⊗ | ⊗ | 2 | 9,53 | 3,97 | 0,4 | 4,4 | 2,0 | 0,20 | 0,08 | 0,40 | 0,10 | 0,05 | 0,25 |
| | 1124610 | CCGW 09T308-S1513 Z2 | CCGW 32.52-S1513 Z2 | ⊗ | ⊗ | 2 | 9,53 | 3,97 | 0,8 | 4,4 | 2,0 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 |

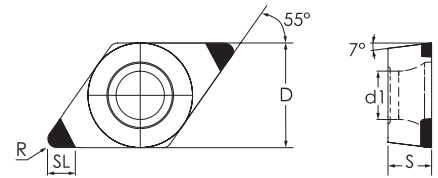
⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta


Insert Order Code: (1) Geometry code + (2) Grade code

DC = RHOMBIC 55° POSITIVE

RÔMBICA 55° POSITIVA | RÓMBICA 55° POSITIVA



DCGW Z2

| | (1) Geometry code | (2) Grade code | | H | | Dimensions Dimensões Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | |
|---|-------------------|----------------------|-----------------------|--------|--------|--|------|------|-----|-----|-----|--|------|-----------|------|---------|------|
| | | ISO Reference | ANSI Reference | Y5 | Y4 | Z | D | S | R | d1 | SL | ap (mm) | | fn (mm/r) | | Min Max | |
| | | | | PBY603 | PBY620 | | | | | | | Min | Max | Min | Max | | |
| | 1124642 | DCGW 070202-S1513 Z2 | DCGW 21.50.5-S1513 Z2 | ⊗ | ○ | 2 | 6,35 | 2,38 | 0,2 | 2,8 | 2,5 | 0,15 | 0,08 | 0,20 | 0,08 | 0,05 | 0,20 |
| | 1124611 | DCGW 070202-S2513 Z2 | DCGW 21.50.5-S2513 Z2 | ⊗ | ⊗ | 2 | 6,35 | 2,38 | 0,2 | 2,8 | 2,0 | 0,15 | 0,08 | 0,20 | 0,08 | 0,05 | 0,20 |
| | 1124643 | DCGW 070204-S1513 Z2 | DCGW 21.51-S1513 Z2 | ⊗ | ○ | 2 | 6,35 | 2,38 | 0,4 | 2,8 | 2,5 | 0,15 | 0,08 | 0,40 | 0,08 | 0,05 | 0,25 |
| | 1124436 | DCGW 070204-S2513 Z2 | DCGW 21.51-S2513 Z2 | ⊗ | ⊗ | 2 | 6,35 | 2,38 | 0,4 | 2,8 | 2,4 | 0,15 | 0,08 | 0,40 | 0,08 | 0,05 | 0,25 |
| | 1124644 | DCGW 070208-S1513 Z2 | DCGW 21.52-S1513 Z2 | ○ | ○ | 2 | 6,35 | 2,38 | 0,8 | 2,8 | 2,0 | 0,2 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 |
| | 1124612 | DCGW 070208-S2513 Z2 | DCGW 21.52-S2513 Z2 | ⊗ | ⊗ | 2 | 6,35 | 2,38 | 0,8 | 2,8 | 2,5 | 0,2 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 |
| | 1124613 | DCGW 11T302-S2513 Z2 | DCGW 32.50.5-S2513 Z2 | ⊗ | ⊗ | 2 | 9,53 | 3,97 | 0,2 | 4,4 | 2,7 | 0,15 | 0,08 | 0,20 | 0,08 | 0,05 | 0,20 |
|  | 1124554 | DCGW 11T304-S2513 Z2 | DCGW 32.51-S2513 Z2 | ⊗ | ⊗ | 2 | 9,53 | 3,97 | 0,4 | 4,4 | 2,5 | 0,2 | 0,08 | 0,40 | 0,10 | 0,05 | 0,25 |
| | 1124744 | DCGW 11T304-S3515 Z2 | DCGW 32.51-S3515 Z2 | ○ | ⊗ | 2 | 9,53 | 3,97 | 0,4 | 4,4 | 2,5 | 0,2 | 0,08 | 0,40 | 0,10 | 0,05 | 0,25 |
| | 1124614 | DCGW 11T308-S2513 Z2 | DCGW 32.52-S2513 Z2 | ⊗ | ⊗ | 2 | 9,53 | 3,97 | 0,8 | 4,4 | 2,0 | 0,2 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 |
| | 1124745 | DCGW 11T308-S3515 Z2 | DCGW 32.52-S3515 Z2 | ○ | ⊗ | 2 | 9,53 | 3,97 | 0,8 | 4,4 | 2,0 | 0,2 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 |
| | 1124645 | DCGW 11T302-S1513 Z2 | DCGW 32.50.5-S1513 Z2 | ⊗ | ○ | 2 | 9,53 | 3,97 | 0,2 | 4,4 | 2,7 | 0,15 | 0,08 | 0,20 | 0,08 | 0,05 | 0,20 |
| | 1124647 | DCGW 11T304-S1513 Z2 | DCGW 32.51-S1513 Z2 | ⊗ | ○ | 2 | 9,53 | 3,97 | 0,4 | 4,4 | 2,5 | 0,2 | 0,08 | 0,40 | 0,10 | 0,05 | 0,25 |
| | 1124649 | DCGW 11T308-S1513 Z2 | DCGW 32.52-S1513 Z2 | ○ | ○ | 2 | 9,53 | 3,97 | 0,8 | 4,4 | 2,0 | 0,2 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 |

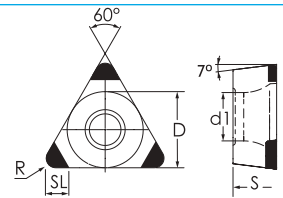
⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta


Insert Order Code: (1) Geometry code + (2) Grade code

TC - TRIANGULAR 60° POSITIVE

TRIANGULAR 60° POSITIVA | TRIANGULAR 60° POSITIVA



TCGW Z3

| | (1) Geometry code | (2) Grade code | | H | | Dimensions Dimensões Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | |
|---|-------------------|----------------------|---------------------|-------|-------|--|------|------|-----|-----|-----|--|------|------|--------------|------|------|
| | | ISO Reference | ANSI Reference | PB603 | PB620 | Z | D | S | R | d1 | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | | | | | | | | | | | | | | |
|  | 1124434 | TCGW 16T304-S2513 Z3 | TCGW 32.51-S2513 Z3 | ⊗ | ⊗ | 3 | 9,53 | 3,97 | 0,4 | 4,4 | 2,5 | 0,15 | 0,08 | 0,45 | 0,08 | 0,05 | 0,20 |
| | 1124651 | TCGW 16T308-S2513 Z3 | TCGW 32.52-S2513 Z3 | ⊗ | ⊗ | 3 | 9,53 | 3,97 | 0,8 | 4,4 | 2,0 | 0,2 | 0,08 | 0,45 | 0,10 | 0,08 | 0,30 |

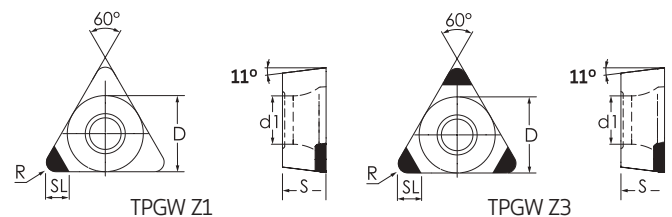
⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta



Insert Order Code: (1)Geometry code + (2)Grade code

TP - TRIANGULAR 60° POSITIVE

TRIANGULAR 60° POSITIVA | TRIANGULAR 60° POSITIVA



TPGW Z1 / TPGW Z3

| | (1) Geometry code | (2) Grade code | | H | | Dimensions Dimensões Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | |
|---|-------------------|----------------------|-------------------------|-------|-------|--|------|------|-----|-----|-----|--|------|------|--------------|------|------|
| | | ISO Reference | ANSI Reference | PB603 | PB620 | Z | D | S | R | d1 | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | | | | | | | | | | | | | | |
|  | 1124657 | TPGW 110302-S2513 Z1 | TPGW 220.5-S2513 Z1 | ○ | ○ | 1 | 6,35 | 2,38 | 0,2 | 2,8 | 2,4 | 0,15 | 0,08 | 0,20 | 0,08 | 0,05 | 0,15 |
| | 1124660 | TPGW 110304-S2513 Z1 | TPGW 221-S2513 Z1 | ⊗ | ○ | 1 | 6,35 | 2,38 | 0,4 | 2,8 | 2,3 | 0,15 | 0,08 | 0,40 | 0,08 | 0,05 | 0,20 |
| | 1124598 | TPGW 110308-S2513 Z1 | TPGW 222-S2513 Z1 | ⊗ | ⊗ | 1 | 6,35 | 2,38 | 0,8 | 2,8 | 2,4 | 0,20 | 0,08 | 0,45 | 0,10 | 0,08 | 0,20 |
|  | 1124652 | TPGW 090202-S1513 Z3 | TPGW 1.81.50.5-S1513 Z3 | ⊗ | ○ | 3 | 5,56 | 2,38 | 0,2 | 2,5 | 2,5 | 0,10 | 0,08 | 0,20 | 0,08 | 0,05 | 0,15 |
| | 1124653 | TPGW 090202-S2513 Z3 | TPGW 1.81.50.5-S2513 Z3 | ⊗ | ○ | 3 | 5,56 | 2,38 | 0,2 | 2,5 | 2,5 | 0,10 | 0,05 | 0,20 | 0,08 | 0,05 | 0,15 |
| | 1124654 | TPGW 090204-S1513 Z3 | TPGW 1.81.51-S1513 Z3 | ⊗ | ○ | 3 | 5,56 | 2,38 | 0,4 | 2,5 | 2,3 | 0,15 | 0,08 | 0,40 | 0,08 | 0,05 | 0,15 |
| | 1124655 | TPGW 090204-S2513 Z3 | TPGW 1.81.51-S2513 Z3 | ⊗ | ⊗ | 3 | 5,56 | 2,38 | 0,4 | 2,5 | 2,3 | 0,15 | 0,08 | 0,40 | 0,08 | 0,05 | 0,15 |
| | 1124658 | TPGW 110302-S2513 Z3 | TPGW 220.5-S2513 Z3 | ⊗ | ⊗ | 3 | 6,35 | 2,38 | 0,2 | 2,8 | 2,4 | 0,15 | 0,08 | 0,20 | 0,08 | 0,05 | 0,15 |
| | 1124661 | TPGW 110304-S2513 Z3 | TPGW 221-S2513 Z3 | ⊗ | ⊗ | 3 | 6,35 | 2,38 | 0,4 | 2,8 | 2,3 | 0,15 | 0,08 | 0,40 | 0,08 | 0,05 | 0,20 |
| | 1124663 | TPGW 110308-S2513 Z3 | TPGW 222-S2513 Z3 | ○ | ⊗ | 3 | 6,35 | 2,38 | 0,8 | 2,8 | 2 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,20 |
| | 1124656 | TPGW 110302-S1513 Z3 | TPGW 220.5-S1513 Z3 | ⊗ | ○ | 3 | 6,35 | 2,38 | 0,2 | 2,8 | 2,4 | 0,15 | 0,08 | 0,20 | 0,08 | 0,05 | 0,15 |
| | 1124659 | TPGW 110304-S1513 Z3 | TPGW 221-S1513 Z3 | ⊗ | ○ | 3 | 6,35 | 2,38 | 0,4 | 2,8 | 2,3 | 0,15 | 0,08 | 0,40 | 0,08 | 0,05 | 0,20 |
| | 1124662 | TPGW 110308-S1513 Z3 | TPGW 222-S1513 Z3 | ○ | ○ | 3 | 6,35 | 2,38 | 0,8 | 2,8 | 2 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,20 |

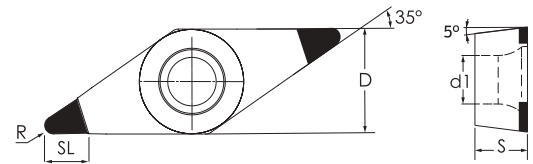
⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta


Insert Order Code: (1)Geometry code + (2)Grade code

VB = RHOMBIC 35° POSITIVE

RÔMBICA 35° POSITIVA | RÓMBICA 35° POSITIVA



VBGW Z2

| | (1) Geometry code | (2) Grade code | | H | | Dimensions Dimensões Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | |
|---|-------------------|----------------------|---------------------|--------|--------|---|------|------|-----|-----|-----|--|------|------|-----------|------|------|
| | | ISO Reference | ANSI Reference | Y5 | Y4 | Z | D | S | R | d1 | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | PBY603 | PBY620 | | | | | | | | | | | | |
|  | 1124664 | VBGW 110302-S2513 Z2 | VBGW 220.5-S2513 Z2 | ⊗ | ⊗ | 2 | 6,35 | 3,18 | 0,2 | 2,8 | 3,2 | 0,10 | 0,08 | 0,20 | 0,05 | 0,05 | 0,15 |
| | 1124665 | VBGW 110304-S2513 Z2 | VBGW 221-S2513 Z2 | ⊗ | ⊗ | 2 | 6,35 | 3,18 | 0,4 | 2,8 | 2,8 | 0,15 | 0,08 | 0,40 | 0,08 | 0,05 | 0,20 |
| | 1124666 | VBGW 110308-S2513 Z2 | VBGW 222-S2513 Z2 | ○ | ⊗ | 2 | 6,35 | 3,18 | 0,8 | 2,8 | 2,0 | 0,15 | 0,08 | 0,50 | 0,10 | 0,08 | 0,25 |
| | 1124618 | VBGW 160402-S2513 Z2 | VBGW 330.5-S2513 Z2 | ⊗ | ⊗ | 2 | 9,53 | 4,76 | 0,2 | 4,4 | 2,0 | 0,10 | 0,08 | 0,20 | 0,08 | 0,05 | 0,15 |
| | 1124619 | VBGW 160404-S2513 Z2 | VBGW 331-S2513 Z2 | ⊗ | ⊗ | 2 | 9,53 | 4,76 | 0,4 | 4,4 | 2,0 | 0,15 | 0,08 | 0,40 | 0,08 | 0,05 | 0,20 |
| | 1124620 | VBGW 160408-S2513 Z2 | VBGW 332-S2513 Z2 | ⊗ | ⊗ | 2 | 9,53 | 4,76 | 0,8 | 4,4 | 2,0 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 |
| | 1124621 | VBGW 160402-S1513 Z2 | VBGW 330.5-S1513 Z2 | ⊗ | ⊗ | 2 | 9,53 | 4,76 | 0,2 | 4,4 | 2,0 | 0,10 | 0,08 | 0,20 | 0,08 | 0,05 | 0,15 |
| | 1124622 | VBGW 160404-S1513 Z2 | VBGW 331-S1513 Z2 | ⊗ | ⊗ | 2 | 9,53 | 4,76 | 0,4 | 4,4 | 2,0 | 0,15 | 0,08 | 0,40 | 0,08 | 0,05 | 0,20 |
| | 1124623 | VBGW 160408-S1513 Z2 | VBGW 332-S1513 Z2 | ⊗ | ⊗ | 2 | 9,53 | 4,76 | 0,8 | 4,4 | 2,0 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 |

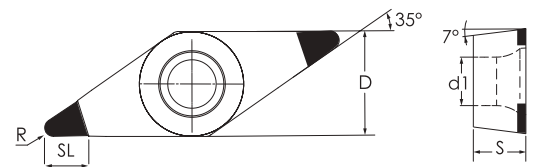
⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta


Insert Order Code: (1) Geometry code + (2) Grade code

VC = RHOMBIC 35° POSITIVE

RÔMBICA 35° POSITIVA | RÓMBICA 35° POSITIVA



VCGW Z2

| | (1) Geometry code | (2) Grade code | | H | | Dimensions Dimensões Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | |
|---|-------------------|----------------------|-------------------|--------|--------|---|------|------|-----|-----|-----|--|------|------|-----------|------|------|
| | | ISO Reference | ANSI Reference | Y5 | Y4 | Z | D | S | R | d1 | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | PBY603 | PBY620 | | | | | | | | | | | | |
|  | 1124667 | VCGW 160404-S2513 Z2 | VCGW 331-S2513 Z2 | ⊗ | ⊗ | 2 | 9,53 | 4,76 | 0,4 | 4,4 | 2,8 | 0,15 | 0,08 | 0,40 | 0,08 | 0,05 | 0,20 |
| | 1124668 | VCGW 160408-S2513 Z2 | VCGW 332-S2513 Z2 | ⊗ | ⊗ | 2 | 9,53 | 4,76 | 0,8 | 4,4 | 2,0 | 0,20 | 0,08 | 0,50 | 0,10 | 0,08 | 0,30 |

⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: (1) Geometry code + (2) Grade code

PCD GRADES SELECTION

Seleção de graus | Selección de calidades

PCD (Polycrystalline Diamond) is a composite of diamond particles that are sintered with a metallic binder creating the hardest and one of the most abrasion resistant materials used in cutting tools.

Its development achieved an extremely significance for the machining of Non-Ferrous Materials, such as high-silicon aluminium, metal matrix composites (MMC) and carbon fibre reinforced plastics (CFRP).

Grade description:

| Grade | Code | Characteristics | Application |
|--------|------|---|--|
| PDP410 | D6 | General purpose Fine surface finishing | <ul style="list-style-type: none"> - <14% silicon aluminium alloy - automotive industry - Graphite and graphite composites - Wood composites - Copper alloy |
| PDP403 | I3 | Highest abrasion resistance Bimodal grain structure for increased diamond percentage content | <ul style="list-style-type: none"> - >14% silicon aluminium alloy - Fiber glass, fiberboard - Wood laminates - Metal matrix composites - Stone sawing - Ceramics - Sintered tungsten carbide (10-16% Co) |

PDP410

<14% silicon
aluminium
alloy

PDP403

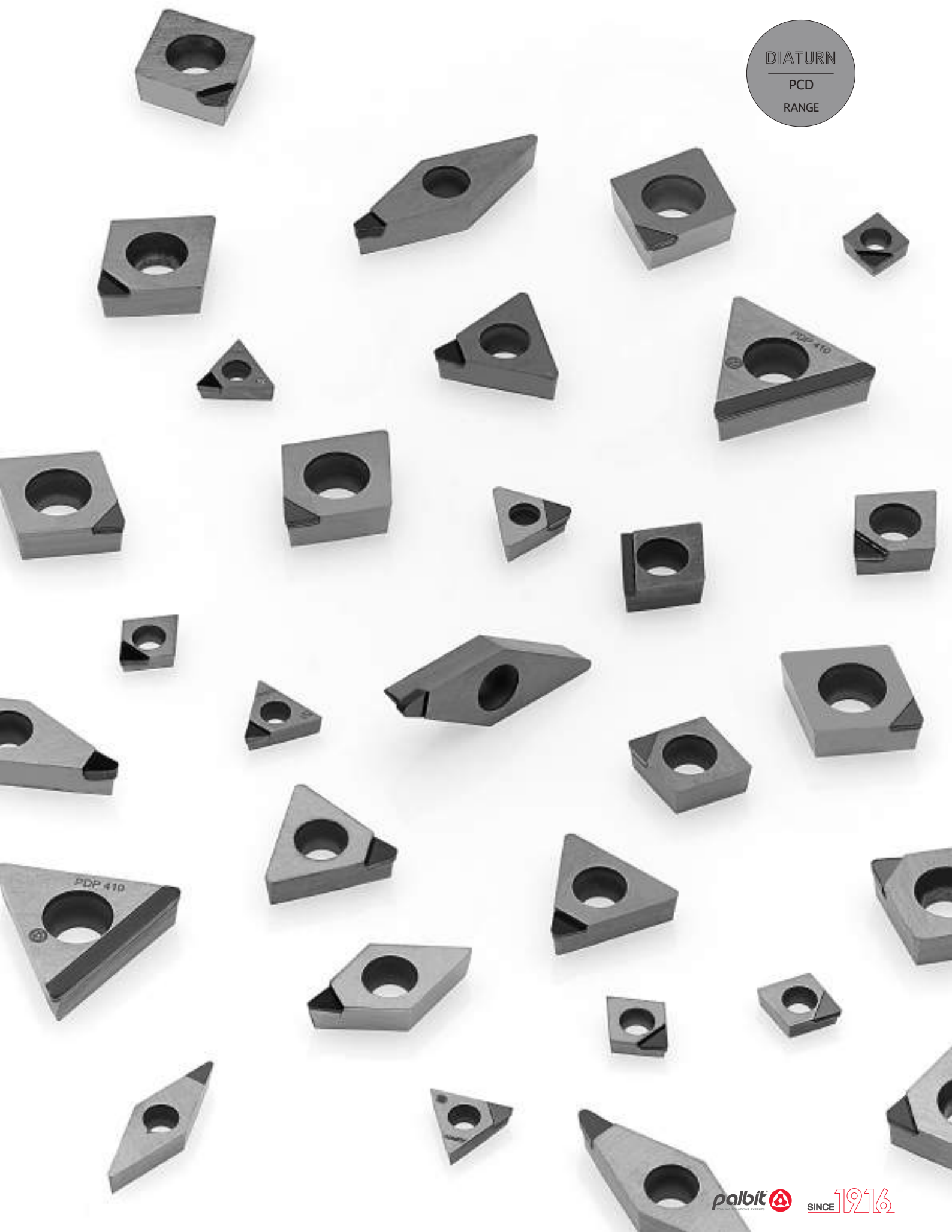
>14% silicon
aluminium
alloy



DIATURN

PCD

RANGE



GEOMETRY SELECTION

Seleção da geometria | Selección de la geometria

The insert geometry and nose radius are very important on turning operation having direct influence on the tool life and productivity.

Insert nose radius is an important performance parameter:

- For good chip breaking, must be used a small nose radius: 0,2-0,4mm (0,008-0,016inch);
- A large nose radius: 0,8-1,2mm (0,031-0,047inch) generates better surface finishing and produces thinner chips, which reduces the degree of crater wear in hard part turning operations
- The machining with large nose radius and small depth of cut results in reduced entry and exit forces..


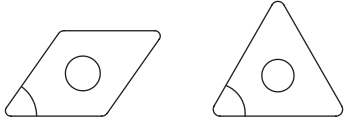
In general, a large nose radius provides greater edge strength and therefore extended tool life. For this reason, it is advised to use the largest and allowed nose radius based on the requirements of each process.

Finishing and semi-finishing:

In these cases, there are special requirements on the surface and tolerances.

Roughing:

For the evaluation of the cutting edge radius in roughing operations it is recommended to use the following formula, in order to calculate the minimum radius vs feed:

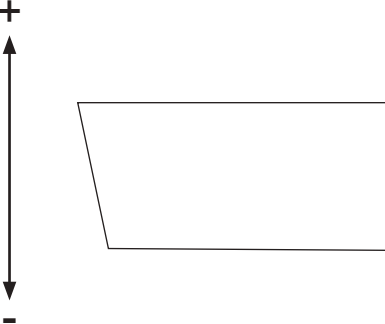
| Insert shape | Formula |
|---|---------------------------------------|
|  | <p>Radius >1,6 x feed per rev.</p> |
|  | <p>Radius >2,5 x feed per rev.</p> |

Seleção da preparação de aresta | Selección de la preparación de arista

The most important criteria for the stability and cutting edge tool-life is to define the correct cutting edge preparation. Its choice is mainly required in order to achieve the best economical result.

Edge preparation:

PCD: F type cutting edge preparation:

| | |
|---|---|
| <p>Cutting forces Edge strength</p>  | <p>F – Standard preparation without honing - Standard</p> <ul style="list-style-type: none"> - Sharp cutting edge; - Standard and recommended edge preparation for aluminium or other non-ferrous materials. |
|---|---|

Note:

Based on our experience sometimes is necessary to define edge preparation during several tests to provide the best possible solution for each application.



ISO PCD INSERTS CODE KEY

| | | | |
|---|--|---|---------|
| H | | M | |
| O | | V | |
| P | | W | |
| S | | L | |
| T | | A | |
| C | | B | |
| D | | K | |
| E | | R | |
| F | | X | Special |

1- Insert shape symbol

| Symbol | m (mm) | d (mm) | s (mm) |
|--------|-------------|-------------|--------|
| A | ±0.005 | ±0.025 | ±0.025 |
| F | ±0.005 | ±0.013 | ±0.025 |
| C | ±0.013 | ±0.025 | ±0.025 |
| H | ±0.013 | ±0.013 | ±0.025 |
| E | ±0.025 | ±0.025 | ±0.025 |
| G | ±0.025 | ±0.025 | ±0.13 |
| J | ±0.005 | ±0.05~±0.13 | ±0.025 |
| K* | ±0.013 | ±0.05~±0.13 | ±0.025 |
| L* | ±0.025 | ±0.05~±0.13 | ±0.025 |
| M* | ±0.08~±0.20 | ±0.05~±0.13 | ±0.13 |
| N* | ±0.08~±0.20 | ±0.05~±0.13 | ±0.025 |
| U* | ±0.13~±0.38 | ±0.08~±0.25 | ±0.13 |

As a rule, the sides of these inserts are as sintered. Tolerance differs with insert size, for the accuracy of class M, refer to the table on the right.

Triangular inserts with a facet (secondary cutting edge)

| Detailed dimension of M class insert Insert height Tolerances (mm) | | | | | |
|---|-------|-------|-------|-------|-------|
| Inscribed circle | T | S | C | D | V |
| 6.35 | ±0.08 | - | - | - | - |
| 9.525 | ±0.08 | ±0.08 | ±0.11 | ±0.10 | ±0.13 |
| 12.70 | ±0.13 | ±0.13 | ±0.13 | ±0.15 | - |
| 15.875 | ±0.15 | ±0.15 | ±0.15 | ±0.18 | - |
| 19.05 | ±0.15 | ±0.15 | ±0.15 | ±0.18 | - |
| 25.40 | - | ±0.18 | - | - | - |
| 31.75 | - | ±0.25 | - | - | - |

| Inscribed circle Tolerances (mm) | | | | | |
|----------------------------------|-------|-------|-------|-------|-------|
| Inscribed circle | T | S | C | D | V |
| 6.35 | ±0.05 | - | - | - | - |
| 9.525 | ±0.05 | ±0.05 | ±0.05 | ±0.05 | ±0.05 |
| 12.70 | ±0.08 | ±0.08 | ±0.08 | ±0.08 | ±0.08 |
| 15.875 | ±0.10 | ±0.10 | ±0.10 | ±0.10 | ±0.10 |
| 19.05 | - | - | - | - | ±0.10 |
| 25.40 | - | ±0.13 | - | - | ±0.10 |
| 31.75 | - | ±0.20 | - | - | ±0.12 |

3 - Tolerances symbol

| | | | | |
|---|---|---|---|-----------------------|
| A | B | C | D | E |
| | | | | |
| F | G | N | P | O |
| | | | | Other clearance angle |

2 - Normal clearance symbol

| | | | | |
|------|---|---|---|---|
| ISO | D | C | G | W |
| ANSI | D | C | G | W |

| 4 - Insert symbol | | | | | | | | | |
|-------------------|-----------|--------------------------------------|-------------------------|-------|--------|--------------|------------|---------------------------|-------|
| symbol | Type | Hole type | Chipbreaker | Shape | symbol | Type | Hole type | Chipbreaker | Shape |
| W | with hole | Round hole one countersink (40°-60°) | Without chipbreaker | | G | with hole | Round hole | Chipbreaker on both sides | |
| T | | | Chipbreaker on one side | | N | without hole | - | Without chipbreaker | |
| A | with hole | Round hole | Without chipbreaker | | R | without hole | - | Chipbreaker on one side | |
| M | | | Chipbreaker on one side | | X | | | - | - |

| R's | 35° V's | 55° D's | 80° C's | 90° S's | 60° T's | 80° W's | IC | | ANSI |
|------|------------|------------|------------|------------|------------|------------|--------|-------|--------|
| | | | | | | | mm | inch | Symbol |
| - | 06 | 04 | - | 03 | 06 | 02 | 3,97 | 5/32 | 1,20 |
| - | 08 | 05 | 04 | 04 | 08 | L3 | 4,76 | 3/16 | 1,50 |
| - | 09 | 06 | 05 | 05 | 09 | 03 | 5,56 | 7/32 | 1,80 |
| 06** | - | - | - | - | - | - | 6,00 | 0,236 | |
| 06* | 11 | 07 | 06 | 06 | 11 | 04 | 6,35 | 1/4 | 2,00 |
| 07* | 13 | 09 | 08 | 07 | 13 | 05 | 7,94 | 5/16 | 2,50 |
| 08* | - | - | - | - | - | - | 8,00 | 0,315 | |
| 09* | 16 | 11 | 09 | 09 | 16 | 06 | 9,525 | 3/8 | 3,00 |
| 10** | - | - | - | - | - | - | 10,00 | 0,394 | |
| 12** | - | - | - | - | - | - | 12,00 | 0,472 | |
| 12* | 22 | 15 | 12 | 12 | 22 | 08 | 12,70 | 1/2 | 4,00 |
| 15* | 27 | 19 | 16 | 15 | 27 | 10 | 15,875 | 5/8 | 5,00 |
| 16** | - | - | - | - | - | - | 16,00 | 0,63 | |
| 19* | 33 | 23 | 19 | 19 | 33 | 13 | 19,05 | 3/4 | 6,00 |
| 20** | - | - | - | - | - | - | 20,00 | 0,787 | |
| 25** | - | - | - | - | - | - | 25,00 | 0,984 | |
| 25* | 44 | 31 | 25 | 25 | 44 | 17 | 25,40 | 1,00 | 8,00 |
| 31* | 54 | 38 | 32 | 31 | 54 | 21 | 31,75 | 1 1/4 | 10,00 |
| 32** | - | - | - | - | - | - | 32,00 | 1,26 | |

* ANSI designation only
(Radius Designation is R0)

** Metric designation only
(Radius Designation is M0)

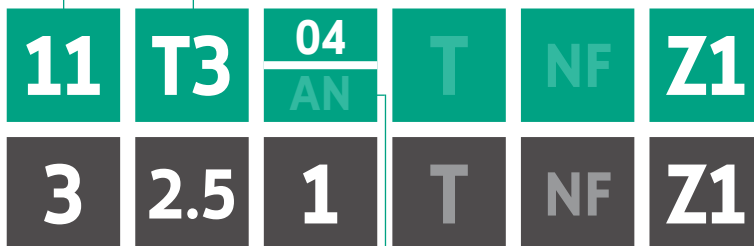
According to International Standard ISO 1832 - 2012(E)

"Indexable inserts for cutting tools - Designation"

| ISO | mm | ANSI | inch |
|-----|-------|------|-------|
| 01 | 1.59 | 1 | 0.062 |
| T1 | 1.98 | 1.2 | 0.078 |
| 02 | 2.38 | 1.5 | 0.094 |
| 03 | 3.18 | 2 | 0.125 |
| T3 | 3.97 | 2.5 | 0.156 |
| 04 | 4.76 | 3 | 0.188 |
| 05 | 5.56 | 3.5 | 0.219 |
| 06 | 6.35 | 4 | 0.250 |
| 07 | 7.94 | 5 | 0.312 |
| 09 | 9.52 | 6 | 0.375 |
| 12 | 12.70 | 8 | 0.500 |

5 - Insert size symbol

6 - Insert thickness symbol



| 10 - Tip type | |
|---------------|----------------------|
| Z1 (1 tip) | Z6 (6 tips) |
| Z2 (2 tips) | Z8 (8 tips) |
| Z3 (3 tips) | FL (Full edge left) |
| Z4 (4 tips) | FR (Full edge right) |
| Z5 (5 tips) | O (other) |

| 7 - Insert corner symbol | | | |
|--|--------------|------|------|
| ISO | mm | inch | ANSI |
| 00 | Sharp nose | | 0 |
| 01 | 0.10 | .004 | 0.2 |
| 02 | 0.20 | .008 | 0.5 |
| 04 | 0.40 | .015 | 1 |
| 08 | 0.80 | .032 | 2 |
| 12 | 1.2 | .047 | 3 |
| 16 | 1.6 | .062 | 4 |
| 20 | 2.0 | .078 | 5 |
| 24 | 2.4 | .094 | 6 |
| 28 | 2.8 | .109 | 7 |
| 32 | 3.2 | .125 | 8 |
| ⁰⁰ (inch or M0/ metric) | Round insert | | 0 |

| 7.1* - Insert edges symbol | | | |
|---|---------|---|---------|
| For inserts having secondary edges two digits are used: | | | |
| 1 st digit is secondary edge | | 2 nd digit is secondary edges relief angle | |
| A | 45° | A | 3° |
| D | 60° | B | 5° |
| E | 75° | C | 7° |
| F | 85° | D | 15° |
| P | 90° | E | 20° |
| Z | special | F | 25° |
| | | G | 30° |
| | | N | 0° |
| | | P | 11° |
| | | Z | special |

*only when required.

| 8* - Cutting edge information | | |
|-------------------------------|-----------------------|--------|
| Shape | Honing | Symbol |
| | No honing | F |
| | With honing | E |
| | Chamfered No honing | T |
| | Chamfered with honing | S |

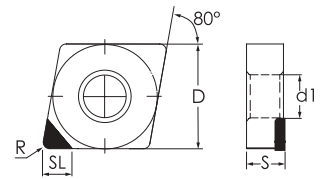
*only when required.

| 9 - Chipbreaker geometries | |
|----------------------------|-----------|
| NF | Finishing |

NEGATIVE INSERTS

CN - RHOMBIC 80° NEGATIVE

RÔMBICA 80° NEGATIVA | RÓMBICA 80° NEGATIVA



CNGA Z1

| | (1) Geometry code | (2) Grade code | | N | | Dimensions Dimensões Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | |
|--|-------------------|----------------|----------------|----|----|---|------|------|------|---|------|--|------|------|-----------|------|------|
| | | ISO Reference | ANSI Reference | D6 | I3 | D | S | R | d1 | W | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | | | | | | | | | | | | | | |
| | 1124228 | CNGA 120404 Z1 | CNGA 431 Z1 | ○ | ○ | 12,70 | 4,76 | 0,40 | 5,16 | - | 3,50 | 0,10 | 0,07 | 0,40 | 0,10 | 0,06 | 0,20 |
| | 1124110 | CNGA 120408 Z1 | CNGA 432 Z1 | ⊗ | ○ | 12,70 | 4,76 | 0,80 | 5,16 | - | 3,50 | 0,15 | 0,07 | 0,80 | 0,15 | 0,08 | 0,30 |
| | 1124229 | CNGA 120412 Z1 | CNGA 433 Z1 | ○ | ○ | 12,70 | 4,76 | 1,20 | 5,16 | - | 3,50 | 0,25 | 0,08 | 1,20 | 0,30 | 0,10 | 0,40 |
| | 1124230 | CNGA 120416 Z1 | CNGA 434 Z1 | ○ | ○ | 12,70 | 4,76 | 1,60 | 5,16 | - | 3,50 | 0,50 | 0,08 | 1,60 | 0,35 | 0,10 | 0,50 |

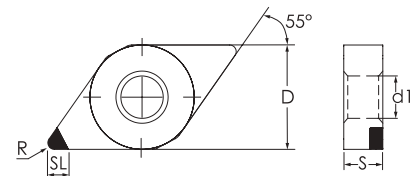
⊗ Stock Itens | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: (1) Geometry code + (2) Grade code

DN - RHOMBIC 55° NEGATIVE

RÔMBICA 55° NEGATIVA | RÓMBICA 55° NEGATIVA



DNGA Z1

| | (1) Geometry code | (2) Grade code | | N | | Dimensions Dimensões Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | |
|--|-------------------|----------------|----------------|----|----|---|------|------|------|---|------|--|------|------|-----------|------|------|
| | | ISO Reference | ANSI Reference | D6 | I3 | D | S | R | d1 | W | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | | | | | | | | | | | | | | |
| | 1124235 | DNGA 150404 Z1 | DNGA 431 Z1 | ○ | ○ | 12,70 | 4,76 | 0,40 | 5,16 | - | 3,50 | 0,10 | 0,07 | 0,40 | 0,10 | 0,05 | 0,20 |
| | 1124236 | DNGA 150408 Z1 | DNGA 432 Z1 | ○ | ○ | 12,70 | 4,76 | 0,80 | 5,16 | - | 3,50 | 0,15 | 0,07 | 0,80 | 0,15 | 0,05 | 0,25 |
| | 1124362 | DNGA 150608 Z1 | DNGA 442 Z1 | ○ | ○ | 12,70 | 6,35 | 0,80 | 5,16 | - | 3,50 | 0,15 | 0,07 | 0,80 | 0,15 | 0,05 | 0,25 |
| | 1124363 | DNGA 150612 Z1 | DNGA 443 Z1 | ○ | ○ | 12,70 | 6,35 | 1,20 | 5,16 | - | 3,50 | 0,20 | 0,08 | 1,20 | 0,20 | 0,05 | 0,30 |

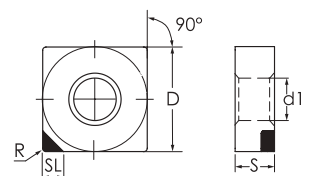
⊗ Stock Itens | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: (1) Geometry code + (2) Grade code

SN - SQUARE 90° NEGATIVE

QUADRADA 90° NEGATIVA | ESQUADRA 90° NEGATIVA



SNGA Z1

| | (1) Geometry code | (2) Grade code | | N | | Dimensions Dimensões Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | |
|--|-------------------|----------------|----------------|----|----|---|------|------|------|---|------|--|------|------|-----------|------|------|
| | | ISO Reference | ANSI Reference | D6 | I3 | D | S | R | d1 | W | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | | | | | | | | | | | | | | |
| | 1124243 | SNGA 090304 Z1 | SNGA 321 Z1 | ○ | ○ | 9,53 | 3,18 | 0,40 | 3,81 | - | 3,50 | 0,10 | 0,07 | 0,40 | 0,10 | 0,07 | 0,20 |
| | 1124244 | SNGA 090308 Z1 | SNGA 322 Z1 | ○ | ○ | 9,53 | 3,18 | 0,80 | 3,81 | - | 3,50 | 0,20 | 0,08 | 0,80 | 0,12 | 0,08 | 0,25 |
| | 1124245 | SNGA 120404 Z1 | SNGA 431 Z1 | ○ | ○ | 12,70 | 4,76 | 0,40 | 5,16 | - | 3,50 | 0,10 | 0,07 | 0,40 | 0,12 | 0,07 | 0,25 |
| | 1124246 | SNGA 120408 Z1 | SNGA 432 Z1 | ○ | ○ | 12,70 | 4,76 | 0,80 | 5,16 | - | 3,50 | 0,20 | 0,08 | 0,80 | 0,15 | 0,08 | 0,30 |

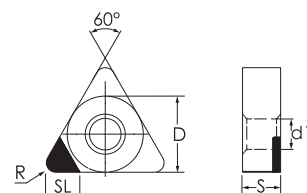
⊗ Stock Itens | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: (1) Geometry code + (2) Grade code

TN - TRIANGULAR 60° NEGATIVE

TRIANGULAR 60° NEGATIVA | TRIANGULAR 60° NEGATIVA



TNGA Z1

| | (1) Geometry code | (2) Grade code | | N | | Dimensions Dimensões Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | |
|--|-------------------|----------------|----------------|--------|--------|---|------|------|------|---|------|--|------|------|-----------|------|------|
| | | ISO Reference | ANSI Reference | D6 | I3 | D | S | R | d1 | W | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | PDP410 | PDP403 | | | | | | | | | | | | |
| | 1124256 | TNGA 110304 Z1 | TNGA 221 Z1 | ○ | ○ | 6,350 | 3,18 | 0,40 | 2,26 | - | 3,50 | 0,10 | 0,08 | 0,40 | 0,08 | 0,03 | 0,15 |
| | 1124257 | TNGA 110308 Z1 | TNGA 222 Z1 | ○ | ○ | 6,350 | 3,18 | 0,80 | 2,26 | - | 3,50 | 0,15 | 0,10 | 0,80 | 0,10 | 0,05 | 0,25 |
| | 1124258 | TNGA 160404 Z1 | TNGA 331 Z1 | ○ | ○ | 9,525 | 4,76 | 0,40 | 3,81 | - | 3,50 | 0,10 | 0,08 | 0,40 | 0,10 | 0,05 | 0,20 |
| | 1124259 | TNGA 160408 Z1 | TNGA 332 Z1 | ○ | ○ | 9,525 | 4,76 | 0,80 | 3,81 | - | 3,50 | 0,20 | 0,10 | 0,80 | 0,15 | 0,08 | 0,30 |
| | 1124385 | TNGA 160412 Z1 | TNGA 333 Z1 | ○ | ○ | 9,525 | 4,76 | 1,20 | 3,81 | - | 3,50 | 0,20 | 0,10 | 0,80 | 0,15 | 0,08 | 0,30 |

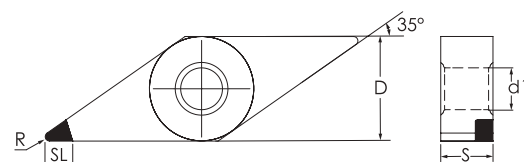
Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: (1) Geometry code + (2) Grade code

VN - RHOMBIC 35° NEGATIVE

RÔMBICA 35° NEGATIVA | RÔMBICA 35° NEGATIVA



VNGA Z1

| | (1) Geometry code | (2) Grade code | | N | | Dimensions Dimensões Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | |
|--|-------------------|----------------|----------------|--------|--------|---|------|------|------|------|------|--|------|------|-----------|------|------|
| | | ISO Reference | ANSI Reference | D6 | I3 | D | S | R | d1 | W | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | PDP410 | PDP403 | | | | | | | | | | | | |
| | 1124285 | VNGA 160404 Z1 | VNGA 331 Z1 | ○ | ○ | 9,53 | 4,76 | 0,40 | 3,81 | 0,00 | 3,50 | 0,10 | 0,07 | 0,40 | 0,10 | 0,07 | 0,20 |
| | 1124286 | VNGA 160408 Z1 | VNGA 332 Z1 | ○ | ○ | 9,53 | 4,76 | 0,80 | 3,81 | 0,00 | 3,50 | 0,20 | 0,08 | 0,80 | 0,15 | 0,08 | 0,30 |
| | 1124287 | VNGA 160412 Z1 | VNGA 333 Z1 | ○ | ○ | 9,53 | 4,76 | 1,20 | 3,81 | 0,00 | 3,50 | 0,25 | 0,10 | 1,20 | 0,17 | 0,10 | 0,35 |

Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: (1) Geometry code + (2) Grade code

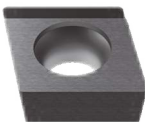
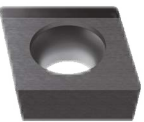
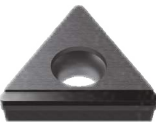
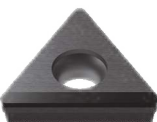
POSITIVE INSERTS

OVERVIEW | VISTA GENÉRICA | VISIÓN GENERAL

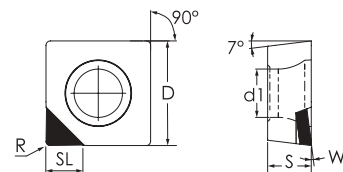
SINGLE TIP

| | | | | | | | |
|---|--|---|--|--|--|---|--|
| SCGT Z1 | | SCGW Z1 | | | | | |
|  | |  | | | | | |
| Size 06 09 12 | | Size 06 09 12 | | | | | |
| Page 487 | | | | | | | |
| CCGT Z1 | | CCGW Z1 | | CPGT Z1 | | CPGW Z1 | |
|  | |  | |  | |  | |
| Size 06 09 12 | | Size 06 09 12 | | Size 06 09 12 | | Size 06 09 12 | |
| Page 488 | | | | Page 489 | | | |
| DCGT Z1 | | DCGW Z1 | | | | | |
|  | |  | | | | | |
| Size 07 11 | | Size 07 11 15 | | | | | |
| Page 490 | | | | | | | |
| VCGT Z1 | | VCGW Z1 | | | | | |
|  | |  | | | | | |
| Size 07 11 16 | | Size 07 11 16 | | | | | |
| Page 491 | | | | | | | |
| TCGT Z1 | | TCGW Z1 | | TPGT Z1 | | TPGW Z1 | |
|  | |  | |  | |  | |
| Size 09 11 16 | | Size 09 11 16 | | Size 11 16 | | Size 11 16 | |
| Page 492 | | | | Page 493 | | | |

FULL EDGE

| | | | | | | | |
|---|--|---|--|--|--|---|--|
| CCGT FR/FL | | CCGW FR/FL | | TCGT FL | | TCGW FL | |
|  | |  | |  | |  | |
| Size 06 09 12 | | Size 06 09 12 | | Size 11 16 | | Size 11 16 22 | |
| Page 494 | | | | Page 495 | | | |

SC = SQUARE 90° POSITIVE
 QUADRADA 90° POSITIVA | ESQUADRA 90° POSITIVA



SCGT Z1

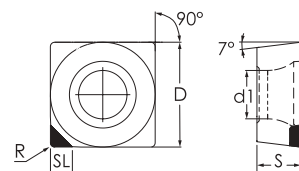
| | ⁽¹⁾ Geometry code | ⁽²⁾ Grade code | | N | | Dimensions Dimensões Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | |
|--|------------------------------|---------------------------|-----------------|--------|--------|--|------|------|------|-----|------|--|------|------|--------------|------|------|
| | | ISO Reference | ANSI Reference | D6 | I3 | D | S | R | d1 | W | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | PDP410 | PDP403 | | | | | | | | | | | | |
| | 1124386 | SCGT 060202 Z1 | SCGT 21.50.5 Z1 | ○ | ○ | 6,35 | 2,38 | 0,20 | 2,80 | 7° | 3,50 | 0,08 | 0,05 | 0,20 | 0,07 | 0,05 | 0,15 |
| | 1124387 | SCGT 060204 Z1 | SCGT 21.51 Z1 | ○ | ○ | 6,35 | 2,38 | 0,40 | 2,80 | 7° | 3,50 | 0,10 | 0,05 | 0,40 | 0,09 | 0,05 | 0,20 |
| | 1124388 | SCGT 09T304 Z1 | SCGT 32.51 Z1 | ○ | ○ | 9,52 | 3,97 | 0,40 | 4,40 | 10° | 3,50 | 0,10 | 0,07 | 0,40 | 0,10 | 0,05 | 0,20 |
| | 1124389 | SCGT 09T308 Z1 | SCGT 32.52 Z1 | ○ | ○ | 9,52 | 3,97 | 0,80 | 4,40 | 10° | 3,50 | 0,20 | 0,08 | 0,80 | 0,15 | 0,07 | 0,30 |
| | 1124390 | SCGT 120404 Z1 | SCGT 431 Z1 | ○ | ○ | 12,70 | 4,76 | 0,40 | 5,50 | 10° | 3,50 | 0,12 | 0,07 | 0,40 | 0,10 | 0,05 | 0,20 |
| | 1124391 | SCGT 120408 Z1 | SCGT 432 Z1 | ⊗ | ○ | 12,70 | 4,76 | 0,80 | 5,50 | 10° | 3,50 | 0,22 | 0,08 | 0,80 | 0,15 | 0,08 | 0,30 |

⊗ Stock items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: ⁽¹⁾Geometry code + ⁽²⁾Grade code

SCGW Z1



| | ⁽¹⁾ Geometry code | ⁽²⁾ Grade code | | N | | Dimensions Dimensões Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | |
|--|------------------------------|---------------------------|-----------------|--------|--------|--|------|------|-------|---|------|--|------|------|--------------|------|------|
| | | ISO Reference | ANSI Reference | D6 | I3 | D | S | R | L | W | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | PDP410 | PDP403 | | | | | | | | | | | | |
| | 1124237 | SCGW 060202 Z1 | SCGW 21.50.5 Z1 | ○ | ○ | 6,35 | 2,38 | 0,20 | 6,35 | - | 3,50 | 0,08 | 0,05 | 0,20 | 0,07 | 0,05 | 0,15 |
| | 1124238 | SCGW 060204 Z1 | SCGW 21.51 Z1 | ○ | ○ | 6,35 | 2,38 | 0,40 | 6,35 | - | 3,50 | 0,10 | 0,05 | 0,40 | 0,09 | 0,05 | 0,20 |
| | 1124239 | SCGW 09T304 Z1 | SCGW 32.51 Z1 | ○ | ○ | 9,53 | 3,97 | 0,40 | 9,53 | - | 3,50 | 0,10 | 0,07 | 0,40 | 0,10 | 0,05 | 0,20 |
| | 1124240 | SCGW 09T308 Z1 | SCGW 32.52 Z1 | ○ | ○ | 9,53 | 3,97 | 0,80 | 9,53 | - | 3,50 | 0,20 | 0,08 | 0,80 | 0,15 | 0,07 | 0,30 |
| | 1124241 | SCGW 120404 Z1 | SCGW 431 Z1 | ○ | ○ | 12,70 | 4,76 | 0,40 | 12,70 | - | 3,50 | 0,12 | 0,07 | 0,40 | 0,10 | 0,05 | 0,20 |
| | 1124242 | SCGW 120408 Z1 | SCGW 432 Z1 | ○ | ○ | 12,70 | 4,76 | 0,80 | 12,70 | - | 3,50 | 0,22 | 0,08 | 0,80 | 0,15 | 0,08 | 0,30 |

⊗ Stock items | Itens de stock

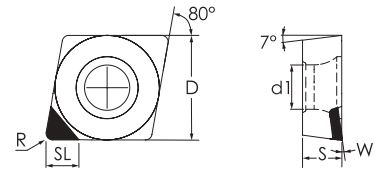
○ Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: ⁽¹⁾Geometry code + ⁽²⁾Grade code

POSITIVE INSERTS

CC - RHOMBIC 80° POSITIVE

RÔMBICA 80° POSITIVA | RÓMBICA 80° POSITIVA



CCGT Z1

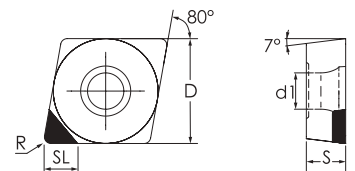
| | (1) Geometry code | (2) Grade code | | N | | Dimensions Dimensões Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | |
|--|-------------------|-------------------|------------------|--------|--------|--|------|------|------|-----|------|--|------|------|--------------|------|------|
| | | ISO Reference | ANSI Reference | PDP410 | PDP403 | D | S | R | d1 | W | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | | | | | | | | | | | | | | |
| | 1124113 | CCGT 060202 Z1 | CCGT 21.50.5 Z1 | ⊗ | ○ | 6,35 | 2,38 | 0,20 | 2,80 | 7° | 3,50 | 0,08 | 0,05 | 0,20 | 0,08 | 0,05 | 0,15 |
| | 1124209 | CCGT 060204 Z1 | CCGT 21.51 Z1 | ○ | ○ | 6,35 | 2,38 | 0,40 | 2,80 | 7° | 3,50 | 0,10 | 0,07 | 0,40 | 0,12 | 0,07 | 0,25 |
| | 1112592 | CCGT 09T304 Z1 | CCGT 32.51 Z1 | ⊗ | ○ | 9,53 | 3,97 | 0,40 | 4,40 | 10° | 3,50 | 0,10 | 0,07 | 0,40 | 0,12 | 0,07 | 0,25 |
| | 1124210 | CCGT 09T308 Z1 | CCGT 32.52 Z1 | ○ | ○ | 9,53 | 3,97 | 0,80 | 4,40 | 10° | 3,50 | 0,20 | 0,08 | 0,80 | 0,15 | 0,08 | 0,30 |
| | 1124211 | CCGT 120404 Z1 | CCGT 431 Z1 | ○ | ○ | 12,70 | 4,76 | 0,40 | 5,50 | 10° | 3,50 | 0,10 | 0,07 | 0,40 | 0,12 | 0,07 | 0,25 |
| | 1112630 | CCGT 120408 Z1 | CCGT 432 Z1 | ⊗ | ○ | 12,70 | 4,76 | 0,80 | 5,50 | 10° | 3,50 | 0,20 | 0,08 | 0,80 | 0,15 | 0,08 | 0,30 |
| | 1124465 | CCGT 09T304-NF Z1 | CCGT 32.51-NF Z1 | ⊗ | ○ | 9,53 | 3,97 | 0,40 | 4,40 | - | 4,00 | 0,12 | 0,07 | 0,40 | 0,15 | 0,07 | 0,25 |

⊗ Stock items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: (1) Geometry code + (2) Grade code

CCGW Z1



| | (1) Geometry code | (2) Grade code | | N | | Dimensions Dimensões Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | |
|--|-------------------|----------------|-----------------|--------|--------|--|------|------|------|---|------|--|------|------|--------------|------|------|
| | | ISO Reference | ANSI Reference | PDP410 | PDP403 | D | S | R | d1 | W | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | | | | | | | | | | | | | | |
| | 1124114 | CCGW 060202 Z1 | CCGW 21.50.5 Z1 | ⊗ | ○ | 6,35 | 2,38 | 0,20 | 2,80 | - | 3,50 | 0,08 | 0,05 | 0,20 | 0,08 | 0,05 | 0,13 |
| | 1124218 | CCGW 060204 Z1 | CCGW 21.51 Z1 | ○ | ○ | 6,35 | 2,38 | 0,40 | 2,80 | - | 3,50 | 0,10 | 0,07 | 0,40 | 0,11 | 0,07 | 0,23 |
| | 1124219 | CCGW 09T302 Z1 | CCGW 32.50.5 Z1 | ○ | ○ | 9,53 | 3,97 | 0,20 | 4,40 | - | 3,50 | 0,08 | 0,05 | 0,20 | 0,08 | 0,05 | 0,15 |
| | 1112593 | CCGW 09T304 Z1 | CCGW 32.51 Z1 | ⊗ | ○ | 9,53 | 3,97 | 0,40 | 4,40 | - | 3,50 | 0,10 | 0,07 | 0,40 | 0,12 | 0,06 | 0,25 |
| | 1124220 | CCGW 09T308 Z1 | CCGW 32.2 Z1 | ○ | ○ | 9,53 | 3,97 | 0,80 | 4,40 | - | 3,50 | 0,20 | 0,08 | 0,80 | 0,15 | 0,08 | 0,30 |
| | 1124221 | CCGW 120404 Z1 | CCGW 431 Z1 | ⊗ | ○ | 12,70 | 4,76 | 0,40 | 5,50 | - | 3,50 | 0,10 | 0,07 | 0,40 | 0,12 | 0,06 | 0,25 |
| | 1112631 | CCGW 120408 Z1 | CCGW 432 Z1 | ⊗ | ○ | 12,70 | 4,76 | 0,80 | 5,50 | - | 3,50 | 0,20 | 0,08 | 0,80 | 0,15 | 0,08 | 0,30 |

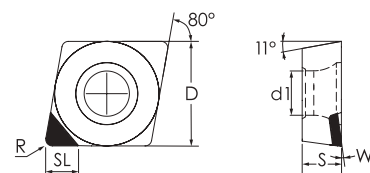
⊗ Stock items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

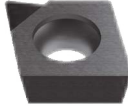
Insert Order Code: (1) Geometry code + (2) Grade code

CP = RHOMBIC 80° POSITIVE

RÔMBICA 80° POSITIVA | RÓMBICA 80° POSITIVA



CPGT Z1

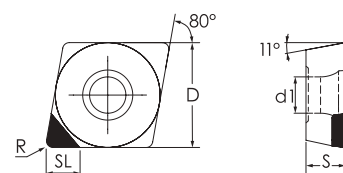
| | ⁽¹⁾ Geometry code | ⁽²⁾ Grade code | | N | | Dimensions Dimensões Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | |
|---|------------------------------|---------------------------|-----------------|--------|--------|--|------|------|------|-----|------|--|------|-----|--------------|------|------|
| | | | | D6 | I3 | D | S | R | d1 | W | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | PDP410 | PDP403 | | | | | | | | | | | | |
|  | 1124392 | CPGT 060202 Z1 | CCGT 21.50.5 Z1 | ○ | ○ | 6,35 | 2,38 | 0,20 | 2,80 | 7° | 3,50 | 0,08 | 0,05 | 0,2 | 0,08 | 0,05 | 0,15 |
| | 1124393 | CPGT 060204 Z1 | CCGT 21.51 Z1 | ○ | ○ | 6,35 | 2,38 | 0,40 | 2,80 | 7° | 3,50 | 0,10 | 0,07 | 0,4 | 0,12 | 0,07 | 0,25 |
| | 1124394 | CPGT 09T304 Z1 | CCGT 32.51 Z1 | ○ | ○ | 9,53 | 3,97 | 0,40 | 4,40 | 10° | 3,50 | 0,10 | 0,07 | 0,4 | 0,12 | 0,07 | 0,25 |
| | 1124395 | CPGT 09T308 Z1 | CCGT 32.52 Z1 | ○ | ○ | 9,53 | 3,97 | 0,80 | 4,40 | 10° | 3,50 | 0,20 | 0,08 | 0,8 | 0,15 | 0,08 | 0,30 |
| | 1124396 | CPGT 120404 Z1 | CCGT 431 Z1 | ○ | ○ | 12,70 | 4,76 | 0,40 | 5,50 | 10° | 3,50 | 0,10 | 0,07 | 0,4 | 0,12 | 0,07 | 0,25 |
| | 1124397 | CPGT 120408 Z1 | CCGT 432 Z1 | ○ | ○ | 12,70 | 4,76 | 0,80 | 5,50 | 10° | 3,50 | 0,20 | 0,08 | 0,8 | 0,15 | 0,08 | 0,30 |

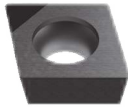
Stock items | Itens de stock

Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: ⁽¹⁾Geometry code + ⁽²⁾Grade code

CPGW Z1



| | ⁽¹⁾ Geometry code | ⁽²⁾ Grade code | | N | | Dimensions Dimensões Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | |
|---|------------------------------|---------------------------|-----------------|--------|--------|--|------|------|------|---|------|--|------|------|--------------|------|------|
| | | | | D6 | I3 | D | S | R | d1 | W | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | PDP410 | PDP403 | | | | | | | | | | | | |
|  | 1124398 | CPGW 060202 Z1 | CPGW 21.50.5 Z1 | ○ | ○ | 6,35 | 2,38 | 0,20 | 2,80 | - | 3,50 | 0,08 | 0,05 | 0,20 | 0,08 | 0,05 | 0,13 |
| | 1124399 | CPGW 060204 Z1 | CPGW 21.51 Z1 | ○ | ○ | 6,35 | 2,38 | 0,40 | 2,80 | - | 3,50 | 0,10 | 0,07 | 0,40 | 0,11 | 0,07 | 0,23 |
| | 1124400 | CPGW 09T302 Z1 | CPGW 32.50.5 Z1 | ○ | ○ | 9,53 | 3,97 | 0,20 | 4,40 | - | 3,50 | 0,08 | 0,05 | 0,20 | 0,08 | 0,05 | 0,15 |
| | 1124401 | CPGW 09T304 Z1 | CPGW 32.51 Z1 | ○ | ○ | 9,53 | 3,97 | 0,40 | 4,40 | - | 3,50 | 0,10 | 0,07 | 0,40 | 0,12 | 0,06 | 0,25 |
| | 1124402 | CPGW 09T308 Z1 | CPGW 32.52 Z1 | ○ | ○ | 9,53 | 3,97 | 0,80 | 4,40 | - | 3,50 | 0,20 | 0,08 | 0,80 | 0,15 | 0,08 | 0,30 |
| | 1124403 | CPGW 120404 Z1 | CPGW 431 Z1 | ○ | ○ | 12,70 | 4,76 | 0,40 | 5,50 | - | 3,50 | 0,10 | 0,07 | 0,40 | 0,12 | 0,06 | 0,25 |
| | 1124404 | CPGW 120408 Z1 | CPGW 432 Z1 | ○ | ○ | 12,70 | 4,76 | 0,80 | 5,50 | - | 3,50 | 0,20 | 0,08 | 0,80 | 0,15 | 0,08 | 0,30 |

Stock items | Itens de stock

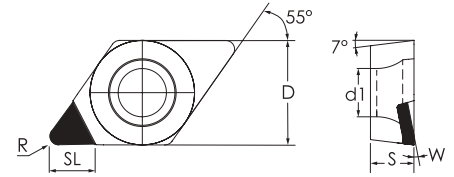
Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: ⁽¹⁾Geometry code + ⁽²⁾Grade code

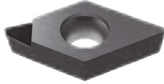
POSITIVE INSERTS

DC - RHOMBIC 55° POSITIVE

RÔMBICA 55° POSITIVA | RÓMBICA 55° POSITIVA



DCGT Z1

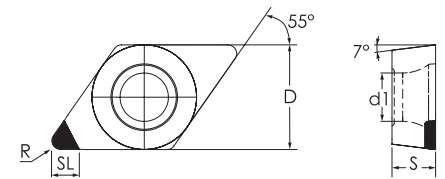
| | (1) Geometry code | (2) Grade code | | N | | Dimensions Dimensões Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | |
|---|-------------------|----------------|-----------------|--------|--------|--|------|------|------|-----|------|--|------|------|--------------|------|------|
| | | ISO Reference | ANSI Reference | D6 | I3 | D | S | R | d1 | W | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | PDP410 | PDP403 | | | | | | | | | | | | |
|  | 1124116 | DCGT 070202 Z1 | DCGT 21.50.5 Z1 | ⊗ | ○ | 6,35 | 2,38 | 0,20 | 2,80 | 7° | 3,50 | 0,08 | 0,05 | 0,20 | 0,08 | 0,05 | 0,15 |
| | 1124231 | DCGT 070204 Z1 | DCGT 21.51 Z1 | ○ | ○ | 6,35 | 2,38 | 0,40 | 2,80 | 7° | 3,50 | 0,10 | 0,07 | 0,40 | 0,10 | 0,05 | 0,20 |
| | 1112634 | DCGT 11T304 Z1 | DCGT 32.501 Z1 | ⊗ | ○ | 9,53 | 3,97 | 0,40 | 4,40 | 10° | 3,50 | 0,10 | 0,07 | 0,40 | 0,10 | 0,05 | 0,20 |
| | 1124380 | DCGT 11T308 Z1 | DCGT 32.52 Z1 | ⊗ | ⊗ | 9,53 | 3,97 | 0,80 | 4,40 | 10° | 3,50 | 0,20 | 0,08 | 0,80 | 0,15 | 0,08 | 0,30 |

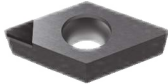
⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: (1) Geometry code + (2) Grade code

DCGW Z1



| | (1) Geometry code | (2) Grade code | | N | | Dimensions Dimensões Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | |
|---|-------------------|----------------|-----------------|--------|--------|--|------|------|------|---|------|--|------|------|--------------|------|------|
| | | ISO Reference | ANSI Reference | D6 | I3 | D | S | R | d1 | W | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | PDP410 | PDP403 | | | | | | | | | | | | |
|  | 1124232 | DCGW 070202 Z1 | DCGW 21.50.5 Z1 | ⊗ | ○ | 6,35 | 2,38 | 0,20 | 2,80 | - | 3,50 | 0,08 | 0,05 | 0,20 | 0,08 | 0,05 | 0,15 |
| | 1124233 | DCGW 070204 Z1 | DCGW 21.51 Z1 | ⊗ | ○ | 6,35 | 2,38 | 0,40 | 2,80 | - | 3,50 | 0,10 | 0,07 | 0,40 | 0,10 | 0,05 | 0,20 |
| | 1124458 | DCGW 11T302 Z1 | DCGW 32.50.5 Z1 | ⊗ | ○ | 9,53 | 3,97 | 0,20 | 4,40 | - | 3,50 | 0,10 | 0,05 | 0,35 | 0,10 | 0,05 | 0,15 |
| | 1112635 | DCGW 11T304 Z1 | DCGW 32.51 Z1 | ⊗ | ○ | 9,53 | 3,97 | 0,40 | 4,40 | - | 3,50 | 0,10 | 0,07 | 0,40 | 0,10 | 0,05 | 0,20 |
| | 1124168 | DCGW 11T308 Z1 | DCGW 32.52 Z1 | ⊗ | ○ | 9,53 | 3,97 | 0,80 | 4,40 | - | 3,50 | 0,20 | 0,08 | 0,80 | 0,15 | 0,08 | 0,30 |
| | 1124234 | DCGW 150404 Z1 | DCGW 431 Z1 | ○ | ○ | 12,70 | 4,76 | 0,40 | 5,50 | - | 3,50 | 0,10 | 0,08 | 0,40 | 0,10 | 0,05 | 0,20 |
| | 1124117 | DCGW 150408 Z1 | DCGW 432 Z1 | ⊗ | ○ | 12,70 | 4,76 | 0,80 | 5,50 | - | 3,50 | 0,20 | 0,10 | 0,80 | 0,15 | 0,08 | 0,30 |

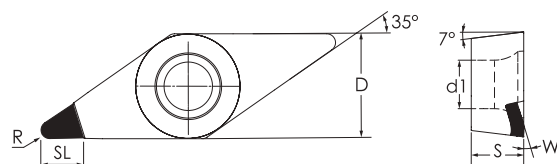
⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: (1) Geometry code + (2) Grade code

VC = RHOMBIC 35° POSITIVE
RÔMBICA 35° POSITIVA | RÓMBICA 35° POSITIVA

VCGT Z1



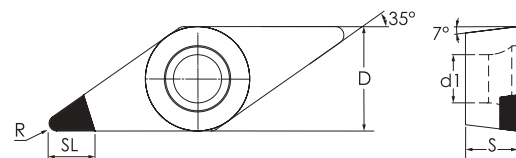
| | (1) Geometry code | (2) Grade code | | N | | Dimensions Dimensões Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | |
|--|-------------------|----------------|-------------------|--------|--------|---|------|------|------|-----|------|--|------|------|-----------|------|------|
| | | ISO Reference | ANSI Reference | D6 | I3 | D | S | R | d1 | W | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | PDP410 | PDP403 | | | | | | | | | | | | |
| | 1124275 | VCGT 070202 Z1 | VCGT 1.31.50.5 Z1 | ○ | ○ | 3,97 | 2,38 | 0,20 | 2,20 | 7° | 3,00 | 0,08 | 0,05 | 0,20 | 0,08 | 0,03 | 0,10 |
| | 1124276 | VCGT 070204 Z1 | VCGT 1.31.51 Z1 | ○ | ○ | 3,97 | 2,38 | 0,40 | 2,20 | 7° | 3,00 | 0,10 | 0,07 | 0,40 | 0,10 | 0,05 | 0,20 |
| | 1124277 | VCGT 110302 Z1 | VCGT 220.5 Z1 | ○ | ○ | 6,35 | 3,18 | 0,20 | 2,80 | 10° | 3,50 | 0,08 | 0,05 | 0,20 | 0,08 | 0,03 | 0,10 |
| | 1124071 | VCGT 110304 Z1 | VCGT 221 Z1 | ⊗ | ⊗ | 6,35 | 3,18 | 0,40 | 2,80 | 10° | 3,50 | 0,10 | 0,07 | 0,40 | 0,10 | 0,05 | 0,20 |
| | 1124278 | VCGT 160404 Z1 | VCGT 331 Z1 | ○ | ○ | 9,53 | 4,76 | 0,40 | 4,40 | 10° | 3,50 | 0,10 | 0,07 | 0,40 | 0,10 | 0,05 | 0,20 |
| | 1112640 | VCGT 160408 Z1 | VCGT 332 Z1 | ⊗ | ○ | 9,53 | 4,76 | 0,80 | 4,40 | 10° | 3,50 | 0,20 | 0,08 | 0,80 | 0,15 | 0,08 | 0,30 |
| | 1124279 | VCGT 160412 Z1 | VCGT 333 Z1 | ○ | ○ | 9,53 | 4,76 | 1,20 | 4,40 | 10° | 3,50 | 0,30 | 0,10 | 1,20 | 0,17 | 0,08 | 0,35 |

⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: (1) Geometry code + (2) Grade code

VCGW Z1



| | (1) Geometry code | (2) Grade code | | N | | Dimensions Dimensões Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | |
|--|-------------------|----------------|-------------------|--------|--------|---|------|------|------|---|------|--|------|------|-----------|------|------|
| | | ISO Reference | ANSI Reference | D6 | I3 | D | S | R | d1 | W | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | PDP410 | PDP403 | | | | | | | | | | | | |
| | 1124280 | VCGW 070202 Z1 | VCGW 1.31.50.5 Z1 | ○ | ○ | 3,97 | 2,38 | 0,20 | 2,20 | - | 3,00 | 0,08 | 0,05 | 0,20 | 0,08 | 0,03 | 0,10 |
| | 1124281 | VCGW 070204 Z1 | VCGW 1.31.51 Z1 | ⊗ | ○ | 3,97 | 2,38 | 0,40 | 2,20 | - | 3,00 | 0,10 | 0,07 | 0,40 | 0,10 | 0,05 | 0,20 |
| | 1124378 | VCGW 110304 Z1 | VCGW 221 Z1 | ○ | ○ | 6,35 | 3,18 | 0,40 | 2,80 | - | 3,50 | 0,10 | 0,07 | 0,40 | 0,10 | 0,05 | 0,20 |
| | 1124282 | VCGW 110308 Z1 | VCGW 222 Z1 | ○ | ○ | 6,35 | 3,18 | 0,80 | 2,80 | - | 3,50 | 0,20 | 0,08 | 0,80 | 0,15 | 0,08 | 0,30 |
| | 1124283 | VCGW 160404 Z1 | VCGW 331 Z1 | ⊗ | ○ | 9,53 | 4,76 | 0,40 | 4,40 | - | 3,50 | 0,10 | 0,07 | 0,40 | 0,10 | 0,05 | 0,20 |
| | 1112641 | VCGW 160408 Z1 | VCGW 332 Z1 | ⊗ | ○ | 9,53 | 4,76 | 0,80 | 4,40 | - | 4,00 | 0,20 | 0,08 | 0,80 | 0,15 | 0,08 | 0,30 |
| | 1124284 | VCGW 160412 Z1 | VCGW 333 Z1 | ○ | ○ | 9,53 | 4,76 | 1,20 | 4,40 | - | 3,50 | 0,30 | 0,10 | 1,20 | 0,17 | 0,08 | 0,35 |

⊗ Stock Items | Itens de stock

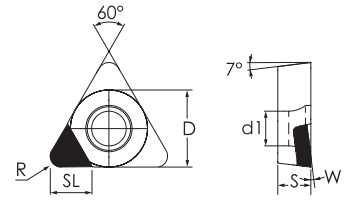
○ Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: (1) Geometry code + (2) Grade code

POSITIVE INSERTS

TC - TRIANGULAR 60° POSITIVE

TRIANGULAR 60° POSITIVA | TRIANGULAR 60° POSITIVA



TCGT Z1

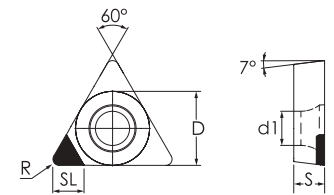
| | (1) Geometry code | (2) Grade code | | N | | Dimensions Dimensões Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | |
|--|-------------------|----------------|-------------------|--------|--------|---|------|------|------|-----|------|--|------|------|-----------|------|------|
| | | ISO Reference | ANSI Reference | D6 | I3 | D | S | R | d1 | W | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | PDP410 | PDP403 | | | | | | | | | | | | |
| | 1124186 | TCGT 090202 Z1 | TCGT 1.81.50.5 Z1 | ⊗ | ○ | 5,56 | 2,38 | 0,20 | 2,50 | 7° | 3,00 | 0,07 | 0,04 | 0,20 | 0,07 | 0,03 | 0,10 |
| | 1124188 | TCGT 090204 Z1 | TCGT 1.81.51 Z1 | ⊗ | ○ | 5,56 | 2,38 | 0,40 | 2,50 | 7° | 3,00 | 0,10 | 0,07 | 0,40 | 0,10 | 0,05 | 0,20 |
| | 1124119 | TCGT 110204 Z1 | TCGT 21.51 Z1 | ⊗ | ○ | 6,35 | 2,38 | 0,40 | 2,80 | 7° | 3,00 | 0,10 | 0,07 | 0,40 | 0,10 | 0,05 | 0,20 |
| | 1124190 | TCGT 110208 Z1 | TCGT 21.52 Z1 | ⊗ | ○ | 6,35 | 2,38 | 0,80 | 2,80 | 7° | 3,00 | 0,20 | 0,08 | 0,80 | 0,15 | 0,08 | 0,30 |
| | 1124247 | TCGT 16T304 Z1 | TCGT 32.51 Z1 | ○ | ○ | 9,53 | 3,97 | 0,40 | 4,40 | 10° | 3,00 | 0,10 | 0,07 | 0,40 | 0,10 | 0,05 | 0,20 |
| | 1112637 | TCGT 16T308 Z1 | TCGT 32.52 Z1 | ⊗ | ○ | 9,53 | 3,97 | 0,80 | 4,40 | 10° | 3,00 | 0,20 | 0,08 | 0,80 | 0,15 | 0,08 | 0,30 |

⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: (1) Geometry code + (2) Grade code

TCGW Z1



| | (1) Geometry code | (2) Grade code | | N | | Dimensions Dimensões Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | |
|--|-------------------|----------------|-------------------|--------|--------|---|------|------|------|---|------|--|------|------|-----------|------|------|
| | | ISO Reference | ANSI Reference | D6 | I3 | D | S | R | d1 | W | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | PDP410 | PDP403 | | | | | | | | | | | | |
| | 1124185 | TCGW 090202 Z1 | TCGW 1.81.50.5 Z1 | ⊗ | ○ | 5,56 | 2,38 | 0,20 | 2,50 | - | 3,00 | 0,07 | 0,04 | 0,20 | 0,07 | 0,03 | 0,10 |
| | 1124187 | TCGW 090204 Z1 | TCGW 1.81.51 Z1 | ⊗ | ○ | 5,56 | 2,38 | 0,40 | 2,50 | - | 3,00 | 0,10 | 0,07 | 0,40 | 0,10 | 0,05 | 0,20 |
| | 1124507 | TCGW 110202 Z1 | TCGW 21.50.5 Z1 | ⊗ | ○ | 6,35 | 2,38 | 0,20 | 2,80 | - | 3,00 | 0,07 | 0,04 | 0,20 | 0,07 | 0,03 | 0,10 |
| | 1124192 | TCGW 110204 Z1 | TCGW 21.51 Z1 | ⊗ | ○ | 6,35 | 2,38 | 0,40 | 2,80 | - | 3,50 | 0,10 | 0,07 | 0,40 | 0,10 | 0,05 | 0,20 |
| | 1124189 | TCGW 110208 Z1 | TCGW 21.52 Z1 | ⊗ | ○ | 6,35 | 2,38 | 0,80 | 2,80 | - | 3,50 | 0,20 | 0,08 | 0,80 | 0,15 | 0,08 | 0,30 |
| | 1124251 | TCGW 16T304 Z1 | TCGW 32.51 Z1 | ○ | ○ | 9,53 | 3,97 | 0,40 | 4,40 | - | 3,50 | 0,10 | 0,07 | 0,40 | 0,10 | 0,05 | 0,20 |
| | 1112638 | TCGW 16T308 Z1 | TCGW 32.52 Z1 | ⊗ | ○ | 9,53 | 3,97 | 0,80 | 4,40 | - | 3,50 | 0,20 | 0,08 | 0,80 | 0,15 | 0,08 | 0,30 |

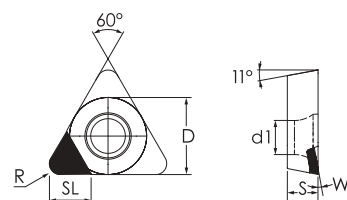
⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: (1) Geometry code + (2) Grade code

TP - TRIANGULAR 60° POSITIVE

TRIANGULAR 60° POSITIVA | TRIANGULAR 60° POSITIVA



TPGT Z1

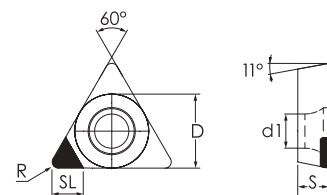
| | (1) Geometry code | (2) Grade code | | N | | Dimensions Dimensões Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | |
|--|-------------------|----------------|----------------|--------|--------|--|------|------|------|-----|------|--|------|------|-----------|------|------|
| | | ISO Reference | ANSI Reference | D6 | I3 | D | S | R | d1 | W | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | PDP410 | PDP403 | | | | | | | | | | | | |
| | 1124260 | TPGT 110302 Z1 | TPGT 220.5 Z1 | ○ | ○ | 6,35 | 3,18 | 0,20 | 3,40 | 10° | 3,50 | 0,07 | 0,04 | 0,20 | 0,07 | 0,05 | 0,10 |
| | 1124261 | TPGT 110304 Z1 | TPGT 221 Z1 | ○ | ○ | 6,35 | 3,18 | 0,40 | 3,40 | 10° | 3,50 | 0,10 | 0,07 | 0,40 | 0,10 | 0,05 | 0,20 |
| | 1124262 | TPGT 110308 Z1 | TPGT 222 Z1 | ○ | ○ | 6,35 | 3,18 | 0,80 | 3,40 | 10° | 3,50 | 0,20 | 0,08 | 0,80 | 0,15 | 0,08 | 0,30 |
| | 1124263 | TPGT 16T304 Z1 | TPGT 32.51 Z1 | ○ | ○ | 9,53 | 3,97 | 0,40 | 4,30 | 10° | 3,50 | 0,10 | 0,07 | 0,40 | 0,10 | 0,05 | 0,20 |
| | 1124174 | TPGT 16T308 Z1 | TPGT 32.52 Z1 | ○ | ○ | 9,53 | 3,97 | 0,80 | 4,30 | 10° | 3,50 | 0,20 | 0,08 | 0,80 | 0,15 | 0,08 | 0,30 |
| | 1124264 | TPGT 160404 Z1 | TPGT 331 Z1 | ○ | ○ | 9,53 | 4,76 | 0,40 | 4,30 | 10° | 3,50 | 0,10 | 0,07 | 0,40 | 0,10 | 0,05 | 0,20 |
| | 1124265 | TPGT 160408 Z1 | TPGT 332 Z1 | ○ | ○ | 9,53 | 4,76 | 0,80 | 4,30 | 10° | 3,50 | 0,20 | 0,08 | 0,80 | 0,15 | 0,08 | 0,30 |

Stock Items | Itens de stock

Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: (1) Geometry code + (2) Grade code

TPGW Z1



| | (1) Geometry code | (2) Grade code | | N | | Dimensions Dimensões Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | |
|--|-------------------|----------------|-----------------|--------|--------|--|------|------|------|---|------|--|------|------|-----------|------|------|
| | | ISO Reference | ANSI Reference | D6 | I3 | D | S | R | d1 | W | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | PDP410 | PDP403 | | | | | | | | | | | | |
| | 1124266 | TPGW 110202 Z1 | TPGW 21.50.5 Z1 | ○ | ○ | 6,35 | 2,38 | 0,20 | 2,80 | - | 3,50 | 0,07 | 0,04 | 0,20 | 0,07 | 0,05 | 0,10 |
| | 1124267 | TPGW 110204 Z1 | TPGW 21.51 Z1 | ○ | ○ | 6,35 | 2,38 | 0,40 | 2,80 | - | 3,50 | 0,10 | 0,07 | 0,40 | 0,10 | 0,05 | 0,20 |
| | 1124268 | TPGW 110208 Z1 | TPGW 21.52 Z1 | ○ | ○ | 6,35 | 2,38 | 0,80 | 2,80 | - | 3,50 | 0,20 | 0,08 | 0,80 | 0,15 | 0,08 | 0,30 |
| | 1124269 | TPGW 110302 Z1 | TPGW 220.5 Z1 | ○ | ○ | 6,35 | 3,18 | 0,20 | 2,80 | - | 3,50 | 0,07 | 0,04 | 0,20 | 0,07 | 0,05 | 0,10 |
| | 1124270 | TPGW 110304 Z1 | TPGW 221 Z1 | ⊗ | ○ | 6,35 | 3,18 | 0,40 | 2,80 | - | 3,50 | 0,10 | 0,07 | 0,40 | 0,10 | 0,05 | 0,20 |
| | 1124379 | TPGW 110308 Z1 | TPGW 222 Z1 | ⊗ | ○ | 6,35 | 3,18 | 0,80 | 2,80 | - | 3,50 | 0,20 | 0,08 | 0,80 | 0,15 | 0,08 | 0,30 |
| | 1124271 | TPGW 16T304 Z1 | TPGW 32.51 Z1 | ○ | ○ | 9,53 | 3,97 | 0,40 | 4,30 | - | 3,50 | 0,10 | 0,07 | 0,40 | 0,10 | 0,05 | 0,20 |
| | 1124272 | TPGW 16T308 Z1 | TPGW 32.52 Z1 | ○ | ○ | 9,53 | 3,97 | 0,80 | 4,30 | - | 3,50 | 0,20 | 0,08 | 0,80 | 0,15 | 0,08 | 0,30 |
| | 1124273 | TPGW 160404 Z1 | TPGW 331 Z1 | ○ | ○ | 9,53 | 4,76 | 0,40 | 4,30 | - | 3,50 | 0,10 | 0,07 | 0,40 | 0,10 | 0,05 | 0,20 |
| | 1124274 | TPGW 160408 Z1 | TPGW 332 Z1 | ○ | ○ | 9,53 | 4,76 | 0,80 | 4,30 | - | 3,50 | 0,20 | 0,08 | 0,80 | 0,15 | 0,08 | 0,30 |

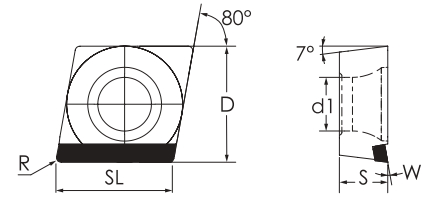
Stock Items | Itens de stock

Available under request | Disponível sob consulta | Disponible bajo consulta


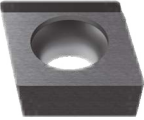
Insert Order Code: (1) Geometry code + (2) Grade code

POSITIVE INSERTS

CC = RHOMBIC 80° POSITIVE
RÔMBICA 80° POSITIVA | RÓMBICA 80° POSITIVA



CCGT FR/FL

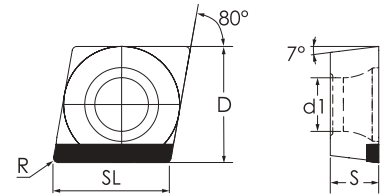
| | (1) Geometry code | (2) Grade code | | N | | Dimensions Dimensões Dimensiones (mm) | | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | |
|--|-------------------|----------------|-----------------|--------|--------|--|------|------|------|-----|-------|------------|--|------|--------------|------|------|
| | | ISO Reference | ANSI Reference | D6 | I3 | L | S | R | D | W | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | PDP410 | PDP403 | | | | | | | | | | | | |
|  CCGT FR | 1124212 | CCGT 09T302 FR | CCGT 32.50.5 FR | ○ | ○ | 9,53 | 3,97 | 0,20 | 4,40 | 10° | 9,70 | 4,85 | 0,2 | 6,40 | 0,08 | 0,05 | 0,15 |
| | 1124165 | CCGT 09T304 FR | CCGT 32.51 FR | ⊗ | ○ | 9,53 | 3,97 | 0,40 | 4,40 | 10° | 9,70 | 4,85 | 0,40 | 6,40 | 0,12 | 0,07 | 0,25 |
| | 1124213 | CCGT 120404 FR | CCGT 431 FR | ○ | ○ | 12,70 | 4,76 | 0,40 | 5,50 | 10° | 12,90 | 6,45 | 0,40 | 8,50 | 0,15 | 0,08 | 0,30 |
| | 1124214 | CCGT 120408 FR | CCGT 432 FR | ○ | ○ | 12,70 | 4,76 | 0,80 | 5,50 | 10° | 12,90 | 6,45 | 0,80 | 8,50 | 0,3 | 0,1 | 0,40 |
|  CCGT FL | 1124215 | CCGT 09T302 FL | CCGT 32.50.5 FL | ○ | ○ | 9,53 | 3,97 | 0,20 | 4,40 | 10° | 9,70 | 4,85 | 0,20 | 6,40 | 0,08 | 0,05 | 0,15 |
| | 1124166 | CCGT 09T304 FL | CCGT 32.51 FL | ⊗ | ○ | 9,53 | 3,97 | 0,40 | 4,40 | 10° | 9,70 | 4,85 | 0,40 | 6,40 | 0,12 | 0,07 | 0,25 |
| | 1124216 | CCGT 120404 FL | CCGT 431 FL | ○ | ○ | 12,70 | 4,76 | 0,40 | 5,50 | 10° | 12,90 | 6,45 | 0,40 | 8,50 | 0,15 | 0,08 | 0,30 |
| | 1124217 | CCGT 120408 FL | CCGT 432 FL | ○ | ○ | 12,70 | 4,76 | 0,80 | 5,50 | 10° | 12,90 | 6,45 | 0,80 | 8,50 | 0,3 | 0,1 | 0,40 |


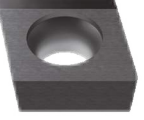
⊗ Stock Itens | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: (1) Geometry code + (2) Grade code

CCGW FR/FL



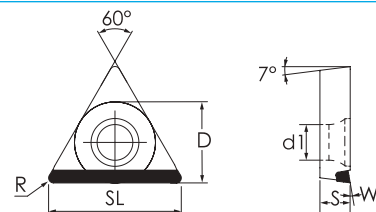
| | (1) Geometry code | (2) Grade code | | N | | Dimensions Dimensões Dimensiones (mm) | | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | |
|--|-------------------|----------------|----------------|--------|--------|--|------|-----|-----|---|------|------------|--|-----|--------------|------|------|
| | | ISO Reference | ANSI Reference | D6 | I3 | D | S | R | d1 | W | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | PDP410 | PDP403 | | | | | | | | | | | | |
|  CCGW FR | 1124547 | CCGW 060204 FR | CCGW 21.51 FR | ⊗ | ○ | 9,53 | 3,97 | 0,4 | 4,4 | - | 9,7 | 4,85 | 0,4 | 6,4 | 0,12 | 0,07 | 0,25 |
| | 1124170 | CCGW 09T304 FR | CCGW 32.51 FR | ○ | ○ | 9,53 | 3,97 | 0,4 | 4,4 | - | 9,7 | 4,85 | 0,4 | 6,4 | 0,12 | 0,07 | 0,25 |
| | 1124222 | CCGW 09T308 FR | CCGW 32.52 FR | ○ | ○ | 9,53 | 3,97 | 0,8 | 4,4 | - | 9,7 | 4,85 | 0,8 | 6,4 | 0,16 | 0,1 | 0,35 |
| | 1124223 | CCGW 120404 FR | CCGW 431 FR | ○ | ○ | 12,7 | 4,76 | 0,4 | 5,5 | - | 12,9 | 6,45 | 0,4 | 8,5 | 0,15 | 0,08 | 0,3 |
| | 1124224 | CCGW 120408 FR | CCGW 432 FR | ○ | ○ | 12,7 | 4,76 | 0,8 | 5,5 | - | 12,9 | 6,45 | 0,8 | 8,5 | 0,3 | 0,1 | 0,4 |
|  CCGW FL | 1124548 | CCGW 060204 FL | CCGW 21.51 FL | ⊗ | ○ | 6,35 | 2,38 | 0,4 | 2,8 | - | 6,5 | 3,25 | 0,4 | 4,2 | 0,08 | 0,07 | 0,25 |
| | 1124171 | CCGW 09T304 FL | CCGW 32.51 FL | ○ | ○ | 9,53 | 3,97 | 0,4 | 4,4 | - | 9,7 | 4,85 | 0,4 | 6,4 | 0,12 | 0,07 | 0,25 |
| | 1124225 | CCGW 09T308 FL | CCGW 32.52 FL | ○ | ○ | 9,53 | 3,97 | 0,8 | 4,4 | - | 9,7 | 4,85 | 0,8 | 6,4 | 0,16 | 0,1 | 0,35 |
| | 1124226 | CCGW 120404 FL | CCGW 431 FL | ○ | ○ | 12,7 | 4,76 | 0,4 | 5,5 | - | 12,9 | 6,45 | 0,4 | 8,5 | 0,15 | 0,08 | 0,3 |
| | 1124227 | CCGW 120408 FL | CCGW 432 FL | ⊗ | ○ | 12,7 | 4,76 | 0,8 | 5,5 | - | 12,9 | 6,45 | 0,8 | 8,5 | 0,3 | 0,1 | 0,4 |

⊗ Stock Itens | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: (1) Geometry code + (2) Grade code

TC - TRIANGULAR 60° POSITIVE
 TRIÂNGULAR 60° POSITIVA | TRIANGULAR 60° POSITIVA



TCGT FL

| | ⁽¹⁾ Geometry code | ⁽²⁾ Grade code | | N | | Dimensions Dimensões Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | |
|--|------------------------------|---------------------------|----------------|--------|--------|---|------|------|------|-----|-------|--|------|-------|-----------|------|------|
| | | ISO Reference | ANSI Reference | D6 | I3 | D | S | R | d1 | W | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | PDP410 | PDP403 | | | | | | | | | | | | |
| | 1124173 | TCGT 110204 FL | TCGT 21.51 FL | ⊗ | ○ | 6,35 | 2,38 | 0,40 | 2,80 | 7° | 10,41 | 5,20 | 0,40 | 6,90 | 0,10 | 0,05 | 0,20 |
| | 1124248 | TCGT 110208 FL | TCGT 21.52 FL | ○ | ○ | 6,35 | 2,38 | 0,80 | 2,80 | 7° | 9,83 | 4,92 | 0,80 | 6,50 | 0,15 | 0,08 | 0,30 |
| | 1124249 | TCGT 16T304 FL | TCGT 32.51 FL | ○ | ○ | 9,53 | 3,97 | 0,40 | 4,40 | 10° | 15,91 | 7,96 | 0,40 | 10,50 | 0,10 | 0,05 | 0,20 |
| | 1124250 | TCGT 16T308 FL | TCGT 32.52 FL | ○ | ○ | 9,53 | 3,97 | 0,80 | 4,40 | 10° | 15,33 | 7,67 | 0,80 | 10,15 | 0,15 | 0,08 | 0,30 |

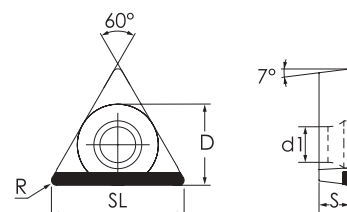
⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: ⁽¹⁾Geometry code + ⁽²⁾Grade code

Note: Can be used as FR geometry.

TCGW FL



| | ⁽¹⁾ Geometry code | ⁽²⁾ Grade code | | N | | Dimensions Dimensões Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | | |
|--|------------------------------|---------------------------|-----------------|--------|--------|---|------|------|------|---|-------|--|------|-------|-----------|------|------|
| | | ISO Reference | ANSI Reference | D6 | I3 | D | S | R | d1 | W | SL | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | PDP410 | PDP403 | | | | | | | | | | | | |
| | 1124252 | TCGW 110202 FL | TCGW 21.50.5 FL | ○ | ○ | 6,35 | 2,38 | 0,20 | 2,80 | - | 10,71 | 5,20 | 0,40 | 6,90 | 0,10 | 0,05 | 0,20 |
| | 1112777 | TCGW 110204 FL | TCGW 21.51 FL | ⊗ | ○ | 6,35 | 2,38 | 0,40 | 2,80 | - | 10,41 | 5,21 | 0,80 | 6,50 | 0,15 | 0,08 | 0,30 |
| | 1124253 | TCGW 16T304 FL | TCGW 32.51 FL | ○ | ○ | 9,53 | 3,97 | 0,40 | 4,40 | - | 15,91 | 7,96 | 0,40 | 10,50 | 0,10 | 0,05 | 0,20 |
| | 1124254 | TCGW 16T308 FL | TCGW 32.52 FL | ○ | ○ | 9,53 | 3,97 | 0,80 | 4,40 | - | 15,33 | 7,67 | 0,80 | 10,15 | 0,15 | 0,08 | 0,30 |
| | 1124255 | TCGW 220404 FL | TCGW 431 FL | ○ | ○ | 12,70 | 4,76 | 0,40 | 5,50 | - | 21,40 | 8,00 | 0,40 | 10,70 | 0,10 | 0,08 | 0,20 |
| | 1112713 | TCGW 220408 FL | TCGW 432 FL | ⊗ | ○ | 12,70 | 4,76 | 0,80 | 5,50 | - | 20,83 | 7,84 | 0,80 | 10,45 | 0,15 | 0,10 | 0,30 |

⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: ⁽¹⁾Geometry code + ⁽²⁾Grade code

Note: Can be used as FR geometry.

PCD RECOMMENDED CUTTING DATA

Condições de corte recomendadas para PCD | Datos de corte recomendadas para PCD

| Workpiece material | VC (m/min) | | Recommend grade for PCD | |
|---|------------|-----------|-------------------------|---------|
| | | | PDP 410 | PDP 403 |
| Aluminium alloys: Aluminium, Si<14% | Roughing | 800-3000 | ⊗ | |
| | Finishing | 800-3000 | ⊗ | |
| Aluminium: Aluminium, Si≥14% | Roughing | 300-700 | ○ | ⊗ |
| | Finishing | 250-700 | ○ | ⊗ |
| Copper alloys: Copper, Zinc, Brass | Roughing | 600-1200 | ⊗ | |
| | Finishing | 700-1500 | ⊗ | |
| Metal matrix composites: Al (10-20%) SiC | Roughing | 300-1150 | | ⊗ |
| | Finishing | 400-1260 | | ⊗ |
| Tungsten carbide 10-16% Co: Unsintered | Roughing | 50-200 | | ⊗ |
| | Finishing | 60-220 | | ⊗ |
| Tungsten carbide 10-16% Co: Sintered | Roughing | 20-40 | | ⊗ |
| | Finishing | 25-45 | | ⊗ |
| Ebonite, Fiberglass, Plastic materials, Graphite, Glass. | Roughing | 200-1500 | ⊗ | ⊗ |
| | Finishing | 300-2000 | ⊗ | ⊗ |
| Ceramic: Unsintered | Roughing | 50-150 | | ⊗ |
| | Finishing | 50-200 | | ⊗ |
| Ceramic: Sintered | Roughing | 20-35 | | ⊗ |
| | Finishing | 20-40 | | ⊗ |
| Wood | Finishing | 1000-4000 | ⊗ | |

⊗ Recomendado ○ Second choice



VIDEO

BAR PEELING

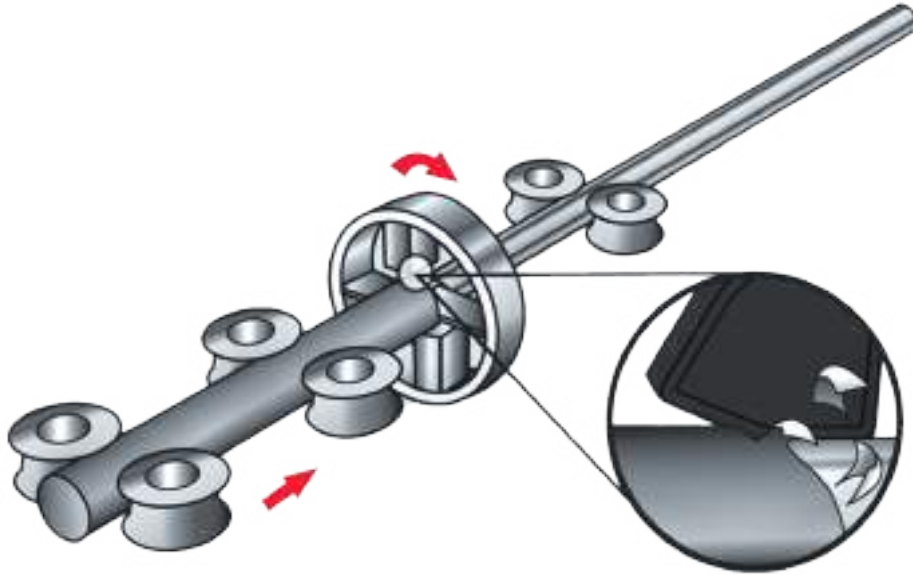


BAR PEELING

Bar Peeling is the machining process by which a raw forged blank is converted into a polished bar.

During this peeling process, surface cracks and oxide layers are removed giving a perfect roundness with good surface and dimensional accuracy to the bar.

The range of materials that can be machined with these tools is vast and goes from all kind of Steels to Cast Iron parts.

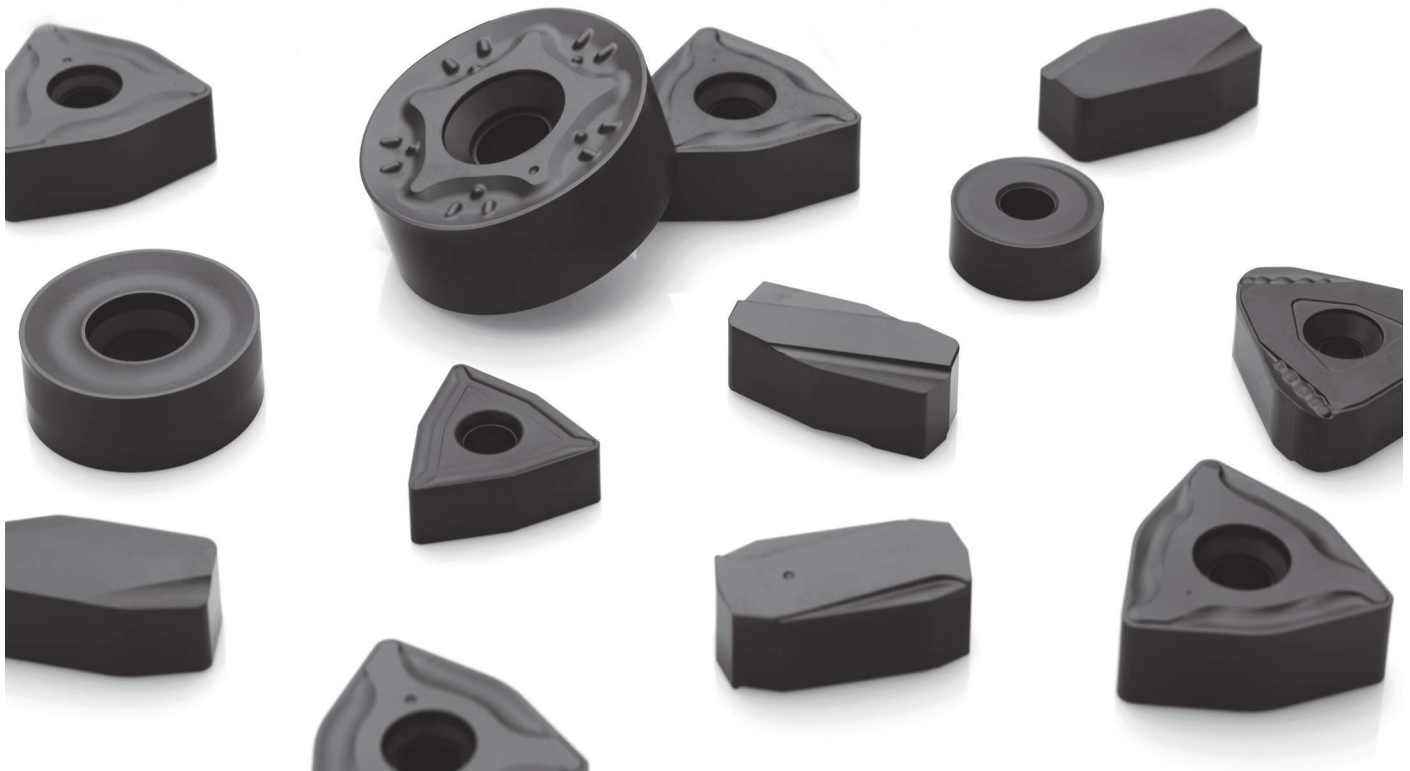


The size of blank bar can go from 4 mm (157 inch) to over 400 mm (15.75 inch) in diameter.

The surface quality and dimensional tolerances are also high, which leads to less machining at later stages.

Our aim is at the same time improving your productivity (by removing maximal chips volume) and, at the same time, matching or surpassing your surface quality requirements. This is why our Bar Peeling program is vast, comprising both standard tools and also special custom-made solutions to every customer needs.

This flyer has only a small portion of our possible range of production. Please don't hesitate to contact us regarding other possible geometries that we may have although not presented in this brochure.



| | | | | | | | | |
|----------|----------|----------|----------|-----------|-----------|-----------|---|-----------|
| L | N | G | F | 20 | 10 | 35 | - | MP |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 8 |

1 - Insert Shape

| | | | | |
|----------|----------|----------|----------|----------|
| | | | | |
| I | J | L | R | S |
| | | | | |
| T | U | W | X | |

2 - Clearance Angle

5 - Length of Cutting Edge (In)

The length of the secondary cutting edge is indicated in mm

| | |
|-------|-------|
| 13 mm | 25 mm |
| 14 mm | 27 mm |
| 15 mm | 28 mm |
| 17 mm | 38 mm |
| 20 mm | 44 mm |
| 22 mm | 50 mm |

3 - Tolerances

| symbol | m (mm) | d (mm) | s (mm) |
|-----------|-------------|-------------|--------|
| A | ±0.005 | ±0.025 | ±0.025 |
| F | ±0.005 | ±0.013 | ±0.025 |
| C | ±0.013 | ±0.025 | ±0.025 |
| H | ±0.013 | ±0.013 | ±0.025 |
| E | ±0.025 | ±0.025 | ±0.025 |
| G | ±0.025 | ±0.025 | ±0.13 |
| J | ±0.005 | ±0.05~±0.13 | ±0.025 |
| K* | ±0.013 | ±0.05~±0.13 | ±0.025 |
| L* | ±0.025 | ±0.05~±0.13 | ±0.025 |
| M* | ±0.08~±0.20 | ±0.05~±0.13 | ±0.13 |
| N* | ±0.08~±0.20 | ±0.05~±0.13 | ±0.025 |
| U* | ±0.13~±0.38 | ±0.08~0.25 | ±0.13 |

* As a rule, the sides of these inserts are as sintered. Tolerance differs with insert size, for the accuracy of Class M, refer to the table on the right.

4 - Insert type

| symbol | Type | Type of hole | Chipbreaker | Shape |
|----------|--------------|---|---------------------------|------------|
| W | with hole | Round hole / one countersink (40°~60°) | Without chipbreaker | |
| T | with hole | | Chipbreaker on one side | |
| Q | with hole | Round hole / one countersink (40°~60°) | Without chipbreaker | |
| U | with hole | | Chipbreaker on both sides | |
| B | with hole | Round hole / one countersink (70°~90°) | Without chipbreaker | |
| H | with hole | | Chipbreaker on one side | |
| C | with hole | Round hole / double countersink (70°~90°) | Without chipbreaker | |
| J | with hole | | Chipbreaker on both sides | |
| A | with hole | Round hole | Without chipbreaker | |
| M | with hole | | Chipbreaker on one side | |
| G | with hole | | Chipbreaker on both sides | |
| N | without hole | -- | Without chipbreaker | |
| R | without hole | -- | Chipbreaker on one side | |
| F | without hole | -- | Chipbreaker on both sides | |
| X | - | - | -- | On request |

6 - Thickness (S)

The length of the secondary cutting edge is indicated in mm

| |
|---------------|
| 08 = 8,00 mm |
| 09 = 9,52 mm |
| 10 = 10,00 mm |
| 12 = 12,00 mm |
| 12 = 12,70 mm |
| 13 = 13,00 mm |
| 14 = 14,00 mm |
| 18 = 18,00 mm |

8 - Chip Breaker

Chip breaker according to Palbit geometries

| | |
|----|----|
| FP | MH |
| ST | RP |
| MP | LH |








7 - Depth of Cut (ap)

Maximum depth of cut

| |
|--------------|
| 20 = 2,00 mm |
| 25 = 2,50 mm |
| 35 = 3,50 mm |
| 40 = 4,00 mm |
| 80 = 8,00 mm |

BAR PEELING INSERTS RANGE

NEGATIVE INSERTS | PASTILHAS NEGATIVAS | PLAQUITAS NEGATIVAS

| | ⁽¹⁾ Geometry code | ISO Reference | ANSI Reference | new grades | | | | | | | | | | | | Cutting conditions Condições de corte Condiciones de Corte | | | | | | | |
|--|------------------------------|--------------------|--------------------|------------|----|----|----|----|----|----|----|----|----|----|----|--|----|------------|------|-------|--------------|------|-------|
| | | | | P | | | | | | M | | | | | | K | | ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | | | L7 | R2 | L8 | R3 | N2 | S9 | L8 | U5 | N2 | V7 | P1 | V8 | L5 | L6 | | | | | | |
| INGR-MP  Rectangular 90° | 1123828 | INGR 221240-MP | INGR 221240-MP | △ | ⊗ | ○ | | | | | | ○ | | | | ○ | ○ | 2,00 | 0,40 | 4,00 | 3,50 | 1,00 | 8,00 |
| JNGF-MP  Rectangular 90° | 1123830 | JNGF 201220-MP | JNGF 201220-MP | ○ | △ | ⊗ | | | | | | △ | ⊗ | | | ○ | ○ | 1,50 | 1,00 | 2,00 | 3,50 | 1,50 | 6,00 |
| | 1123996 | JNGF 201220-MP SP1 | JNGF 201220-MP SP1 | ○ | ○ | | | | | | | ○ | | | | ○ | ○ | 1,50 | 1,00 | 2,00 | 3,50 | 1,50 | 6,00 |
| | 1123997 | JNGF 201220-MP SP2 | JNGF 201220-MP SP2 | △ | ⊗ | △ | ⊗ | | | | | △ | ⊗ | | | ○ | ○ | 1,50 | 1,00 | 2,00 | 3,50 | 1,50 | 6,00 |
| | 1124043 | JNGF 271220-MP | JNGF 271220-MP | ○ | ○ | | | | | | | △ | ⊗ | | | ○ | ○ | 1,50 | 1,00 | 2,00 | 3,50 | 1,50 | 6,00 |
| LNGF-MP  Rectangular 90° | 1123826 | LNGF 201035-MP | LNGF 201035-MP | △ | ⊗ | ○ | | | | | | ○ | | | | ○ | ○ | 2,00 | 0,80 | 3,50 | 2,50 | 1,00 | 6,50 |
| | 1123827 | LNGF 201235-MP | LNGF 201235-MP | △ | ⊗ | ○ | | | | | | ○ | | | | ○ | ○ | 2,00 | 0,80 | 3,50 | 2,50 | 1,00 | 6,50 |
| UNGF-MP  Rectangular 90° | 1123829 | UNGF 171240-MP | UNGF 171240-MP | ○ | △ | ⊗ | | | | | | △ | ⊗ | | | ○ | ○ | 1,50 | 0,35 | 4,00 | 2,00 | 1,00 | 5,00 |
| TNMJ-MP  Triangular 60° | 1123838 | TNMJ 201025-MP | TNMJ 201025-MP | ○ | △ | ⊗ | | | | | | △ | ⊗ | | | ○ | ○ | 1,00 | 0,70 | 2,50 | 3,00 | 1,00 | 5,50 |
| | 1123843 | TNMJ 201425-MP | TNMJ 201425-MP | ○ | △ | ⊗ | | | | | | △ | ⊗ | | | ○ | ○ | 1,00 | 0,70 | 2,50 | 3,00 | 1,00 | 5,50 |
| TNGM-MP  Triangular 60° | 1124104 | TNGM 220812-MP | TNGM 220812-MP | ○ | △ | ⊗ | | | | | | △ | ⊗ | ○ | | ○ | ○ | 0,70 | 0,20 | 1,30 | 14,00 | 5,00 | 18,00 |
| TNMM-LH  Triangular 60° | 1124102 | TNMM 441116-LH | TNMM 441116-LH | ○ | | | | △ | ⊗ | | | △ | ⊗ | | | ○ | ○ | 12,00 | 2,00 | 25,00 | 0,80 | 0,50 | 1,60 |

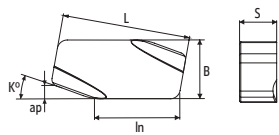
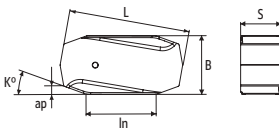
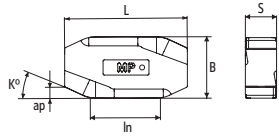
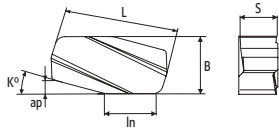
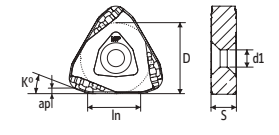
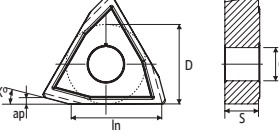
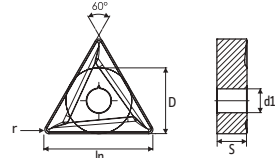
⊗ First choice | 1ª Escolha | 1ª Opción

△ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock

Insert Order Code: ⁽¹⁾ Geometry code + ⁽²⁾ Grade code

⊗ Stock items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

| Dimensions Dimensões Dimensions (mm) | | | | | | | | | Technical Drawing Desenho Técnico Diseño Técnico |
|---|-------|-------|-------|-------|-------|------|------|----|---|
| L | D | ln | B | S | d1 | r | ap | K° | |
| 38,25 | - | 22,00 | 17,50 | 12,00 | - | - | 4,00 | 20 |  |
| 36,90 | - | 20,00 | 18,00 | 12,35 | - | - | 2,00 | 20 |  |
| 36,30 | - | 20,00 | 18,00 | 12,45 | - | - | 2,00 | 20 | |
| 36,50 | - | 20,00 | 18,00 | 12,45 | - | - | 2,00 | 20 | |
| 36,90 | - | 27,00 | 18,00 | 12,45 | - | - | 2,00 | 20 | |
| 40,00 | - | 20,00 | 20,00 | 10,00 | - | - | 3,50 | 25 |  |
| 40,00 | - | 20,00 | 20,00 | 12,00 | - | - | 3,50 | 25 | |
| 36,50 | - | 17,00 | 18,00 | 12,00 | - | - | 4,00 | 15 |  |
| - | 28,60 | 20,00 | - | 10,00 | 7,00 | - | 2,50 | 20 |  |
| - | 28,60 | 20,00 | - | 14,00 | 7,00 | - | 2,50 | 20 | |
| - | 19,05 | 22,00 | - | 8,00 | 7,96 | - | 1,20 | 15 |  |
| - | 25,40 | 11,50 | - | 25,40 | 44,00 | 1,60 | - | - |  |

BAR PEELING INSERTS RANGE

NEGATIVE INSERTS | PASTILHAS NEGATIVAS | PLAQUITAS NEGATIVAS

| | (1) Geometry code | ISO Reference | ANSI Reference | new grades | | | | | | | | | | | | | | Cutting conditions Condições de corte Condiciones de Corte | | | | | |
|--|-------------------|----------------|----------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|------|---------|------|------|-----------|
| | | | | P | | | | | M | | | | | K | | | | | | | | | |
| | | | | (2) Grade code | | L7 | R2 | L8 | R3 | N2 | S9 | L8 | U5 | N2 | V7 | P1 | V8 | L5 | L6 | ap (mm) | Min | Max | fn (mm/r) |
| XNMJ-MP  Special 85° | 1123835 | XNMJ 151380-MP | XNMJ 151380-MP | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH5125 | PHS225 | PH5135 | PHS235 | PH5228 | PHS228 | PH5705 | PH5320 | 3,00 | 1,00 | 6,50 | 6,00 | 4,00 | 12,00 |
| XNMJ-MH  Special 85° | 1123836 | XNMJ 151380-MH | XNMJ 151380-MH | | | | | | | | | | | | | | | 3,00 | 1,00 | 6,50 | 6,00 | 4,00 | 12,00 |
| XNGF-FP  Special 85° | 1123837 | XNGF 150980-FP | XNGF 150980-FP | | | | | | | | | | | | | | | 3,00 | 1,00 | 4,50 | 6,00 | 4,00 | 12,00 |
| XNGJ-RP  Special 85° | 1123834 | XNGJ 151380-RP | XNGJ 151380-RP | | | | | | | | | | | | | | | 3,00 | 1,00 | 6,50 | 6,00 | 4,00 | 12,00 |
| WNGJ-MP  Special 75° | 1124041 | WNGJ 130950-MP | WNGJ 130950-MP | | | | | | | | | | | | | | | 3,00 | 0,50 | 5,00 | 6,00 | 3,00 | 11,00 |
| RNMX-MP  Round R° | 1123831 | RNMX 381200-MP | RNMX 381200-MP | | | | | | | | | | | | | | | 4,00 | 2,00 | 8,00 | 2,00 | 1,00 | 4,00 |
| | 1123832 | RNMX 5018M0-MP | RNMX 5018M0-MP | | | | | | | | | | | | | | | 6,00 | 2,00 | 12,00 | 3,50 | 2,50 | 6,50 |
| RNMX-RP  Round R° | 1123833 | RNMX 5018M0-RP | RNMX 5018M0-RP | | | | | | | | | | | | | | | 6,00 | 2,00 | 12,00 | 6,00 | 4,00 | 10,50 |
| RNMG-ST  Round R° | 1120443 | RNMG 250900-ST | RNMG 860-ST | | | | | | | | | | | | | | | 5,00 | 2,50 | 10,00 | 1,00 | 0,25 | 2,50 |

⊕ First choice | 1ª Escolha | 1ª Opción

⊕ Stock available until sold out | Stock disponível até acabar el stock | Stock disponible hasta acabar el stock

Insert Order Code: (1) Geometry code + (2) Grade code

⊖ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

| Dimensions Dimensões Dimensions (mm) | | | | | | | | | Technical Drawing Desenho Técnico Diseño Técnico |
|---|-------|-------|---|-------|-------|---|------|-------|--|
| L | D | ln | B | S | d1 | r | ap | K° | |
| - | 31,75 | 15,00 | - | 13,00 | 9,00 | - | 8,00 | 25 | |
| - | 31,75 | 15,00 | - | 13,00 | 9,00 | - | 8,00 | 25 | |
| - | 28,58 | 15,00 | - | 8,88 | - | - | 8,00 | 30,00 | |
| - | 31,75 | 15,00 | - | 13,00 | 9,00 | - | 8,00 | 25 | |
| - | 22,23 | 13,00 | - | 9,56 | 7,93 | - | 5,00 | 15 | |
| - | 38,10 | - | - | 12,70 | 13,00 | - | - | - | |
| - | 50,00 | - | - | 18,00 | 12,70 | - | - | - | |
| - | 50,00 | - | - | 18,00 | 12,70 | - | - | - | |
| - | 25,40 | - | - | 9,52 | 9,12 | - | - | - | |



RAILWAY

RAILWAY

Palbit is constantly investing in new technologies, research and development of cutting tools for the railway industry.

We supply a complete range of tooling solutions based on a wide experience and know-how to achieve high efficiency machining on new rails and weels as well as re-profiling, crossing rails, joints and more.

FACE TURNING

Inserts with MT-CVD coating grade and high wear resistance for the machining of forged steels providing longer tool file.

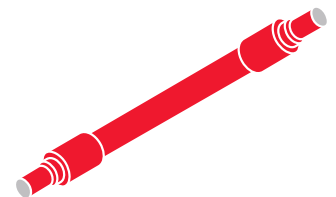


WHEEL TURNING

Inserts with special design geometry for wheel re-profiling providing productivity through a better chip evacuation. High built-up edge resistance and wear providing efficiency and increasing tool life.

EXTERNAL TURNING

MT-CVD coating inserts with high wear resistance for turning long axle shafts.





ISO RAILWAY INSERTS CODE KEY

| | | | |
|---|--|---|---------|
| H | | M | |
| O | | V | |
| P | | W | |
| S | | L | |
| T | | A | |
| C | | B | |
| D | | K | |
| E | | R | |
| F | | X | Special |

1- Insert shape symbol

| Symbol | m (mm) | d (mm) | s (mm) |
|--------|-------------|-------------|--------|
| A | ±0.005 | ±0.025 | ±0.025 |
| F | ±0.005 | ±0.013 | ±0.025 |
| C | ±0.013 | ±0.025 | ±0.025 |
| H | ±0.013 | ±0.013 | ±0.025 |
| E | ±0.025 | ±0.025 | ±0.025 |
| G | ±0.025 | ±0.025 | ±0.13 |
| J | ±0.005 | ±0.05~±0.13 | ±0.025 |
| K* | ±0.013 | ±0.05~±0.13 | ±0.025 |
| L* | ±0.025 | ±0.05~±0.13 | ±0.025 |
| M* | ±0.08~±0.20 | ±0.05~±0.13 | ±0.13 |
| N* | ±0.08~±0.20 | ±0.05~±0.13 | ±0.025 |
| U* | ±0.13~±0.38 | ±0.08~±0.25 | ±0.13 |

*As a rule, the sides of these inserts are as sintered. Tolerance differs with insert size, for the accuracy of class M, refer to the table on the right.

Triangular inserts with a facet (secondary cutting edge)

| Detailed dimension of M class insert Insert height Tolerances (mm) | | | | | |
|---|-------|-------|-------|-------|-------|
| Inscribed circle | T | S | C | D | V |
| 6.35 | ±0.08 | - | - | - | - |
| 9.525 | ±0.08 | ±0.08 | ±0.11 | ±0.10 | ±0.13 |
| 12.70 | ±0.13 | ±0.13 | ±0.13 | ±0.15 | - |
| 15.875 | ±0.15 | ±0.15 | ±0.15 | ±0.18 | - |
| 19.05 | ±0.15 | ±0.15 | ±0.15 | ±0.18 | - |
| 25.40 | - | ±0.18 | - | - | - |
| 31.75 | - | ±0.25 | - | - | - |

| Inscribed circle Tolerances (mm) | | | | | |
|----------------------------------|-------|-------|-------|-------|-------|
| Inscribed circle | T | S | C | D | V |
| 6.35 | ±0.05 | - | - | - | - |
| 9.525 | ±0.05 | ±0.05 | ±0.05 | ±0.05 | ±0.05 |
| 12.70 | ±0.08 | ±0.08 | ±0.08 | ±0.08 | ±0.08 |
| 15.875 | ±0.10 | ±0.10 | ±0.10 | ±0.10 | ±0.10 |
| 19.05 | - | - | - | - | ±0.10 |
| 25.40 | - | ±0.13 | - | - | ±0.10 |
| 31.75 | - | ±0.20 | - | - | ±0.12 |

3 - Tolerances symbol

| A | B | C | D | E |
|---|---|---|---|-----------------------|
| | | | | |
| F | G | N | P | O |
| | | | | Other clearance angle |

2 - Normal clearance symbol



| 4 - Insert symbol | | | | | | | | | | | | | | |
|-------------------|-----------|---|---------------------------|-------|--------|-----------|---|---------------------------|-------|--------|---------------------------|-------------------------|---------------------------|------------|
| symbol | Type | Hole type | Chipbreaker | Shape | symbol | Type | Hole type | Chipbreaker | Shape | symbol | Type | Hole type | Chipbreaker | Shape |
| W | with hole | Round hole / one countersink (40°-60°) | Without chipbreaker | | H | with hole | Round hole / one countersink (70°-90°) | Chipbreaker on one side | | G | with hole | Round hole | Chipbreaker on both sides | |
| T | | | Chipbreaker on one side | | C | | Round hole / double countersink (70°-90°) | Without chipbreaker | | N | | - | Without chipbreaker | |
| Q | | Round hole / double countersink (40°-60°) | Without chipbreaker | | J | | | Chipbreaker on both sides | | R | - | Chipbreaker on one side | | |
| U | | | Chipbreaker on both sides | | A | | Without chipbreaker | | F | - | Chipbreaker on both sides | | | |
| B | | Round hole / one countersink (70°-90°) | Without chipbreaker | | M | | Round hole | Chipbreaker on one side | | X | - | - | - | On request |

Sistema de codificação ISO de pastilhas para a indústria ferroviária

Codificación ISO de plaquitas para ferrocarril

| R's | 35° V's | 55° D's | 80° C's | 90° S's | 60° T's | 80° W's | Ø CI | | ANSI |
|------|------------|------------|------------|------------|------------|------------|--------|-------|--------|
| | | | | | | | mm | inch | Symbol |
| - | 06 | 04 | - | 03 | 06 | 02 | 3,97 | 5/32 | 1,20 |
| - | 08 | 05 | 04 | 04 | 08 | L3 | 4,76 | 3/16 | 1,50 |
| - | 09 | 06 | 05 | 05 | 09 | 03 | 5,56 | 7/32 | 1,80 |
| 06** | - | - | - | - | - | - | 6,00 | 0,236 | |
| 06* | 11 | 07 | 06 | 06 | 11 | 04 | 6,35 | 1/4 | 2,00 |
| 07* | 13 | 09 | 08 | 07 | 13 | 05 | 7,94 | 5/16 | 2,50 |
| 08* | - | - | - | - | - | - | 8,00 | 0,315 | |
| 09* | 16 | 11 | 09 | 09 | 16 | 06 | 9,525 | 3/8 | 3,00 |
| 10** | - | - | - | - | - | - | 10,00 | 0,394 | |
| 12** | - | - | - | - | - | - | 12,00 | 0,472 | |
| 12* | 22 | 15 | 12 | 12 | 22 | 08 | 12,70 | 1/2 | 4,00 |
| 15* | 27 | 19 | 16 | 15 | 27 | 10 | 15,875 | 5/8 | 5,00 |
| 16** | - | - | - | - | - | - | 16,00 | 0,63 | |
| 19* | 33 | 23 | 19 | 19 | 33 | 13 | 19,05 | 3/4 | 6,00 |
| 20** | - | - | - | - | - | - | 20,00 | 0,787 | |
| 25** | - | - | - | - | - | - | 25,00 | 0,984 | |
| 25* | 44 | 31 | 25 | 25 | 44 | 17 | 25,40 | 1,00 | 8,00 |
| 31* | 54 | 38 | 32 | 31 | 54 | 21 | 31,75 | 1 1/4 | 10,00 |
| 32** | - | - | - | - | - | - | 32,00 | 1,26 | |

5 - Insert size symbol

* ANSI designation only (Radius Designation is 00)

** Metric designation only (Radius Designation is M0)

According to International Standard ISO 1832 - 2012(E)

"Indexable inserts for cutting tools - Designation"

| ISO | mm | ANSI | inch |
|-----|-------|------|-------|
| 01 | 1.59 | 1 | 0.062 |
| T1 | 1.98 | 1.2 | 0.078 |
| 02 | 2.38 | 1.5 | 0.094 |
| 03 | 3.18 | 2 | 0.125 |
| T3 | 3.97 | 2.5 | 0.156 |
| 04 | 4.76 | 3 | 0.188 |
| 05 | 5.56 | 3.5 | 0.219 |
| 06 | 6.35 | 4 | 0.250 |
| 07 | 7.94 | 5 | 0.312 |
| 09 | 9.52 | 6 | 0.375 |
| 12 | 12.70 | 8 | 0.500 |

6 - Insert thickness symbol



| 10 - Chipbreaker geometries | | | | | |
|-----------------------------|----|----|-----|-----|-----|
| | HY | HZ | RMM | RRM | RHR |
| NEGATIVE Chipbreakers | | | | | |
| POSITIVE Chipbreakers | RM | RR | ST | | |

| | |
|----------------------|------------|
| T | Tangential |
| *only when required. | |

| 7 - Insert corner symbol | | | |
|--------------------------|--------------|------|------|
| ISO | mm | inch | ANSI |
| 00 | Sharp nose | | 0 |
| 01 | 0.10 | .004 | 0.2 |
| 02 | 0.20 | .008 | 0.5 |
| 04 | 0.40 | .015 | 1 |
| 08 | 0.80 | .032 | 2 |
| 12 | 1.2 | .047 | 3 |
| 16 | 1.6 | .062 | 4 |
| 20 | 2.0 | .078 | 5 |
| 24 | 2.4 | .094 | 6 |
| 28 | 2.8 | .109 | 7 |
| 32 | 3.2 | .125 | 8 |
| 00 (inch or M0/metric) | Round insert | | 0 |



| 7.1* - Insert edges symbol | | | |
|---|---------|---|---------|
| For inserts having secondary edges two digits are used: | | | |
| 1 st digit is secondary edge | | 2 nd digit is secondary edges relief angle | |
| A | 45° | A | 3° |
| D | 60° | B | 5° |
| E | 75° | C | 7° |
| F | 85° | D | 15° |
| P | 90° | E | 20° |
| Z | special | F | 25° |
| *only when required. | | G | 30° |
| | | N | 0° |
| | | P | 11° |
| | | Z | special |

| 8* - Cutting edge information | | |
|-------------------------------|-----------------------|--------|
| Shape | Honing | Symbol |
| | No honing | F |
| | With honing | E |
| | Chamfered No honing | T |
| | Chamfered with honing | S |
| *only when required. | | |

| 9* - Cutting direction | | |
|------------------------|-------|--------|
| Shape | Hand | Symbol |
| | Right | R |
| | Left | L |
| | None | N |
| *only when required. | | |

CN = RHOMBIC 80° NEGATIVE



RÔMBICA 80° NEGATIVA | RÓMBICA 80° NEGATIVA

| | | | P | | | | | | | | M | | | | | | K | | | N | S | | | | | |
|---|-------------------------|----------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|-----|----|
| Inserts Pastilhas Plaquetas | (1) Geometry code | ISO Reference | CVD-MT | | | | | | | | PVD | | CVD-MT | | | | | | PVD | | CVD-MT | | | UNC | PVD | |
| | | | new grades | | | | | | | | | | new grades | | | | | | | | | | | | | |
| | | | (2) Grade code | L6 | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | L7 | U4 | L8 | U5 | L9 | V6 | G1 | G4 | L5 | L6 | L9 | 10 | G1 |
| PH5320 | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PH5115 | PHS215 | PH5125 | PHS225 | PH5740 | PHS240 | PH7910 | PH7920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PH7920 | | | |
|  CNMM-HY Heavy to Roughing | 1121608 | CNMM 190612-HY | | | ⊕ | ⊗ | ⊕ | ⊗ | | | | ⊕ | | ⊕ | | ⊕ | ⊗ | | | | | | | | | |
| | 1121252 | CNMM 190616-HY | | | ⊕ | ⊗ | ⊕ | ⊗ | | | | ⊕ | | ⊕ | | ⊕ | ⊗ | | | | | | | | | |
| | 1121434 | CNMM 190624-HY | | | ⊕ | ⊗ | ⊕ | ⊗ | | | | ⊕ | | ⊕ | | ⊕ | ⊗ | | | | | | | | | |
| 1121248 | CNMM 250924-HY | | | ⊕ | ⊗ | ⊕ | ⊗ | | | | ⊕ | | ⊕ | | ⊕ | ⊗ | | | | | | | | | | |
|  CNMM-HZ Heavy to Roughing | 1121607 | CNMM 190612-HZ | | | ⊕ | ⊗ | ⊕ | ⊗ | ⊗ | | | | | | | | | | | | ⊗ | ⊗ | | | | |
| | 1121251 | CNMM 190616-HZ | | | ⊕ | ⊗ | ⊕ | ⊗ | | | | | | | | | | | | | | ⊗ | ⊗ | | | |
| | 1121435 | CNMM 190624-HZ | | | ⊕ | ⊗ | ⊕ | ⊗ | | | | | | | | | | | | | | ⊗ | ⊗ | | | |
| | 1121247 | CNMM 250924-HZ | | | ⊕ | ⊗ | ⊕ | ⊗ | | | | | | | | | | | | | | ⊗ | ⊗ | | | |

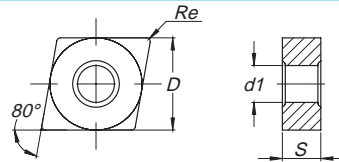
⊗ First choice | 1ª Escolha | 1ª Opción
 ⊕ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock
 Insert Order Code: ⁽¹⁾ Geometry code + ⁽²⁾ Grade code
⊗ Stock Items | Itens de stock
 ○ Available under request | Disponível sob consulta | Disponible bajo consulta

SN = SQUARE 90° NEGATIVE

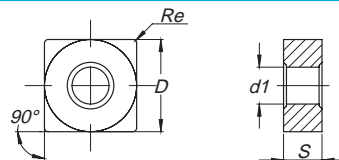
QUADRADA 90° NEGATIVA | ESQUADRA 90° NEGATIVA

| | | | P | | | | | | | | M | | | | | | K | | | N | S | | | | | |
|---|-------------------------|----------------|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|-----|----|
| Inserts Pastilhas Plaquetas | (1) Geometry code | ISO Reference | CVD-MT | | | | | | | | PVD | | CVD-MT | | | | | | PVD | | CVD-MT | | | UNC | PVD | |
| | | | new grades | | | | | | | | | | new grades | | | | | | | | | | | | | |
| | | | (2) Grade code | L6 | T6 | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | L7 | U4 | L8 | U5 | L9 | V6 | G1 | G4 | L5 | L6 | L9 | 10 | G1 |
| PH5320 | PHG105 | PH5115 | PHG115 | PH5125 | PHG125 | PH5740 | PHG140 | PH7910 | PH7920 | PH5115 | PHS215 | PH5125 | PHS225 | PH5740 | PHS240 | PH7910 | PH7920 | PH5705 | PH5320 | PH5740 | PH0910 | PH7910 | PH7920 | | | |
|  SNMM-HY Heavy to Roughing | 1121606 | SNMM 190612-HY | | | ⊕ | ⊗ | ⊕ | ⊗ | ⊗ | | | | ⊕ | | ⊕ | | ⊕ | ⊗ | | | | | | | | |
| | 1121250 | SNMM 190616-HY | | | ⊕ | ⊗ | ⊕ | ⊗ | | | | | ⊕ | | ⊕ | | ⊕ | ⊗ | | | | | | | | |
| | 1121452 | SNMM 190624-HY | | | ⊕ | ⊗ | ⊕ | ⊗ | | | | | ⊕ | | ⊕ | | ⊕ | ⊗ | | | | | | | | |
| 1121160 | SNMM 250724-HY | | | ⊕ | ⊗ | ⊕ | ⊗ | | | | | ⊕ | | ⊕ | | ⊕ | ⊗ | | | | | | | | | |
| 1121161 | SNMM 250924-HY | | | ⊕ | ⊗ | ⊕ | ⊗ | | | | | ⊕ | | ⊕ | | ⊕ | ⊗ | | | | | | | | | |
|  SNMM-HZ Heavy to Roughing | 1121605 | SNMM 190612-HZ | | | ⊕ | ⊗ | ⊕ | ⊗ | ⊗ | | | | | | | | | | | | ⊗ | ⊗ | | | | |
| | 1121249 | SNMM 190616-HZ | | | ⊕ | ⊗ | ⊕ | ⊗ | | | | | | | | | | | | | | ⊗ | ⊗ | | | |
| | 1121440 | SNMM 190624-HZ | | | ⊕ | ⊗ | ⊕ | ⊗ | | | | | | | | | | | | | | ⊗ | ⊗ | | | |
| | 1121158 | SNMM 250724-HZ | | | ⊕ | ⊗ | ⊕ | ⊗ | | | | | | | | | | | | | | ⊗ | ⊗ | | | |
| | 1123786 | SNMM 250732-HZ | | | | | ⊕ | ⊗ | | | | | | | | | | | | | | ⊗ | ⊗ | | | |
| 1121159 | SNMM 250924-HZ | | | ⊕ | ⊗ | ⊕ | ⊗ | | | | | | | | | | | | | | ⊗ | ⊗ | | | | |

⊗ First choice | 1ª Escolha | 1ª Opción
 ⊕ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock
 Insert Order Code: ⁽¹⁾ Geometry code + ⁽²⁾ Grade code
⊗ Stock Items | Itens de stock
 ○ Available under request | Disponível sob consulta | Disponible bajo consulta






| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|----------------|---|------|------|------|--|------|-------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| CNMM 190612-HY | CNMM 643-HY | 19,050 | 6,35 | 1,20 | 7,94 | 6,00 | 2,00 | 12,00 | 0,50 | 0,35 | 0,80 |
| CNMM 190616-HY | CNMM 644-HY | 19,050 | 6,35 | 1,60 | 7,94 | 6,00 | 2,00 | 12,00 | 0,60 | 0,35 | 1,00 |
| CNMM 190624-HY | CNMM 646-HY | 19,050 | 6,35 | 2,40 | 7,94 | 6,00 | 2,00 | 12,00 | 0,60 | 0,35 | 1,20 |
| CNMM 250924-HY | CNMM 866-HY | 25,400 | 9,52 | 2,40 | 9,12 | 8,00 | 2,50 | 15,00 | 0,70 | 0,40 | 1,40 |
| CNMM 190612-HZ | CNMM 643-HZ | 19,050 | 6,35 | 1,20 | 7,94 | 10,00 | 2,40 | 12,00 | 0,65 | 0,50 | 0,80 |
| CNMM 190616-HZ | CNMM 644-HZ | 19,050 | 6,35 | 1,60 | 7,94 | 10,00 | 2,40 | 12,00 | 0,80 | 0,50 | 1,10 |
| CNMM 190624-HZ | CNMM 646-HZ | 19,050 | 6,35 | 2,40 | 7,94 | 10,00 | 3,20 | 12,00 | 1,00 | 0,60 | 1,60 |
| CNMM 250924-HZ | CNMM 866-HZ | 25,400 | 9,52 | 2,40 | 9,12 | 10,00 | 3,20 | 17,00 | 1,00 | 0,60 | 1,60 |



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|----------------|---|------|------|------|--|------|-------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| SNMM 190612-HY | SNMM 643-HY | 19,050 | 6,35 | 1,20 | 7,94 | 6,00 | 2,00 | 12,00 | 0,60 | 0,35 | 0,90 |
| SNMM 190616-HY | SNMM 644-HY | 19,050 | 6,35 | 1,60 | 7,94 | 6,00 | 2,00 | 12,00 | 0,60 | 0,35 | 1,20 |
| SNMM 190624-HY | SNMM 646-HY | 19,050 | 6,35 | 2,40 | 7,94 | 6,00 | 2,00 | 12,00 | 1,00 | 0,60 | 1,60 |
| SNMM 250724-HY | SNMM 856-HY | 25,400 | 7,94 | 2,40 | 9,12 | 8,50 | 2,50 | 15,00 | 1,00 | 0,60 | 1,60 |
| SNMM 250924-HY | SNMM 866-HY | 25,400 | 9,52 | 2,40 | 9,12 | 8,50 | 3,00 | 15,00 | 1,00 | 0,60 | 1,60 |
| SNMM 190612-HZ | SNMM 643-HZ | 19,050 | 6,35 | 1,20 | 7,94 | 10,00 | 2,40 | 13,00 | 0,60 | 0,35 | 0,90 |
| SNMM 190616-HZ | SNMM 644-HZ | 19,050 | 6,35 | 1,60 | 7,94 | 10,00 | 2,40 | 13,00 | 0,60 | 0,35 | 1,20 |
| SNMM 190624-HZ | SNMM 646-HZ | 19,050 | 6,35 | 2,40 | 7,94 | 10,00 | 3,20 | 13,00 | 1,00 | 0,60 | 1,60 |
| SNMM 250724-HZ | SNMM 856-HZ | 25,400 | 7,94 | 2,40 | 9,12 | 10,00 | 3,20 | 17,00 | 1,00 | 0,60 | 1,60 |
| SNMM 250732-HZ | SNMM 858-HZ | 25,400 | 7,94 | 3,20 | 9,12 | 10,00 | 3,20 | 17,00 | 1,20 | 0,80 | 1,80 |
| SNMM 250924-HZ | SNMM 866-HZ | 25,400 | 9,52 | 2,40 | 9,12 | 10,00 | 3,20 | 17,00 | 1,00 | 0,60 | 1,60 |

LINUX = RECTANGULAR 90° NEGATIVE

RECTANGULAR 90° NEGATIVA | RETANGULAR 90° NEGATIVA

| Inserts Pastilhas Plaquetas | (1) Geometry code | new grades (2) Grade code ISO Reference | P | | | | | | M | | | | | | K | | | | | | |
|---|-------------------------|---|--------|----|----|----|----|----|-----|----|--------|----|----|----|----|----|-----|----|-----|--------|----|
| | | | CVD-MT | | | | | | PVD | | CVD-MT | | | | | | PVD | | UNC | CVD-MT | |
| | | | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | L7 | U4 | L8 | U5 | L9 | V6 | G1 | G4 | 25 | L5 | L6 |
| LNXX-RMM  Medium | 1123640 | LNXX 321248-RMM | △ | ⊗ | △ | ⊗ | | | | | | | | | | | | | | | |
| LNXX-RRM  Roughing | 1123639 | LNXX 321248-RRM | △ | ⊗ | | ○ | | ○ | | | | | | | | | | | | | ○ |
| LNXX-RHR  Heavy Roughing | 1123643 | LNXX 321248-RHR | △ | ⊗ | | ○ | | | | | | | | | | | | | | | |

⊗ First choice | 1ª Escolha | 1ª Opción

△ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock




Insert Order Code: (1) Geometry code + (2) Grade code

⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

LINUX-T = TANGENTIAL 90° NEGATIVE

TANGENCIAL 90° NEGATIVA | TANGENCIAL 90° NEGATIVA

| Inserts Pastilhas Plaquetas | (1) Geometry code | new grades (2) Grade code ISO Reference | P | | | | | | M | | | | | | K | | | | | | |
|---|-------------------------|---|--------|----|----|----|----|----|-----|----|--------|----|----|----|----|----|-----|----|-----|--------|----|
| | | | CVD-MT | | | | | | PVD | | CVD-MT | | | | | | PVD | | UNC | CVD-MT | |
| | | | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | L7 | U4 | L8 | U5 | L9 | V6 | G1 | G4 | 25 | L5 | L6 |
| LNXX-RMM-T  Medium | 1121953 | LNXX 191940-RMM-T | △ | ⊗ | △ | ⊗ | | | | | | | | | | | | | | | |
| | 1122005 | LNXX 301940-RMM-T | △ | ⊗ | △ | ⊗ | | | | | | | | | | | | | | | |
| LNXX-RRM-T  Roughing | 1120404 | LNXX 191940-RRM-T | △ | ⊗ | △ | ⊗ | | | | | | | | | | | | | | | |
| | 1123985 | LNXX 301940-RRM-T | △ | ⊗ | △ | ⊗ | | | | | | | | | | | | | | | |
| LNXX-RHR-T  Heavy Roughing | 1191628 | LNXX 191940-RHR-T | △ | ⊗ | △ | ⊗ | | | | | | | | | | | | | | | |
| | 1191969 | LNXX 301940-RHR-T | △ | ⊗ | △ | ⊗ | | | | | | | | | | | | | | | |

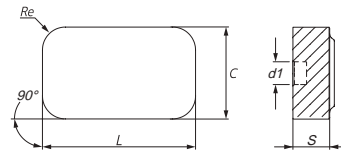
⊗ First choice | 1ª Escolha | 1ª Opción

△ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock

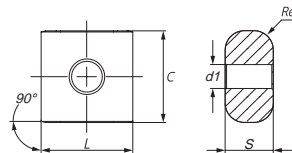
Insert Order Code: (1) Geometry code + (2) Grade code

⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta




| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|-----------------|-----------------|---|-------|------|------|------|--|------|-------|-------------|------|------|
| | | L | C | Re | S | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| LNUX 321248-RMM | LNUX 321248-RMM | 31,75 | 19,05 | 4,76 | 12,7 | 7,87 | 3,00 | 1,50 | 18,00 | 0,80 | 0,30 | 1,50 |
| LNUX 321248-RRM | LNUX 321248-RRM | 31,75 | 19,05 | 4,76 | 12,7 | 7,87 | 3,00 | 1,50 | 18,00 | 1,00 | 0,80 | 1,50 |
| LNUX 321248-RHR | LNUX 321248-RHR | 31,75 | 19,05 | 4,76 | 12,7 | 7,87 | 3,00 | 1,50 | 18,00 | 1,20 | 0,50 | 1,80 |



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|-------------------|-------------------|---|-------|------|-------|------|--|------|-------|-------------|------|------|
| | | L | C | Re | S | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| LNUX 191940-RMM-T | LNUX 191940-RMM-T | 19,05 | 19,05 | 4,00 | 10,00 | 6,35 | 2,50 | 1,60 | 8,00 | 0,80 | 0,30 | 1,50 |
| LNUX 301940-RMM-T | LNUX 301940-RMM-T | 30,00 | 19,05 | 4,00 | 12,00 | 6,35 | 3,00 | 1,60 | 12,00 | 0,80 | 0,30 | 1,50 |
| LNUX 191940-RRM-T | LNUX 191940-RRM-T | 19,05 | 19,05 | 4,00 | 10,00 | 6,35 | 5,50 | 2,50 | 10,00 | 1,00 | 0,80 | 1,50 |
| LNUX 301940-RRM-T | LNUX 301940-RRM-T | 30,00 | 19,05 | 4,00 | 12,00 | 6,35 | 4,50 | 2,50 | 13,00 | 1,00 | 0,50 | 2,00 |
| LNUX 191940-RHR-T | LNUX 191940-RHR-T | 19,05 | 19,05 | 4,00 | 10,00 | 6,35 | 5,50 | 2,50 | 10,00 | 1,20 | 0,50 | 1,80 |
| LNUX 301940-RHR-T | LNUX 301940-RHR-T | 30,00 | 19,05 | 4,00 | 12,00 | 6,35 | 6,50 | 3,00 | 15,00 | 1,20 | 0,50 | 1,80 |

RC = ROUND R° POSITIVE




REDONDA R° POSITIVA | REDONDA R° POSITIVA

| Inserts Pastilhas Plaquetas | (1) Geometry code | ISO Reference | P | | | | | | | | M | | | | | | K | | | N | | S | | | | | |
|---|-------------------------|----------------|----------------|----|----|----|----|----|----|----|-----|----|--------|----|----|----|----|----|-----|----|-----|--------|----|-----|-----|----|--|
| | | | CVD-MT | | | | | | | | PVD | | CVD-MT | | | | | | PVD | | UNC | CVD-MT | | UNC | PVD | | |
| | | | (2) Grade code | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | L7 | U4 | L8 | U5 | L9 | V6 | G1 | G4 | 25 | L5 | L6 | L9 | 10 | G1 | G4 | |
| RCMR-RR | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | 1122009 | RCMR 2507M0-RR | ⊕ | | ⊕ | | | | | | | | | | | | | | | | | | | | | | |
| | 1122008 | RCMR 3209M0-RR | ⊕ | | ⊕ | | | | | | | | | | | | | | | | | | | | | | |
| Roughing to Medium | | | | | | | | | | | | | | | | | | | | | | | | | | | |

⊕ First choice | 1ª Escolha | 1ª Opción ⊕ Stock available until sold out | Stock disponible até acabar o stock | Stock disponible hasta acabar el stock Insert Order Code: ⁽¹⁾Geometry code + ⁽²⁾Grade code
⊗ Stock Items | Itens de stock ○ Available under request | Disponível sob consulta | Disponible bajo consulta

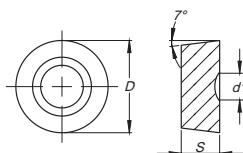
RC = ROUND R° POSITIVE

REDONDA R° POSITIVA | REDONDA R° POSITIVA

| Inserts Pastilhas Plaquetas | (1) Geometry code | ISO Reference | P | | | | | | | | M | | | | | | K | | | N | | S | | | | | |
|---|-------------------------|----------------|----------------|----|----|----|----|----|----|----|-----|----|--------|----|----|----|----|----|-----|----|-----|--------|----|-----|-----|----|--|
| | | | CVD-MT | | | | | | | | PVD | | CVD-MT | | | | | | PVD | | UNC | CVD-MT | | UNC | PVD | | |
| | | | (2) Grade code | L7 | R2 | L8 | R3 | L9 | V5 | G1 | G4 | L7 | U4 | L8 | U5 | L9 | V6 | G1 | G4 | 25 | L5 | L6 | L9 | 10 | G1 | G4 | |
| RCMX-ST | 1121428 | RCMX 2006M0-ST | | ⊕ | ⊕ | ⊕ | | | | | | | | | | | | | | | | | | | | | |
|  | 1121429 | RCMX 2507M0-ST | ⊕ | ⊕ | ⊕ | ⊕ | | | | | | | | | | | | | | | | | | | | | |
| | 1123910 | RCMX 3009M0-ST | | ⊕ | | ⊕ | | | | | | | | | | | | | | | | | | | | | |
| Roughing to Medium | 1121430 | RCMX 3209M0-ST | ⊕ | | ⊕ | ⊕ | | | | | | | | | | | | | | | | | | | | | |
| RCMX-RM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | 1123678 | RCMX 3209M0-RM | ⊕ | ⊕ | ⊕ | ⊕ | | | | ⊕ | | ⊕ | | | | | | | | | | | | | | | |
| Roughing to Medium | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RCMX-RR | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | 1123667 | RCMX 2507M0-RR | ⊕ | ⊕ | ⊕ | ⊕ | | | | ⊕ | | ⊕ | | | | | | | | | | | | | | | |
| | 1123666 | RCMX 3209M0-RR | ⊕ | ⊕ | ⊕ | ⊕ | | ⊕ | | ⊕ | | ⊕ | | | | | | | | | | | | | | | |
| Roughing to Medium | | | | | | | | | | | | | | | | | | | | | | | | | | | |

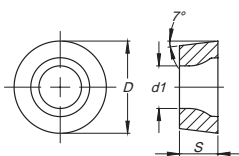
⊕ First choice | 1ª Escolha | 1ª Opción ⊕ Stock available until sold out | Stock disponible até acabar o stock | Stock disponible hasta acabar el stock Insert Order Code: ⁽¹⁾Geometry code + ⁽²⁾Grade code
⊗ Stock Items | Itens de stock ○ Available under request | Disponível sob consulta | Disponible bajo consulta

RELIEF ANGLE 7°



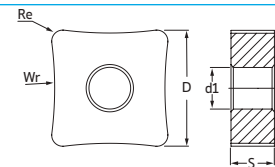
| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|----------------|---|------|----|-------|--|------|-------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| RCMR 2507M0-RR | RCMR 2507M0-RR | 25,00 | 7,94 | - | 9,00 | 5,00 | 3,20 | 8,00 | 1,80 | 0,80 | 2,50 |
| RCMR 3209M0-RR | RCMR 3209M0-RR | 32,00 | 9,52 | - | 12,00 | 6,50 | 3,20 | 13,00 | 1,80 | 0,80 | 2,50 |


RELIEF ANGLE 7°



| ISO Reference | ANSI Reference | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | Cutting Conditions Condições de Corte Condiciones de Corte | | | | | |
|----------------|----------------|---|------|----|-------|--|------|-------|-------------|------|------|
| | | D | S | Re | d1 | ap (mm) | Min | Max | fn (mm/rev) | Min | Max |
| RCMX 2006M0-ST | RCMX 2006M0-ST | 20,00 | 6,35 | - | 6,50 | 5,00 | 2,00 | 8,00 | 0,63 | 0,20 | 2,00 |
| RCMX 2507M0-ST | RCMX 2507M0-ST | 25,00 | 7,94 | - | 7,20 | 6,30 | 2,50 | 10,00 | 0,79 | 0,25 | 2,50 |
| RCMX 3009M0-ST | RCMX 3009M0-ST | 30,00 | 9,55 | - | 10,00 | 7,00 | 3,00 | 11,00 | 0,85 | 0,30 | 2,80 |
| RCMX 3209M0-ST | RCMX 3209M0-ST | 32,00 | 9,52 | - | 9,50 | 8,00 | 3,20 | 12,80 | 1,01 | 0,32 | 3,20 |
| RCMX 3209M0-RM | RCMX 3209M0-RM | 32,00 | 9,52 | - | 9,50 | 6,50 | 3,20 | 13,00 | 1,80 | 0,80 | 2,50 |
| RCMX 2507M0-RR | RCMX 2507M0-RR | 25,00 | 7,94 | - | 7,20 | 5,00 | 3,20 | 8,00 | 1,80 | 0,80 | 2,50 |
| RCMX 3209M0-RR | RCMX 3209M0-RR | 32,00 | 9,52 | - | 9,50 | 6,50 | 3,20 | 13,00 | 1,80 | 0,80 | 2,50 |

SCARFING = SNMA



| Inserts Pastilhas Plaquitas | (1) Geometry code | ISO Reference | ANSI Reference | P | M | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | | Tube Diameter (mm) |
|---|-------------------------|------------------|-------------------|-----|-----|---|------|-----|------|-----|--------------------------|
| | | | | CVD | CVD | D | S | Re | d1 | Wr | |
| | | | | L8 | L8 | | | | | | |
| (2) Grade code | | PH5125 | PH5125 | | | | | | | | |
| | 1123927 | SNMA 150612-R020 | SNMA 543-R020 | ○ | ○ | 15,88 | 6,35 | 1,2 | 6,35 | 20 | 23-29 |
| | 1123928 | SNMA 150612-R022 | SNMA 543-R022 | ○ | ○ | 15,88 | 6,35 | 1,2 | 6,35 | 22 | 25-32 |
| | 1123929 | SNMA 150612-R025 | SNMA 543-R025 | ○ | ○ | 15,88 | 6,35 | 1,2 | 6,35 | 25 | 29-36 |
| | 1123930 | SNMA 150612-R027 | SNMA 543-R027 | ○ | ○ | 15,88 | 6,35 | 1,2 | 6,35 | 27 | 31-39 |
| | 1123931 | SNMA 150612-R030 | SNMA 543-R030 | ○ | ○ | 15,88 | 6,35 | 1,2 | 6,35 | 30 | 35-44 |
| | 1123932 | SNMA 150612-R035 | SNMA 543-R035 | ○ | ○ | 15,88 | 6,35 | 1,2 | 6,35 | 35 | 40-51 |
| | 1123933 | SNMA 150612-R040 | SNMA 543-R040 | ○ | ○ | 15,88 | 6,35 | 1,2 | 6,35 | 40 | 46-58 |
| | 1123934 | SNMA 150612-R050 | SNMA 543-R050 | ○ | ○ | 15,88 | 6,35 | 1,2 | 6,35 | 50 | 58-73 |
| | 1123935 | SNMA 150612-R060 | SNMA 543-R060 | ○ | ○ | 15,88 | 6,35 | 1,2 | 6,35 | 60 | 69-87 |
| | 1123936 | SNMA 150612-R070 | SNMA 543-R070 | ○ | ○ | 15,88 | 6,35 | 1,2 | 6,35 | 70 | 80-95 |
|  SNMA Roughing | 1123937 | SNMA 190612-R030 | SNMA 643-R030 | ○ | ○ | 19,05 | 6,35 | 1,2 | 7,94 | 30 | 35-44 |
| | 1123938 | SNMA 190612-R040 | SNMA 643-R040 | ○ | ○ | 19,05 | 6,35 | 1,2 | 7,94 | 40 | 46-58 |
| | 1123939 | SNMA 190612-R050 | SNMA 643-R050 | ○ | ○ | 19,05 | 6,35 | 1,2 | 7,94 | 50 | 58-73 |
| | 1123940 | SNMA 190612-R060 | SNMA 643-R060 | ○ | ○ | 19,05 | 6,35 | 1,2 | 7,94 | 60 | 69-87 |
| | 1123941 | SNMA 190612-R070 | SNMA 643-R070 | ○ | ○ | 19,05 | 6,35 | 1,2 | 7,94 | 70 | 80-95 |
| | 1123942 | SNMA 190612-R080 | SNMA 643-R080 | ○ | ○ | 19,05 | 6,35 | 1,2 | 7,94 | 80 | 92-116 |
| | 1123943 | SNMA 190612-R090 | SNMA 643-R090 | ○ | ○ | 19,05 | 6,35 | 1,2 | 7,94 | 90 | 104-131 |
| | 1123944 | SNMA 250924-R000 | SNMA 866-R000 | ○ | ○ | 25,40 | 9,52 | 2,4 | 9,12 | 0 | - |
| | 1123945 | SNMA 250924-R060 | SNMA 866-R060 | ○ | ○ | 25,40 | 9,52 | 2,4 | 9,12 | 60 | 69-87 |
| | 1123946 | SNMA 250924-R070 | SNMA 866-R070 | ○ | ○ | 25,40 | 9,52 | 2,4 | 9,12 | 70 | 80-95 |
| | 1123947 | SNMA 250924-R080 | SNMA 866-R080 | ○ | ○ | 25,40 | 9,52 | 2,4 | 9,12 | 80 | 92-116 |
| | 1123948 | SNMA 250924-R100 | SNMA 866-R100 | ○ | ○ | 25,40 | 9,52 | 2,4 | 9,12 | 100 | 115-145 |
| | 1123949 | SNMA 250924-R150 | SNMA 866-R150 | ○ | ○ | 25,40 | 9,52 | 2,4 | 9,12 | 150 | 165-215 |
| | 1123950 | SNMA 250924-R200 | SNMA 866-R200 | ○ | ○ | 25,40 | 9,52 | 2,4 | 9,12 | 200 | 230-290 |

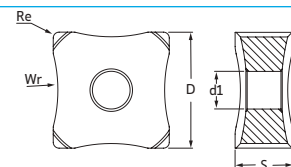
🔴 First choice | 1ª Escolha | 1ª Opción


📦 Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: ⁽¹⁾Geometry code + ⁽²⁾Grade code

SCARFING = SNMX



| Inserts Pastilhas Plaquitas | (1) Geometry code | (2) Grade code | | P | M | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | | Tube Diameter (mm) |
|--|-------------------------|------------------|-------------------|--------|--------|---|-------|-----|------|-----|--------------------------|
| | | ISO Reference | ANSI Reference | CVD | CVD | D | S | Re | d1 | Wr | |
| | | | | L8 | L8 | | | | | | |
| | | | | PH5125 | PH5125 | | | | | | |
| | 1123879 | SNMX 150708-R000 | SNMX 552-R000 | ○ | ○ | 15,88 | 7,94 | 0,8 | 5,16 | 0 | - |
| | 1123880 | SNMX 150708-R007 | SNMX 552-R007 | ○ | ○ | 15,88 | 7,94 | 0,8 | 5,16 | 7 | 08-10 |
| | 1123881 | SNMX 150708-R009 | SNMX 552-R009 | ○ | ○ | 15,88 | 7,94 | 0,8 | 5,16 | 9 | 10-13 |
| | 1123882 | SNMX 150708-R011 | SNMX 552-R011 | ○ | ○ | 15,88 | 7,94 | 0,8 | 5,16 | 11 | 13-16 |
| | 1123883 | SNMX 150708-R013 | SNMX 552-R013 | ○ | ○ | 15,88 | 7,94 | 0,8 | 5,16 | 13 | 15-19 |
| | 1123884 | SNMX 150708-R015 | SNMX 552-R015 | ○ | ○ | 15,88 | 7,94 | 0,8 | 5,16 | 15 | 17-22 |
| | 1123885 | SNMX 150708-R018 | SNMX 552-R018 | ○ | ○ | 15,88 | 7,94 | 0,8 | 5,16 | 18 | 21-26 |
| | 1123886 | SNMX 150708-R020 | SNMX 552-R020 | ⊗ | ⊗ | 15,88 | 7,94 | 0,8 | 5,16 | 20 | 23-29 |
| | 1123887 | SNMX 150708-R022 | SNMX 552-R022 | ○ | ○ | 15,88 | 7,94 | 0,8 | 5,16 | 22 | 25-32 |
| | 1123888 | SNMX 150708-R025 | SNMX 552-R025 | ○ | ○ | 15,88 | 7,94 | 0,8 | 5,16 | 25 | 29-36 |
| | 1123889 | SNMX 150708-R027 | SNMX 552-R027 | ○ | ○ | 15,88 | 7,94 | 0,8 | 5,16 | 27 | 31-39 |
| | 1123890 | SNMX 150708-R030 | SNMX 552-R030 | ○ | ○ | 15,88 | 7,94 | 0,8 | 5,16 | 30 | 35-44 |
| | 1123891 | SNMX 150708-R035 | SNMX 552-R035 | ○ | ○ | 15,88 | 7,94 | 0,8 | 5,16 | 35 | 40-51 |
| | 1123892 | SNMX 150708-R040 | SNMX 552-R040 | ○ | ○ | 15,88 | 7,94 | 0,8 | 5,16 | 40 | 46-58 |
| | 1123893 | SNMX 150708-R045 | SNMX 552-R045 | ○ | ○ | 15,88 | 7,94 | 0,8 | 5,16 | 45 | 52-65 |
| | 1123894 | SNMX 150708-R050 | SNMX 552-R050 | ○ | ○ | 15,88 | 7,94 | 0,8 | 5,16 | 50 | 58-73 |
| | 1123895 | SNMX 150708-R060 | SNMX 552-R060 | ○ | ○ | 15,88 | 7,94 | 0,8 | 5,16 | 60 | 69-87 |
| | 1124461 | SNMX 150708-R070 | SNMX 552-R070 | ○ | ○ | 15,88 | 7,94 | 0,8 | 5,16 | 70 | 80-95 |
| | 1124462 | SNMX 150708-R075 | SNMX 552-R075 | ○ | ○ | 15,88 | 7,94 | 0,8 | 5,16 | 75 | 86-102 |
|  SNMX Medium to Finishing | 1123896 | SNMX 190912-R000 | SNMX 663-R000 | ○ | ○ | 19,05 | 9,12 | 1,2 | 6,35 | 0 | - |
| | 1122012 | SNMX 190912-R020 | SNMX 663-R020 | ○ | ○ | 19,05 | 9,12 | 1,2 | 6,35 | 20 | 23-29 |
| | 1123897 | SNMX 190912-R030 | SNMX 663-R030 | ○ | ○ | 19,05 | 9,12 | 1,2 | 6,35 | 30 | 35-44 |
| | 1123898 | SNMX 190912-R040 | SNMX 663-R040 | ○ | ○ | 19,05 | 9,12 | 1,2 | 6,35 | 40 | 46-58 |
| | 1123899 | SNMX 190912-R050 | SNMX 663-R050 | ○ | ○ | 19,05 | 9,12 | 1,2 | 6,35 | 50 | 58-73 |
| | 1122013 | SNMX 190912-R060 | SNMX 663-R060 | ○ | ○ | 19,05 | 9,12 | 1,2 | 6,35 | 60 | 69-87 |
| | 1123900 | SNMX 190912-R070 | SNMX 663-R070 | ○ | ○ | 19,05 | 9,12 | 1,2 | 6,35 | 70 | 80-95 |
| | 1123901 | SNMX 190912-R080 | SNMX 663-R080 | ○ | ○ | 19,05 | 9,12 | 1,2 | 6,35 | 80 | 92-116 |
| | 1123902 | SNMX 190912-R090 | SNMX 663-R090 | ○ | ○ | 19,05 | 9,12 | 1,2 | 6,35 | 90 | 104-131 |
| | 1123903 | SNMX 190912-R100 | SNMX 663-R100 | ○ | ○ | 19,05 | 9,12 | 1,2 | 6,35 | 100 | 115-145 |
| | 1123864 | SNMX 251216-R000 | SNMX 884-R000 | ⊗ | ⊗ | 25,40 | 12,70 | 1,6 | 9,12 | 0 | - |
| | 1123904 | SNMX 251216-R050 | SNMX 884-R050 | ⊗ | ⊗ | 25,40 | 12,70 | 1,6 | 9,12 | 50 | 58-73 |
| | 1122015 | SNMX 251216-R080 | SNMX 884-R080 | ⊗ | ⊗ | 25,40 | 12,70 | 1,6 | 9,12 | 80 | 92-116 |
| | 1123905 | SNMX 251216-R090 | SNMX 884-R090 | ⊗ | ⊗ | 25,40 | 12,70 | 1,6 | 9,12 | 90 | 104-131 |
| | 1123906 | SNMX 251216-R100 | SNMX 884-R100 | ⊗ | ⊗ | 25,40 | 12,70 | 1,6 | 9,12 | 100 | 115-145 |
| | 1122016 | SNMX 251216-R120 | SNMX 884-R120 | ⊗ | ⊗ | 25,40 | 12,70 | 1,6 | 9,12 | 120 | 138-174 |
| | 1123907 | SNMX 251216-R150 | SNMX 884-R150 | ⊗ | ⊗ | 25,40 | 12,70 | 1,6 | 9,12 | 150 | 165-215 |
| | 1123908 | SNMX 251216-R200 | SNMX 884-R200 | ⊗ | ⊗ | 25,40 | 12,70 | 1,6 | 9,12 | 200 | 230-290 |
| | 1123909 | SNMX 251216-R250 | SNMX 884-R250 | ⊗ | ⊗ | 25,40 | 12,70 | 1,6 | 9,12 | 250 | 275-315 |

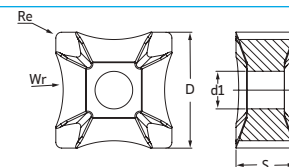
⊗ First choice | 1ª Escolha | 1ª Opción

⊗ Stock items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

Insert Order Code: (1) Geometry code + (2) Grade code

SCARFING = SNMG



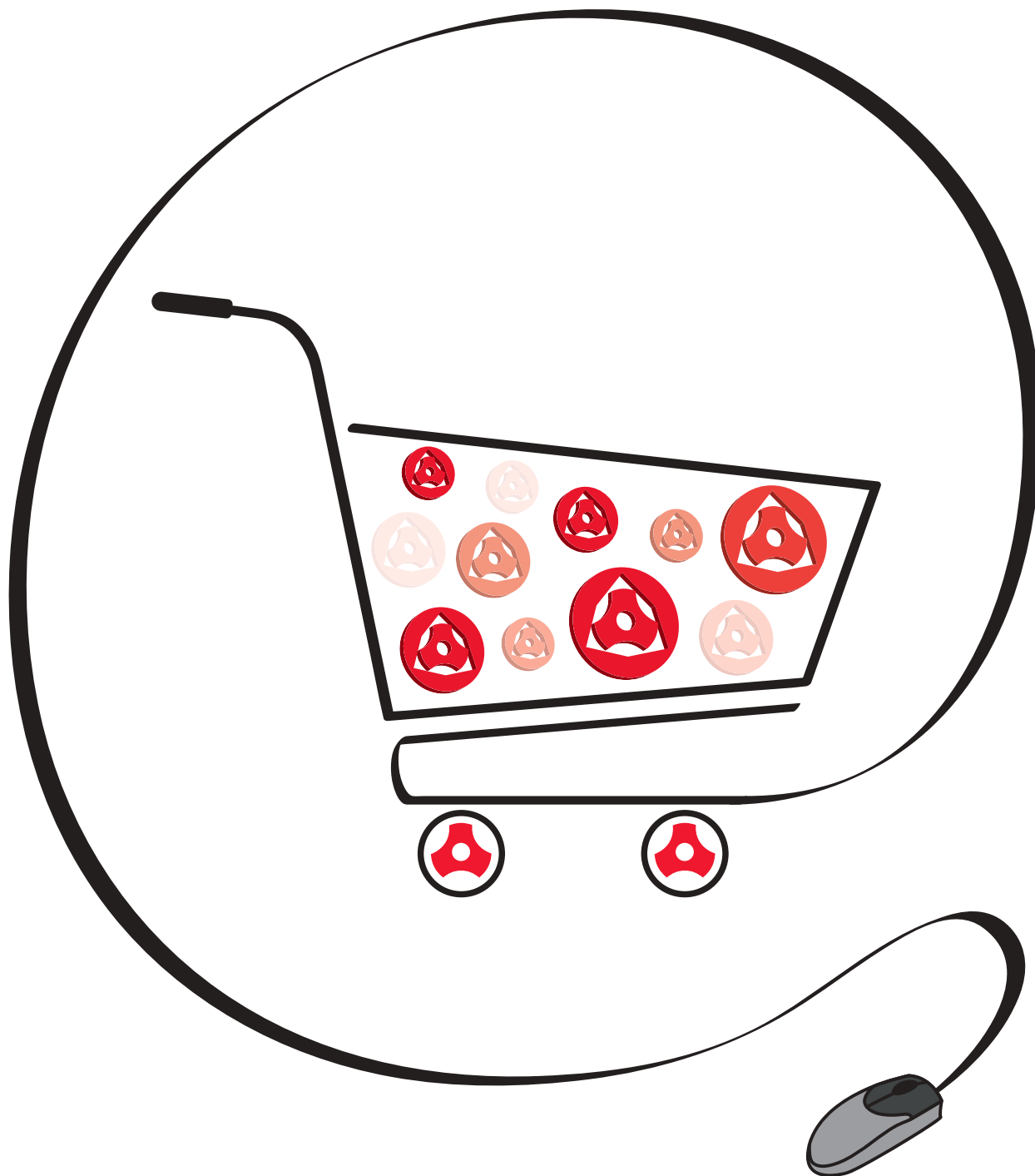
| Inserts Pastilhas Plaquetas | (1) Geometry code | ISO Reference | ANSI Reference | P | M | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | | Tube Diameter (mm) |
|-----------------------------------|-------------------------|------------------|-------------------|--------|--------|---|------|-----|------|-----|--------------------------|
| | | | | CVD | CVD | D | S | Re | d1 | Wr | |
| | | | | L7 | L8 | | | | | | |
| (2) Grade code | | | | PH5115 | PH5125 | | | | | | |
| | 1123951 | SNMG 15M808-R000 | SNMG 55.12-R000 | ○ | ○ | 15,88 | 8,15 | 0,8 | 5,16 | 0 | - |
| | 1123952 | SNMG 15M808-R007 | SNMG 55.12-R007 | ○ | ○ | 15,88 | 8,15 | 0,8 | 5,16 | 7 | 08-10 |
| | 1123953 | SNMG 15M808-R009 | SNMG 55.12-R009 | ○ | ○ | 15,88 | 8,15 | 0,8 | 5,16 | 9 | 10-13 |
| | 1123954 | SNMG 15M808-R011 | SNMG 55.12-R011 | ⊗ | ○ | 15,88 | 8,15 | 0,8 | 5,16 | 11 | 13-16 |
| | 1123955 | SNMG 15M808-R013 | SNMG 55.12-R013 | ⊗ | ○ | 15,88 | 8,15 | 0,8 | 5,16 | 13 | 15-19 |
| | 1123956 | SNMG 15M808-R015 | SNMG 55.12-R015 | ⊗ | ○ | 15,88 | 8,15 | 0,8 | 5,16 | 15 | 17-22 |
| | 1123957 | SNMG 15M808-R018 | SNMG 55.12-R018 | ⊗ | ○ | 15,88 | 8,15 | 0,8 | 5,16 | 18 | 21-26 |
| | 1123958 | SNMG 15M808-R020 | SNMG 55.12-R020 | ⊗ | ○ | 15,88 | 8,15 | 0,8 | 5,16 | 20 | 23-29 |
| | 1123959 | SNMG 15M808-R022 | SNMG 55.12-R022 | ○ | ○ | 15,88 | 8,15 | 0,8 | 5,16 | 22 | 25-32 |
| | 1123960 | SNMG 15M808-R025 | SNMG 55.12-R025 | ⊗ | ○ | 15,88 | 8,15 | 0,8 | 5,16 | 25 | 29-36 |
| | 1123961 | SNMG 15M808-R027 | SNMG 55.12-R027 | ⊗ | ○ | 15,88 | 8,15 | 0,8 | 5,16 | 27 | 31-39 |
| | 1123962 | SNMG 15M808-R030 | SNMG 55.12-R030 | ⊗ | ○ | 15,88 | 8,15 | 0,8 | 5,16 | 30 | 35-44 |
| | 1123963 | SNMG 15M808-R035 | SNMG 55.12-R035 | ⊗ | ○ | 15,88 | 8,15 | 0,8 | 5,16 | 35 | 40-51 |
| | 1123964 | SNMG 15M808-R040 | SNMG 55.12-R040 | ⊗ | ○ | 15,88 | 8,15 | 0,8 | 5,16 | 40 | 46-58 |
| | 1123965 | SNMG 15M808-R045 | SNMG 55.12-R045 | ⊗ | ○ | 15,88 | 8,15 | 0,8 | 5,16 | 45 | 52-65 |
| | 1123966 | SNMG 15M808-R050 | SNMG 55.12-R050 | ○ | ○ | 15,88 | 8,15 | 0,8 | 5,16 | 50 | 58-73 |
| | 1123967 | SNMG 15M808-R060 | SNMG 55.12-R060 | ⊗ | ○ | 15,88 | 8,15 | 0,8 | 5,16 | 60 | 69-87 |
| | 1123968 | SNMG 19M808-R000 | SNMG 65.13-R000 | ○ | ○ | 19,05 | 8,15 | 0,8 | 8,00 | 20 | - |
| | 1123969 | SNMG 19M808-R010 | SNMG 65.13-R010 | ○ | ○ | 19,05 | 8,15 | 0,8 | 8,00 | 10 | 12-15 |
| | 1123970 | SNMG 19M808-R020 | SNMG 65.13-R020 | ⊗ | ○ | 19,05 | 8,15 | 0,8 | 8,00 | 20 | 23-29 |
| | 1123971 | SNMG 19M808-R030 | SNMG 65.13-R030 | ⊗ | ○ | 19,05 | 8,15 | 0,8 | 8,00 | 30 | 35-44 |
| | 1123972 | SNMG 19M808-R040 | SNMG 65.13-R040 | ○ | ○ | 19,05 | 8,15 | 0,8 | 8,00 | 40 | 46-58 |
| | 1123973 | SNMG 19M808-R050 | SNMG 65.13-R050 | ○ | ○ | 19,05 | 8,15 | 0,8 | 8,00 | 50 | 58-73 |
| | 1123974 | SNMG 19M808-R060 | SNMG 65.13-R060 | ○ | ○ | 19,05 | 8,15 | 0,8 | 8,00 | 60 | 69-87 |
| | 1123975 | SNMG 19M808-R070 | SNMG 65.13-R070 | ○ | ○ | 19,05 | 8,15 | 0,8 | 8,00 | 70 | 80-95 |
| | 1123976 | SNMG 19M808-R080 | SNMG 65.13-R080 | ○ | ○ | 19,05 | 8,15 | 0,8 | 8,00 | 80 | 92-116 |
| | 1123977 | SNMG 19M808-R090 | SNMG 65.13-R090 | ○ | ○ | 19,05 | 8,15 | 0,8 | 8,00 | 90 | 104-131 |
| | 1123978 | SNMG 19M808-R100 | SNMG 65.13-R100 | ○ | ○ | 19,05 | 8,15 | 0,8 | 8,00 | 100 | 115-145 |



⊗ First choice | 1ª Escolha | 1ª Opción
 ⊗ Stock items | Itens de stock
 ○ Available under request | Disponível sob consulta | Disponible bajo consulta
 Insert Order Code: ⁽¹⁾ Geometry code + ⁽²⁾ Grade code

ANYTIME, ANYWHERE

Online ordering available 24-hour per day and shipments around the globe.



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CODE KEY FOR EXTERNAL TURNING TOOLHOLDERS

Sistema De Codificação Para Suportes De Torneamento Externo (ISO) | Codificación De Herramientas De Torneado Exterior (ISO)

| | | | | | | | | |
|----------|----------|----------|----------|----------|-----------|-----------|----------|-----------|
| P | C | L | N | R | 25 | 25 | M | 12 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

1 - Inserts Clamping System

| | | | | |
|----------|----------|----------|----------|----------|
| | | | | |
| C | D | M | P | S |

2 - Insert Shape

| | | | |
|----------|----------|----------|----------|
| | | | |
| C | D | E | K |
| | | | |
| R | S | T | V |
| | | | |
| W | | | |

4 - Inserts Clearance Angle

| | | | |
|----------|----------|----------|----------|
| | | | |
| B | C | N | P |

5 - Tool Hand

| | | |
|----------|----------|----------|
| | | |
| L | N | R |

3 - Toolholder Leading Angle

| | | |
|----------|----------|----------|
| | | |
| A | B | C |
| | | |
| D | E | F |
| | | |
| G | H | J |
| | | |
| K | L | M |
| | | |
| N | Q | R |
| | | |
| S | T | V |
| | | |
| X | Z | |

6 - Height of Shank (mm)

| |
|----------|
| |
| H |

7 - Width of Shank (mm)

| |
|----------|
| |
| B |

8 - Length of Holder (mm)

| | | | | |
|--|----------|-----|----------|---------|
| | D | 60 | P | 170 |
| | E | 70 | R | 200 |
| | F | 80 | S | 250 |
| | G | 90 | T | 300 |
| | H | 100 | U | 350 |
| | K | 125 | V | 400 |
| | L | 140 | X | Special |
| | M | 150 | | |

9 - Length of Inserts Cutting Edge (mm)

| | | | |
|-------------------|----------|----------|----------|
| | | | |
| C, D, E, V | K | R | S |
| | | | |
| T | W | X | Z |



- C - 526 | Top Clamp Toolholders (C)
- C - 541 | Dimple Lock Toolholders (D)
- C - 547 | Wedge Clamp (M) & Double Lock (M-K) Toolholders
- C - 562 | Lever Lock Toolholders (P)
- C - 585 | Center Screw Toolholders (S)

EXTERNAL TURNING



TURNING

Insert selection

Overview

Negative inserts

Positive inserts

PCBN & PCD inserts

Heavy turning

External Toolholders

Internal Toolholders

Automatic Lathes

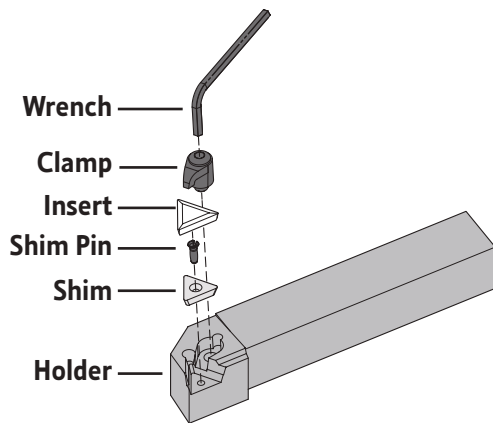
Spare Parts

Technical Data

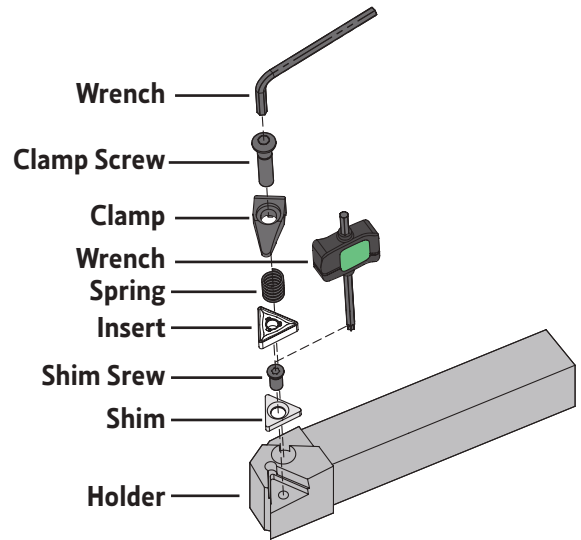
CLAMPING SYSTEMS FOR EXTERNAL TOOLHOLDERS

Sistemas De Fixação Para Ferramentas De Torneamento Externo | Sistemas De Fijación Para Herramientas De Torneado Exterior

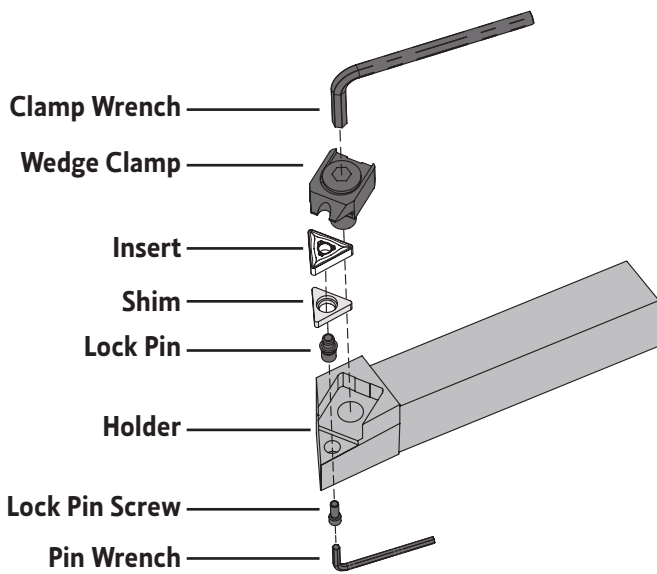
(C) TOP CLAMP SYSTEM



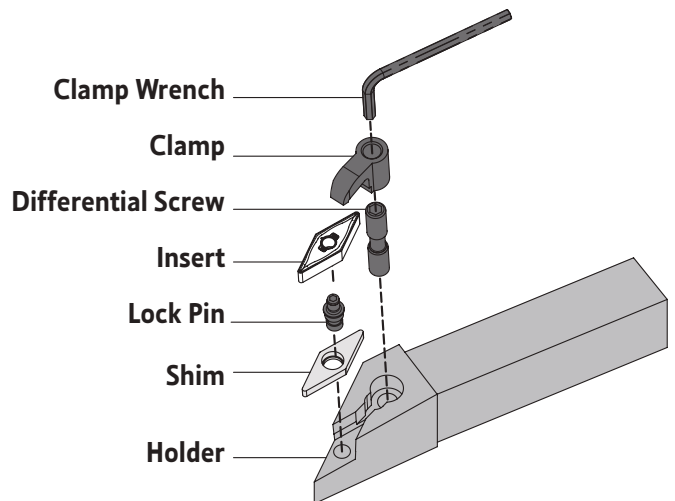
(D) DIMPLE LOCK SYSTEM



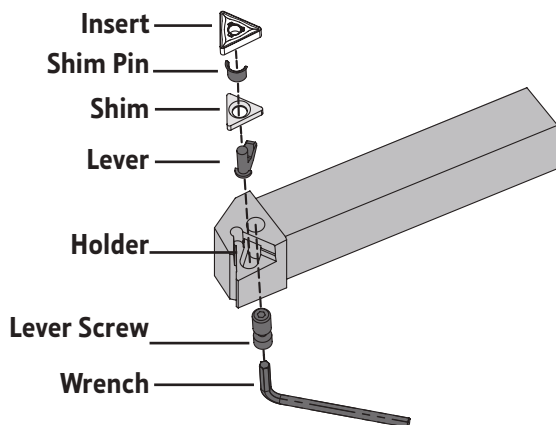
(M) WEDGE CLAMP SYSTEM



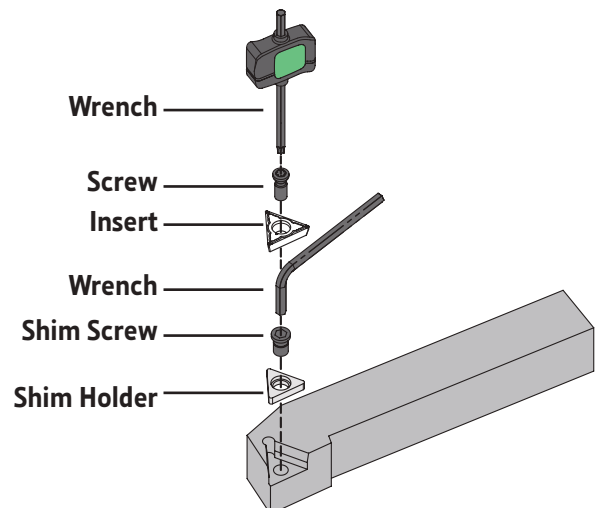
(M-K) DOUBLE LOCK SYSTEM



(P) LEVER LOCK SYSTEM

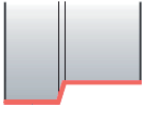
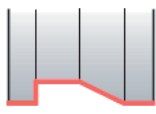




(S) CENTER SCREW SYSTEM



TURNING
 Insert selection
 Overview
 Negative inserts
 Positive inserts
 PCBN & PCD inserts
 Heavy turning
 External Toolholders
 Internal Toolholders
 Automatic Lathes
 Spare Parts
 Technical Data

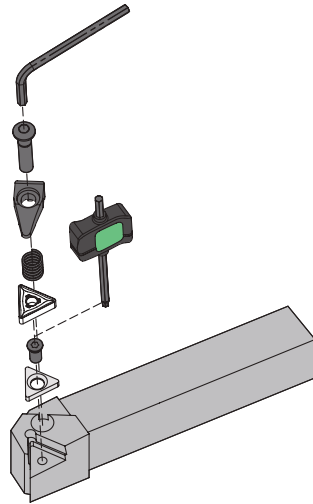
SUITABLE CLAMPING SYSTEM DEFINITION
 Definição do sistema de fixação | Definición del sistema de Fijación

| Operation | | Longitudinal turning | Profiling | Facing | Plunging |
|------------------|---|---|--|---|---|
| | |  |  |  |  |
| Negative inserts | (C) TOP CLAMP SYSTEM | ● | ● | ● | ● |
| | (D) DIMPLE LOCK SYSTEM | ● ● | ● ● | ● ● | |
| | (M) WEDGE CLAMP SYSTEM = (M-K) DOUBLE LOCK SYSTEM | ● | ● | ● | |
| | (P) LEVER LOCK SYSTEM | ● | ● | ● | |
| Positive inserts | (C) TOP CLAMP SYSTEM | ● | ● | ● | ● |
| | (P) LEVER LOCK SYSTEM | | ● | | |
| | (S) CENTER SCREW SYSTEM | ● ● | ● ● | ● ● | |

● ● Recommended Insert Shape ● Alternative Insert Shape

- TURNING
- Insert selection
- Overview
- Negative inserts
- Positive inserts
- PCBN & PCD inserts
- Heavy turning
- External Toolholders
- Internal Toolholders
- Automatic Lathes
- Spare Parts
- Technical Data

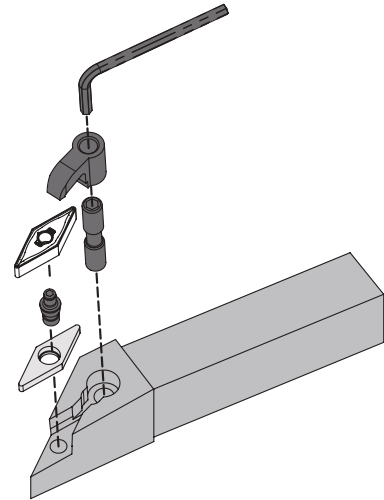
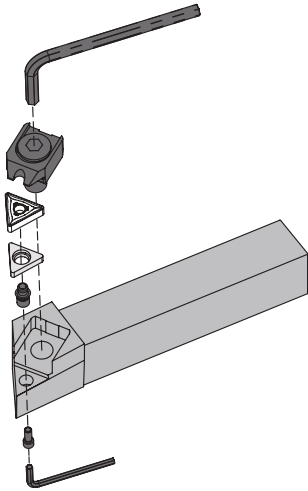
(D) DIMPLE LOCK SYSTEM



| Positive inserts | Negative inserts | Overview | Insert selection | TURNING |
|---|---|---|---|---|
| <p>DCLN 95°</p> <p>PAGE C - 542 CN.. 1204.. CN.. 1906..</p> | <p>DDJN 93°</p> <p>PAGE C - 543 DN.. 1104.. DN.. 1506..</p> | <p>DSSN 45°</p> <p>PAGE C - 544 SN.. 1204.. SN.. 1906..</p> | <p>DTGN 90°</p> <p>PAGE C - 545 TN.. 1604.. TN.. 2204..</p> | <p>DWLN 95°</p> <p>PAGE C - 546 WN.. 0604.. WN.. 0804..</p> |

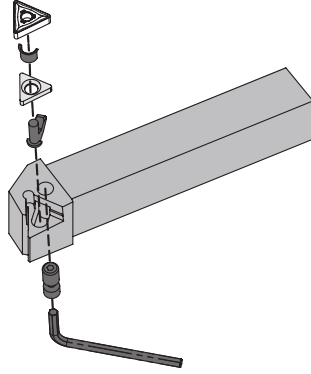
(M) WEDGE CLAMP SYSTEM

(M-K) DOUBLE LOCK SYSTEM



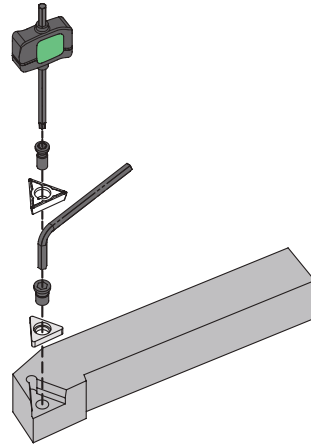
| | | | | | |
|--|--|--|---|--|--|
| MCLN 95° PAGE C - 548 CN.. 1204.. CN.. 1906.. | MCLN-K 95° PAGE C - 549 CN.. 1204.. CN.. 1906.. | MDJN-K 93° PAGE C - 550 DN.. 1506.. | MSSN-K 45° PAGE C - 551 SN.. 1204.. | MSSN 45° PAGE C - 552 SN.. 1204.. SN.. 1906.. | MTEN 60° PAGE C - 553 TN.. 1604.. TN.. 2204.. |
| MTJN 93° PAGE C - 554 TN.. 1604.. TN.. 2204.. | MTJN-K 93° PAGE C - 555 TN.. 1604.. TN.. 2204.. | MTNN 63° PAGE C - 556 TN.. 1604.. TN.. 2204.. | MVJN-K 93° PAGE C - 557 VN.. 1604.. | MVQN-K 117°30' PAGE C - 558 VN.. 1604.. | MVVN-K 72°30' PAGE C - 559 VN.. 1604.. |
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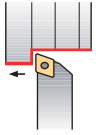
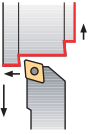
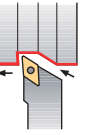
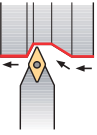
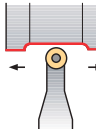
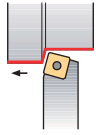
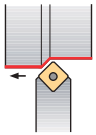
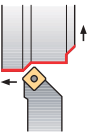
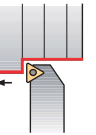
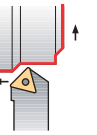
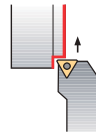
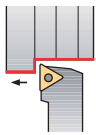
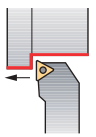
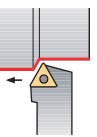
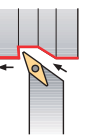
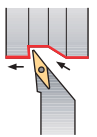
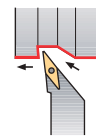
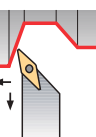
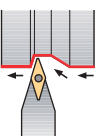
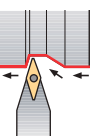
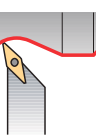
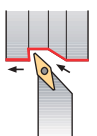
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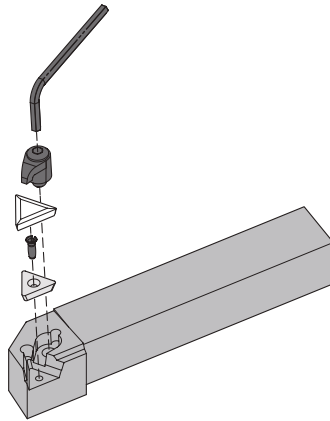
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| <p>PDJN 93°</p> <p>PAGE C - 570 DN.. 1104.. DN.. 1504.. DN.. 1506..</p> | <p>PDNN 63°</p> <p>PAGE C - 571 DN.. 1504.. DN.. 1506..</p> | <p>PRDC</p> <p>PAGE C - 572 RC.. 1003M0 ... RC.. 3209M0</p> | <p>PRSC</p> <p>PAGE C - 574 RC.. 10..32</p> | <p>PRSN</p> <p>PAGE C - 575 RN.. 09..25</p> | <p>PSBN 75°</p> <p>PAGE C - 576 SN.. 0903.. ... SN.. 2507..</p> |
| <p>PSDN 45°</p> <p>PAGE C - 577 SN.. 0903.. ... SN.. 2507..</p> | <p>PSKN 75°</p> <p>PAGE C - 578 SN.. 0903.. ... SN.. 2507..</p> | <p>PSSN 45°</p> <p>PAGE C - 579 SN.. 0903.. ... SN.. 2507..</p> | <p>PTDN 45°</p> <p>PAGE C - 580 TN.. 2204..</p> | <p>PTFN 90°</p> <p>PAGE C - 581 TN.. 1604.. TN.. 2204.. TN.. 2706..</p> | <p>PTGN 90°</p> <p>PAGE C - 582 TN.. 1604.. ... TN.. 3307..</p> |
| <p>PTTN 60°</p> <p>PAGE C - 583 TN.. 1604.. TN.. 2204..</p> | <p>PWLN 95°</p> <p>PAGE C - 584 WN.. 0604.. WN.. 0804..</p> | | | | |

(S) CENTER SCREW SYSTEM



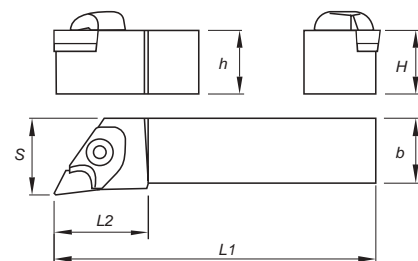
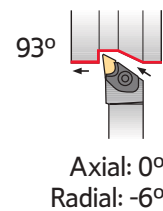
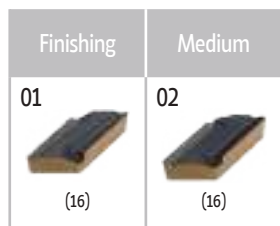
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| <p>SCAC 90°</p>  <p>PAGE C - 586 CC.. 0602.. CC.. 09T3.. CC.. 1204..</p> | <p>SCLC 95°</p>  <p>PAGE C - 587 CC.. 0602.. CC.. 09T3.. CC.. 1204..</p> | <p>SDJC 93°</p>  <p>PAGE C - 588 DC.. 0702.. DC.. 11T3..</p> | <p>SDNC 62°30'</p>  <p>PAGE C - 589 DC.. 0702.. DC.. 11T3..</p> | <p>SRDC</p>  <p>PAGE C - 590 RC.. 0602M0.. ... RC.. 1204M0..</p> | <p>SSBC 75°</p>  <p>PAGE C - 591 SC.. 09T3.. SC.. 1204..</p> |
| <p>SSDC 45°</p>  <p>PAGE C - 592 SC.. 09T3.. SC.. 1204..</p> | <p>SSSC 45°</p>  <p>PAGE C - 593 SC.. 09T3.. SC.. 1204..</p> | <p>STAC 90°</p>  <p>PAGE C - 594 TC.. 0902.. TC.. 1102.. TC.. 16T3..</p> | <p>STDC 45°</p>  <p>PAGE C - 595 TC.. 0902.. TC.. 1102.. TC.. 16T3..</p> | <p>STFC 90°</p>  <p>PAGE C - 596 TC.. 0902.. TC.. 1102.. TC.. 16T3..</p> | <p>STGC 90°</p>  <p>PAGE C - 597 TC.. 0902.. TC.. 1102.. TC.. 16T3..</p> |
| <p>STJC 93°</p>  <p>PAGE C - 598 TC.. 0902.. TC.. 1102.. TC.. 16T3..</p> | <p>STTC 60°</p>  <p>PAGE C - 599 TC.. 0902.. TC.. 1102.. TC.. 16T3..</p> | <p>SVHC 107°30'</p>  <p>PAGE C - 600 VC.. 1604..</p> | <p>SVJB 93°</p>  <p>PAGE C - 601 VB.. 1604..</p> | <p>SVJC 93°</p>  <p>PAGE C - 602 VC.. 1103.. VC.. 1604..</p> | <p>SVLC 95°</p>  <p>PAGE C - 603 VC.. 1303..</p> |
| <p>SVVB 72°30'</p>  <p>PAGE C - 604 VB.. 1604..</p> | <p>SVVC 72°30'</p>  <p>PAGE C - 605 VC.. 1103.. VC.. 1604..</p> | <p>SVXC 113°</p>  <p>PAGE C - 606 VC.. 1803..</p> | <p>SVZC 100°</p>  <p>PAGE C - 607 VC.. 1604..</p> | | |











(C) TOP CLAMP SYSTEM



| | | | | | |
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| <p>CSTP 60°</p> <p>PAGE C - 533 SP.0903.. SP.1203..</p> | <p>CTBP 75°</p> <p>PAGE C - 534 TP. 1103.. TP. 1603.. TP. 2204..</p> | <p>CTCP N 90°</p> <p>PAGE C - 535 TP. 1103.. TP. 1603.. TP. 2204..</p> | <p>CTCP 90°</p> <p>PAGE C - 536 TP. 1103.. TP. 1603.. TP. 2204..</p> | <p>CTDP 45°</p> <p>PAGE C - 537 TP. 1103.. TP. 1603.. TP. 2204..</p> | <p>CTFP 90°</p> <p>PAGE C - 538 TP. 1103.. TP. 1603.. TP. 2204..</p> |
| <p>CTGP 90°</p> <p>PAGE C - 539 TP. 1103.. TP. 1603.. TP. 2204..</p> | <p>CTTP 60°</p> <p>PAGE C - 540 TP. 0902.. TP. 1103.. TP. 2204..</p> | | | | |

(C) TOP CLAMP TOOLHOLDERS









































































| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212034800 | 212034900 | CKJN R/L 2020 K16 | 20 | 20 | 125 | 34 | 30 | KNUX 1604.. | 0,390 |  |  |
| 212026300 | 212035000 | CKJN R/L 2525 M16 | 25 | 25 | 150 | 34 | 32 | KNUX 1604.. | 0,700 |  |  |
| 212010300 | 212260400 | CKJN R/L 3225 P16 | 32 | 25 | 170 | 34 | 32 | KNUX 1604.. | 1,000 |  |  |
| 212260500 | 212260600 | CKJN R/L 3232 P16 | 32 | 32 | 170 | 34 | 40 | KNUX 1604.. | 1,250 |  |  |
| 212260700 | 212260800 | CKJN R/L 4025 R16 | 40 | 25 | 200 | 34 | 32 | KNUX 1604.. | 1,500 |  |  |

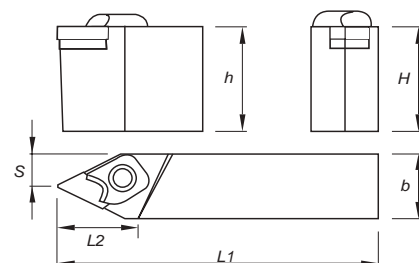
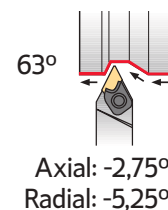
 Stock Items | Itens de stock





 Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Order separately | | | | | | |
|------------------|--|---|---|--|---|--|--|
| | Shim | Shim Pin | Shim Pin Punch | Spring | Clamp | Screw | Wrench |
| CKJN R 2020 K16 |  CK160500 |  BE03000 |  BF04813 |  M09513 |  GAW1400 |  DW142600 |  SS40 |
| CKJN R 2525 M16 |  CK160500 |  BE03000 |  BF04815 |  M09513 |  GAW1400 |  DW142600 |  SS40 |
| CKJN R 3225 P16 |  CK160500 |  BE03000 |  BF04815 |  M09513 |  GAW1400 |  DW142600 |  SS40 |
| CKJN R 3232 P16 |  CK160500 |  BE03000 |  BF04815 |  M09513 |  GAW1400 |  DW142600 |  SS40 |
| CKJN R 4025 R16 |  CK160500 |  BE03000 |  BF04815 |  M09513 |  GAW1400 |  DW142600 |  SS40 |
| CKJN L 2020 K16 |  CK160501 |  BE03000 |  BF04813 |  M09513 |  GAW1401 |  DW142600 |  SS40 |
| CKJN L 2525 M16 |  CK160501 |  BE03000 |  BF04815 |  M09513 |  GAW1401 |  DW142600 |  SS40 |
| CKJN L 3225 P16 |  CK160501 |  BE03000 |  BF04815 |  M09513 |  GAW1401 |  DW142600 |  SS40 |
| CKJN L 3232 P16 |  CK160501 |  BE03000 |  BF04815 |  M09513 |  GAW1401 |  DW142600 |  SS40 |
| CKJN L 4025 R16 |  CK160501 |  BE03000 |  BF04815 |  M09513 |  GAW1401 |  DW142600 |  SS40 |

(C) TOP CLAMP TOOLHOLDERS










| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|------|-------------|-------|---|---|
| R | L | | H-h | b | L1 | L2 | S | | | R | L |
| 212260900 | 212261000 | CKNN R/L 4025 R16 | 40 | 25 | 200 | 37 | 14,3 | KNUX 1604.. | 1,500 |  |  |
| 212261100 | 212261200 | CKNN R/L 5032 S16 | 50 | 32 | 250 | 37 | 16,8 | KNUX 1604.. | 3,000 |  |  |




 Stock Items | Itens de stock

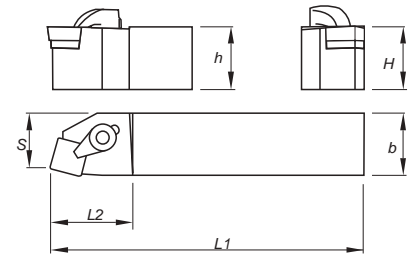
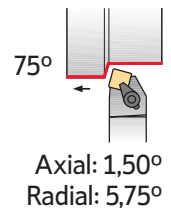
 Available under request | Disponível sob consulta | Disponible bajo consulta



















SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Order separately | | | | | | |
|------------------|---|---|---|---|---|---|---|
| | Shim | Shim Pin | Shim Pin Punch | Spring | Clamp | Screw | Wrench |
| CKNN R 4025 R16 |  |  |  |  |  |  |  |
| CKNN R 5032 S16 | CK160500 | BE03000 | BF04815 | M09513 | GAW1400 | DW142600 | SS40 |
| CKNN L 4025 R16 | CK160500 | BE03000 | BF04815 | M09513 | GAW1400 | DW142600 | SS40 |
| CKNN L 5032 S16 | CK160501 | BE03000 | BF04815 | M09513 | GAW1401 | DW142600 | SS40 |

(C) TOP CLAMP TOOLHOLDERS

| Medium to Finishing | Finishing to Fine Finishing | Medium |
|---|--|--|
| Flat  (09-12-19) | 12  (09-12) | 13  (09-12) |




| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212042000 | 212261300 | CSBP R/L 1212 F09 | 12 | 12 | 80 | 22 | 11 | SP..0903.. | 0,070 |  |  |
| 212261400 | 212261500 | CSBP R/L 1616 H09 | 16 | 16 | 100 | 22 | 13 | SP..0903.. | 0,200 |  |  |
| 212261600 | 212261700 | CSBP R/L 2020 K09 | 20 | 20 | 125 | 22 | 17 | SP..0903.. | 0,400 |  |  |
| 212261800 | 212033900 | CSBP R/L 2020 K12 | 20 | 20 | 125 | 34 | 17 | SP..1203.. | 0,400 |  |  |
| 212034000 | 212034100 | CSBP R/L 2525 M12 | 25 | 25 | 150 | 34 | 22 | SP..1203.. | 0,700 |  |  |
| 212261900 | 212262000 | CSBP R/L 3225 P12 | 32 | 25 | 170 | 34 | 22 | SP..1203.. | 1,000 |  |  |
| 212262100 | 212262200 | CSBP R/L 3232 P19 | 32 | 32 | 170 | 40 | 27 | SP..1904.. | 1,250 |  |  |
| 212262300 | 212262400 | CSBP R/L 4040 S19 | 40 | 40 | 250 | 40 | 35 | SP..1904.. | 3,000 |  |  |
| 212262500 | 212262600 | CSBP R/L 5050 T19 | 50 | 50 | 300 | 40 | 43 | SP..1904.. | 5,650 |  |  |

 Stock Items | Itens de stock

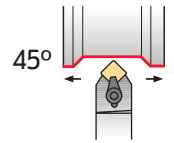
 Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS || Complementos | Repuestos

Complementary Accessories - Flat Inserts

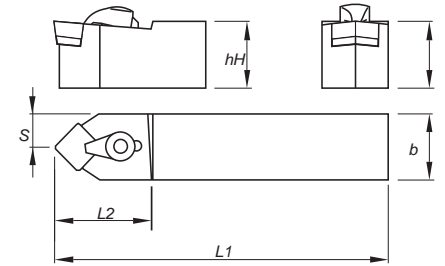
| Cutter Reference | Shim | Shim Pin | Clamp | Wrench | Clamp | Chip Breaker 1 | Chip Breaker 2 |
|-------------------|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |
| CSBP R/L 1212 F09 | CS090300 | BE02100 | GS05001 | SS25 | GS05004 | QCS0900 | - |
| CSBP R/L 1616 H09 | CS090300 | BE02100 | GS05001 | SS25 | GS05004 | QCS0900 | - |
| CSBP R/L 2020 K09 | CS090300 | BE02100 | GS05001 | SS25 | GS05004 | QCS0900 | - |
| CSBP R/L 2020 K12 | CS120300 | BE02100 | GS06000 | SS30 | GS05005 | QCS1200 | QCS1201 |
| CSBP R/L 2525 M12 | CS120300 | BE02100 | GS06000 | SS30 | GS05005 | QCS1200 | QCS1201 |
| CSBP R/L 3225 P12 | CS120300 | BE02100 | GS06000 | SS30 | GS05005 | QCS1200 | QCS1201 |
| CSBP R/L 3232 P19 | CS190300 | BE03000 | GS08000 | SS40 | GS08001 | QCS1900 | QCS1901 |
| CSBP R/L 4040 S19 | CS190300 | BE03000 | GS08000 | SS40 | GS08001 | QCS1900 | QCS1901 |
| CSBP R/L 5050 T19 | CS190300 | BE03000 | GS08000 | SS40 | GS08001 | QCS1900 | QCS1901 |

(C) TOP CLAMP TOOLHOLDERS



Axial: 4,25°
Radial: 4,25°

| Medium to Finishing | Finishing to Fine Finishing | Medium |
|---------------------|-----------------------------|---------|
| Flat | 12 | 13 |
| | | |
| (09-12) | (09-12) | (09-12) |



| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|------|-------------|-------|-------|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212262700 | 212262800 | CSDP R/L 1010 E09 | 10 | 10 | 70 | 22 | 5,6 | SP.. 0903.. | 0,030 | | |
| 212262900 | 212263000 | CSDP R/L 1212 F09 | 12 | 12 | 80 | 22 | 7,6 | SP.. 0903.. | 0,070 | | |
| 212263100 | 212263200 | CSDP R/L 1616 H09 | 16 | 16 | 100 | 22 | 11,6 | SP.. 0903.. | 0,200 | | |
| 212263300 | 212263400 | CSDP R/L 2020 K12 | 20 | 20 | 125 | 28 | 14,0 | SP.. 1203.. | 0,400 | | |
| 212263500 | 212263600 | CSDP R/L 2525 M12 | 25 | 25 | 150 | 28 | 19,0 | SP.. 1203.. | 0,700 | | |
| 212263700 | | CSDP N 1010 E09 | 10 | 10 | 70 | 22 | 5,0 | SP.. 0903.. | 0,030 | | |
| 212263800 | | CSDP N 1212 F09 | 12 | 12 | 80 | 22 | 6,0 | SP.. 0903.. | 0,070 | | |
| 212263900 | | CSDP N 1616 H09 | 16 | 16 | 100 | 22 | 8,0 | SP.. 0903.. | 0,200 | | |
| 212018400 | | CSDP N 2020 K12 | 20 | 20 | 125 | 28 | 10,0 | SP.. 1203.. | 0,400 | | |
| 212264000 | | CSDP N 2525 M12 | 25 | 25 | 150 | 28 | 12,5 | SP.. 1203.. | 0,700 | | |

Stock Items | Itens de stock

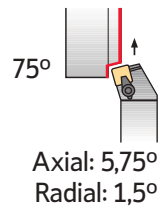
Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS | Complementos | Repuestos

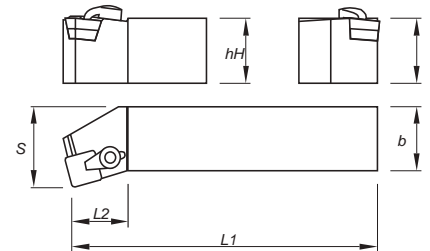
Complementary Accessories - Flat Inserts

| Cutter Reference | Shim | Shim Pin | Clamp | Wrench | Clamp | Chip Breaker 1 | Chip Breaker 2 |
|-------------------|----------|----------|---------|--------|---------|----------------|----------------|
| CSDP R/L 1010 E09 | | | | | | | |
| CSDP R/L 1010 E09 | - | - | GS05000 | SS25 | - | QCS0901 | QCS0902 |
| CSDP R/L 1212 F09 | CS090300 | BE02100 | GS05001 | SS25 | GS05004 | QCS0901 | QCS0902 |
| CSDP R/L 1616 H09 | CS090300 | BE02100 | GS05001 | SS25 | GS05004 | QCS0901 | QCS0902 |
| CSDP R/L 2020 K12 | CS120300 | BE02100 | GS06000 | SS30 | GS05005 | QCS1202 | QCS1203 |
| CSDP R/L 2525 M12 | CS120300 | BE02100 | GS06000 | SS30 | GS05005 | QCS1202 | QCS1203 |
| CSDP N 1010 E09 | - | - | GS05000 | SS25 | - | QCS0901 | QCS0902 |
| CSDP N 1212 F09 | CS090300 | BE02100 | GS05001 | SS25 | GS05004 | QCS0901 | QCS0902 |
| CSDP N 1616 H09 | CS090300 | BE02100 | GS05001 | SS25 | GS05004 | QCS0901 | QCS0902 |
| CSDP N 2020 K12 | CS120300 | BE02100 | GS06000 | SS30 | GS05005 | QCS1202 | QCS1203 |
| CSDP N 2525 M12 | CS120300 | BE02100 | GS06000 | SS30 | GS05005 | QCS1202 | QCS1203 |

(C) TOP CLAMP TOOLHOLDERS



| Medium to Finishing | Finishing to Fine Finishing | Medium |
|------------------------|-----------------------------|-------------------|
| Flat (09-12-19) | 12 (09-12) | 13 (09-12) |



| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-----------|-------|-------|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212042100 | 212264100 | CSKP R/L 1212 F09 | 12 | 12 | 80 | 18 | 16 | SP.0903.. | 0,070 | | |
| 212264200 | 212264300 | CSKP R/L 1616 H09 | 16 | 16 | 100 | 22 | 20 | SP.0903.. | 0,200 | | |
| 212264400 | 212264500 | CSKP R/L 2020 K09 | 20 | 20 | 125 | 22 | 25 | SP.0903.. | 0,400 | | |
| 212034200 | 212034300 | CSKP R/L 2020 K12 | 20 | 20 | 125 | 28 | 25 | SP.1203.. | 0,400 | | |
| 212036000 | 212034400 | CSKP R/L 2525 M12 | 25 | 25 | 150 | 28 | 32 | SP.1203.. | 0,700 | | |
| 212264600 | 212264700 | CSKP R/L 3225 P12 | 32 | 25 | 170 | 28 | 32 | SP.1203.. | 1,000 | | |
| 212264800 | 212264900 | CSKP R/L 3232 P19 | 32 | 32 | 170 | 42 | 40 | SP.1904.. | 1,250 | | |
| 212265000 | 212265100 | CSKP R/L 4040 S19 | 40 | 40 | 250 | 42 | 50 | SP.1904.. | 3,000 | | |
| 212265200 | 212265300 | CSKP R/L 5050 T19 | 50 | 50 | 300 | 42 | 60 | SP.1904.. | 5,650 | | |

Stock Items | Itens de stock




Available under request | Disponível sob consulta | Disponible bajo consulta

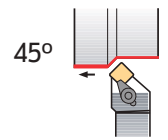
SPARE PARTS || Complementos | Repuestos

Complementary Accessories - Flat Inserts

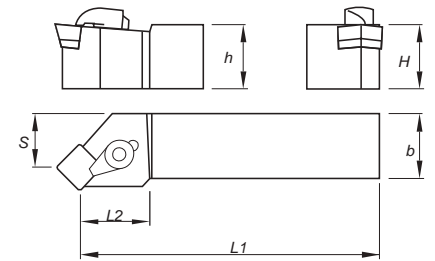
| Cutter Reference | Shim | Shim Pin | Clamp | Wrench | Clamp | Chip Breaker 1 | Chip Breaker 2 |
|-------------------|----------|----------|---------|--------|---------|----------------|----------------|
| | | | | | | | |
| CSKP R/L 1212 F09 | CS090300 | BE02100 | GS05001 | SS25 | GS05004 | QCS0900 | - |
| CSKP R/L 1616 H09 | CS090300 | BE02100 | GS05001 | SS25 | GS05004 | QCS0900 | - |
| CSKP R/L 2020 K09 | CS090300 | BE02100 | GS05001 | SS25 | GS05004 | QCS0900 | - |
| CSKP R/L 2020 K12 | CS120300 | BE02100 | GS06000 | SS30 | GS05005 | QCS1200 | QCS1201 |
| CSKP R/L 2525 M12 | CS120300 | BE02100 | GS06000 | SS30 | GS05005 | QCS1200 | QCS1201 |
| CSKP R/L 3225 P12 | CS120300 | BE02100 | GS06000 | SS30 | GS05005 | QCS1200 | QCS1201 |
| CSKP R/L 3232 P19 | CS190300 | BE03000 | GS08000 | SS40 | GS08001 | QCS1900 | QCS1901 |
| CSKP R/L 4040 S19 | CS190300 | BE03000 | GS08000 | SS40 | GS08001 | QCS1900 | QCS1901 |
| CSKP R/L 5050 T19 | CS190300 | BE03000 | GS08000 | SS40 | GS08001 | QCS1900 | QCS1901 |















(C) TOP CLAMP TOOLHOLDERS

| Medium to Finishing | Finishing to Fine Finishing | Medium |
|---|---|---|
| Flat | 12 | 13 |
|  |  |  |
| (09-12-19) | (09-12) | (09-12) |



Axial: 4,25°
Radial: 4,25°



| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212019000 | 212018800 | CSSP R/L 1212 F09 | 12 | 12 | 80 | 22 | 16 | SP.. 0903.. | 0,070 |  |  |
| 212265400 | 212265500 | CSSP R/L 1616 H09 | 16 | 16 | 100 | 22 | 20 | SP.. 0903.. | 0,200 |  |  |
| 212034500 | 212034600 | CSSP R/L 2020 K12 | 20 | 20 | 125 | 22 | 25 | SP.. 1203.. | 0,400 |  |  |
| 212036100 | 212034700 | CSSP R/L 2525 M12 | 25 | 25 | 150 | 28 | 32 | SP.. 1203.. | 0,700 |  |  |
| 212265600 | 212265700 | CSSP R/L 3225 P12 | 32 | 25 | 170 | 28 | 32 | SP.. 1203.. | 1,000 |  |  |
| 212265800 | 212265900 | CSSP R/L 3232 P19 | 32 | 32 | 170 | 42 | 40 | SP.. 1904.. | 1,250 |  |  |
| 212266000 | 212266100 | CSSP R/L 4040 S19 | 40 | 40 | 250 | 42 | 50 | SP.. 1904.. | 3,000 |  |  |

 Stock Items | Itens de stock




 Available under request | Disponível sob consulta | Disponible bajo consulta

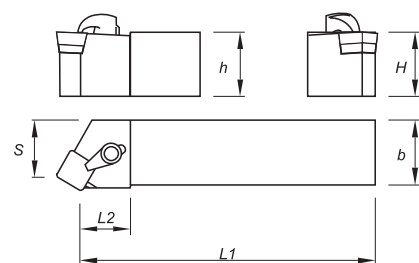
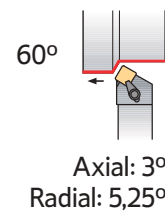
SPARE PARTS || Complementos | Repuestos









Complementary Accessories - Flat Inserts

| Cutter Reference | Shim | Shim Pin | Clamp | Wrench | Clamp | Chip Breaker 1 | Chip Breaker 2 |
|-------------------|---|---|---|---|---|---|---|
| CSSP R/L 1212 F09 |  |  |  |  |  |  |  |
| CSSP R/L 1212 F09 | CS090300 | BE02100 | GS05001 | SS25 | GS05004 | QCS0901 | QCS0902 |
| CSSP R/L 1616 H09 | CS090300 | BE02100 | GS05001 | SS25 | GS05004 | QCS0901 | QCS0902 |
| CSSP R/L 2020 K12 | CS120300 | BE02100 | GS06000 | SS30 | GS05005 | QCS1202 | QCS1203 |
| CSSP R/L 2525 M12 | CS120300 | BE02100 | GS06000 | SS30 | GS05005 | QCS1202 | QCS1203 |
| CSSP R/L 3225 P12 | CS120300 | BE02100 | GS06000 | SS30 | GS05005 | QCS1202 | QCS1203 |
| CSSP R/L 3232 P19 | CS190300 | BE03000 | GS08000 | SS40 | GS08001 | QCS1902 | QCS1903 |
| CSSP R/L 4040 S19 | CS190300 | BE03000 | GS08000 | SS40 | GS08001 | QCS1902 | QCS1903 |

(C) TOP CLAMP TOOLHOLDERS

| Medium to Finishing | Finishing to Fine Finishing | Medium |
|---|---|---|
| Flat | 12 | 13 |
|  |  |  |
| (09-12) | (09-12) | (09-12) |







| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-----------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212266200 | 212266300 | CSTP R/L 1616 H09 | 16 | 16 | 100 | 22 | 13 | SP.0903.. | 0,200 |  |  |
| 212266400 | 212266500 | CSTP R/L 2020 K09 | 20 | 20 | 125 | 22 | 17 | SP.0903.. | 0,350 |  |  |
| 212266600 | 212266700 | CSTP R/L 2020 K12 | 20 | 20 | 125 | 28 | 17 | SP.1203.. | 0,400 |  |  |
| 212266800 | 212266900 | CSTP R/L 2525 M12 | 25 | 25 | 150 | 28 | 22 | SP.1203.. | 0,700 |  |  |

 Stock Items | Itens de stock




Available under request | Disponível sob consulta | Disponible bajo consulta

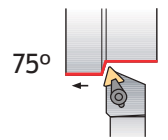
SPARE PARTS || Complementos | Repuestos

Complementary Accessories - Flat Inserts

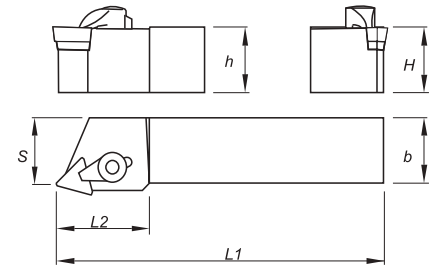
| Cutter Reference | Shim | Shim Pin | Clamp | Wrench | Clamp | Chip Breaker 1 | Chip Breaker 2 |
|-------------------|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |
| CSTP R/L 1616 H09 | CS090300 | BE02100 | GS05001 | SS25 | GS05004 | QCS0900 | - |
| CSTP R/L 2020 K09 | CS090300 | BE02100 | GS05001 | SS25 | GS05004 | QCS0900 | - |
| CSTP R/L 2020 K12 | CS120300 | BE02100 | GS06000 | SS30 | GS05005 | QCS1200 | QCS1201 |
| CSTP R/L 2525 M12 | CS120300 | BE02100 | GS06000 | SS30 | GS05005 | QCS1200 | QCS1201 |









(C) TOP CLAMP TOOLHOLDERS

| Medium to Finishing | Finishing to Fine Finishing | Medium |
|--|--|--|
| Flat  (11-16) | 12  (11-16) | 13  (11-16) |



Axial: 1,5°
Radial: 5,75°



| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212267000 | 212267100 | CTBP R/L 1212 F11 | 12 | 12 | 80 | 18 | 11 | TP. 1103.. | 0,070 |  |  |
| 212267200 | 212267300 | CTBP R/L 1616 H11 | 16 | 16 | 100 | 22 | 13 | TP. 1103.. | 0,200 |  |  |
| 212267400 | 212267500 | CTBP R/L 2020 K16 | 20 | 20 | 125 | 28 | 17 | TP. 1603.. | 0,400 |  |  |
| 212267600 | 212267700 | CTBP R/L 2525 M16 | 25 | 25 | 150 | 28 | 22 | TP. 1603.. | 0,700 |  |  |

 Stock Items | Itens de stock




Available under request | Disponível sob consulta | Disponible bajo consulta

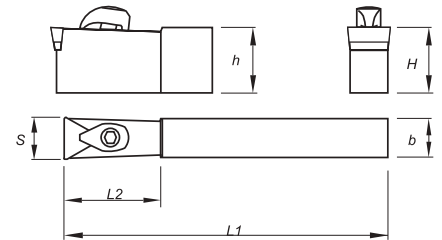
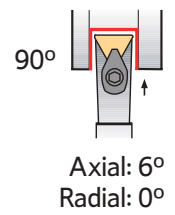
SPARE PARTS || Complementos | Repuestos







Complementary Accessories - Flat Inserts

| Cutter Reference | Shim | Shim Pin | Clamp | Wrench | Clamp | Chip Breaker 1 | Chip Breaker 2 |
|-------------------|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |
| CTBP R/L 1212 F11 | - | - | GS05001 | SS25 | GS05004 | QCT1100 | - |
| CTBP R/L 1616 H11 | - | - | GS05001 | SS25 | GS05004 | QCT1100 | - |
| CTBP R/L 2020 K16 | CT160301 | BE02100 | GS06000 | SS30 | GS05005 | QCT1600 | QCT1601 |
| CTBP R/L 2525 M16 | CT160301 | BE02100 | GS06000 | SS30 | GS05005 | QCT1600 | QCT1601 |


(C) TOP CLAMP TOOLHOLDERS

| Medium to Finishing | Finishing to Fine Finishing | Medium |
|---|--|---|
| Flat  (11-16-22) | 12  (11-16) | 13  (11-16-22) |



| Order Code | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock |
|------------|-----------------|-----------------|----|-----|----|----|-------------|-------|---|
| | | H=h | b | L1 | L2 | S | | | |
| 212267800 | CTCP N 1009 E11 | 10 | 9 | 70 | 22 | 11 | TP.. 1103.. | 0,040 |  |
| 212267900 | CTCP N 2009 K11 | 20 | 9 | 125 | 22 | 11 | TP.. 1103.. | 0,150 |  |
| 212268000 | CTCP N 2509 R11 | 25 | 9 | 200 | 22 | 11 | TP.. 1103.. | 0,350 |  |
| 212268100 | CTCP N 2513 R16 | 25 | 13 | 200 | 28 | 16 | TP.. 1603.. | 0,500 |  |
| 212268200 | CTCP N 2518 R22 | 25 | 18 | 200 | 34 | 22 | TP.. 2204.. | 0,650 |  |
| 212268300 | CTCP N 4018 R22 | 40 | 18 | 200 | 34 | 22 | TP.. 2204.. | 1,100 |  |

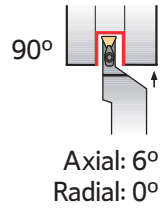
 Stock Items | Itens de stock

 Available under request | Disponível sob consulta | Disponible bajo consulta

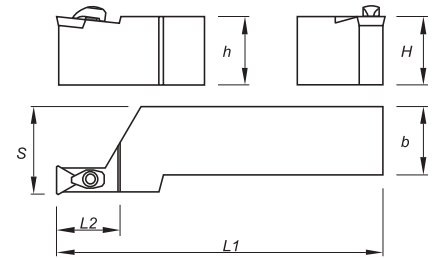
SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Shim | Shim Pin | Clamp | Wrench | Chip Breaker 1 | Chip Breaker 2 |
|------------------|---|---|---|---|---|---|
| |  |  |  |  |  |  |
| CTCP N 1009 E11 | - | - | GS04000 | SS25 | QCT1100 | QCT1101 |
| CTCP N 2009 K11 | - | - | GS04000 | SS25 | QCT1100 | QCT1101 |
| CTCP N 2509 R11 | - | - | GS04000 | SS25 | QCT1100 | QCT1101 |
| CTCP N 2513 R16 | CT160301 | BE02100 | GS05002 | SS30 | QCT1600 | QCT1601 |
| CTCP N 2518 R22 | CT220301 | BE03000 | GS08000 | SS40 | QCT2200 | QCT2201 |
| CTCP N 4018 R22 | CT220301 | BE03000 | GS08000 | SS40 | QCT2200 | QCT2201 |

(C) TOP CLAMP TOOLHOLDERS



| Medium to Finishing | Finishing to Fine Finishing | Medium |
|---------------------|-----------------------------|------------------|
| Flat (11-16-22) | 12 (11-16) | 13 (11-16-22) |



| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|-------|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212268400 | 212268500 | CTCP R/L 1212 F11 | 12 | 12 | 80 | 22 | 16 | TP.. 1103.. | 0,070 | ⊗ | ⊗ |
| 212268600 | 212268700 | CTCP R/L 1616 H11 | 16 | 16 | 100 | 22 | 20 | TP.. 1103.. | 0,200 | ⊗ | ⊗ |
| 212268800 | 212268900 | CTCP R/L 2020 K11 | 20 | 20 | 125 | 22 | 25 | TP.. 1103.. | 0,400 | ⊗ | ⊗ |
| 212269000 | 212269100 | CTCP R/L 2525 M11 | 25 | 25 | 150 | 22 | 32 | TP.. 1103.. | 0,700 | ⊗ | ⊗ |
| 212269200 | 212269300 | CTCP R/L 3225 P16 | 32 | 32 | 170 | 28 | 32 | TP.. 1603.. | 1,000 | ⊗ | ⊗ |
| 212269400 | 212269500 | CTCP R/L 3232 P16 | 32 | 32 | 170 | 28 | 40 | TP.. 1603.. | 1,250 | ⊗ | ⊗ |
| 212269600 | 212269700 | CTCP R/L 3225 P22 | 32 | 25 | 170 | 34 | 32 | TP.. 2204.. | 1,000 | ⊗ | ⊗ |
| 212269800 | 212269900 | CTCP R/L 3232 P22 | 32 | 32 | 170 | 34 | 40 | TP.. 2204.. | 1,250 | ⊗ | ⊗ |




⊗ Stock Items | Itens de stock

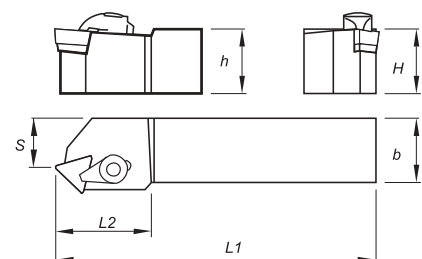
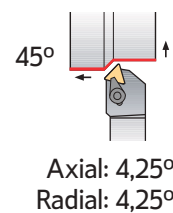
○ Available under request | Disponível sob consulta | Disponible bajo consulta













SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Order separately | | | | | |
|-------------------|------------------|----------|----------------|--------|---------|---------|
| | Shim | Shim Pin | Shim Pin Punch | Spring | Clamp | Screw |
| CTCP R/L 1212 F11 | - | - | GS04000 | SS25 | QCT1100 | QCT1101 |
| CTCP R/L 1616 H11 | - | - | GS04000 | SS25 | QCT1100 | QCT1101 |
| CTCP R/L 2020 K11 | - | - | GS04000 | SS25 | QCT1100 | QCT1101 |
| CTCP R/L 2525 M11 | - | - | GS04000 | SS25 | QCT1100 | QCT1101 |
| CTCP R/L 3225 P16 | CT160301 | BE02100 | GS05002 | SS30 | QCT1600 | QCT1601 |
| CTCP R/L 3232 P16 | CT160301 | BE02100 | GS05002 | SS30 | QCT1600 | QCT1601 |
| CTCP R/L 3225 P22 | CT220301 | BE03000 | GS08000 | SS40 | QCT2200 | QCT2201 |
| CTCP R/L 3232 P22 | CT220301 | BE03000 | GS08000 | SS40 | QCT2200 | QCT2201 |

(C) TOP CLAMP TOOLHOLDERS

| Medium to Finishing | Finishing to Fine Finishing | Medium |
|---|--|---|
| Flat  (11-16-22) | 12  (11-16) | 13  (11-16-22) |










| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|------|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212270000 | 212270100 | CTDP R/L 1212 F11 | 12 | 12 | 80 | 20 | 6,3 | TP.. 1103.. | 0,070 |  |  |
| 212019400 | 212270200 | CTDP R/L 1616 H11 | 16 | 16 | 100 | 22 | 10,3 | TP.. 1103.. | 0,200 |  |  |
| 212270300 | 212270400 | CTDP R/L 2020 K16 | 20 | 20 | 125 | 28 | 12,2 | TP.. 1603.. | 0,400 |  |  |
| 212270500 | 212019300 | CTDP R/L 2525 M16 | 25 | 25 | 150 | 28 | 17,2 | TP.. 1603.. | 0,700 |  |  |
| 212270600 | 212270700 | CTDP R/L 3232 P16 | 32 | 32 | 170 | 28 | 23,5 | TP.. 1603.. | 1,250 |  |  |
| 212270800 | 212270900 | CTDP R/L 3232 P22 | 32 | 32 | 170 | 34 | 20,5 | TP.. 2204.. | 1,250 |  |  |

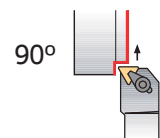
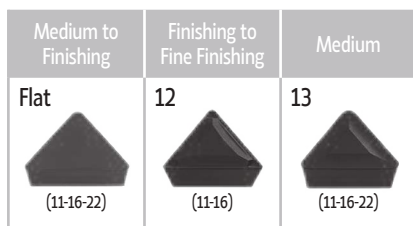
 Stock Items | Itens de stock

 Available under request | Disponível sob consulta | Disponible bajo consulta

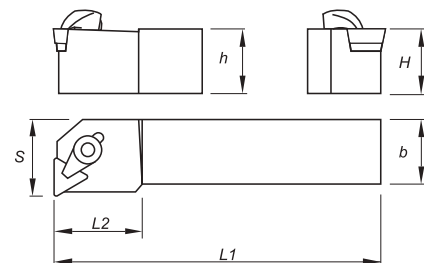
SPARE PARTS | Complementos | Repuestos



























| Cutter Reference | Complementary Accessories - Flat Inserts | | | | | | |
|-------------------|---|---|---|---|---|---|---|
| | Shim | Shim Pin | Clamp | Wrench | Clamp | Chip Breaker 1 | Chip Breaker 2 |
| CTDP R/L 1212 F11 |  |  |  |  |  |  |  |
| CTDP R/L 1212 F11 | - | - | GS05001 | SS25 | GS05004 | QCT1100 | QCT1101 |
| CTDP R/L 1616 H11 | - | - | GS05001 | SS25 | GS05004 | QCT1100 | QCT1101 |
| CTDP R/L 2020 K16 | CT160301 | BE02100 | GS06000 | SS30 | GS05005 | QCT1600 | QCT1601 |
| CTDP R/L 2525 M16 | CT160301 | BE02100 | GS06000 | SS30 | GS05005 | QCT1600 | QCT1601 |
| CTDP R/L 3232 P16 | CT160301 | BE02100 | GS06000 | SS30 | GS05005 | QCT1600 | QCT1601 |
| CTDP R/L 3232 P22 | CT220301 | BE03000 | GS08000 | SS40 | GS08001 | QCT2200 | QCT2201 |

(C) TOP CLAMP TOOLHOLDERS



Axial: 6°
Radial: 0°










| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212271000 | 212271100 | CTFP R/L 1010 E11 | 10 | 10 | 70 | 16 | 12 | TP.. 1103.. | 0,030 |  |  |
| 212019800 | 212271200 | CTFP R/L 1212 F11 | 12 | 12 | 80 | 18 | 16 | TP.. 1103.. | 0,070 |  |  |
| 212019900 | 212271300 | CTFP R/L 1616 H11 | 16 | 16 | 100 | 22 | 20 | TP.. 1103.. | 0,200 |  |  |
| 212033600 | 212019500 | CTFP R/L 2020 K11 | 20 | 20 | 125 | 22 | 25 | TP.. 1103.. | 0,400 |  |  |
| 212033700 | 212024000 | CTFP R/L 2020 K16 | 20 | 20 | 125 | 22 | 25 | TP.. 1603.. | 0,400 |  |  |
| 212035900 | 212033800 | CTFP R/L 2525 M16 | 25 | 25 | 150 | 22 | 32 | TP.. 1603.. | 0,700 |  |  |
| 212271400 | 212271500 | CTFP R/L 3225 P16 | 32 | 25 | 170 | 22 | 32 | TP.. 1603.. | 1,000 |  |  |
| 212271600 | 212271700 | CTFP R/L 3232 P16 | 32 | 32 | 170 | 28 | 40 | TP.. 1603.. | 1,250 |  |  |
| 212271800 | 212271900 | CTFP R/L 4040 S16 | 40 | 40 | 250 | 34 | 50 | TP.. 1603.. | 3,000 |  |  |
| 212272000 | 212272100 | CTFP R/L 5050 T16 | 50 | 50 | 300 | 34 | 60 | TP.. 1603.. | 5,650 |  |  |
| 212272200 | 212272300 | CTFP R/L 3232 P22 | 32 | 32 | 170 | 34 | 40 | TP.. 2204.. | 1,250 |  |  |
| 212272400 | 212272500 | CTFP R/L 4040 S22 | 40 | 40 | 250 | 34 | 50 | TP.. 2204.. | 3,000 |  |  |
| 212272600 | 212272700 | CTFP R/L 5050 T22 | 50 | 50 | 300 | 34 | 60 | TP.. 2204.. | 5,650 |  |  |

 Stock Items | Itens de stock




 Available under request | Disponível sob consulta | Disponible bajo consulta

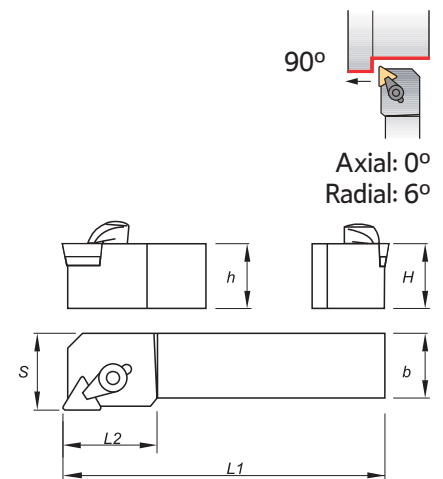
SPARE PARTS | Complementos | Repuestos





















Complementary Accessories - Flat Inserts

| Cutter Reference | Shim | Shim Pin | Clamp | Wrench | Clamp | Chip Breaker 1 | Chip Breaker 2 |
|-------------------|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |
| CTFP R/L 1010 E11 | - | - | GS03000 | SS15 | - | - | - |
| CTFP R/L 1212 F11 | - | - | GS05001 | SS25 | GS05004 | QCT1100 | QCT1101 |
| CTFP R/L 1616 H11 | - | - | GS05001 | SS25 | GS05004 | QCT1100 | QCT1101 |
| CTFP R/L 2020 K11 | - | - | GS05001 | SS25 | GS05004 | QCT1100 | QCT1101 |
| CTFP R/L 2020 K16 | CT160301 | BE02100 | GS06000 | SS30 | GS05005 | QCT1600 | QCT1601 |
| CTFP R/L 2525 M16 | CT160301 | BE02100 | GS06000 | SS30 | GS05005 | QCT1600 | QCT1601 |
| CTFP R/L 3225 P16 | CT160301 | BE02100 | GS06000 | SS30 | GS05005 | QCT1600 | QCT1601 |
| CTFP R/L 3232 P16 | CT160301 | BE02100 | GS06000 | SS30 | GS05005 | QCT1600 | QCT1601 |
| CTFP R/L 4040 S16 | CT160301 | BE02100 | GS06000 | SS30 | GS05005 | QCT1600 | QCT1601 |
| CTFP R/L 5050 T16 | CT160301 | BE02100 | GS06000 | SS30 | GS05005 | QCT1600 | QCT1601 |
| CTFP R/L 3232 P22 | CT220301 | BE03000 | GS08000 | SS40 | GS08001 | QCT2200 | QCT2201 |
| CTFP R/L 4040 S22 | CT220301 | BE03000 | GS08000 | SS40 | GS08001 | QCT2200 | QCT2201 |
| CTFP R/L 5050 T22 | CT220301 | BE03000 | GS08000 | SS40 | GS08001 | QCT2200 | QCT2201 |

(C) TOP CLAMP TOOLHOLDERS

| Medium to Finishing | Finishing to Fine Finishing | Medium |
|---|--|---|
| Flat  (11-16-22) | 12  (11-16) | 13  (11-16-22) |










| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212272800 | 212272900 | CTGP R/L 1010 E11 | 10 | 10 | 70 | 16 | 12 | TP.. 1103.. | 0,030 |  |  |
| 212273000 | 212020200 | CTGP R/L 1212 F11 | 12 | 12 | 80 | 18 | 16 | TP.. 1103.. | 0,070 |  |  |
| 212273100 | 212273200 | CTGP R/L 1616 H11 | 16 | 16 | 100 | 22 | 20 | TP.. 1103.. | 0,200 |  |  |
| 212033100 | 212033200 | CTGP R/L 2020 K11 | 20 | 20 | 125 | 22 | 25 | TP.. 1103.. | 0,400 |  |  |
| 212033300 | 212033400 | CTGP R/L 2020 K16 | 20 | 20 | 125 | 28 | 25 | TP.. 1603.. | 0,400 |  |  |
| 212035800 | 212033500 | CTGP R/L 2525 M16 | 25 | 25 | 150 | 28 | 32 | TP.. 1603.. | 0,700 |  |  |
| 212273300 | 212273400 | CTGP R/L 3225 P16 | 32 | 25 | 170 | 28 | 32 | TP.. 1603.. | 1,000 |  |  |
| 212273500 | 212273600 | CTGP R/L 3232 P22 | 32 | 32 | 170 | 34 | 40 | TP.. 2204.. | 1,250 |  |  |
| 212273700 | 212273800 | CTGP R/L 4040 S22 | 40 | 40 | 250 | 34 | 50 | TP.. 2204.. | 3,000 |  |  |
| 212273900 | 212274000 | CTGP R/L 5050 T22 | 50 | 50 | 300 | 34 | 60 | TP.. 2204.. | 5,650 |  |  |

 Stock Items | Itens de stock




 Available under request | Disponível sob consulta | Disponible bajo consulta

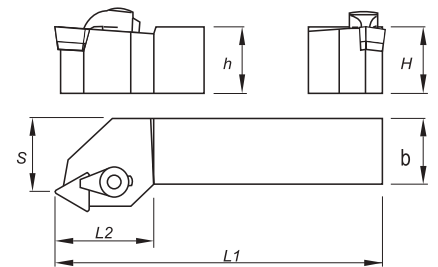
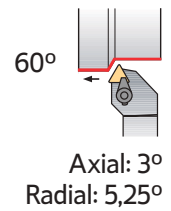
SPARE PARTS | Complementos | Repuestos

















Complementary Accessories - Flat Inserts

| Cutter Reference | Shim | Shim Pin | Clamp | Wrench | Clamp | Chip Breaker 1 | Chip Breaker 2 |
|-------------------|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |
| CTGP R/L 1010 E11 | - | - | GS03000 | SS15 | - | - | - |
| CTGP R/L 1212 F11 | - | - | GS05001 | SS25 | GS05004 | QCT1100 | QCT1101 |
| CTGP R/L 1616 H11 | - | - | GS05001 | SS25 | GS05004 | QCT1100 | QCT1101 |
| CTGP R/L 2020 K11 | - | - | GS05001 | SS25 | GS05004 | QCT1100 | QCT1101 |
| CTGP R/L 2020 K16 | CT160301 | BE02100 | GS06000 | SS30 | GS05005 | QCT1600 | QCT1601 |
| CTGP R/L 2525 M16 | CT160301 | BE02100 | GS06000 | SS30 | GS05005 | QCT1600 | QCT1601 |
| CTGP R/L 3225 P16 | CT160301 | BE02100 | GS06000 | SS30 | GS05005 | QCT1600 | QCT1601 |
| CTGP R/L 3232 P22 | CT220301 | BE03000 | GS08000 | SS40 | GS08001 | QCT2200 | QCT2201 |
| CTGP R/L 4040 S22 | CT220301 | BE03000 | GS08000 | SS40 | GS08001 | QCT2200 | QCT2201 |
| CTGP R/L 5050 T22 | CT220301 | BE03000 | GS08000 | SS40 | GS08001 | QCT2200 | QCT2201 |

(C) TOP CLAMP TOOLHOLDERS

| Medium to Finishing | Finishing to Fine Finishing | Medium |
|--|---|---|
| Flat  (11-16) | 12  (09-11-16) | 13  (09-11-16) |



| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212249500 | 212274100 | CTTP R/L 0808 D09 | 8 | 8 | 60 | 16 | 7 | TP.. 0902.. | 0,020 |  |  |
| 212274200 | 212274300 | CTTP R/L 1010 E09 | 10 | 10 | 70 | 16 | 9 | TP.. 0902.. | 0,030 |  |  |
| 212274400 | 212274500 | CTTP R/L 1010 E11 | 10 | 10 | 70 | 16 | 9 | TP.. 1103.. | 0,030 |  |  |
| 212274600 | 212274700 | CTTP R/L 1212 F11 | 12 | 12 | 80 | 18 | 11 | TP.. 1103.. | 0,070 |  |  |
| 212274800 | 212274900 | CTTP R/L 1616 H11 | 16 | 16 | 100 | 22 | 13 | TP.. 1103.. | 0,200 |  |  |
| 212275000 | 212275100 | CTTP R/L 2020 K11 | 20 | 20 | 125 | 22 | 17 | TP.. 1103.. | 0,400 |  |  |
| 212275200 | 212275300 | CTTP R/L 2020 K16 | 20 | 20 | 125 | 28 | 17 | TP.. 1603.. | 0,400 |  |  |
| 212247400 | 212275400 | CTTP R/L 2525 M16 | 25 | 25 | 150 | 28 | 22 | TP.. 1603.. | 0,700 |  |  |

 Stock Items | Itens de stock

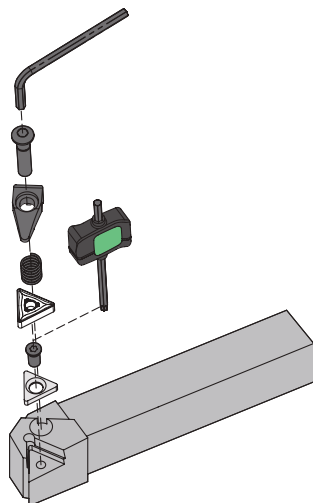
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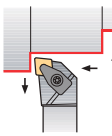
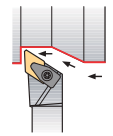
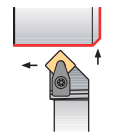
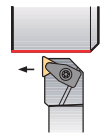
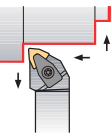
SPARE PARTS | Complementos | Repuestos

Complementary Accessories - Flat Inserts

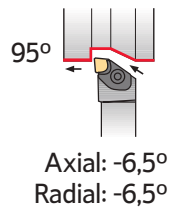
| Cutter Reference | Shim | Shim Pin | Clamp | Wrench | Clamp | Chip Breaker 1 | Chip Breaker 2 |
|-------------------|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |
| CTTP R/L 0808 D09 | - | - | GS03000 | SS15 | - | - | - |
| CTTP R/L 1010 E09 | - | - | GS03000 | SS15 | - | - | - |
| CTTP R/L 1010 E11 | - | - | GS03000 | SS15 | GS05004 | QCT1100 | QCT1101 |
| CTTP R/L 1212 F11 | - | - | GS05001 | SS25 | GS05004 | QCT1100 | QCT1101 |
| CTTP R/L 1616 H11 | - | - | GS05001 | SS25 | GS05004 | QCT1100 | QCT1101 |
| CTTP R/L 2020 K11 | - | - | GS05001 | SS25 | GS05004 | QCT1100 | QCT1101 |
| CTTP R/L 2020 K16 | CT160301 | BE02100 | GS06000 | SS30 | GS05005 | QCT1600 | QCT1601 |
| CTTP R/L 2525 M16 | CT160301 | BE02100 | GS06000 | SS30 | GS05005 | QCT1600 | QCT1601 |

(D) DIMPLE LOCK SYSTEM

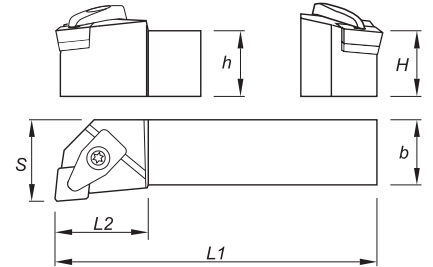


| | | | | |
|--|--|--|--|--|
| <p>DCLN 95°</p>  <p>PAGE C - 542 CN.. 1204.. CN.. 1906..</p> | <p>DDJN 93°</p>  <p>PAGE C - 543 DN.. 1104.. DN.. 1506..</p> | <p>DSSN 45°</p>  <p>PAGE C - 544 SN.. 1204.. SN.. 1906..</p> | <p>DTGN 90°</p>  <p>PAGE C - 545 TN.. 1604.. TN.. 2204..</p> | <p>DWLN 95°</p>  <p>PAGE C - 546 WN.. 0604.. WN.. 0804..</p> |
|--|--|--|--|--|

(D) DIMPLE LOCK TOOLHOLDERS



| | | | | | | |
|---------------------|----------------|---------------------|---------------------|----------------|-------------------|-------------------|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium | Medium |
| Flat (12-19) | MF (12) | SF (12) | LC (12) | MS (12) | MR (12-19) | PM (12) |
| Medium | Medium Wiper | Roughing to Medium | Roughing | Roughing | Heavy to Roughing | Heavy to Roughing |
| ST (12-19) | MW (12) | SS (12-19) | HR (12-19) | RP (19) | HY (19) | HZ (19) |



| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|-------|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212275500 | 212275600 | DCLN R/L 2020 K12 | 20 | 20 | 125 | 28 | 25 | CN.. 1204.. | 0,400 | | |
| 212219600 | 212246600 | DCLN R/L 2525 M12 | 25 | 25 | 150 | 28 | 32 | CN.. 1204.. | 0,750 | | |
| 212275700 | 212249200 | DCLN R/L 3232 P12 | 32 | 32 | 170 | 28 | 40 | CN.. 1204.. | 1,300 | | |
| 212275800 | 212275900 | DCLN R/L 3232 P19 | 32 | 32 | 170 | 42 | 40 | CN.. 1906.. | 1,300 | | |
| 212276000 | 212276100 | DCLN R/L 4040 S19 | 40 | 40 | 250 | 45 | 50 | CN.. 1906.. | 3,050 | | |
















Stock Items | Itens de stock

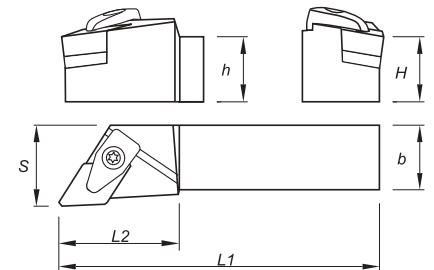
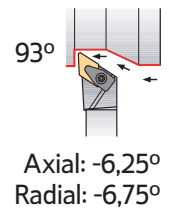
Available under request | Disponível sob consulta | Disponible bajo consulta









SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Shim | Shim Screw | Spring | Clamp | Clamp Screw | Wrench |
|-------------------|----------|----------------|------------|-----------|-----------------|------------|
| DCLN R/L 2020 K12 | CC120600 | T06010000 | M09513 | GA07002 | D0602900 | SS40 |
| DCLN R/L 2525 M12 | CC120600 | T06010000 | M09513 | GA07002 | D0602900 | SS40 |
| DCLN R/L 3232 P12 | CC120600 | T06010000 | M09513 | GA07002 | D0602900 | SS40 |
| DCLN R/L 3232 P19 | CC190502 | T06015000 | M09513 | GA07003 | D0602900 | SS40 |
| DCLN R/L 4040 S19 | CC190502 | T06015000 | M09513 | GA07003 | D0602900 | SS40 |

(D) DIMPLE LOCK TOOLHOLDERS

| | | | | | | | |
|--|--|--|---|---|--|---|--|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium | Medium | Medium |
| Flat | MF | SF | LC | MS | MR | PM | ST |
|  (11-15) |  (11-15) |  (11-15) |  (15) |  (15) |  (11-15) |  (15) |  (11-15) |
| Medium Wiper | Roughing to Medium | Roughing | Roughing | Roughing to Medium | Medium to Finishing | Medium to Finishing | |
| MW | SS | HR | RP | O1 | O2 | O3 | |
|  (15) |  (11-15) |  (15) |  (15) |  (15) |  (15) |  (15) | |









| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|------|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212422900 | 212423000 | DDJN R/L 2020 K11 | 20 | 20 | 125 | 34 | 25,0 | DN.. 1104.. | 0,400 |  |  |
| 212065900 | 212276200 | DDJN R/L 2020 K15 | 20 | 20 | 125 | 34 | 25 | DN.. 1506.. | 0,400 |  |  |
| 212219300 | 212168000 | DDJN R/L 2525 M15 | 25 | 25 | 150 | 34 | 32 | DN.. 1506.. | 0,750 |  |  |
| 212276300 | 212249400 | DDJN R/L 3232 P15 | 32 | 32 | 170 | 34 | 40 | DN.. 1506.. | 1,300 |  |  |












 Stock Items | Itens de stock

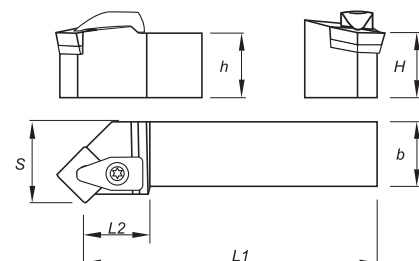
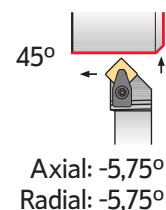
 Available under request | Disponível sob consulta | Disponible bajo consulta











SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Shim | Shim Screw | Spring | Clamp | Clamp Screw | Wrench |
|-------------------|---|---|---|---|--|---|
| DDJN R/L 2020 K11 |  CD110302 |  D0500801 |  M06511 |  GA05001 |  T05008000 |  SS40 |
| DDJN R/L 2020 K15 | CD150501 | T06010000 | M09513 | GA07002 | D0602900 | SS40 |
| DDJN R/L 2525 M15 | CD150501 | T06010000 | M09513 | GA07002 | D0602900 | SS40 |
| DDJN R/L 3232 P15 | CD150501 | T06010000 | M09513 | GA07002 | D0602900 | SS40 |

(D) DIMPLE LOCK TOOLHOLDERS































| | | | | | |
|--|--|---|--|---|--|
| Roughing | Finishing | Medium | Medium | Medium | Medium |
| Flat  (12-19) | MF  (12) | SF  (12) | MR  (12-19) | PM  (12) | ST  (12-19) |
| Roughing to Medium | Roughing | Roughing | Heavy to Roughing | Heavy to Roughing | |
| SS  (12-19) | HR  (12-19) | RP  (19) | HY  (19) | HZ  (19) | |














| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212066000 | 212276400 | DSSN R/L 2020 K12 | 20 | 20 | 125 | 28 | 25 | SN.. 1204.. | 0,400 |  |  |
| 212245800 | 212276500 | DSSN R/L 2525 M12 | 25 | 25 | 150 | 28 | 32 | SN.. 1204.. | 0,750 |  |  |
| 212276600 | 212276700 | DSSN R/L 3225 P12 | 32 | 25 | 170 | 28 | 32 | SN.. 1204.. | 1,050 |  |  |
| 212276800 | 212276900 | DSSN R/L 3232 P19 | 32 | 32 | 170 | 42 | 40 | SN.. 1906.. | 1,300 |  |  |
| 212277000 | 212277100 | DSSN R/L 4040 S19 | 40 | 40 | 250 | 45 | 50 | SN.. 1906.. | 3,050 |  |  |

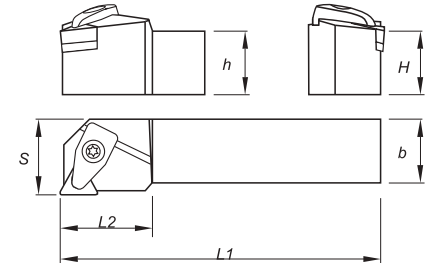
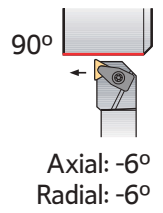
 Stock Itens | Itens de stock  Available under request | Disponível sob consulta | Disponible bajo consulta  Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock









SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Shim | Shim Screw | Spring | Clamp | Clamp Screw | Wrench |
|-------------------|--|---|--|--|--|--|
| DSSN R/L 2020 K12 |  CS120600 |  T06010000 |  M09513 |  GA07002 |  D0602900 |  SS40 |
| DSSN R/L 2525 M12 |  CS120600 |  T06010000 |  M09513 |  GA07002 |  D0602900 |  SS40 |
| DSSN R/L 3225 P12 |  CS120600 |  T06010000 |  M09513 |  GA07002 |  D0602900 |  SS40 |
| DSSN R/L 3232 P19 |  CS190501 |  T06015000 |  M09513 |  GA07003 |  D0602900 |  SS40 |
| DSSN R/L 4040 S19 |  CS190400 |  P0801411 |  M09513 |  GA07001 |  D0702800 |  SS40 |


(D) DIMPLE LOCK TOOLHOLDERS

| | | | | | |
|--|--|--|--|---|--|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium |
| Flat | MF | SF | LC | MS | MR |
|  (16-22) |  (16-22) |  (16-22) |  (16-22) |  (16) |  (16-22) |
| Medium | Medium | Roughing to Medium | Roughing | Medium to Finishing | |
| PM | ST | SS | HR | O1 | |
|  (16-22) |  (16-22) |  (16-22) |  (16-22) |  (16) | |



























| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212277200 | 212277300 | DTGN R/L 2020 K16 | 20 | 20 | 125 | 28 | 25 | TN.. 1604.. | 0,400 |  |  |
| 212219500 | 212277400 | DTGN R/L 2525 M16 | 25 | 25 | 150 | 28 | 32 | TN.. 1604.. | 0,750 |  |  |
| 212277500 | 212277600 | DTGN R/L 2525 M22 | 25 | 25 | 150 | 34 | 32 | TN.. 2204.. | 0,750 |  |  |
| 212277700 | 212277800 | DTGN R/L 3232 P22 | 32 | 32 | 170 | 34 | 40 | TN.. 2204.. | 1,300 |  |  |

 Stock Items | Itens de stock

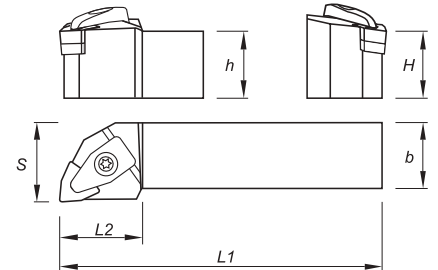
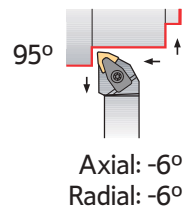
 Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Shim | Shim Screw | Spring | Clamp | Clamp Screw | Wrench |
|-------------------|---|--|---|---|---|---|
| DTGN R/L 2020 K16 |  CT160600 |  T05008000 |  M06511 |  GA05001 |  D0500801 |  SS40 |
| DTGN R/L 2525 M16 |  CT160600 |  T05008000 |  M06511 |  GA05001 |  D0500801 |  SS40 |
| DTGN R/L 2525 M22 |  CT220600 |  T06010000 |  M09513 |  GA07002 |  D0602900 |  SS40 |
| DTGN R/L 3232 P22 |  CT220600 |  T06010000 |  M09513 |  GA07002 |  D0602900 |  SS40 |

(D) DIMPLE LOCK TOOLHOLDERS

| | | | | | |
|-----------------|---------------|---------------------|---------------------|---------------------|---------------|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium to Finishing | Medium |
| Flat (06-08) | MF (06-08) | SF (06-08) | LC (08) | MS (06-08) | PM (06-08) |
| Medium | Medium | Medium Wiper | Roughing to Medium | Roughing | |
| MR (06-08) | ST (08) | MW (06-08) | SS (06-08) | HR (08) | |



| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|-------|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212425100 | 212425200 | DWLN R/L 2020 K06 | 20 | 20 | 125 | 34 | 25 | WN.. 0604.. | 0,400 | | |
| 212425300 | 212425400 | DWLN R/L 2525 M06 | 25 | 25 | 150 | 34 | 25 | WN.. 0604.. | 0,400 | | |
| 212277900 | 212278000 | DWLN R/L 2020 K08 | 20 | 20 | 125 | 34 | 25 | WN.. 0804.. | 0,400 | | |
| 212219400 | 212246300 | DWLN R/L 2525 M08 | 25 | 25 | 150 | 34 | 32 | WN.. 0804.. | 0,750 | | |
| 212278100 | 212278200 | DWLN R/L 3232 P08 | 32 | 32 | 170 | 34 | 40 | WN.. 0804.. | 1,300 | | |

Stock Items | Itens de stock

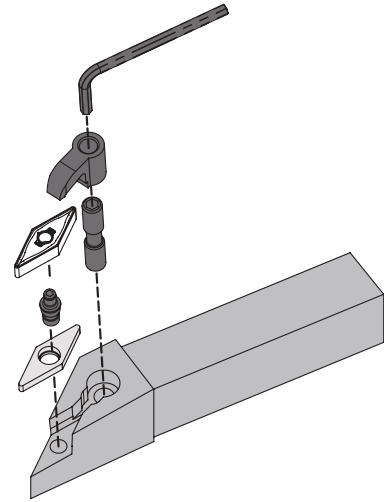
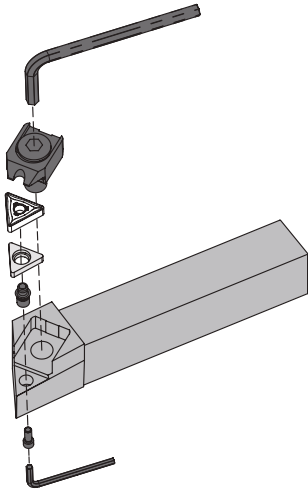
Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Shim | Shim Screw | Spring | Clamp | Clamp Screw | Wrench |
|-------------------|----------|------------|--------|---------|-------------|--------|
| DWLN R/L 2020 K06 | | | | | | |
| DWLN R/L 2525 M06 | CW060302 | T05008000 | M06511 | GA05001 | T05008000 | SS40 |
| DWLN R/L 2020 K08 | CW080500 | T06010000 | M09513 | GA07002 | D0602900 | SS40 |
| DWLN R/L 2525 M08 | CW080500 | T06010000 | M09513 | GA07002 | D0602900 | SS40 |
| DWLN R/L 3232 P08 | CW080500 | T06010000 | M09513 | GA07002 | D0602900 | SS40 |

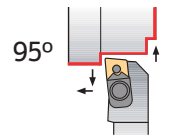
(M) WEDGE CLAMP SYSTEM

(M-K) DOUBLE LOCK SYSTEM

















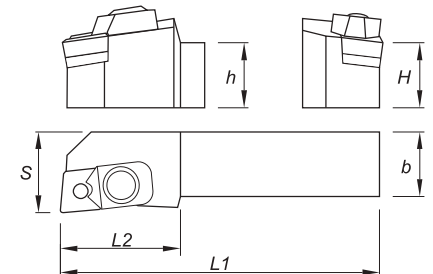
| | | | | | |
|--|--|--|--|--|--|
| <p>MCLN 95°</p> <p>PAGE C - 548 CN.. 1204.. CN.. 1906..</p> | <p>MCLN-K 95°</p> <p>PAGE C - 549 CN.. 1204.. CN.. 1906..</p> | <p>MDJN-K 93°</p> <p>PAGE C - 550 DN.. 1506..</p> | <p>MSSN-K 45°</p> <p>PAGE C - 551 SN.. 1204..</p> | <p>MSSN 45°</p> <p>PAGE C - 552 SN.. 1204.. SN.. 1906..</p> | <p>MTEN 60°</p> <p>PAGE C - 553 TN.. 1604.. TN.. 2204..</p> |
| <p>MTJN 93°</p> <p>PAGE C - 554 TN.. 1604.. TN.. 2204..</p> | <p>MTJN-K 93°</p> <p>PAGE C - 555 TN.. 1604.. TN.. 2204..</p> | <p>MTNN 63°</p> <p>PAGE C - 556 TN.. 1604.. TN.. 2204..</p> | <p>MVJN-K 93°</p> <p>PAGE C - 557 VN.. 1604..</p> | <p>MVQN-K 117°30'</p> <p>PAGE C - 558 VN.. 1604..</p> | <p>MVVN-K 72°30'</p> <p>PAGE C - 559 VN.. 1604..</p> |
| <p>MWLN 95°</p> <p>PAGE C - 560 WN.. 0604.. WN.. 0804..</p> | <p>MWLN-K 95°</p> <p>PAGE C - 561 WN.. 0804..</p> | | | | |













(M) WEDGE CLAMP SYSTEM




Axial: -8°
Radial: -6,5°

| | | | | | | |
|--|---|--|--|---|--|---|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium | Medium |
| Flat  (12-19) | MF  (12) | SF  (12) | LC  (12) | MS  (12) | MR  (12-19) | PM  (12) |
| Medium | Medium Wiper | Roughing to Medium | Roughing | Roughing | Heavy to Roughing | Heavy to Roughing |
| ST  (12-19) | MW  (12) | SS  (12-19) | HR  (12-19) | RP  (19) | HY  (19) | HZ  (19) |






| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212245900 | 212278300 | MCLN R/L 2020 K12 | 20 | 20 | 125 | 34 | 25 | CN.. 1204.. | 0,450 |  |  |
| 212246000 | 212010500 | MCLN R/L 2525 M12 | 25 | 25 | 150 | 34 | 32 | CN.. 1204.. | 0,800 |  |  |
| 212278400 | 212278500 | MCLN R/L 3225 P12 | 32 | 25 | 170 | 34 | 32 | CN.. 1204.. | 1,200 |  |  |
| 212278600 | 212278700 | MCLN R/L 2525 M19 | 25 | 25 | 150 | 42 | 32 | CN.. 1906.. | 0,800 |  |  |
| 212278800 | 212278900 | MCLN R/L 3225 P19 | 32 | 25 | 170 | 42 | 32 | CN.. 1906.. | 1,200 |  |  |
| 212279000 | 212279100 | MCLN R/L 4040 S19 | 40 | 40 | 250 | 42 | 50 | CN.. 1906.. | 3,100 |  |  |















 Stock Items | Itens de stock

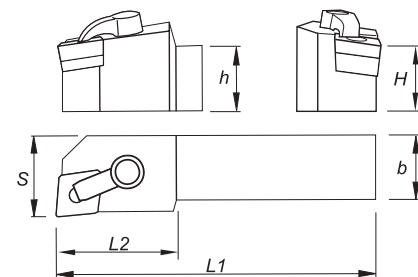
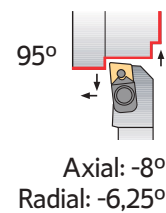
 Available under request | Disponível sob consulta | Disponible bajo consulta











SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Shim | Lock Pin | lock Pin Screw | Wedge Clamp | Wrench |
|-------------------|---|--|---|--|---|
| MCLN R/L 2020 K12 |  CC120500 |  BC06000 |  D0400900 |  GW08002 |  SS50 |
| MCLN R/L 2525 M12 | CC120500 | BC06000 | D0400900 | GW08002 | SS50 |
| MCLN R/L 3225 P12 | CC120500 | BC06000 | D0400900 | GW08002 | SS50 |
| MCLN R/L 2525 M19 | CC190500 | BC08000 | D0602200 | GW08003 | SS50 |
| MCLN R/L 3225 P19 | CC190500 | BC08000 | D0602200 | GW08003 | SS50 |
| MCLN R/L 4040 S19 | CC190500 | BC08000 | D0602200 | GW08003 | SS50 |

(M-K) DOUBLE LOCK SYSTEM

| | | | | | | |
|---|--|---|---|--|---|--|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium | Medium |
| Flat  (12-19) | MF  (12) | SF  (12) | LC  (12) | MS  (12) | MR  (12-19) | PM  (12) |
| Medium | Medium Wiper | Roughing to Medium | Roughing | Roughing | Heavy to Roughing | Heavy to Roughing |
| ST  (12-19) | MW  (12) | SS  (12-19) | HR  (12-19) | RP  (19) | HY  (19) | HZ  (19) |

































| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|---------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212286200 | 212286300 | MCLN R/L 2020 K12-K | 20 | 20 | 125 | 28 | 25 | CN.. 1204.. | 0,450 |  |  |
| 212286400 | 212286500 | MCLN R/L 2525 M12-K | 25 | 25 | 150 | 28 | 32 | CN.. 1204.. | 0,800 |  |  |
| 212286600 | 212286700 | MCLN R/L 3225 P12-K | 32 | 25 | 170 | 28 | 32 | CN.. 1204.. | 1,200 |  |  |
| 212286800 | 212286900 | MCLN R/L 2525 M19-K | 25 | 25 | 150 | 42 | 32 | CN.. 1906.. | 0,800 |  |  |
| 212287000 | 212287100 | MCLN R/L 3232 P19-K | 32 | 32 | 170 | 42 | 40 | CN.. 1906.. | 1,400 |  |  |

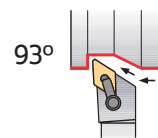
 Stock Items | Itens de stock

 Available under request | Disponível sob consulta | Disponible bajo consulta


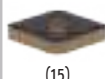
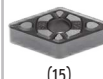

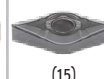










SPARE PARTS | Complementos | Repuestos

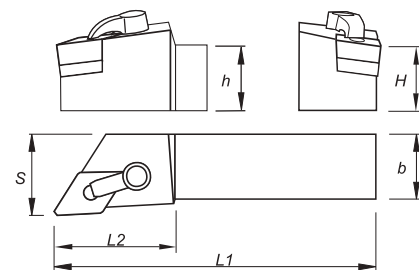
| Cutter Reference | Shim | Lock Pin | Lock Pin Wrench | Clamp | Differential Screw | Clamp Wrench |
|---------------------|--|---|--|---|--|--|
| MCLN R/L 2020 K12-K |  CC120500 |  BS1-400 |  SS25 |  GA06000 |  F0602900 |  SS30 |
| MCLN R/L 2525 M12-K |  CC120500 |  BS1-400 |  SS25 |  GA06000 |  F0602900 |  SS30 |
| MCLN R/L 3225 P12-K |  CC120500 |  BS1-400 |  SS25 |  GA06000 |  F0602900 |  SS30 |
| MCLN R/L 2525 M19-K |  CC190502 |  BS3-800 |  SS40 |  GA06003 |  F0802900 |  SS40 |
| MCLN R/L 3232 P19-K |  CC190502 |  BS3-800 |  SS40 |  GA06003 |  F0802900 |  SS40 |







(M-K) DOUBLE LOCK SYSTEM



Axial: -6°
Radial: -7°

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium | Medium | Medium |
| Flat | MF | SF | LC | MS | MR | PM | ST |
|  (15) |  (15) |  (15) |  (15) |  (15) |  (15) |  (15) |  (15) |
| Medium Wiper | Roughing to Medium | Roughing | Roughing | Roughing to Medium | Medium to Finishing | Medium to Finishing | |
| MW | SS | HR | RP | O1 | O2 | O3 | |
|  (15) |  (15) |  (15) |  (15) |  (15) |  (15) |  (15) | |









| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|---------------------|-----------------|----|-----|----|----|-------------|-------|--|--|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212287200 | 212287300 | MDJN R/L 2020 K15-K | 20 | 20 | 125 | 34 | 25 | DN.. 1506.. | 0,450 |  |  |
| 212287400 | 212287500 | MDJN R/L 2525 M15-K | 25 | 25 | 150 | 34 | 32 | DN.. 1506.. | 0,800 |  |  |
| 212287600 | 212287700 | MDJN R/L 3225 P15-K | 32 | 25 | 170 | 34 | 32 | DN.. 1506.. | 1,200 |  |  |









 Stock Items | Itens de stock

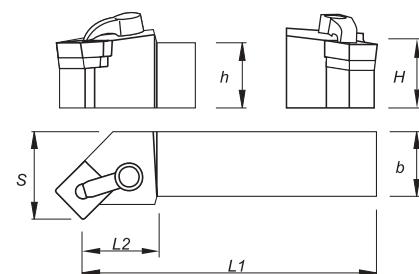
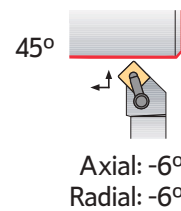
 Available under request | Disponível sob consulta | Disponible bajo consulta





SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Shim | Lock Pin | Lock Pin Wrench | Clamp | Differential Screw | Clamp Wrench |
|---------------------|---|---|---|--|---|---|
| |  |  |  |  |  |  |
| MDJN R/L 2020 K15-K | CD150501 | BS1-401 | SS25 | GA06001 | F0602900 | SS30 |
| MDJN R/L 2525 M15-K | CD150501 | BS1-401 | SS25 | GA06001 | F0602900 | SS30 |
| MDJN R/L 3225 P15-K | CD150501 | BS1-401 | SS25 | GA06001 | F0602900 | SS30 |

(M-K) DOUBLE LOCK SYSTEM

| | | | |
|---|---|---|---|
| Roughing | Finishing | Medium to finishing | Medium |
| Flat  (12) | MF  (12) | SF  (12) | MR  (12) |
| Medium | Medium | Roughing to Medium | Roughing |
| PM  (12) | ST  (12) | SS  (12) | HR  (12) |









| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|---------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212287800 | 212287900 | MSSN R/L 2020 K12-K | 20 | 20 | 125 | 28 | 27 | SN.. 1204.. | 0,450 |  |  |
| 212288000 | 212288100 | MSSN R/L 2525 M12-K | 25 | 25 | 150 | 28 | 32 | SN.. 1204.. | 0,800 |  |  |

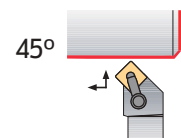
 Stock Items | Itens de stock

 Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS | Complementos | Repuestos

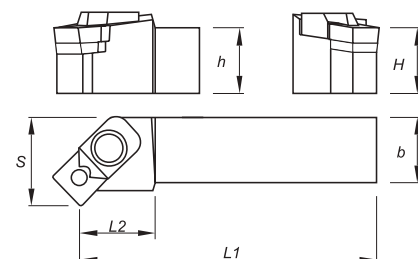
| Cutter Reference | Shim  | Lock Pin  | Lock Pin Wrench  | Clamp  | Differential Screw  | Clamp Wrench  |
|---------------------|---|---|--|--|---|---|
| MSSN R/L 2020 K12-K | CS120500 | BS1-400 | SS25 | GA06000 | F0602900 | SS30 |
| MSSN R/L 2525 M12-K | CS120500 | BS1-400 | SS25 | GA06000 | F0602900 | SS30 |

(M) WEDGE CLAMP SYSTEM



Axial: -6°
Radial: -6°

| | | | | | |
|--------------------|-----------|----------|-------------------|-------------------|---------|
| Roughing | Finishing | Medium | Medium | Medium | Medium |
| Flat | MF | SF | MR | PM | ST |
| (12-19) | (12) | (12) | (12-19) | (12) | (12-19) |
| Roughing to Medium | Roughing | Roughing | Heavy to Roughing | Heavy to Roughing | |
| SS | HR | RP | HY | HZ | |
| (12-19) | (12-19) | (19) | (19) | (19) | |



| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|-------|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212279200 | 212279300 | MSSN R/L 2020 K12 | 20 | 20 | 125 | 34 | 27 | SN.. 1204.. | 0,450 | | |
| 212279400 | 212279500 | MSSN R/L 2525 M12 | 25 | 25 | 150 | 34 | 32 | SN.. 1204.. | 0,800 | | |
| 212279600 | 212279700 | MSSN R/L 3225 P12 | 32 | 25 | 170 | 34 | 32 | SN.. 1204.. | 1,200 | | |
| 212279800 | 212279900 | MSSN R/L 2525 M19 | 25 | 25 | 150 | 42 | 32 | SN.. 1906.. | 0,800 | | |
| 212280000 | 212280100 | MSSN R/L 3225 P19 | 32 | 25 | 170 | 42 | 32 | SN.. 1906.. | 1,200 | | |
| 212280200 | 212280300 | MSSN R/L 3232 P19 | 32 | 32 | 170 | 42 | 40 | SN.. 1906.. | 1,400 | | |
| 212280400 | 212280500 | MSSN R/L 4040 S19 | 40 | 40 | 250 | 42 | 50 | SN.. 1906.. | 3,100 | | |












Stock Items | Itens de stock

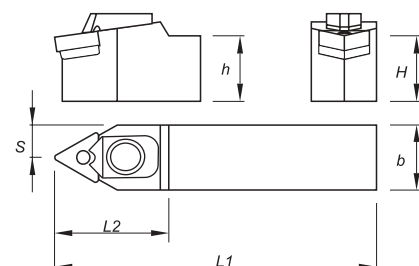
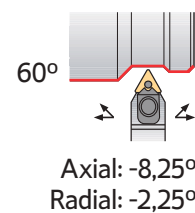
Available under request | Disponível sob consulta | Disponible bajo consulta

























SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Shim | Lock Pin | Lock Pin Screw | Wedge Clamp | Wrench |
|-------------------|----------|----------|----------------|-------------|--------|
| MSSN R/L 2020 K12 | | | | | |
| MSSN R/L 2525 M12 | CS120400 | BC06000 | D0400900 | GW08001 | SS50 |
| MSSN R/L 3225 P12 | CS120400 | BC06000 | D0400900 | GW08001 | SS50 |
| MSSN R/L 2525 M19 | CS190400 | BC08000 | D0601400 | GW08003 | SS50 |
| MSSN R/L 3225 P19 | CS190400 | BC08000 | D0601400 | GW08003 | SS50 |
| MSSN R/L 3232 P19 | CS190400 | BC08000 | D0601400 | GW08003 | SS50 |
| MSSN R/L 4040 S19 | CS190400 | BC08000 | D0601400 | GW08003 | SS50 |

(M) WEDGE CLAMP SYSTEM

| | | | | | |
|--|--|--|--|---|--|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium |
| Flat | MF | SF | LC | MS | MR |
|  (16-22) |  (16-22) |  (16-22) |  (16-22) |  (16) |  (16-22) |
| Medium | Medium | Roughing to Medium | Roughing | Medium to Finishing | |
| PM | ST | SS | HR | O1 | |
|  (16-22) |  (16-22) |  (16-22) |  (16-22) |  (16) | |








| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|------|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212280600 | 212280700 | MTEN R/L 2020 K16 | 20 | 20 | 125 | 34 | 10,5 | TN.. 1604.. | 0,450 |  |  |
| 212054800 | 212280900 | MTEN R/L 2525 M16 | 25 | 25 | 150 | 34 | 13,0 | TN.. 1604.. | 0,800 |  |  |
| 212281000 | 212281100 | MTEN R/L 3225 P16 | 32 | 25 | 170 | 34 | 13,0 | TN.. 1604.. | 1,200 |  |  |
| 212168800 | 212281300 | MTEN R/L 2525 M22 | 25 | 25 | 150 | 42 | 13,0 | TN.. 2204.. | 0,800 |  |  |
| 212281500 | 212281600 | MTEN R/L 3225 P22 | 32 | 25 | 170 | 42 | 13,0 | TN.. 2204.. | 1,200 |  |  |
| 212281800 | 212281900 | MTEN R/L 3232 P22 | 32 | 32 | 170 | 42 | 16,5 | TN.. 2204.. | 1,400 |  |  |
| 212282100 | 212282200 | MTEN R/L 4025 R22 | 40 | 25 | 200 | 42 | 13,0 | TN.. 2204.. | 1,500 |  |  |
| 212282400 | 212282500 | MTEN R/L 5032 S22 | 50 | 32 | 250 | 45 | 16,5 | TN.. 2204.. | 2,950 |  |  |
| 212280800 | | MTEN N 2020 K16 | 20 | 20 | 125 | 34 | 10,5 | TN.. 1604.. | 0,450 |  | |
| 212169700 | | MTEN N 2525 M16 | 25 | 25 | 150 | 34 | 13,0 | TN.. 1604.. | 0,800 |  | |
| 212281200 | | MTEN N 3225 P16 | 32 | 25 | 170 | 34 | 13,0 | TN.. 1604.. | 1,200 |  | |
| 212281400 | | MTEN N 2525 M22 | 25 | 25 | 150 | 42 | 13,0 | TN.. 2204.. | 0,800 |  | |
| 212281700 | | MTEN N 3225 P22 | 32 | 25 | 170 | 42 | 13,0 | TN.. 2204.. | 1,200 |  | |
| 212282000 | | MTEN N 3232 P22 | 32 | 32 | 170 | 42 | 16,5 | TN.. 2204.. | 1,400 |  | |
| 212282300 | | MTEN N 4025 R22 | 40 | 25 | 200 | 42 | 13,0 | TN.. 2204.. | 1,500 |  | |
| 212282600 | | MTEN N 5032 S22 | 50 | 32 | 250 | 45 | 16,5 | TN.. 2204.. | 2,950 |  | |

 Stock Items | Itens de stock

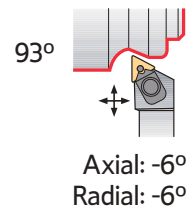
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SPARE PARTS || Complementos | Repuestos

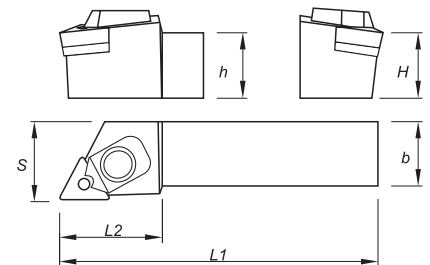
| Cutter Reference | Shim | Lock Pin | Lock Pin Screw | Wedge Clamp | Wrench |
|---------------------|---|---|---|---|---|
| |  |  |  |  |  |
| MTEN R/L/N 2020 K16 | CT160302 | BC04500 | D0300700 | GW08001 | SS50 |
| MTEN R/L/N 2525 M16 | CT160302 | BC04500 | D0300700 | GW08001 | SS50 |
| MTEN R/L/N 3225 P16 | CT160302 | BC04500 | D0300700 | GW08001 | SS50 |
| MTEN R/L/N 2525 M22 | CT220500 | BC06000 | D0400900 | GW08003 | SS50 |
| MTEN R/L/N 3225 P22 | CT220500 | BC06000 | D0400900 | GW08003 | SS50 |
| MTEN R/L/N 3232 P22 | CT220500 | BC06000 | D0400900 | GW08003 | SS50 |
| MTEN R/L/N 4025 R22 | CT220500 | BC06000 | D0400900 | GW08003 | SS50 |
| MTEN R/L/N 5032 S22 | CT220500 | BC06000 | D0400900 | GW08003 | SS50 |

















C
TURNING
Insert selection
Overview
Negative inserts
Positive inserts
PCBN & PCD inserts
Heavy turning
External Toolholders
Internal Toolholders
Automatic Lathes
Spare Parts
Technical Data

(M) WEDGE CLAMP SYSTEM



| | | | | | |
|--|--|--|--|--|--|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium |
| Flat | MF | SF | LC | MS | MR |
|  (16-22) |  (16-22) |  (16-22) |  (16-22) |  (16) |  (16-22) |
| Medium | Medium | Medium | Roughing to Medium | Roughing | Medium to Finishing |
| PM | ST | MW | SS | HR | O1 |
|  (16-22) |  (16-22) |  (16-22) |  (16-22) |  (16-22) |  (16) |








| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212054100 | 212282700 | MTJN R/L 2020 K16 | 20 | 20 | 125 | 34 | 25 | TN.. 1604.. | 0,450 |  |  |
| 212026100 | 212047700 | MTJN R/L 2525 M16 | 25 | 25 | 150 | 34 | 32 | TN.. 1604.. | 0,800 |  |  |
| 212010600 | 212282800 | MTJN R/L 3225 P16 | 32 | 25 | 170 | 34 | 32 | TN.. 1604.. | 1,200 |  |  |
| 212282900 | 212283000 | MTJN R/L 2525 M22 | 25 | 25 | 150 | 42 | 32 | TN.. 2204.. | 0,800 |  |  |
| 212283100 | 212283200 | MTJN R/L 3225 P22 | 32 | 25 | 170 | 42 | 32 | TN.. 2204.. | 1,200 |  |  |
| 212283300 | 212283400 | MTJN R/L 3232 P22 | 32 | 32 | 170 | 42 | 40 | TN.. 2204.. | 1,400 |  |  |
| 212283500 | 212283600 | MTJN R/L 4025 R22 | 40 | 25 | 200 | 42 | 32 | TN.. 2204.. | 1,500 |  |  |
| 212010700 | 212283700 | MTJN R/L 5032 S22 | 50 | 32 | 250 | 45 | 40 | TN.. 2204.. | 2,950 |  |  |













 Stock Items | Itens de stock

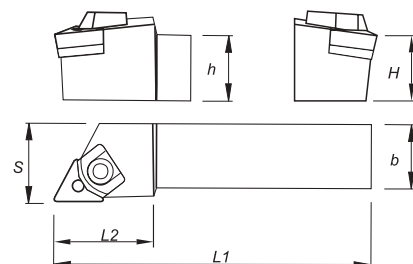
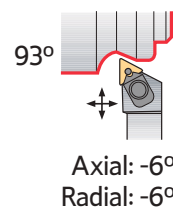
 Available under request | Disponível sob consulta | Disponible bajo consulta















SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Shim | Lock Pin | Lock Pin Screw | Wedge Clamp | Wrench |
|-------------------|---|--|---|--|---|
| MTJN R/L 2020 K16 |  CT160302 |  BC04500 |  D0300700 |  GW08001 |  SS50 |
| MTJN R/L 2525 M16 | CT160302 | BC04500 | D0300700 | GW08001 | SS50 |
| MTJN R/L 3225 P16 | CT160302 | BC04500 | D0300700 | GW08001 | SS50 |
| MTJN R/L 2525 M22 | CT220500 | BC06000 | D0400900 | GW08003 | SS50 |
| MTJN R/L 3225 P22 | CT220500 | BC06000 | D0400900 | GW08003 | SS50 |
| MTJN R/L 3232 P22 | CT220500 | BC06000 | D0400900 | GW08003 | SS50 |
| MTJN R/L 4025 R22 | CT220500 | BC06000 | D0400900 | GW08003 | SS50 |
| MTJN R/L 5032 S22 | CT220500 | BC06000 | D0400900 | GW08003 | SS50 |

(M-K) DOUBLE LOCK SYSTEM

| | | | | | |
|--|--|--|--|--|--|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium |
| Flat | MF | SF | LC | MS | MR |
|  (16-22) |  (16-22) |  (16-22) |  (16-22) |  (16) |  (16-22) |
| Medium | Medium | Medium | Roughing to Medium | Roughing | Medium to Finishing |
| PM | ST | MW | SS | HR | O1 |
|  (16-22) |  (16-22) |  (16-22) |  (16-22) |  (16-22) |  (16) |








| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|---------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212289300 | 212289400 | MTJN R/L 2020 K16-K | 20 | 20 | 125 | 22 | 25 | TN.. 1604.. | 0,450 |  |  |
| 212228600 | 212289500 | MTJN R/L 2525 M16-K | 25 | 25 | 150 | 22 | 32 | TN.. 1604.. | 0,800 |  |  |
| 212169600 | 212289600 | MTJN R/L 2525 M22-K | 25 | 25 | 150 | 28 | 32 | TN.. 2204.. | 0,800 |  |  |
| 212289700 | 212289800 | MTJN R/L 3225 P22-K | 32 | 25 | 170 | 28 | 32 | TN.. 2204.. | 1,200 |  |  |
| 212289900 | 212290000 | MTJN R/L 3232 P22-K | 32 | 32 | 170 | 28 | 40 | TN.. 2204.. | 1,400 |  |  |
| 212290100 | 212290200 | MTJN R/L 4025 R22-K | 40 | 25 | 200 | 34 | 32 | TN.. 2204.. | 1,500 |  |  |
| 212290300 | 212290400 | MTJN R/L 5032 S22-K | 50 | 32 | 250 | 34 | 40 | TN.. 2204.. | 2,950 |  |  |












 Stock Items | Itens de stock

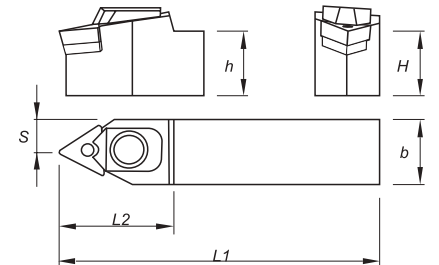
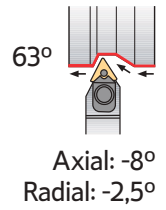
 Available under request | Disponível sob consulta | Disponible bajo consulta

















SPARE PARTS || Complementos | Repuestos


| Cutter Reference | Shim | Lock Pin | Lock Pin Screw | Wedge Clamp | Wrench |
|---------------------|---|--|---|--|---|
| MTJN R/L 2020 K16-K |  CT160302 |  BC04500 |  D0300700 |  GW05001 |  SS25 |
| MTJN R/L 2525 M16-K | CT160302 | BC04500 | D0300700 | GW05001 | SS25 |
| MTJN R/L 2525 M22-K | CT220500 | BC06000 | D0400900 | GW06001 | SS30 |
| MTJN R/L 3225 P22-K | CT220500 | BC06000 | D0400900 | GW06001 | SS30 |
| MTJN R/L 3232 P22-K | CT220500 | BC06000 | D0400900 | GW06001 | SS30 |
| MTJN R/L 4025 R22-K | CT220500 | BC06000 | D0400900 | GW06001 | SS30 |
| MTJN R/L 5032 S22-K | CT220500 | BC06000 | D0400900 | GW06001 | SS30 |

(M) WEDGE CLAMP SYSTEM

| | | | | | |
|--|--|--|--|---|--|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium |
| Flat | MF | SF | LC | MS | MR |
|  (16-22) |  (16-22) |  (16-22) |  (16-22) |  (16) |  (16-22) |
| Medium | Medium | Roughing to Medium | Roughing | Medium to Finishing | |
| PM | ST | SS | HR | O1 | |
|  (16-22) |  (16-22) |  (16-22) |  (16-22) |  (16) | |








| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|------|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212283800 | 212283900 | MTNN R/L 2020 K16 | 20 | 20 | 125 | 34 | 10,0 | TN.. 1604.. | 0,450 |  |  |
| 212284000 | 212043900 | MTNN R/L 2525 M16 | 25 | 25 | 150 | 34 | 12,5 | TN.. 1604.. | 0,800 |  |  |
| 212284100 | 212284200 | MTNN R/L 3225 P16 | 32 | 25 | 170 | 34 | 12,5 | TN.. 1604.. | 1,200 |  |  |
| 212284300 | 212284400 | MTNN R/L 2525 M22 | 25 | 25 | 150 | 42 | 12,5 | TN.. 2204.. | 0,800 |  |  |
| 212284500 | 212284600 | MTNN R/L 3225 P22 | 32 | 25 | 170 | 42 | 12,5 | TN.. 2204.. | 1,200 |  |  |
| 212284700 | 212284800 | MTNN R/L 3232 P22 | 32 | 32 | 170 | 42 | 16,0 | TN.. 2204.. | 1,400 |  |  |
| 212284900 | 212285000 | MTNN R/L 4025 R22 | 40 | 25 | 200 | 42 | 12,5 | TN.. 2204.. | 1,500 |  |  |
| 212285100 | 212285200 | MTNN R/L 5032 S22 | 50 | 32 | 250 | 45 | 16,0 | TN.. 2204.. | 2,950 |  |  |










 Stock items | Itens de stock

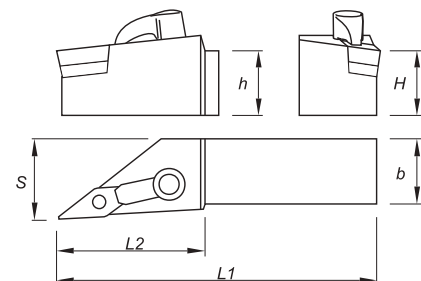
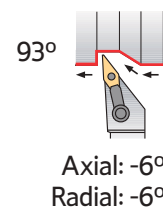
 Available under request | Disponível sob consulta | Disponible bajo consulta







SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Shim | Lock Pin | Lock Pin Screw | Wedge Clamp | Wrench |
|-------------------|---|---|---|---|---|
| MTNN R/L 2020 K16 |  |  |  |  |  |
| MTNN R/L 2525 M16 | CT160302 | BC04500 | D0300700 | GW08001 | SS50 |
| MTNN R/L 3225 P16 | CT160302 | BC04500 | D0300700 | GW08001 | SS50 |
| MTNN R/L 2525 M22 | CT220500 | BC06000 | D0400900 | GW08003 | SS50 |
| MTNN R/L 3225 P22 | CT220500 | BC06000 | D0400900 | GW08003 | SS50 |
| MTNN R/L 3232 P22 | CT220500 | BC06000 | D0400900 | GW08003 | SS50 |
| MTNN R/L 4025 R22 | CT220500 | BC06000 | D0400900 | GW08003 | SS50 |
| MTNN R/L 5032 S22 | CT220500 | BC06000 | D0400900 | GW08003 | SS50 |

(M-K) DOUBLE LOCK SYSTEM

| | | | | |
|---|---|---|---|---|
| Roughing | Medium to Finishing | Medium to Finishing | Medium to Finishing | Medium to Finishing |
| Flat | MF | SF | LC | MS |
|  (16) |  (16) |  (16) |  (16) |  (16) |
| Medium | Medium | Medium | Roughing to Medium | |
| MR | PM | ST | SS | |
|  (16) |  (16) |  (16) |  (16) | |







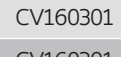





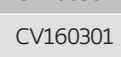







| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|---------------------|-----------------|----|-----|----|----|-------------|-------|--|--|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212050100 | 212057700 | MVJN R/L 2020 K16-K | 20 | 20 | 125 | 43 | 25 | VN.. 1604.. | 0,450 |  |  |
| 212246100 | 212288200 | MVJN R/L 2525 M16-K | 25 | 25 | 150 | 43 | 32 | VN.. 1604.. | 0,800 |  |  |
| 212288300 | 212288400 | MVJN R/L 3225 P16-K | 32 | 25 | 170 | 43 | 32 | VN.. 1604.. | 1,200 |  |  |

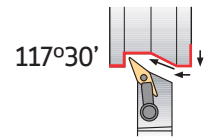
 Stock Items | Itens de stock

 Available under request | Disponível sob consulta | Disponible bajo consulta










SPARE PARTS || Complementos | Repuestos

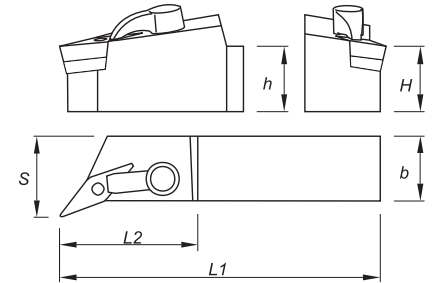
| Cutter Reference | Shim | Lock Pin | Lock Pin Wrench | Clamp | Differential Screw | Clamp Wrench |
|---------------------|---|--|---|--|---|---|
| MVJN R/L 2020 K16-K |  CV160301 |  BS05000 |  SS20 |  GA06002 |  F0602900 |  SS30 |
| MVJN R/L 2525 M16-K |  CV160301 |  BS05000 |  SS20 |  GA06002 |  F0602900 |  SS30 |
| MVJN R/L 3225 P16-K |  CV160301 |  BS05000 |  SS20 |  GA06002 |  F0602900 |  SS30 |







(M-K) DOUBLE LOCK SYSTEM




Axial: -8°
Radial: -10°

| | | | | |
|---|---|---|---|---|
| Roughing | Medium to Finishing | Medium to Finishing | Medium to Finishing | Medium to Finishing |
| Flat | MF | SF | LC | MS |
|  (16) |  (16) |  (16) |  (16) |  (16) |
| Medium | Medium | Medium | Roughing to Medium | |
| MR | PM | ST | SS | |
|  (16) |  (16) |  (16) |  (16) | |







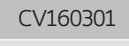





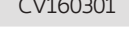







| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|---------------------|-----------------|----|-----|----|----|-------------|-------|--|--|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212288500 | 212288600 | MVQN R/L 2020 K16-K | 20 | 20 | 125 | 43 | 25 | VN.. 1604.. | 0,450 |  |  |
| 212288700 | 212288800 | MVQN R/L 2525 M16-K | 25 | 25 | 150 | 43 | 32 | VN.. 1604.. | 0,800 |  |  |
| 212288900 | 212289000 | MVQN R/L 3225 P16-K | 32 | 25 | 170 | 43 | 32 | VN.. 1604.. | 1,200 |  |  |










 Stock Items | Itens de stock

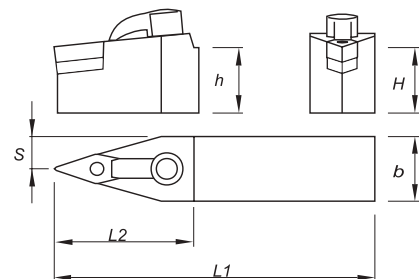
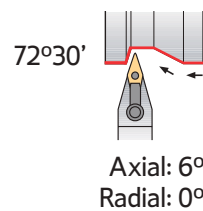
 Available under request | Disponível sob consulta | Disponible bajo consulta





SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Shim | Lock Pin | Lock Pin Wrench | Clamp | Differential Screw | Clamp Wrench |
|---------------------|---|--|---|---|---|---|
| MVQN R/L 2020 K16-K |  CV160301 |  BS05000 |  SS20 |  GA06002 |  F0602900 |  SS30 |
| MVQN R/L 2525 M16-K |  CV160301 |  BS05000 |  SS20 |  GA06002 |  F0602900 |  SS30 |
| MVQN R/L 3225 P16-K |  CV160301 |  BS05000 |  SS20 |  GA06002 |  F0602900 |  SS30 |

(M-K) DOUBLE LOCK SYSTEM

| | | | | |
|---|---|---|---|---|
| Roughing | Medium to Finishing | Medium to Finishing | Medium to Finishing | Medium to Finishing |
| Flat | MF | SF | LC | MS |
|  (16) |  (16) |  (16) |  (16) |  (16) |
| Medium | Medium | Medium | Roughing to Medium | |
| MR | PM | ST | SS | |
|  (16) |  (16) |  (16) |  (16) | |







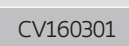







| Order Code | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-------------------|-----------------|----|-----|----|------|------------|-------|---|---|
| | | H=h | b | L1 | L2 | S | | | R | L |
| 212289100 | MVVN N 2020 K16-K | 20 | 20 | 125 | 43 | 10,0 | VN..1604.. | 0,450 |  |  |
| 212289200 | MVVN N 2525 M16-K | 25 | 25 | 150 | 43 | 12,5 | VN..1604.. | 0,800 |  |  |












 Stock Items | Itens de stock

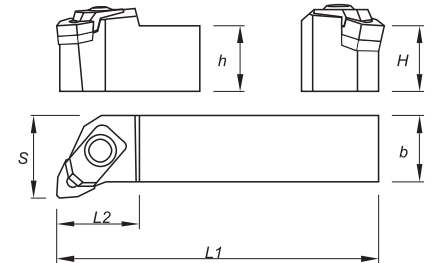
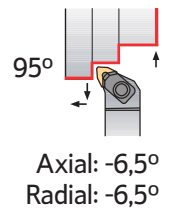
 Available under request | Disponível sob consulta | Disponible bajo consulta















SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Shim | Lock Pin | Lock Pin Wrench | Clamp | Differential Screw | Clamp Wrench |
|-------------------|---|--|---|--|---|---|
| MVVN N 2020 K16-K |  CV160301 |  BS05000 |  SS20 |  GA06002 |  F0602900 |  SS30 |
| MVVN N 2525 M16-K |  CV160301 |  BS05000 |  SS20 |  GA06002 |  F0602900 |  SS30 |

(M) WEDGE CLAMP SYSTEM

| | | | | | |
|--|--|--|--|--|--|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium |
| Flat  (08) | MF  (06-08) | SF  (06-08) | LC  (08) | MS  (06-08) | PM  (06-08) |
| Medium | Medium | Medium Wiper | Roughing to Medium | Roughing | |
| MR  (06-08) | ST  (08) | MW  (06-08) | SS  (06-08) | HR  (08) | |








| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212285300 | 212285400 | MWLN R/L 1616 H06 | 16 | 16 | 100 | 15 | 20 | WN.. 0604.. | 0,200 |  |  |
| 212048200 | 212285500 | MWLN R/L 2020 K06 | 20 | 20 | 125 | 25 | 25 | WN.. 0604.. | 0,450 |  |  |
| 212285600 | 212285700 | MWLN R/L 2525 M06 | 25 | 25 | 150 | 25 | 32 | WN.. 0604.. | 0,800 |  |  |
| 212246200 | 212285800 | MWLN R/L 2020 K08 | 20 | 20 | 125 | 34 | 25 | WN.. 0804.. | 0,450 |  |  |
| 212054000 | 212042400 | MWLN R/L 2525 M08 | 25 | 25 | 150 | 34 | 32 | WN.. 0804.. | 0,800 |  |  |
| 212285900 | 212286000 | MWLN R/L 3225 P08 | 32 | 25 | 170 | 34 | 32 | WN.. 0804.. | 1,200 |  |  |
| 212010800 | 212286100 | MWLN R/L 3232 P08 | 32 | 32 | 170 | 34 | 40 | WN.. 0804.. | 1,400 |  |  |












 Stock Items | Itens de stock

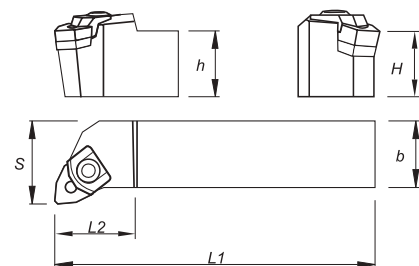
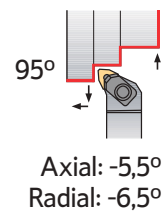
 Available under request | Disponível sob consulta | Disponible bajo consulta







SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Shim  | Lock Pin  | Lock Pin Screw  | Wedge Clamp  | Wrench  |
|-------------------|---|---|---|--|---|
| MWLN R/L 1616 H06 | CW060300 | BC04501 | D0300700 | GW05000 | SS25 |
| MWLN R/L 2020 K06 | CW060300 | BC04500 | D0300700 | GW05000 | SS25 |
| MWLN R/L 2525 M06 | CW060300 | BC04500 | D0300700 | GW05000 | SS25 |
| MWLN R/L 2020 K08 | CW080500 | BC06000 | D0400900 | GW08000 | SS50 |
| MWLN R/L 2525 M08 | CW080500 | BC06000 | D0400900 | GW08000 | SS50 |
| MWLN R/L 3225 P08 | CW080500 | BC06000 | D0400900 | GW08000 | SS50 |
| MWLN R/L 3232 P08 | CW080500 | BC06000 | D0400900 | GW08000 | SS50 |

(M-K) DOUBLE LOCK SYSTEM

| | | | | | |
|---|---|---|---|---|---|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium |
| Flat | MF | SF | LC | MS | PM |
|  (08) |  (08) |  (08) |  (08) |  (08) |  (08) |
| Medium | Medium | Medium Wiper | Roughing to Medium | Roughing | |
| MR | ST | MW | SS | HR | |
|  (08) |  (08) |  (08) |  (08) |  (08) | |


















| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|---------------------|-----------------|----|-----|----|----|-------------|-------|--|--|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212290500 | 212290600 | MWLN R/L 2020 K08-K | 20 | 20 | 125 | 34 | 25 | WN.. 0804.. | 0,450 |  |  |
| 212250200 | 212290700 | MWLN R/L 2525 M08-K | 25 | 25 | 150 | 34 | 32 | WN.. 0804.. | 0,800 |  |  |
| 212290800 | 212290900 | MWLN R/L 3232 P08-K | 32 | 32 | 170 | 34 | 40 | WN.. 0804.. | 1,400 |  |  |

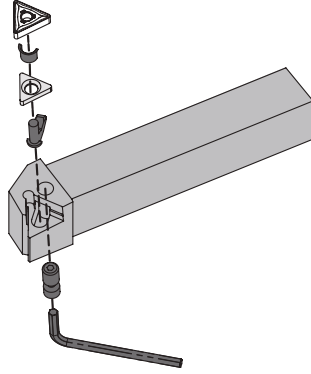
 Stock Items | Itens de stock

 Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS || Complementos | Repuestos














| Cutter Reference | Shim | Lock Pin | Lock Pin Screw | Wedge Clamp | Wrench |
|---------------------|---|--|---|--|---|
| MWLN R/L 2020 K08-K |  CW080500 |  BC06000 |  D0400900 |  GW06000 |  SS25 |
| MWLN R/L 2525 M08-K |  CW080500 |  BC06000 |  D0400900 |  GW06000 |  SS25 |
| MWLN R/L 3232 P08-K |  CW080500 |  BC06000 |  D0400900 |  GW06000 |  SS25 |

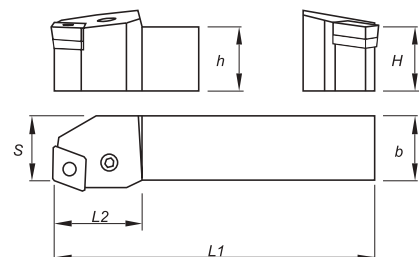
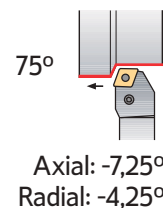
(P) LEVER LOCK SYSTEM

























| | | | | | |
|---|--|---|--|--|--|
| <p>PCBN 75°</p> <p>PAGE C - 563 CN.. 1204.. CN.. 1606.. CN.. 1906.. CN..2509..</p> | <p>PCFN 90°</p> <p>PAGE C - 564 CN.. 1204.. CN.. 1606.. CN.. 1906..</p> | <p>PCKN 75°</p> <p>PAGE C - 565 CN.. 1204... CN.. 1906.. CN.. 2506..</p> | <p>PCLN 95°</p> <p>PAGE C - 566 CN..0903.. ... CN..2509..</p> | <p>PCMN 50°</p> <p>PAGE C - 568 SN.. 1204.. SN.. 1906..</p> | <p>PCSN 45°</p> <p>PAGE C - 569 CN.. 1204.. CN.. 1606.. CN.. 1906..</p> |
| <p>PDJN 93°</p> <p>PAGE C - 570 DN.. 1104.. DN.. 1504.. DN.. 1506..</p> | <p>PDNN 63°</p> <p>PAGE C - 571 DN.. 1504.. DN.. 1506..</p> | <p>PRDC</p> <p>PAGE C - 572 RC.. 1003M0 ... RC.. 3209M0</p> | <p>PRSC</p> <p>PAGE C - 574 RC.. 10..32</p> | <p>PRSN</p> <p>PAGE C - 575 RN.. 09..25</p> | <p>PSBN 75°</p> <p>PAGE C - 576 SN.. 0903.. ... SN.. 2507..</p> |
| <p>PSDN 45°</p> <p>PAGE C - 577 SN.. 0903.. ... SN.. 2507..</p> | <p>PSKN 75°</p> <p>PAGE C - 578 SN.. 0903.. ... SN.. 2507..</p> | <p>PSSN 45°</p> <p>PAGE C - 579 SN.. 0903.. ... SN.. 2507..</p> | <p>PTDN 45°</p> <p>PAGE C - 580 TN.. 2204..</p> | <p>PTFN 90°</p> <p>PAGE C - 581 TN.. 1604.. TN.. 2204.. TN.. 2706..</p> | <p>PTGN 90°</p> <p>PAGE C - 582 TN.. 1604.. ... TN.. 3307..</p> |
| <p>PTTN 60°</p> <p>PAGE C - 583 TN.. 1604.. TN.. 2204..</p> | <p>PWLN 95°</p> <p>PAGE C - 584 WN.. 0604.. WN.. 0804..</p> | | | | |

(P) LEVER LOCK TOOLHOLDERS

| | | | | | | |
|---|---|--|--|--|---|---|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium | Medium |
| Flat  (12-16-19) | MF  (12) | SF  (12) | LC  (12) | MS  (12) | MR  (12-16-19) | PM  (12) |
| Medium | Roughing to Medium | Roughing | Roughing | Heavy to Roughing | Heavy to Roughing | |
| ST  (12-16-19) | SS  (12-16-19) | HR  (12-16-19-25) | RP  (16-19) | HY  (19-25) | HZ  (19-25) | |



| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|------|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212291000 | 212291100 | PCBN R/L 2020 K12 | 20 | 20 | 125 | 28 | 17 | CN.. 1204.. | 0,400 |  |  |
| 212011200 | 212010900 | PCBN R/L 2525 M12 | 25 | 25 | 150 | 28 | 22 | CN.. 1204.. | 0,750 |  |  |
| 212423100 | 212423200 | PCBN R/L 3225 P12 | 32 | 25 | 170 | 34 | 22,0 | CN.. 1204.. | 0,750 |  |  |
| 212291200 | 212291300 | PCBN R/L 2525 M16 | 25 | 25 | 150 | 34 | 22 | CN.. 1606.. | 0,750 |  |  |
| 212291400 | 212291500 | PCBN R/L 3225 P16 | 32 | 25 | 170 | 34 | 22 | CN.. 1606.. | 1,050 |  |  |
| 212291600 | 212291700 | PCBN R/L 3232 P16 | 32 | 32 | 170 | 34 | 27 | CN.. 1606.. | 1,300 |  |  |
| 212291800 | 212291900 | PCBN R/L 3225 P19 | 32 | 25 | 170 | 42 | 22 | CN.. 1906.. | 1,050 |  |  |
| 212011300 | 212011000 | PCBN R/L 3232 P19 | 32 | 32 | 170 | 42 | 27 | CN.. 1906.. | 1,300 |  |  |
| 212011400 | 212011100 | PCBN R/L 4040 S19 | 40 | 40 | 250 | 45 | 35 | CN.. 1906.. | 3,050 |  |  |
| 212387900 | 212388000 | PCBN R/L 4040 P25 | 40 | 40 | 250 | 48 | 41 | CN.. 2509.. | 3,100 |  |  |
| 212388100 | 212388200 | PCBN R/L 5050 T25 | 50 | 50 | 300 | 50 | 51 | CN.. 2509.. | 4,000 |  |  |

 Stock Items | Itens de stock














 Available under request | Disponível sob consulta | Disponible bajo consulta

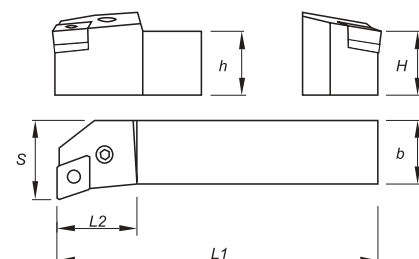
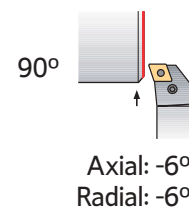
SPARE PARTS | Complementos | Repuestos















| Cutter Reference | Order separately | | | | | |
|-------------------|---|---|---|---|---|---|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench |
| PCBN R/L 2020 K12 |  |  |  |  |  |  |
| PCBN R/L 2525 M12 | CC120301 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| PCBN R/L 3225 P12 | CC120301 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| PCBN R/L 2525 M16 | CC160500 | BE07000 | BF65012 | AN17100 | PA0802300 | SS30 |
| PCBN R/L 3225 P16 | CC160500 | BE07000 | BF65012 | AN17100 | PA0802300 | SS30 |
| PCBN R/L 3232 P16 | CC160500 | BE07000 | BF65012 | AN17100 | PA0802300 | SS30 |
| PCBN R/L 3225 P19 | CC190500 | BE08500 | BF80012 | AN20800 | PA1002700 | SS40 |
| PCBN R/L 3232 P19 | CC190500 | BE08500 | BF80012 | AN20800 | PA1002700 | SS40 |
| PCBN R/L 4040 S19 | CC190500 | BE08500 | BF80012 | AN20800 | PA1002700 | SS40 |
| PCBN R/L 4040 S25 | CC250700 | BE10500 | BF12520 | AN25200 | PA1203600 | SS50 |
| PCBN R/L 5050 T25 | CC250700 | BE10500 | BF12520 | AN25200 | PA1203600 | SS50 |

C
TURNING
Insert selection
Overview
Negative inserts
Positive inserts
PCBN & PCD inserts
Heavy turning
External Toolholders
Internal Toolholders
Automatic Lathes
Spare Parts
Technical Data

(P) LEVER LOCK TOOLHOLDERS

| | | | | | | |
|---|---|---|--|---|---|---|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium | Medium |
| Flat  (12-16-19) | MF  (12) | SF  (12) | LC  (12) | MS  (12) | MR  (12-16-19) | PM  (12) |
| Medium | Roughing to Medium | Roughing | Roughing | Heavy to Roughing | Heavy to Roughing | |
| ST  (12-16-19) | SS  (12-16-19) | HR  (12-16-19) | RP  (16-19) | HY  (19) | HZ  (19) | |



| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212292000 | 212292100 | PCFN R/L 2525 M12 | 25 | 25 | 150 | 28 | 32 | CN..1204.. | 0,750 |  |  |
| 212292200 | 212292300 | PCFN R/L 2525 M16 | 25 | 25 | 150 | 34 | 32 | CN..1606.. | 0,750 |  |  |
| 212292400 | 212292500 | PCFN R/L 3225 P16 | 32 | 25 | 170 | 34 | 32 | CN..1606.. | 1,050 |  |  |
| 212292600 | 212292700 | PCFN R/L 3232 P16 | 32 | 32 | 170 | 34 | 40 | CN..1606.. | 1,300 |  |  |
| 212292800 | 212292900 | PCFN R/L 3225 P19 | 32 | 25 | 170 | 42 | 32 | CN..1906.. | 1,050 |  |  |
| 212293000 | 212293100 | PCFN R/L 3232 P19 | 32 | 32 | 170 | 42 | 40 | CN..1906.. | 1,300 |  |  |
| 212293200 | 212293300 | PCFN R/L 4040 S19 | 40 | 40 | 250 | 45 | 50 | CN..1906.. | 3,050 |  |  |














 Stock Items | Itens de stock

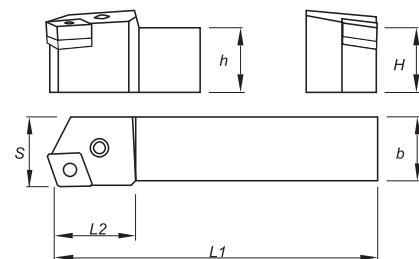
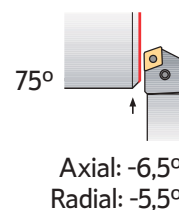
 Available under request | Disponível sob consulta | Disponible bajo consulta















SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Order separately | | | | | |
|-------------------|--|---|---|---|---|--|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench |
| PCFN R/L 2525 M12 |  CC120301 |  BE05500 |  BF47509 |  AN13100 |  PA0802100 |  SS30 |
| PCFN R/L 2525 M16 | CC160500 | BE07000 | BF65012 | AN17100 | PA0802300 | SS30 |
| PCFN R/L 3225 P16 | CC160500 | BE07000 | BF65012 | AN17100 | PA0802300 | SS30 |
| PCFN R/L 3232 P16 | CC160500 | BE07000 | BF65012 | AN17100 | PA0802300 | SS30 |
| PCFN R/L 3225 P19 | CC190500 | BE08500 | BF80012 | AN20800 | PA1002700 | SS40 |
| PCFN R/L 3232 P19 | CC190500 | BE08500 | BF80012 | AN20800 | PA1002700 | SS40 |
| PCFN R/L 4040 S19 | CC190500 | BE08500 | BF80012 | AN20800 | PA1002700 | SS40 |

(P) LEVER LOCK TOOLHOLDERS

| | | | | | | |
|--|--|---|---|--|--|---|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium | Medium |
| Flat  (12-19) | MF  (12) | SF  (12) | LC  (12) | MS  (12) | MR  (12-19) | PM  (12) |
| Medium | Roughing to Medium | Roughing | Roughing | Heavy to Roughing | Heavy to Roughing | |
| ST  (12-19) | SS  (12-19) | HR  (12-19-25) | RP  (19) | HY  (19-25) | HZ  (19-25) | |



| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212011600 | 212293400 | PCKN R/L 2020 K12 | 20 | 20 | 125 | 28 | 25 | CN.. 1204.. | 0,400 |  |  |
| 212011700 | 212293500 | PCKN R/L 2525 M12 | 25 | 25 | 150 | 28 | 32 | CN.. 1204.. | 0,750 |  |  |
| 212293600 | 212011500 | PCKN R/L 3225 P12 | 32 | 25 | 170 | 28 | 32 | CN.. 1204.. | 1,050 |  |  |
| 212293800 | 212293900 | PCKN R/L 3232 P19 | 32 | 32 | 170 | 34 | 40 | CN.. 1906.. | 1,300 |  |  |
| 212294000 | 212294100 | PCKN R/L 4040 S19 | 40 | 40 | 250 | 45 | 50 | CN.. 1906.. | 3,050 |  |  |
| 212294200 | 212294300 | PCKN R/L 4040 S25 | 40 | 40 | 250 | 45 | 50 | CN.. 2509.. | 3,050 |  |  |
| 212294400 | 212294500 | PCKN R/L 5050 T25 | 50 | 50 | 300 | 45 | 60 | CN.. 2509.. | 5,850 |  |  |

 Stock Items | Itens de stock














 Available under request | Disponível sob consulta | Disponible bajo consulta

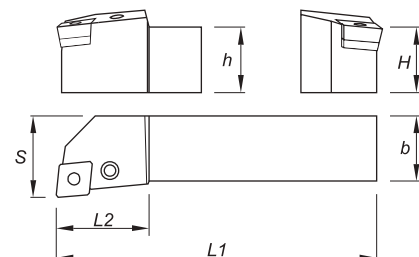
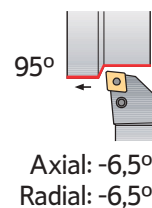
SPARE PARTS | Complementos | Repuestos







































| Cutter Reference | Order separately | | | | | |
|-------------------|--|---|---|---|---|--|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench |
| PCKN R/L 2020 K12 |  CC120301 |  BE05500 |  BF47509 |  AN13100 |  PA0802100 |  SS30 |
| PCKN R/L 2525 M12 |  CC120301 |  BE05500 |  BF47509 |  AN13100 |  PA0802100 |  SS30 |
| PCKN R/L 3225 P12 |  CC120301 |  BE05500 |  BF47509 |  AN13100 |  PA0802100 |  SS30 |
| PCKN R/L 3232 P19 |  CC190500 |  BE08500 |  BF80012 |  AN20800 |  PA1002700 |  SS40 |
| PCKN R/L 4040 S19 |  CC190500 |  BE08500 |  BF80012 |  AN20800 |  PA1002700 |  SS40 |
| PCKN R/L 4040 S25 |  CC250700 |  BE10500 |  BF12520 |  AN25200 |  PA1203600 |  SS50 |
| PCKN R/L 5050 T25 |  CC250700 |  BE10500 |  BF12520 |  AN25200 |  PA1203600 |  SS50 |

C
 TURNING
 Insert selection
 Overview
 Negative inserts
 Positive inserts
 PCBN & PCD inserts
 Heavy turning
 External Toolholders
 Internal Toolholders
 Automatic Lathes
 Spare Parts
 Technical Data

(P) LEVER LOCK TOOLHOLDERS

| | | | | | | |
|---|---|---|---|---|---|--|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium | Medium |
| Flat  (09-12-16-19) | MF  (09-12) | SF  (12) | LC  (12) | MS  (12) | MR  (09-12-16-19) | PM  (12) |
| Medium | Roughing to Medium | Roughing | Roughing | Heavy to Roughing | Heavy to Roughing | |
| ST  (09-12-16-19) | SS  (09-12-16-19) | HR  (12-16-19-25) | RP  (16-19) | HY  (19-25) | HZ  (19-25) | |



| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212294600 | 212294700 | PCLN R/L 1616 H09 | 16 | 16 | 100 | 25 | 20 | CN.. 0903.. | 0,250 |  |  |
| 212294800 | 212294900 | PCLN R/L 2020 K09 | 20 | 20 | 125 | 27 | 25 | CN.. 0903.. | 0,400 |  |  |
| 212295000 | 212295100 | PCLN R/L 2525 M09 | 25 | 25 | 150 | 27 | 32 | CN.. 0903.. | 0,750 |  |  |
| 212012300 | 212011800 | PCLN R/L 1616 H12 | 16 | 16 | 100 | 26 | 20 | CN.. 1204.. | 0,250 |  |  |
| 212012400 | 212011900 | PCLN R/L 2020 K12 | 20 | 20 | 125 | 28 | 25 | CN.. 1204.. | 0,400 |  |  |
| 212044800 | 212031500 | PCLN R/L 2525 M12 | 25 | 25 | 150 | 28 | 32 | CN.. 1204.. | 0,750 |  |  |
| 212295200 | 212295300 | PCLN R/L 3225 P12 | 32 | 25 | 170 | 28 | 32 | CN.. 1204.. | 1,050 |  |  |
| 212058200 | 212295400 | PCLN R/L 3232 P12 | 32 | 32 | 170 | 28 | 40 | CN.. 1204.. | 1,300 |  |  |
| 212036400 | 212168100 | PCLN R/L 2525 M16 | 25 | 25 | 150 | 34 | 32 | CN.. 1606.. | 0,750 |  |  |
| 212295500 | 212295600 | PCLN R/L 3225 P16 | 32 | 25 | 170 | 34 | 32 | CN.. 1606.. | 1,050 |  |  |
| 212295700 | 212012100 | PCLN R/L 3232 P16 | 32 | 32 | 170 | 34 | 40 | CN.. 1606.. | 1,300 |  |  |
| 212295800 | 212012200 | PCLN R/L 4040 S16 | 40 | 40 | 250 | 34 | 50 | CN.. 1606.. | 3,050 |  |  |
| 212058100 | 212295900 | PCLN R/L 2525 M19 | 25 | 25 | 150 | 42 | 32 | CN.. 1906.. | 0,750 |  |  |
| 212296000 | 212296100 | PCLN R/L 3225 P19 | 32 | 25 | 170 | 42 | 32 | CN.. 1906.. | 1,050 |  |  |
| 212058300 | 212296200 | PCLN R/L 3232 P19 | 32 | 32 | 170 | 42 | 40 | CN.. 1906.. | 1,300 |  |  |
| 212058400 | 212296300 | PCLN R/L 4040 S19 | 40 | 40 | 250 | 45 | 50 | CN.. 1906.. | 3,050 |  |  |
| 212422700 | 212422800 | PCLN R/L 5050 T19 | 50 | 50 | 300 | 50 | 60 | CN.. 1906.. | 3,050 |  |  |
| 212296400 | 212296500 | PCLN R/L 4040 S25 | 40 | 40 | 250 | 45 | 50 | CN.. 2509.. | 3,050 |  |  |
| 212296600 | 212296700 | PCLN R/L 5050 T25 | 50 | 50 | 300 | 45 | 60 | CN.. 2509.. | 5,850 |  |  |

 Stock Items | Itens de stock

 Available under request | Disponível sob consulta | Disponible bajo consulta

(P) LEVER LOCK TOOLHOLDERS

SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Order separately | | | | | |
|-------------------|------------------|----------|----------------|---------|-------------|--------|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench |
| PCLN R/L 1616 H09 | CC090300 | BE04400 | BF40009 | AN01200 | PA0601700 | SS25 |
| PCLN R/L 2020 K09 | CC090300 | BE04400 | BF40009 | AN01200 | PA0601700 | SS25 |
| PCLN R/L 2525 M09 | CC090300 | BE04400 | BF40009 | AN01200 | PA0601700 | SS25 |
| PCLN R/L 1616 H12 | CC120301 | BE05500 | BF47509 | AC13200 | PA0801700 | SS30 |
| PCLN R/L 2020 K12 | CC120301 | BE05500 | BF47509 | AC13200 | PA0802100 | SS30 |
| PCLN R/L 2525 M12 | CC120301 | BE05500 | BF47509 | AC13200 | PA0802100 | SS30 |
| PCLN R/L 3225 P12 | CC120301 | BE05500 | BF47509 | AC13200 | PA0802100 | SS30 |
| PCLN R/L 3232 P12 | CC120301 | BE05500 | BF47509 | AC13200 | PA0802100 | SS30 |
| PCLN R/L 2525 M16 | CC160500 | BE07000 | BF65012 | AN17100 | PA0802300 | SS30 |
| PCLN R/L 3225 P16 | CC160500 | BE07000 | BF65012 | AN17100 | PA0802300 | SS30 |
| PCLN R/L 3232 P16 | CC160500 | BE07000 | BF65012 | AN17100 | PA0802300 | SS30 |
| PCLN R/L 4040 S16 | CC160500 | BE07000 | BF65012 | AN17100 | PA0802300 | SS30 |
| PCLN R/L 2525 M19 | CC190500 | BE08500 | BF80012 | AN20800 | PA1002700 | SS40 |
| PCLN R/L 3225 P19 | CC190500 | BE08500 | BF80012 | AN20800 | PA1002700 | SS40 |
| PCLN R/L 3232 P19 | CC190500 | BE08500 | BF80012 | AN20800 | PA1002700 | SS40 |
| PCLN R/L 4040 S19 | CC190500 | BE08500 | BF80012 | AN20800 | PA1002700 | SS40 |
| PCLN R/L 5050 T19 | CC190500 | BE08500 | BF80012 | AN20800 | PA1002700 | SS40 |
| PCLN R/L 4040 S25 | CC250700 | BE10500 | BF12520 | AN25200 | PA1203600 | SS50 |
| PCLN R/L 5050 T25 | CC250700 | BE10500 | BF12520 | AN25200 | PA1203600 | SS50 |



TURNING

Insert selection

Overview

Negative inserts

Positive inserts

PCBN & PCD inserts

Heavy turning

External Toolholders














Internal Toolholders

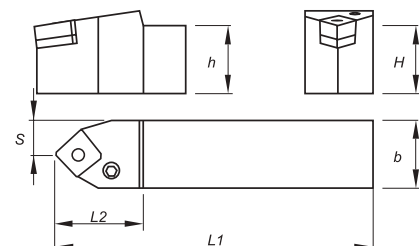
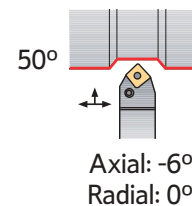
Automatic Lathes






Spare Parts

Technical Data

(P) LEVER LOCK TOOLHOLDERS

| | | | | | | |
|--|--|--|---|---|--|---|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium | Medium |
| Flat  (12-19) | MF  (12) | SF  (12) | LC  (12) | MS  (12) | MR  (12-19) | PM  (12) |
| Medium | Roughing to Medium | Roughing | Roughing | Heavy to Roughing | Heavy to Roughing | |
| ST  (12-19) | SS  (12-19) | HR  (12-19) | RP  (19) | HY  (19) | HZ  (19) | |



| Order Code | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock |
|------------|-----------------|-----------------|----|-----|----|------|-------------|-------|---|
| | | H=h | b | L1 | L2 | S | | | |
| 212296800 | PCMN N 2020 K12 | 20 | 20 | 125 | 34 | 10,0 | CN.. 1204.. | 0,400 |  |
| 212296900 | PCMN N 2525 M12 | 25 | 25 | 150 | 34 | 12,5 | CN.. 1204.. | 0,750 |  |
| 212297000 | PCMN N 3225 P12 | 32 | 25 | 170 | 34 | 12,5 | CN.. 1204.. | 1,050 |  |
| 212297100 | PCMN N 3232 P19 | 32 | 32 | 170 | 42 | 16,0 | CN.. 1906.. | 1,300 |  |
| 212297200 | PCMN N 4040 S19 | 40 | 40 | 250 | 42 | 20,0 | CN.. 1906.. | 3,050 |  |














 Stock Items | Itens de stock

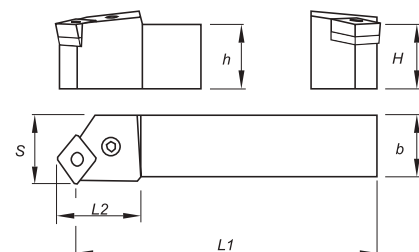
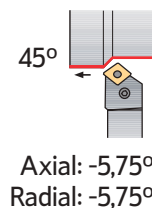
 Available under request | Disponível sob consulta | Disponible bajo consulta

















SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Order separately | | | | | |
|------------------|---|---|---|---|---|---|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench |
| PCMN N 2020 K12 |  |  |  |  |  |  |
| PCMN N 2525 M12 | CC120301 | BE05500 | BF47509 | AN13100 | A0802100 | SS30 |
| PCMN N 3225 P12 | CC120301 | BE05500 | BF47509 | AN13100 | A0802100 | SS30 |
| PCMN N 3232 P19 | CC190500 | BE08500 | BF80012 | AN20800 | A1002700 | SS40 |
| PCMN N 4040 S19 | CC190500 | BE08500 | BF80012 | AN20800 | A1002700 | SS40 |

(P) LEVER LOCK TOOLHOLDERS

| | | | | | | |
|---|---|---|---|---|---|---|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium | Medium |
| Flat  (12-16-19) | MF  (12) | SF  (12) | LC  (12) | MS  (12) | MR  (12-16-19) | PM  (12) |
| Medium | Roughing to Medium | Roughing | Roughing | Heavy to Roughing | Heavy to Roughing | |
| ST  (12-19) | SS  (12-16-19) | HR  (12-16-19) | RP  (19) | HY  (19) | HZ  (19) | |







| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212297300 | 212297400 | PCSN R/L 2020 K12 | 20 | 20 | 125 | 28 | 25 | CN.. 1204.. | 0,400 |  |  |
| 212297500 | 212012800 | PCSN R/L 2525 M12 | 25 | 25 | 150 | 28 | 32 | CN.. 1204.. | 0,750 |  |  |
| 212297600 | 212297700 | PCSN R/L 2525 M16 | 25 | 25 | 150 | 34 | 32 | CN.. 1606.. | 0,750 |  |  |
| 212297800 | 212297900 | PCSN R/L 3225 P16 | 32 | 25 | 170 | 34 | 32 | CN.. 1606.. | 1,050 |  |  |
| 212013100 | 212298000 | PCSN R/L 3232 P16 | 32 | 32 | 170 | 34 | 40 | CN.. 1606.. | 1,300 |  |  |
| 212298100 | 212298200 | PCSN R/L 3225 P19 | 32 | 25 | 170 | 42 | 32 | CN.. 1906.. | 1,050 |  |  |
| 212298300 | 212298400 | PCSN R/L 3232 P19 | 32 | 32 | 170 | 42 | 40 | CN.. 1906.. | 1,300 |  |  |
| 212298500 | 212298600 | PCSN R/L 4040 S19 | 40 | 40 | 250 | 45 | 50 | CN.. 1906.. | 3,050 |  |  |

 Stock Items | Itens de stock
















 Available under request | Disponível sob consulta | Disponible bajo consulta

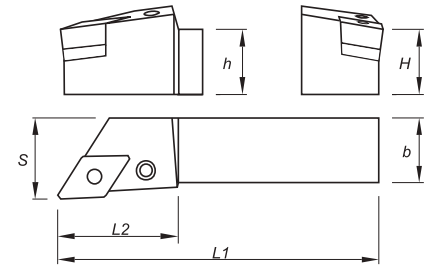
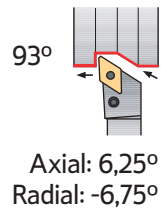
SPARE PARTS | Complementos | Repuestos





















| Cutter Reference | Order separately | | | | | |
|-------------------|---|---|---|---|---|---|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench |
| PCSN R/L 2020 K12 |  |  |  |  |  |  |
| PCSN R/L 2525 M12 | CC120301 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| PCSN R/L 2525 M16 | CC120301 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| PCSN R/L 3225 P16 | CC160500 | BE07000 | BF65012 | AN17100 | PA0802300 | SS30 |
| PCSN R/L 3232 P16 | CC160500 | BE07000 | BF65012 | AN17100 | PA0802300 | SS30 |
| PCSN R/L 3225 P19 | CC160500 | BE07000 | BF65012 | AN17100 | PA0802300 | SS30 |
| PCSN R/L 3232 P19 | CC190500 | BE08500 | BF80012 | AN20800 | PA1002700 | SS40 |
| PCSN R/L 4040 S19 | CC190500 | BE08500 | BF80012 | AN20800 | PA1002700 | SS40 |


C
TURNING
Insert selection
Overview
Negative inserts
Positive inserts
PCBN & PCD inserts
Heavy turning
External Toolholders
Internal Toolholders
Automatic Lathes
Spare Parts
Technical Data

(P) LEVER LOCK TOOLHOLDERS

| | | | | | | | |
|--|--|--|---|---|--|---|--|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium | Medium | Medium |
| Flat | MF | SF | LC | MS | MR | PM | ST |
|  (11-15) |  (11-15) |  (11-15) |  (15) |  (15) |  (11-15) |  (15) |  (11-15) |
| Medium Wiper | Roughing to Medium | Roughing | Roughing | Roughing to Medium | Medium to Finishing | Medium to Finishing | |
| MW | SS | HR | RP | O1 | O2 | O3 | |
|  (15) |  (11-15) |  (15) |  (15) |  (15) |  (15) |  (15) | |



| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212057800 | 212298700 | PDJN R/L 1616 H11 | 16 | 16 | 100 | 28 | 20 | DN.. 1104.. | 0,250 |  |  |
| 212246900 | 212246800 | PDJN R/L 2020 K11 | 20 | 20 | 125 | 28 | 25 | DN.. 1104.. | 0,400 |  |  |
| 212247500 | 212247600 | PDJN R/L 2525 M11 | 25 | 25 | 150 | 28 | 32 | DN.. 1104.. | 0,750 |  |  |
| 212298800 | 212298900 | PDJN R/L 3225 P11 | 32 | 25 | 170 | 28 | 32 | DN.. 1104.. | 1,050 |  |  |
| 212013600 | 212013200 | PDJN R/L 2020 K15 | 20 | 20 | 125 | 34 | 25 | DN.. 1506.. | 0,400 |  |  |
| 212037300 | 212031600 | PDJN R/L 2525 M15 | 25 | 25 | 150 | 34 | 32 | DN.. 1506.. | 0,750 |  |  |
| 212299000 | 212013400 | PDJN R/L 3225 P15 | 32 | 25 | 170 | 34 | 32 | DN.. 1506.. | 1,050 |  |  |
| 212013800 | 212013500 | PDJN R/L 3232 P15 | 32 | 32 | 170 | 34 | 40 | DN.. 1506.. | 1,300 |  |  |
| 212299100 | 212299200 | PDJN R/L 4025 R15 | 40 | 25 | 200 | 34 | 32 | DN.. 1506.. | 1,850 |  |  |
| 212299300 | 212299400 | PDJN R/L 5032 S15 | 50 | 32 | 250 | 34 | 40 | DN.. 1506.. | 2,900 |  |  |
















 Stock Items | Itens de stock

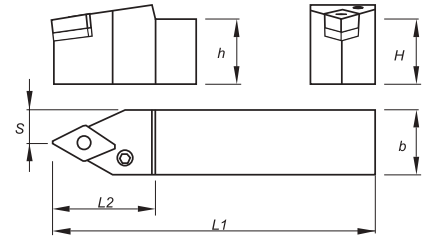
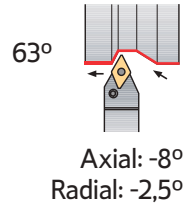
 Available under request | Disponível sob consulta | Disponible bajo consulta









SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Order separately | | | | | | for inserts DN. 1504.. | |
|-------------------|---|---|---|---|--|---|------------------------|----------|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench | Shim | Shim Pin |
| PDJN R/L 1616 H11 |  |  |  |  |  |  | - | - |
| PDJN R/L 2020 K11 | CD110300 | BE04400 | BF40009 | AN01200 | PA0601700 | SS25 | - | - |
| PDJN R/L 2525 M11 | CD110300 | BE04400 | BF40009 | AN01200 | PA0601700 | SS25 | - | - |
| PDJN R/L 3225 P11 | CD110300 | BE04400 | BF40009 | AN01200 | PA0601700 | SS25 | - | - |
| PDJN R/L 2020 K15 | CD150300 | BE05500 | BF47509 | AN14700 | PA0802101 | SS30 | CD150500 | BE05401 |
| PDJN R/L 2525 M15 | CD150300 | BE05500 | BF47509 | AN14700 | PA0802101 | SS30 | CD150500 | BE05401 |
| PDJN R/L 3225 P15 | CD150300 | BE05500 | BF47509 | AN14700 | PA0802101 | SS30 | CD150500 | BE05401 |
| PDJN R/L 3232 P15 | CD150300 | BE05500 | BF47509 | AN14700 | PA0802101 | SS30 | CD150500 | BE05401 |
| PDJN R/L 4025 R15 | CD150300 | BE05500 | BF47509 | AN14700 | PA0802101 | SS30 | CD150500 | BE05401 |
| PDJN R/L 5032 S15 | CD150300 | BE05500 | BF47509 | AN14700 | PA0802101 | SS30 | CD150500 | BE05401 |

(P) LEVER LOCK TOOLHOLDERS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium | Medium | Medium |
| Flat | MF | SF | LC | MS | MR | PM | ST |
|  (15) |  (15) |  (15) |  (15) |  (15) |  (15) |  (15) |  (15) |
| Medium Wiper | Roughing to Medium | Roughing | Roughing | Roughing to Medium | Medium to Finishing | Medium to Finishing | |
| MW | SS | HR | RP | O1 | O2 | O3 | |
|  (15) |  (15) |  (15) |  (15) |  (15) |  (15) |  (15) | |



| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|------|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212299500 | 212299600 | PDNN R/L 2020 K15 | 20 | 20 | 125 | 34 | 10,0 | DN.. 1506.. | 0,400 |  |  |
| 212299800 | 212299900 | PDNN R/L 2525 M15 | 25 | 25 | 150 | 34 | 12,5 | DN.. 1506.. | 0,750 |  |  |
| 212300100 | 212300200 | PDNN R/L 3225 P15 | 32 | 25 | 170 | 34 | 12,5 | DN.. 1506.. | 1,050 |  |  |
| 212300300 | 212300400 | PDNN R/L 3232 P15 | 32 | 32 | 170 | 34 | 16,0 | DN.. 1506.. | 1,300 |  |  |
| 212300600 | 212300700 | PDNN R/L 4025 S15 | 40 | 25 | 250 | 34 | 12,5 | DN.. 1506.. | 1,850 |  |  |
| 212300900 | 212301000 | PDNN R/L 5032 S15 | 50 | 32 | 250 | 34 | 16,0 | DN.. 1506.. | 2,900 |  |  |
| 212299700 | | PDNN N 2020 K15 | 20 | 20 | 125 | 34 | 10,0 | DN.. 1506.. | 0,400 |  | |
| 212300000 | | PDNN N 2525 M15 | 25 | 25 | 150 | 34 | 12,5 | DN.. 1506.. | 0,750 |  | |
| 212250000 | | PDNN N 3225 P15 | 32 | 25 | 170 | 34 | 12,5 | DN.. 1506.. | 1,050 |  | |
| 212300500 | | PDNN N 3232 P15 | 32 | 32 | 170 | 34 | 16,0 | DN.. 1506.. | 1,300 |  | |
| 212300800 | | PDNN N 4025 S15 | 40 | 25 | 250 | 34 | 12,5 | DN.. 1506.. | 1,850 |  | |
| 212301100 | | PDNN N 5032 S15 | 50 | 32 | 250 | 34 | 16,0 | DN.. 1506.. | 2,900 |  | |

 Stock Items | Itens de stock

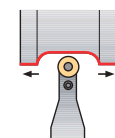
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SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Order separately | | | | | | for inserts DN.. 1504.. | |
|---------------------|---|---|---|---|--|---|---|---|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench | Shim | Shim Pin |
| PDNN R/L/N 2020 K15 |  |  |  |  |  |  |  |  |
| PDNN R/L/N 2525 M15 | CD150300 | BE05500 | BF47509 | AN14700 | PA0802101 | SS30 | CD150500 | BE05401 |
| PDNN R/L/N 3225 P15 | CD150300 | BE05500 | BF47509 | AN14700 | PA0802101 | SS30 | CD150500 | BE05401 |
| PDNN R/L/N 3232 P15 | CD150300 | BE05500 | BF47509 | AN14700 | PA0802101 | SS30 | CD150500 | BE05401 |
| PDNN R/L/N 4025 S15 | CD150300 | BE05500 | BF47509 | AN14700 | PA0802101 | SS30 | CD150500 | BE05401 |
| PDNN R/L/N 5032 S15 | CD150300 | BE05500 | BF47509 | AN14700 | PA0802101 | SS30 | CD150500 | BE05401 |

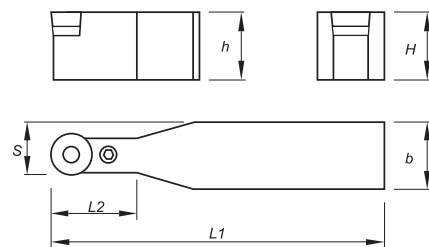
C
TURNING
Insert selection
Overview
Negative inserts
Positive inserts
PCBN & PCD inserts
Heavy turning
External Toolholders
Internal Toolholders
Automatic Lathes
Spare Parts
Technical Data

(P) LEVER LOCK TOOLHOLDERS



Axial: 0°
Radial: 0°

| | | | |
|--|---|--|--|
| Roughing to Medium ..MT-ST (10-12-16-20) | Roughing to Medium ..MT-RF (25) | Roughing to Medium ..MT-RM (20) | Roughing to Medium ..MX-ST (10-12-16-20-25-32) |
| Roughing to Medium ..MX-RM (32) | Roughing to Medium ...MX-RR (25-32) | Finishing to Fine Finishing LN (10-12) | |



| Order Code | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock |
|------------|-----------------|-----------------|----|-----|----|------|-------------|-------|-------|
| | | H=h | b | L1 | L2 | S | | | |
| 212051100 | PRDC N 2020 K10 | 20 | 20 | 125 | 22 | 15,0 | RC.. 1003M0 | 0,400 | ⊗ |
| 212169000 | PRDC N 2525 M10 | 25 | 25 | 150 | 22 | 18,5 | RC.. 1003M0 | 0,750 | ⊗ |
| 212301200 | PRDC N 3225 P10 | 32 | 25 | 170 | 22 | 18,5 | RC.. 1003M0 | 1,050 | ⊗ |
| 212301300 | PRDC N 2020 K12 | 20 | 20 | 125 | 28 | 16,0 | RC.. 1204M0 | 0,400 | ⊗ |
| 212042800 | PRDC N 2525 M12 | 25 | 25 | 150 | 28 | 18,5 | RC.. 1204M0 | 0,750 | ⊗ |
| 212301400 | PRDC N 3225 P12 | 32 | 25 | 170 | 28 | 18,5 | RC.. 1204M0 | 1,050 | ⊗ |
| 212422400 | PRDC N 3232 P12 | 32 | 32 | 180 | 28 | 22,0 | RC.. 1204M0 | 1,300 | ○ |
| 212301500 | PRDC N 4025 S12 | 40 | 25 | 250 | 28 | 18,5 | RC.. 1204M0 | 1,850 | ⊗ |
| 212020600 | PRDC N 3225 P16 | 32 | 25 | 170 | 34 | 20,5 | RC.. 1606M0 | 1,050 | ⊗ |
| 212301600 | PRDC N 3232 P16 | 32 | 32 | 170 | 34 | 24,0 | RC.. 1606M0 | 1,300 | ⊗ |
| 212301700 | PRDC N 3232 P20 | 32 | 32 | 170 | 42 | 26,0 | RC.. 2006M0 | 1,300 | ⊗ |
| 212301800 | PRDC N 4040 S20 | 40 | 40 | 250 | 42 | 30,0 | RC.. 2006M0 | 3,050 | ⊗ |
| 212301900 | PRDC N 4040 S25 | 40 | 40 | 250 | 45 | 32,5 | RC.. 2507M0 | 3,050 | ⊗ |
| 212293700 | PRDC N 4040 U25 | 40 | 40 | 350 | 45 | 32,5 | RC.. 2507M0 | 3,050 | ○ |
| 212302000 | PRDC N 5050 U25 | 50 | 50 | 350 | 45 | 37,5 | RC.. 2507M0 | 5,850 | ○ |
| 212302100 | PRDC N 5050 V32 | 50 | 50 | 400 | 52 | 41,0 | RC.. 3209M0 | 5,850 | ○ |

⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

(P) LEVER LOCK TOOLHOLDERS

SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Order separately | | | | | |
|------------------|------------------|----------|----------------|---------|-------------|--------|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench |
| PRDC N 2020 K10 | CR100300 | BE03800 | BF40009 | AC11700 | PA0501400 | SS20 |
| PRDC N 2525 M10 | CR100300 | BE03800 | BF40009 | AC11700 | PA0501400 | SS20 |
| PRDC N 3225 P10 | CR100300 | BE03800 | BF40009 | AC11700 | PA0501400 | SS20 |
| PRDC N 2020 K12 | CR120300 | BE03800 | BF40009 | AC13300 | PA0601700 | SS25 |
| PRDC N 2525 M12 | CR120300 | BE03800 | BF40009 | AC13300 | PA0601700 | SS25 |
| PRDC N 3225 P12 | CR120300 | BE03800 | BF40009 | AC13300 | PA0601700 | SS25 |
| PRDC N 3232 P12 | CR120300 | BE03800 | BF40009 | AC13300 | PA0601700 | SS25 |
| PRDC N 4025 S12 | CR120300 | BE03800 | BF40009 | AC13300 | PA0601700 | SS25 |
| PRDC N 3225 P16 | CR160500 | BE05400 | BF47509 | AC18000 | PA0602100 | SS25 |
| PRDC N 3232 P16 | CR160500 | BE05400 | BF47509 | AC18000 | PA0602100 | SS25 |
| PRDC N 3232 P20 | CR200500 | BE07000 | BF65012 | AC18700 | PA0802400 | SS30 |
| PRDC N 4040 S20 | CR200500 | BE07000 | BF65012 | AC18700 | PA0802400 | SS30 |
| PRDC N 4040 S25 | CR250600 | BE08500 | BF80012 | AC23000 | PA1003000 | SS40 |
| PRDC N 4040 U25 | CR250600 | BE08500 | BF80012 | AC23000 | PA1003000 | SS40 |
| PRDC N 5050 U25 | CR250600 | BE08500 | BF80012 | AC23000 | PA1003000 | SS40 |
| PRDC N 5050 V32 | CR320600 | BE10500 | BF12520 | AC26700 | PA1203600 | SS50 |



TURNING

Insert selection

Overview

Negative inserts

Positive inserts

PCBN & PCD inserts

Heavy turning

External Toolholders








Internal Toolholders

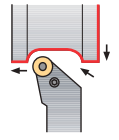
Automatic Lathes

Spare Parts

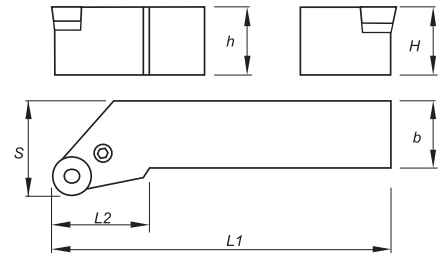
Technical Data

























(P) LEVER LOCK TOOLHOLDERS

| | | | |
|---|---|--|---|
| Roughing to Medium ..MT-ST  (10-12-16-20) | Roughing to Medium ..MT-RF  (25) | Roughing to Medium ..MT-RM  (20) | Roughing to Medium ..MX-ST  (10-12-16-20-25-32) |
| Roughing to Medium ..MX-RM  (32) | Roughing to Medium ..MX-RR  (25-32) | Finishing to Fine LN  (10-12) | |



Axial: 0°
Radial: 0°



| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212302200 | 212302300 | PRSC R/L 2020 K10 | 20 | 20 | 125 | 28 | 25 | RC.. 1003M0 | 0,400 |  |  |
| 212302400 | 212302500 | PRSC R/L 2525 M10 | 25 | 25 | 150 | 28 | 32 | RC.. 1003M0 | 0,750 |  |  |
| 212302600 | 212302700 | PRSC R/L 3225 P10 | 32 | 25 | 170 | 28 | 32 | RC.. 1003M0 | 1,050 |  |  |
| 212302800 | 212302900 | PRSC R/L 2020 K12 | 20 | 20 | 125 | 28 | 25 | RC.. 1204M0 | 0,400 |  |  |
| 212303000 | 212303100 | PRSC R/L 2525 M12 | 25 | 25 | 150 | 28 | 32 | RC.. 1204M0 | 0,750 |  |  |
| 212303200 | 212303300 | PRSC R/L 3225 P12 | 32 | 25 | 170 | 28 | 32 | RC.. 1204M0 | 1,050 |  |  |
| 212303500 | 212303400 | PRSC R/L 2525 M16 | 25 | 25 | 150 | 34 | 32 | RC.. 1606M0 | 0,750 |  |  |
| 212020800 | 212020700 | PRSC R/L 3225 P16 | 32 | 25 | 170 | 34 | 32 | RC.. 1606M0 | 1,050 |  |  |
| 212303700 | 212303600 | PRSC R/L 3232 P20 | 32 | 32 | 170 | 42 | 40 | RC.. 2006M0 | 1,300 |  |  |
| 212303900 | 212303800 | PRSC R/L 4040 S20 | 40 | 40 | 250 | 42 | 50 | RC.. 2006M0 | 3,050 |  |  |
| 212304100 | 212304000 | PRSC R/L 4040 S25 | 40 | 40 | 250 | 45 | 50 | RC.. 2507M0 | 3,050 |  |  |
| 212020900 | 212304200 | PRSC R/L 5050 T32 | 50 | 50 | 300 | 45 | 63 | RC.. 3209M0 | 5,850 |  |  |

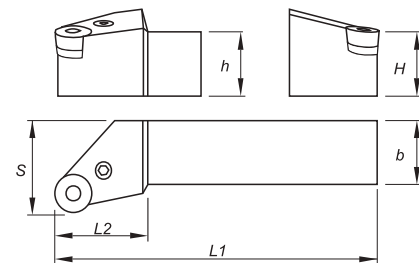
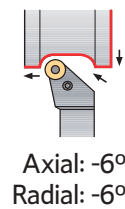
 Stock Itens | Itens de stock











 Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Order separately | | | | | |
|-------------------|------------------|----------|----------------|---------|-------------|--------|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench |
| PRSC R/L 2020 K10 | CR100300 | BE03800 | BF40009 | AC11700 | PA0501400 | SS20 |
| PRSC R/L 2525 M10 | CR100300 | BE03800 | BF40009 | AC11700 | PA0501400 | SS20 |
| PRSC R/L 3225 P10 | CR100300 | BE03800 | BF40009 | AC11700 | PA0501400 | SS20 |
| PRSC R/L 2020 K12 | CR120300 | BE03800 | BF40009 | AC13300 | PA0601700 | SS25 |
| PRSC R/L 2525 M12 | CR120300 | BE03800 | BF40009 | AC13300 | PA0601700 | SS25 |
| PRSC R/L 3225 P12 | CR120300 | BE03800 | BF40009 | AC13300 | PA0601700 | SS25 |
| PRSC R/L 2525 M16 | CR160500 | BE05400 | BF47509 | AC18000 | PA0602100 | SS25 |
| PRSC R/L 3225 P16 | CR160500 | BE05400 | BF47509 | AC18000 | PA0602100 | SS25 |
| PRSC R/L 3232 P20 | CR200500 | BE07000 | BF65012 | AC18700 | PA0802400 | SS30 |
| PRSC R/L 4040 S20 | CR200500 | BE07000 | BF65012 | AC18700 | PA0802400 | SS30 |
| PRSC R/L 4040 S25 | CR250600 | BE08500 | BF80012 | AC23000 | PA0802400 | SS40 |
| PRSC R/L 5050 T32 | CR320600 | BE10500 | BF12520 | AC26700 | PA1203600 | SS50 |

(P) LEVER LOCK TOOLHOLDERS









| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|--|--|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212046800 | 212304300 | PRSN R/L 2020 K09 | 20 | 20 | 125 | 22 | 25 | RNMG 090300 | 0,400 |  |  |
| 212046900 | 212304400 | PRSN R/L 2525 M12 | 25 | 25 | 150 | 28 | 32 | RNMG 120400 | 0,750 |  |  |
| 212047000 | 212304500 | PRSN R/L 3225 P15 | 32 | 25 | 170 | 34 | 32 | RNMG 150600 | 1,050 |  |  |
| 212304600 | 212304700 | PRSN R/L 3232 P19 | 32 | 32 | 170 | 42 | 40 | RNMG 190600 | 1,300 |  |  |
| 212304800 | 212304900 | PRSN R/L 4040 S25 | 40 | 40 | 250 | 45 | 50 | RNMG 250900 | 3,050 |  |  |












 Stock Items | Itens de stock

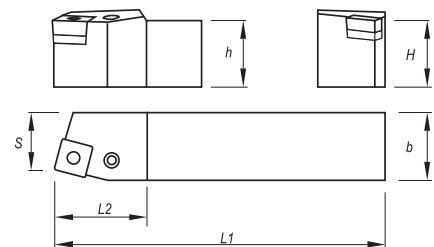
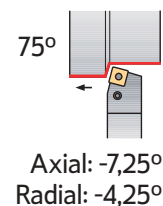
 Available under request | Disponível sob consulta | Disponible bajo consulta



























SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Order separately | | | | | |
|-------------------|---|---|---|---|---|---|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench |
| PRSN R/L 2020 K09 |  |  |  |  |  |  |
| PRSN R/L 2525 M12 | CR090300 | BE03800 | BF40009 | AN01200 | PA0601700 | SS25 |
| PRSN R/L 3225 P15 | CR120302 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| PRSN R/L 3232 P19 | CR150500 | BE07000 | BF65012 | AN17200 | PA0802400 | SS30 |
| PRSN R/L 4040 S25 | CR190500 | BE08500 | BF80012 | AN20800 | PA1002700 | SS40 |
| PRSN R/L 4040 S25 | CR250601 | BE10500 | BF12520 | AN25200 | PA1203600 | SS50 |

(P) LEVER LOCK TOOLHOLDERS

| | | | | | |
|---|--|--|---|--|--|
| Roughing | Finishing | Medium | Medium | Medium | Medium |
| Flat  (09-12-15-19-25) | MF  (12) | SF  (12) | MR  (12-15-19) | PM  (12) | ST  (09-12-15-19) |
| Roughing to Medium | Roughing | Roughing | Heavy to Roughing | Heavy to Roughing | |
| SS  (09-12-15-19) | HR  (12-15-19-25) | RP  (15-19) | HY  (19-25) | HZ  (19-25) | |



| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212305000 | 212305100 | PSBN R/L 1212 F09 | 12 | 12 | 80 | 18 | 11 | SN.. 0903.. | 0,100 |  |  |
| 212305200 | 212305300 | PSBN R/L 1616 H09 | 16 | 16 | 100 | 22 | 13 | SN.. 0903.. | 0,250 |  |  |
| 212305400 | 212305500 | PSBN R/L 2020 K09 | 20 | 20 | 125 | 22 | 17 | SN.. 0903.. | 0,400 |  |  |
| 212032200 | 212032300 | PSBN R/L 2020 K12 | 20 | 20 | 125 | 28 | 17 | SN.. 1204.. | 0,400 |  |  |
| 212014300 | 212032400 | PSBN R/L 2525 M12 | 25 | 25 | 150 | 28 | 22 | SN.. 1204.. | 0,750 |  |  |
| 212305600 | 212305700 | PSBN R/L 3225 P12 | 32 | 25 | 170 | 28 | 22 | SN.. 1204.. | 1,050 |  |  |
| 212014400 | 212305800 | PSBN R/L 2525 M15 | 25 | 25 | 150 | 34 | 22 | SN.. 1506.. | 0,750 |  |  |
| 212305900 | 212306000 | PSBN R/L 3232 P15 | 32 | 32 | 170 | 34 | 27 | SN.. 1506.. | 1,300 |  |  |
| 212306100 | 212306200 | PSBN R/L 3232 P19 | 32 | 32 | 170 | 42 | 27 | SN.. 1906.. | 1,300 |  |  |
| 212306300 | 212306400 | PSBN R/L 4040 S19 | 40 | 40 | 250 | 45 | 35 | SN.. 1906.. | 3,050 |  |  |
| 212422500 | 212422600 | PSBN R/L 5050 T19 | 50 | 50 | 300 | 50 | 43 | SN.. 1906.. | 3,050 |  |  |
| 212306500 | 212014100 | PSBN R/L 4040 S25 | 40 | 40 | 250 | 45 | 35 | SN.. 2507.. | 3,050 |  |  |
| 212306600 | 212306700 | PSBN R/L 5050 T25 | 50 | 50 | 300 | 45 | 43 | SN.. 2507.. | 5,850 |  |  |












 Stock Items | Itens de stock

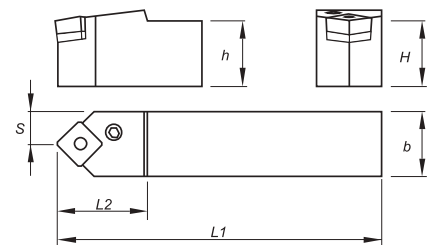
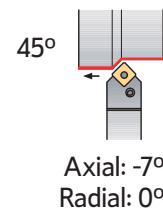
Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Order separately | | | | | |
|-------------------|------------------|----------|----------------|---------|-------------|--------|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench |
| PSBN R/L 1212 F09 | - | - | - | AN07800 | PA0501000 | SS20 |
| PSBN R/L 1616 H09 | CS090301 | BE03800 | - | AN01200 | PA0601700 | SS25 |
| PSBN R/L 2020 K09 | CS090301 | BE03800 | - | AN01200 | PA0601700 | SS25 |
| PSBN R/L 2020 K12 | CS120302 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| PSBN R/L 2525 M12 | CS120302 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| PSBN R/L 3225 P12 | CS120302 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| PSBN R/L 2525 M15 | CS150400 | BE07000 | BF65012 | AN17100 | PA0802300 | SS30 |
| PSBN R/L 3232 P15 | CS150400 | BE07000 | BF65012 | AN17100 | PA0802300 | SS30 |
| PSBN R/L 3232 P19 | CS190400 | BE08500 | BF80012 | AN20800 | PA1002700 | SS40 |
| PSBN R/L 4040 S19 | CS190400 | BE08500 | BF80012 | AN20800 | PA1002700 | SS40 |
| PSBN R/L 5050 T19 | CS190400 | BE08500 | BF80012 | AN20800 | PA1002700 | SS40 |
| PSBN R/L 4040 S25 | CS250600 | BE10500 | BF12520 | AN25200 | PA1203600 | SS50 |
| PSBN R/L 5050 T25 | CS250600 | BE10500 | BF12520 | AN25200 | PA1203600 | SS50 |

(P) LEVER LOCK TOOLHOLDERS

| | | | | | |
|--|---|---|--|--|---|
| Roughing | Finishing | Medium | Medium | Medium | Medium |
| Flat  (09-12-19-25) | MF  (12) | SF  (12) | MR  (12-19) | PM  (12) | ST  (09-12-19) |
| Roughing to Medium | Roughing | Roughing | Heavy to Roughing | Heavy to Roughing | |
| SS  (09-12-19) | HR  (12-19-25) | RP  (19) | HY  (19-25) | HZ  (19-25) | |



| Order Code | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------------|-----------------|----|-----|----|------|-------------|-------|-------|---|
| | | H=h | b | L1 | L2 | S | | | R | L |
| 212306800 | PSDN N 1010 E09 | 10 | 10 | 70 | 16 | 5,0 | SN.. 0903.. | 0,070 | ⊗ | |
| 212306900 | PSDN N 1212 F09 | 12 | 12 | 80 | 18 | 6,0 | SN.. 0903.. | 0,100 | ⊗ | |
| 212307000 | PSDN N 1616 H09 | 16 | 16 | 100 | 22 | 8,0 | SN.. 0903.. | 0,250 | ⊗ | |
| 212056700 | PSDN N 2020 K12 | 20 | 20 | 125 | 28 | 10,0 | SN.. 1204.. | 0,400 | ⊗ | |
| 212307100 | PSDN N 2525 M12 | 25 | 25 | 150 | 28 | 12,5 | SN.. 1204.. | 0,750 | ⊗ | |
| 212307200 | PSDN N 3225 P12 | 32 | 25 | 170 | 28 | 12,5 | SN.. 1204.. | 1,050 | ⊗ | |
| 212307300 | PSDN N 3232 P12 | 32 | 32 | 170 | 28 | 16,0 | SN.. 1204.. | 1,300 | ⊗ | |
| 212307400 | PSDN N 3225 P19 | 32 | 25 | 170 | 42 | 12,5 | SN.. 1906.. | 1,050 | ⊗ | |
| 212249100 | PSDN N 3232 P19 | 32 | 32 | 170 | 42 | 16,0 | SN.. 1906.. | 1,300 | ⊗ | |
| 212307500 | PSDN N 4040 S25 | 40 | 40 | 250 | 45 | 20,0 | SN.. 2507.. | 3,050 | ⊗ | |
| 212307600 | PSDN N 5050 T25 | 50 | 50 | 300 | 45 | 25,0 | SN.. 2507.. | 5,850 | ⊗ | |

⊗ Stock Items | Itens de stock

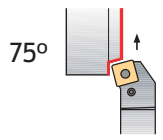
○ Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS | Complementos | Repuestos

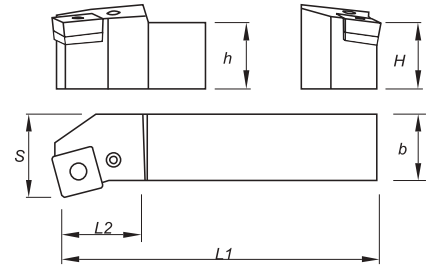
| Cutter Reference | Order separately | | | | | |
|------------------|------------------|----------|----------------|---------|-------------|--------|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench |
| PSDN N 1010 E09 | - | - | - | AN07800 | PA0501000 | SS20 |
| PSDN N 1212 F09 | - | - | - | AN07800 | PA0501000 | SS20 |
| PSDN N 1616 H09 | CS090301 | BE03800 | BF40009 | AN01200 | PA0601700 | SS25 |
| PSDN N 2020 K12 | CS120302 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| PSDN N 2525 M12 | CS120302 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| PSDN N 3225 P12 | CS120302 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| PSDN N 3232 P12 | CS120302 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| PSDN N 3225 P19 | CS190400 | BE08500 | BF80012 | AN20800 | PA1002700 | SS40 |
| PSDN N 3232 P19 | CS190400 | BE08500 | BF80012 | AN20800 | PA1002700 | SS40 |
| PSDN N 4040 S25 | CS250600 | BE10500 | BF12520 | AN25200 | PA1203600 | SS50 |
| PSDN N 5050 T25 | CS250600 | BE10500 | BF12520 | AN25200 | PA1203600 | SS50 |

TURNING
Insert selection
Overview
Negative inserts
Positive inserts
PCBN & PCD inserts
Heavy turning
External Toolholders
Internal Toolholders
Automatic Lathes
Spare Parts
Technical Data

(P) LEVER LOCK TOOLHOLDERS



75°
Axial: -4,25°
Radial: -7,25°



| | | | | | |
|--------------------------|---------------------|---------------|-------------------|-------------------|---------------------|
| Roughing | Finishing | Medium | Medium | Medium | Medium |
| Flat (09-12-15-19-25) | MF (12) | SF (12) | MR (12-15-19) | PM (12) | ST (09-12-15-19) |
| Roughing to Medium | Roughing | Roughing | Heavy to Roughing | Heavy to Roughing | |
| SS (09-12-15-19) | HR (12-15-19-25) | RP (15-19) | HY (19-25) | HZ (19-25) | |

| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|-------|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212307700 | 212307800 | PSKN R/L 1616 H09 | 16 | 16 | 100 | 22 | 20 | SN.. 0903.. | 0,250 | | |
| 212307900 | 212308000 | PSKN R/L 2020 K09 | 20 | 20 | 125 | 22 | 25 | SN.. 0903.. | 0,400 | | |
| 212032500 | 212032600 | PSKN R/L 2020 K12 | 20 | 20 | 125 | 28 | 25 | SN.. 1204.. | 0,400 | | |
| 212032700 | 212032800 | PSKN R/L 2525 M12 | 25 | 25 | 150 | 28 | 32 | SN.. 1204.. | 0,750 | | |
| 212308100 | 212308200 | PSKN R/L 3225 P12 | 32 | 25 | 170 | 28 | 32 | SN.. 1204.. | 1,050 | | |
| 212308300 | 212308400 | PSKN R/L 2525 M15 | 25 | 25 | 150 | 34 | 32 | SN.. 1506.. | 0,750 | | |
| 212308500 | 212308600 | PSKN R/L 3232 P15 | 32 | 32 | 170 | 34 | 40 | SN.. 1506.. | 1,300 | | |
| 212308700 | 212308800 | PSKN R/L 3232 P19 | 32 | 32 | 170 | 42 | 40 | SN.. 1906.. | 1,300 | | |
| 212308900 | 212309000 | PSKN R/L 4040 S19 | 40 | 40 | 250 | 45 | 50 | SN.. 1906.. | 3,050 | | |
| 212309100 | 212309200 | PSKN R/L 4040 S25 | 40 | 40 | 250 | 45 | 50 | SN.. 2507.. | 3,050 | | |
| 212309300 | 212309400 | PSKN R/L 5050 T25 | 50 | 50 | 300 | 45 | 60 | SN.. 2507.. | 5,850 | | |

Stock Items | Itens de stock

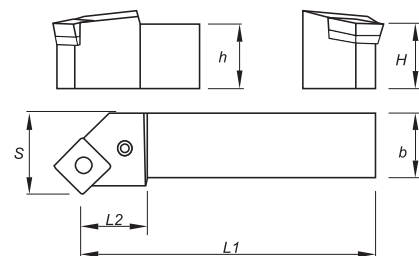
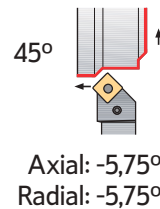
Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Order separately | | | | | |
|-------------------|------------------|----------|----------------|---------|-------------|--------|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench |
| PSKN R/L 1616 H09 | CS090301 | BE03800 | BF40009 | AN01200 | PA0601700 | SS25 |
| PSKN R/L 2020 K09 | CS090301 | BE03800 | BF40009 | AN01200 | PA0601700 | SS25 |
| PSKN R/L 2020 K12 | CS120302 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| PSKN R/L 2525 M12 | CS120302 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| PSKN R/L 3225 P12 | CS120302 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| PSKN R/L 2525 M15 | CS150400 | BE07000 | BF65012 | AN17100 | PA0802300 | SS30 |
| PSKN R/L 3232 P15 | CS150400 | BE07000 | BF65012 | AN17100 | PA0802300 | SS30 |
| PSKN R/L 3232 P19 | CS190400 | BE08500 | BF80012 | AN20800 | PA1002700 | SS40 |
| PSKN R/L 4040 S19 | CS190400 | BE08500 | BF80012 | AN20800 | PA1002700 | SS40 |
| PSKN R/L 4040 S25 | CS250600 | BE10500 | BF12520 | AN25200 | PA1203600 | SS50 |
| PSKN R/L 5050 T25 | CS250600 | BE10500 | BF12520 | AN25200 | PA1203600 | SS50 |

(P) LEVER LOCK TOOLHOLDERS

| | | | | | |
|--------------------|---------------|----------|-------------------|-------------------|---------------|
| Roughing | Finishing | Medium | Medium | Medium | Medium |
| Flat | MF | SF | MR | PM | ST |
| (09-12-15-19-25) | (12) | (12) | (12-15-19) | (12) | (09-12-15-19) |
| Roughing to Medium | Roughing | Roughing | Heavy to Roughing | Heavy to Roughing | |
| SS | HR | RP | HY | HZ | |
| (09-12-15-19) | (12-15-19-25) | (15-19) | (19-25) | (19-25) | |



| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|-------|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212066500 | 212309500 | PSSN R/L 1616 H09 | 16 | 16 | 100 | 22 | 20 | SN.. 0903.. | 0,250 | | |
| 212066600 | 212309600 | PSSN R/L 2020 K09 | 20 | 20 | 125 | 22 | 25 | SN.. 0903.. | 0,400 | | |
| 212032900 | 212033000 | PSSN R/L 2020 K12 | 20 | 20 | 125 | 28 | 25 | SN.. 1204.. | 0,400 | | |
| 212026600 | 212026700 | PSSN R/L 2525 M12 | 25 | 25 | 150 | 28 | 32 | SN.. 1204.. | 0,750 | | |
| 212309700 | 212309800 | PSSN R/L 3225 P12 | 32 | 25 | 170 | 28 | 32 | SN.. 1204.. | 1,050 | | |
| 212066700 | 212309900 | PSSN R/L 2525 M15 | 25 | 25 | 150 | 34 | 32 | SN.. 1506.. | 0,750 | | |
| 212420500 | 212420600 | PSSN R/L 3225 P15 | 32 | 25 | 170 | 42 | 32 | SN.. 1506.. | 1,050 | | |
| 212066800 | 212015400 | PSSN R/L 3232 P15 | 32 | 32 | 170 | 34 | 40 | SN.. 1506.. | 1,300 | | |
| 212066900 | 212310000 | PSSN R/L 3232 P19 | 32 | 32 | 170 | 42 | 40 | SN.. 1906.. | 1,300 | | |
| 212067000 | 212310100 | PSSN R/L 4040 S19 | 40 | 40 | 250 | 45 | 50 | SN.. 1906.. | 3,050 | | |
| 212310200 | 212310300 | PSSN R/L 5050 T19 | 50 | 50 | 300 | 45 | 60 | SN.. 1906.. | 5,850 | | |
| 212310400 | 212310500 | PSSN R/L 4040 S25 | 40 | 40 | 250 | 45 | 50 | SN.. 2507.. | 3,050 | | |
| 212310600 | 212310700 | PSSN R/L 5050 T25 | 50 | 50 | 300 | 45 | 60 | SN.. 2507.. | 5,850 | | |

Stock Items | Itens de stock

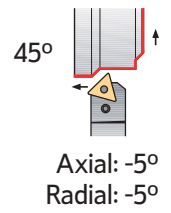
Available under request | Disponível sob consulta | Disponible bajo consulta










SPARE PARTS | Complementos | Repuestos

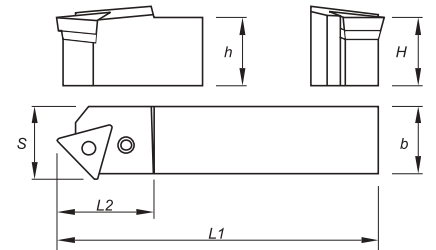
| Cutter Reference | Order separately | | | | | |
|-------------------|------------------|----------|----------------|---------|-------------|--------|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench |
| PSSN R/L 1616 H09 | CS090301 | BE03800 | BF40009 | AN01200 | PA0601700 | SS25 |
| PSSN R/L 2020 K09 | CS090301 | BE03800 | BF40009 | AN01200 | PA0601700 | SS25 |
| PSSN R/L 2020 K12 | CS120302 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| PSSN R/L 2525 M12 | CS120302 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| PSSN R/L 3225 P12 | CS120302 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| PSSN R/L 2525 M15 | CS150400 | BE07000 | BF65012 | AN17100 | PA0802300 | SS30 |
| PSSN R/L 3225 P15 | CS150400 | BE07000 | BF65012 | AN17100 | PA0802300 | SS30 |
| PSSN R/L 3232 P15 | CS150400 | BE07000 | BF65012 | AN17100 | PA0802300 | SS30 |
| PSSN R/L 3232 P19 | CS190400 | BE08500 | BF80012 | AN20800 | PA1002700 | SS40 |
| PSSN R/L 4040 S19 | CS190400 | BE08500 | BF80012 | AN20800 | PA1002700 | SS40 |
| PSSN R/L 5050 T19 | CS190400 | BE08500 | BF80012 | AN20800 | PA1002700 | SS40 |
| PSSN R/L 4040 S25 | CS250600 | BE10500 | BF12520 | AN25200 | PA1203600 | SS50 |
| PSSN R/L 5050 T25 | CS250600 | BE10500 | BF12520 | AN25200 | PA1203600 | SS50 |





TURNING
Insert selection
Overview
Negative inserts
Positive inserts
PCBN & PCD inserts
Heavy turning
External Toolholders
Internal Toolholders
Automatic Lathes
Spare Parts
Technical Data


(P) LEVER LOCK TOOLHOLDERS



| | | | | |
|---|---|---|---|---|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium |
| Flat | MF | SF | LC | MR |
|  (22) |  (22) |  (22) |  (22) |  (22) |
| Medium | Medium | Roughing to Medium | Roughing | |
| PM | ST | SS | HR | |
|  (22) |  (22) |  (22) |  (22) | |



| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212310800 | 212310900 | PTDN R/L 2525 M22 | 25 | 25 | 150 | 34 | 27 | TN.. 2204.. | 0,750 |  |  |
| 212311000 | 212311100 | PTDN R/L 3225 P22 | 32 | 25 | 170 | 34 | 27 | TN.. 2204.. | 1,050 |  |  |












 Stock Items | Itens de stock

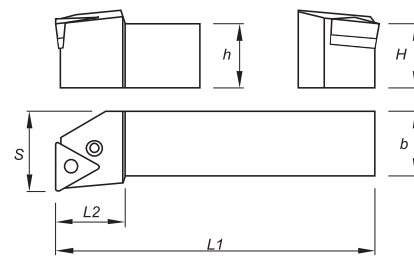
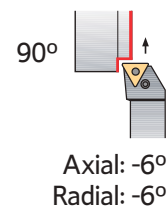
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






SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Order separately | | | | | |
|-------------------|---|---|---|---|---|---|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench |
| PTDN R/L 2525 M22 |  |  |  |  |  |  |
| PTDN R/L 3225 P22 | CT220302 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |

(P) LEVER LOCK TOOLHOLDERS

| | | | | | |
|---|---|--|---|---|--|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium |
| Flat | MF | SF | LC | MS | MR |
|  (16-22-27) |  (16-22) |  (16-22) |  (16-22) |  (16) |  (16-22) |
| Medium | Medium | Roughing to Medium | Roughing | Medium to Finishing | |
| PM | ST | SS | HR | O1 | |
|  (16-22) |  (16-22-27) |  (16-22) |  (16-22-27) |  (16) | |









| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212056500 | 212311200 | PTFN R/L 1616 H16 | 16 | 16 | 100 | 22 | 20 | TN.. 1604.. | 0,250 |  |  |
| 212031700 | 212015800 | PTFN R/L 2020 K16 | 20 | 20 | 125 | 22 | 25 | TN.. 1604.. | 0,400 |  |  |
| 212036500 | 212015900 | PTFN R/L 2525 M16 | 25 | 25 | 150 | 22 | 32 | TN.. 1604.. | 0,750 |  |  |
| 212311300 | 212311400 | PTFN R/L 3225 P16 | 32 | 25 | 170 | 22 | 32 | TN.. 1604.. | 1,050 |  |  |
| 212031800 | 212311500 | PTFN R/L 2525 M22 | 25 | 25 | 150 | 28 | 32 | TN.. 2204.. | 0,750 |  |  |
| 212016300 | 212311600 | PTFN R/L 3225 P22 | 32 | 25 | 170 | 28 | 32 | TN.. 2204.. | 1,050 |  |  |
| 212311700 | 212311800 | PTFN R/L 3232 P22 | 32 | 32 | 170 | 28 | 40 | TN.. 2204.. | 1,300 |  |  |
| 212311900 | 212312000 | PTFN R/L 3232 P27 | 32 | 32 | 170 | 42 | 40 | TN.. 2706.. | 1,300 |  |  |
| 212312100 | 212312200 | PTFN R/L 4040 S27 | 40 | 40 | 250 | 45 | 50 | TN.. 2706.. | 3,050 |  |  |

 Stock Items | Itens de stock

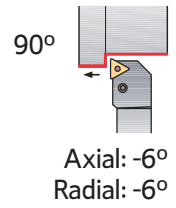
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SPARE PARTS | Complementos | Repuestos

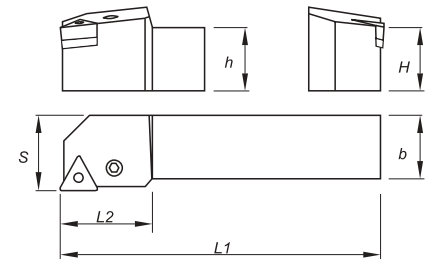
| Cutter Reference | Order separately | | | | | |
|-------------------|---|--|--|--|--|---|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench |
| PTFN R/L 1616 H16 |  CT160303 |  BE04400 |  BF40009 |  AN01200 |  PA0601700 |  SS25 |
| PTFN R/L 2020 K16 | CT160303 | BE04400 | BF40009 | AN01200 | PA0601700 | SS25 |
| PTFN R/L 2525 M16 | CT160303 | BE04400 | BF40009 | AN01200 | PA0601700 | SS25 |
| PTFN R/L 3225 P16 | CT160303 | BE04400 | BF40009 | AN01200 | PA0601700 | SS25 |
| PTFN R/L 2525 M22 | CT220302 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| PTFN R/L 3225 P22 | CT220302 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| PTFN R/L 3232 P22 | CT220302 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| PTFN R/L 3232 P27 | CT270500 | BE05500 | BF65012 | AN17200 | PA0802400 | SS30 |
| PTFN R/L 4040 S27 | CT270500 | BE05500 | BF65012 | AN17200 | PA0802400 | SS30 |























C
TURNING
Insert selection
Overview
Negative inserts
Positive inserts
PCBN & PCD inserts
Heavy turning
External Toolholders
Internal Toolholders
Automatic Lathes
Spare Parts
Technical Data

(P) LEVER LOCK TOOLHOLDERS



| | | | | | |
|--|--|--|--|---|--|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium |
| Flat | MF | SF | LC | MS | MR |
|  (16-22-27-33) |  (16-22) |  (16-22) |  (16-22) |  (16) |  (16-22) |
| Medium | Medium | Roughing to Medium | Roughing | Medium to Finishing | |
| PM | ST | SS | HR | O1 | |
|  (16-22) |  (16-22-27-33) |  (16-22) |  (16-22-27-33) |  (16) | |



| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212052700 | 212312300 | PTGN R/L 1616 H16 | 16 | 16 | 100 | 22 | 20 | TN.. 1604.. | 0,250 |  |  |
| 212031900 | 212016500 | PTGN R/L 2020 K16 | 20 | 20 | 125 | 22 | 25 | TN.. 1604.. | 0,400 |  |  |
| 212026500 | 212037400 | PTGN R/L 2525 M16 | 25 | 25 | 150 | 22 | 32 | TN.. 1604.. | 0,750 |  |  |
| 212312400 | 212312500 | PTGN R/L 3225 P16 | 32 | 25 | 170 | 22 | 32 | TN.. 1604.. | 1,050 |  |  |
| 212032000 | 212032100 | PTGN R/L 2525 M22 | 25 | 25 | 150 | 28 | 32 | TN.. 2204.. | 0,750 |  |  |
| 212312600 | 212312700 | PTGN R/L 3225 P22 | 32 | 25 | 170 | 28 | 32 | TN.. 2204.. | 1,050 |  |  |
| 212058500 | 212312800 | PTGN R/L 3232 P22 | 32 | 32 | 170 | 28 | 40 | TN.. 2204.. | 1,300 |  |  |
| 212058600 | 212312900 | PTGN R/L 4040 S22 | 40 | 40 | 250 | 34 | 50 | TN.. 2204.. | 3,050 |  |  |
| 212066100 | 212313000 | PTGN R/L 3232 P27 | 32 | 32 | 170 | 42 | 40 | TN.. 2706.. | 1,300 |  |  |
| 212313100 | 212313200 | PTGN R/L 4040 S27 | 40 | 40 | 250 | 45 | 50 | TN.. 2706.. | 3,050 |  |  |
| 212250300 | 212313300 | PTGN R/L 5050 T33 | 50 | 50 | 300 | 45 | 60 | TN.. 3307.. | 5,850 |  |  |












 Stock Items | Itens de stock

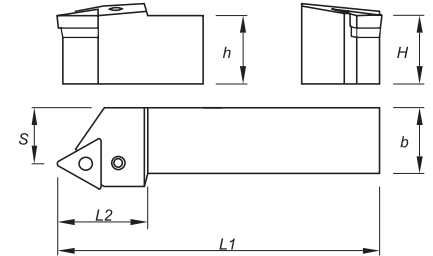
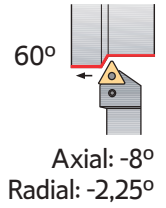
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SPARE PARTS | Complementos | Repuestos


| Cutter Reference | Order separately | | | | | |
|-------------------|---|---|---|---|---|---|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench |
| PTGN R/L 1616 H16 |  |  |  |  |  |  |
| PTGN R/L 2020 K16 | CT160303 | BE04400 | BF40009 | AN01200 | PA0601700 | SS25 |
| PTGN R/L 2525 M16 | CT160303 | BE04400 | BF40009 | AN01200 | PA0601700 | SS25 |
| PTGN R/L 3225 P16 | CT160303 | BE04400 | BF40009 | AN01200 | PA0601700 | SS25 |
| PTGN R/L 2525 M22 | CT220302 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| PTGN R/L 3225 P22 | CT220302 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| PTGN R/L 3232 P22 | CT220302 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| PTGN R/L 4040 S22 | CT220302 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| PTGN R/L 3232 P27 | CT270500 | BE07000 | BF65012 | AN17200 | PA0802400 | SS30 |
| PTGN R/L 4040 S27 | CT270500 | BE07000 | BF65012 | AN17200 | PA0802400 | SS30 |
| PTGN R/L 5050 T33 | CT330500 | BE08301 | BF80012 | AN20800 | PA1002700 | SS40 |

(P) LEVER LOCK TOOLHOLDERS

| | | | | | |
|--|--|--|--|---|--|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium |
| Flat | MF | SF | LC | MS | MR |
|  (16-22) |  (16-22) |  (16-22) |  (16-22) |  (16) |  (16-22) |
| Medium | Medium | Roughing to Medium | Roughing | Medium to Finishing | |
| PM | ST | SS | HR | O1 | |
|  (16-22) |  (16-22) |  (16-22) |  (16-22) |  (16) | |















| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212313400 | 212313500 | PTTN R/L 1616 H16 | 16 | 16 | 100 | 25 | 13 | TN.. 1604.. | 0,250 |  |  |
| 212313600 | 212313700 | PTTN R/L 2020 K16 | 20 | 20 | 125 | 28 | 17 | TN.. 1604.. | 0,400 |  |  |
| 212313800 | 212313900 | PTTN R/L 2525 M16 | 25 | 25 | 150 | 28 | 22 | TN.. 1604.. | 0,750 |  |  |
| 212314000 | 212314100 | PTTN R/L 2525 M22 | 25 | 25 | 150 | 34 | 22 | TN.. 2204.. | 0,750 |  |  |
| 212314200 | 212314300 | PTTN R/L 3225 P22 | 32 | 25 | 170 | 34 | 22 | TN.. 2204.. | 1,050 |  |  |












 Stock Items | Itens de stock

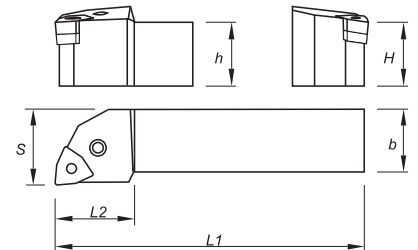
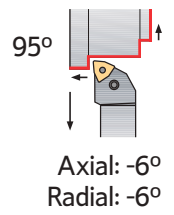
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






SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Order separately | | | | | |
|-------------------|---|--|--|--|--|---|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench |
| PTTN R/L 1616 H16 |  CT160303 |  BE04400 |  BF40009 |  AN01200 |  PA0601700 |  SS25 |
| PTTN R/L 2020 K16 |  CT160303 |  BE04400 |  BF40009 |  AN01200 |  PA0601700 |  SS25 |
| PTTN R/L 2525 M16 |  CT160303 |  BE04400 |  BF40009 |  AN01200 |  PA0601700 |  SS25 |
| PTTN R/L 2525 M22 |  CT220302 |  BE05500 |  BF47509 |  AN13100 |  PA0802100 |  SS30 |
| PTTN R/L 3225 P22 |  CT220302 |  BE05500 |  BF47509 |  AN13100 |  PA0802100 |  SS30 |


(P) LEVER LOCK TOOLHOLDERS

| | | | | | |
|--|--|--|--|--|---|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium |
| Flat  (08) | MF  (06-08) | SF  (06-08) | LC  (08) | MS  (06-08) | PM  (08) |
| Medium | Medium | Medium Wiper | Roughing to Medium | Roughing | |
| MR  (06-08) | ST  (08) | MW  (06-08) | SS  (06-08) | HR  (08) | |








| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212314400 | 212314500 | PWLN R/L 1616 H06 | 16 | 16 | 100 | 15 | 20 | WN.. 0604.. | 0,250 |  |  |
| 212314600 | 212046500 | PWLN R/L 2020 K06 | 20 | 20 | 125 | 25 | 25 | WN.. 0604.. | 0,400 |  |  |
| 212314700 | 212314800 | PWLN R/L 2525 M06 | 25 | 25 | 150 | 25 | 32 | WN.. 0604.. | 0,750 |  |  |
| 212049300 | 212314900 | PWLN R/L 2020 K08 | 20 | 20 | 125 | 34 | 25 | WN.. 0804.. | 0,400 |  |  |
| 212052800 | 212079100 | PWLN R/L 2525 M08 | 25 | 25 | 150 | 34 | 32 | WN.. 0804.. | 0,750 |  |  |
| 212046600 | 212315000 | PWLN R/L 3225 P08 | 32 | 25 | 170 | 34 | 32 | WN.. 0804.. | 1,050 |  |  |
| 212058000 | 212315100 | PWLN R/L 3232 P08 | 32 | 32 | 170 | 34 | 40 | WN.. 0804.. | 1,300 |  |  |

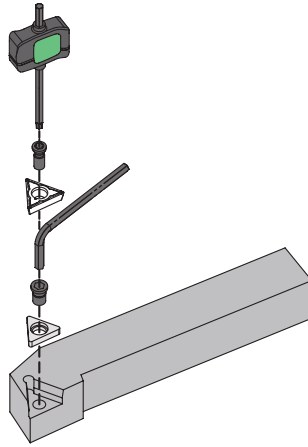
 Stock Items | Itens de stock

 Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS || Complementos | Repuestos

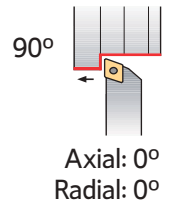
| Cutter Reference | Order separately | | | | | |
|-------------------|---|---|---|---|---|---|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench |
| PWLN R/L 1616 H06 |  |  |  |  |  |  |
| PWLN R/L 2020 K06 | CW060301 | BE04400 | BF40009 | AN01200 | PA0601700 | SS25 |
| PWLN R/L 2525 M06 | CW060301 | BE04400 | BF40009 | AN01200 | PA0601700 | SS25 |
| PWLN R/L 2020 K08 | CW080300 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| PWLN R/L 2525 M08 | CW080300 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| PWLN R/L 3225 P08 | CW080300 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| PWLN R/L 3232 P08 | CW080300 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |

(S) CENTER SCREW SYSTEM

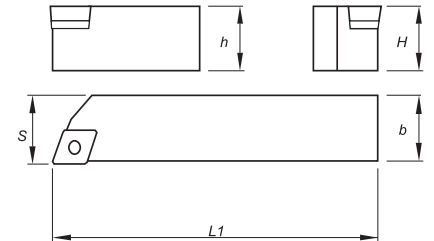


| | | | | | |
|---|---|---|---|---|---|
| SCAC 90° PAGE C - 586 CC.. 0602.. CC.. 09T3.. CC.. 1204.. | SCLC 95° PAGE C - 587 CC.. 0602.. CC.. 09T3.. CC.. 1204.. | SDJC 93° PAGE C - 588 DC.. 0702.. DC.. 11T3.. | SDNC 62°30' PAGE C - 589 DC.. 0702.. DC.. 11T3.. | SRDC PAGE C - 590 RC.. 0602M0.. ... RC.. 1204M0.. | SSBC 75° PAGE C - 591 SC.. 09T3.. SC.. 1204.. |
| SSDC 45° PAGE C - 592 SC.. 09T3.. SC.. 1204.. | SSSC 45° PAGE C - 593 SC.. 09T3.. SC.. 1204.. | STAC 90° PAGE C - 594 TC.. 0902.. TC.. 1102.. TC.. 16T3.. | STDC 45° PAGE C - 595 TC.. 0902.. TC.. 1102.. TC.. 16T3.. | STFC 90° PAGE C - 596 TC.. 0902.. TC.. 1102.. TC.. 16T3.. | STGC 90° PAGE C - 597 TC.. 0902.. TC.. 1102.. TC.. 16T3.. |
| STJC 93° PAGE C - 598 TC.. 0902.. TC.. 1102.. TC.. 16T3.. | STTC 60° PAGE C - 599 TC.. 0902.. TC.. 1102.. TC.. 16T3.. | SVHC 107°30' PAGE C - 600 VC.. 1604.. | SVJB 93° PAGE C - 601 VB.. 1604.. | SVJC 93° PAGE C - 602 VC.. 1103.. VC.. 1604.. | SVLC 95° PAGE C - 603 VC.. 1303.. |
| SVVB 72°30' PAGE C - 604 VB.. 1604.. | SVVC 72°30' PAGE C - 605 VC.. 1103.. VC.. 1604.. | SVXC 113° PAGE C - 606 VC.. 1803.. | SVZC 100° PAGE C - 607 VC.. 1604.. | | |

(S) CENTER SCREW TOOLHOLDERS



| | | | | | | |
|------------------------|----------------------|----------------------|---------------------------|-----------------------------|----------------------|----------------------|
| Finishing | Finishing | Finishing | Finishing | Finishing | Finishing wiper | Medium to Finishing |
| Flat (06-09-12) | FP (06-09-12) | BO (06-09-12) | FM (06-09-12) | FK (06-09-12) | FW (06-09) | LM (06-09-12) |
| Medium | Medium | Medium | Medium to Finishing wiper | Finishing to Fine finishing | Medium to Finishing | |
| MP (06-09-12) | MM (06-09-12) | MK (06-09-12) | MW (06-09-12) | FS (06-09) | LN (06-09-12) | |



| Order Code | | Reference | Dimensions (mm) | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|------|-------------|-------|-------|---|
| R | L | | H=h | b | L1 | S | | | R | L |
| 212139500 | 212139400 | SCAC R/L 0808 D06 | 8 | 8 | 60 | 8,5 | CC.. 0602.. | 0,050 | | |
| 212139700 | 212139600 | SCAC R/L 1010 E06 | 10 | 10 | 70 | 10,5 | CC.. 0602.. | 0,070 | | |
| 212139900 | 212139800 | SCAC R/L 1212 F09 | 12 | 12 | 80 | 12,5 | CC.. 09T3.. | 0,100 | | |
| 212140100 | 212140000 | SCAC R/L 1616 H09 | 16 | 16 | 100 | 16,5 | CC.. 09T3.. | 0,200 | | |
| 212140300 | 212140200 | SCAC R/L 2020 K12 | 20 | 20 | 125 | 20,5 | CC.. 1204.. | 0,400 | | |
| 212140500 | 212140400 | SCAC R/L 2525 M12 | 25 | 25 | 150 | 25,5 | CC.. 1204.. | 0,700 | | |













Stock Items | Itens de stock

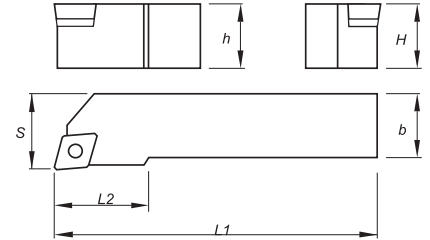
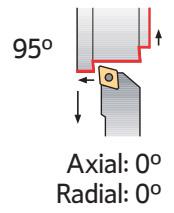
Available under request | Disponível sob consulta | Disponible bajo consulta















SPARE PARTS || Complementos | Repuestos


| Cutter Reference | Shim | Shim Screw | Screw | Wrench |
|-------------------|----------|----------------|-----------|------------|
| SCAC R/L 0808 D06 | - | - | P0250700 | XT07 |
| SCAC R/L 1010 E06 | - | - | P0250700 | XT07 |
| SCAC R/L 1212 F09 | - | - | P0401100 | XT15-S35 |
| SCAC R/L 1616 H09 | - | - | P0401100 | XT15-S35 |
| SCAC R/L 2020 K12 | CC120401 | T06004000 | P0401400 | XT15-S40 |
| SCAC R/L 2525 M12 | CC120401 | T06004000 | P0401400 | XT15-S40 |

(S) CENTER SCREW TOOLHOLDERS

| | | | | | | |
|---|---|---|---|---|---|---|
| Finishing | Finishing | Finishing | Finishing | Finishing | Finishing wiper | Medium to Finishing |
| Flat  (06-09-12) | FP  (06-09-12) | BO  (06-09-12) | FM  (06-09-12) | FK  (06-09-12) | FW  (06-09) | LM  (06-09-12) |
| Medium | Medium | Medium | Medium to Finishing wiper | Finishing to Fine finishing | Medium to Finishing | |
| MP  (06-09-12) | MM  (06-09-12) | MK  (06-09-12) | MW  (06-09-12) | FS  (06-09) | LN  (06-09-12) | |







| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212140700 | 212140600 | SCLC R/L 0808 D06 | 8 | 8 | 60 | 10 | 10 | CC.. 0602.. | 0,050 |  |  |
| 212045400 | 212140800 | SCLC R/L 1010 E06 | 10 | 10 | 70 | 10 | 12 | CC.. 0602.. | 0,070 |  |  |
| 212037100 | 212140900 | SCLC R/L 1212 F09 | 12 | 12 | 80 | 16 | 16 | CC.. 09T3.. | 0,100 |  |  |
| 212047600 | 212141000 | SCLC R/L 1616 H09 | 16 | 16 | 100 | 16 | 20 | CC.. 09T3.. | 0,200 |  |  |
| 212037500 | 212141100 | SCLC R/L 2020 K09 | 20 | 20 | 125 | 16 | 25 | CC.. 09T3.. | 0,400 |  |  |
| 212037700 | 212141200 | SCLC R/L 2020 K12 | 20 | 20 | 125 | 25 | 25 | CC.. 1204.. | 0,400 |  |  |
| 212037900 | 212141300 | SCLC R/L 2525 M12 | 25 | 25 | 150 | 25 | 32 | CC.. 1204.. | 0,700 |  |  |

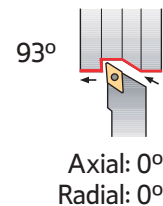
 Stock Items | Itens de stock













 Available under request | Disponível sob consulta | Disponible bajo consulta

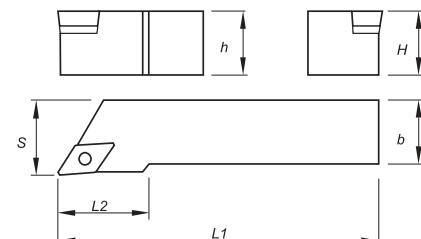
SPARE PARTS | Complementos | Repuestos















| Cutter Reference | Shim  | Shim Screw  | Screw  | Wrench  |
|-------------------|---|---|--|---|
| SCLC R/L 0808 D06 | - | - | P0250700 | XT07 |
| SCLC R/L 1010 E06 | - | - | P025070 | XT07 |
| SCLC R/L 1212 F09 | - | - | P0401100 | XT15-S35 |
| SCLC R/L 1616 H09 | - | - | P0401100 | XT15-S35 |
| SCLC R/L 2020 K09 | - | - | P0401100 | XT15-S35 |
| SCLC R/L 2020 K12 | CC120401 | T06004000 | P0401400 | XT15-S40 |
| SCLC R/L 2525 M12 | CC120401 | T06004000 | P0401400 | XT15-S40 |

(S) CENTER SCREW TOOLHOLDERS



| | | | | | |
|--|--|--|--|--|--|
| Finishing | Finishing | Finishing | Finishing | Finishing wiper | Medium to Finishing |
| Flat  (07-11) | FP  (07-11) | FM  (07-11) | FK  (07-11) | FW  (07-11) | LM  (07-11) |
| Medium | Medium | Medium | Medium to Finishing wiper | Finishing to Fine Finishing | Finishing to Fine Finishing |
| MP  (07-11) | MM  (07-11) | MK  (07-11) | MW  (11) | FS  (07-11) | LN  (07-11) |






| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212143800 | 212143700 | SDJC R/L 1010 E07 | 10 | 10 | 70 | 16 | 12 | DC.. 0702.. | 0,070 |  |  |
| 212021500 | 212143900 | SDJC R/L 1212 F07 | 12 | 12 | 80 | 18 | 16 | DC.. 0702.. | 0,100 |  |  |
| 212420700 | 212420800 | SDJC R/L 1616 H07 | 16 | 16 | 100 | 16 | 20 | DC.. 0702.. | 0,150 |  |  |
| 212021600 | 212144000 | SDJC R/L 1212 F11 | 12 | 12 | 80 | 18 | 16 | DC.. 11T3.. | 0,100 |  |  |
| 212035100 | 212035200 | SDJC R/L 1616 H11 | 16 | 16 | 100 | 22 | 20 | DC.. 11T3.. | 0,200 |  |  |
| 212036200 | 212035300 | SDJC R/L 2020 K11 | 20 | 20 | 125 | 22 | 25 | DC.. 11T3.. | 0,400 |  |  |
| 212042600 | 212144100 | SDJC R/L 2525 M11 | 25 | 25 | 150 | 22 | 32 | DC.. 11T3.. | 0,700 |  |  |











 Stock Items | Itens de stock

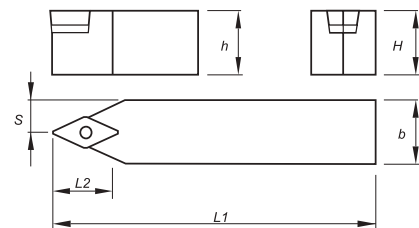
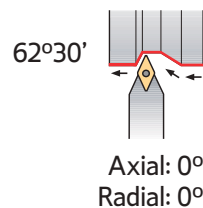
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SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Shim  | Shim Screw  | Screw  | Wrench  |
|-------------------|---|---|--|---|
| SDJC R/L 1010 E07 | - | - | P0250700 | XT07 |
| SDJC R/L 1212 F07 | - | - | P0250700 | XT07 |
| SDJC R/L 1616 H07 | - | - | P0250700 | XT07 |
| SDJC R/L 1212 F11 | - | - | P0401100 | XT15-S35 |
| SDJC R/L 1616 H11 | CD110301 | T05003500 | P0351500 | XT15-S35 |
| SDJC R/L 2020 K11 | CD110301 | T05003500 | P0351500 | XT15-S35 |
| SDJC R/L 2525 M11 | CD110301 | T05003500 | P0351500 | XT15-S35 |

(S) CENTER SCREW TOOLHOLDERS

| | | | | |
|--|--|--|--|--|
| Finishing | Finishing | Finishing | Finishing | Medium to Finishing |
| Flat | FP | FM | FK | LM |
|  (07-11) |  (07-11) |  (07-11) |  (07-11) |  (07-11) |
| Medium | Medium | Medium | Finishing to Fine Finishing | Finishing to Fine Finishing |
| MP | MM | MK | FS | LN |
|  (07-11) |  (07-11) |  (07-11) |  (07-11) |  (07-11) |



| Order Code | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock |
|------------|-----------------|-----------------|----|-----|----|------|-------------|-------|-------|
| | | H=h | b | L1 | L2 | S | | | |
| 212144200 | SDNC N 0808 D07 | 8 | 8 | 60 | 16 | 4,0 | DC.. 0702.. | 0,050 | ⊗ |
| 212144300 | SDNC N 1010 E07 | 10 | 10 | 70 | 16 | 5,0 | DC.. 0702.. | 0,070 | ⊗ |
| 212144400 | SDNC N 1212 F07 | 12 | 12 | 80 | 18 | 6,0 | DC.. 0702.. | 0,100 | ⊗ |
| 212259700 | SDNC N 1616 H11 | 16 | 16 | 100 | 22 | 8,0 | DC.. 11T3.. | 0,200 | ⊗ |
| 212144500 | SDNC N 2020 K11 | 20 | 20 | 125 | 22 | 10,0 | DC.. 11T3.. | 0,400 | ⊗ |
| 212259800 | SDNC N 2525 M11 | 25 | 25 | 150 | 22 | 12,5 | DC.. 11T3.. | 0,700 | ⊗ |

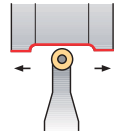
⊗ Stock Items | Itens de stock

○ Available under request | Disponible sob consulta | Disponible bajo consulta





SPARE PARTS || Complementos | Repuestos

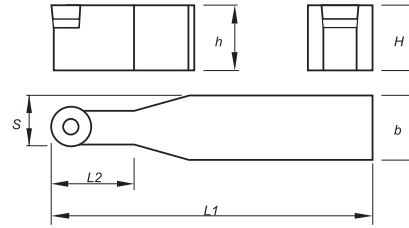
| Cutter Reference | Shim | Shim Screw | Screw | Wrench |
|------------------|---|---|--|--|
| SDNC N 0808 D07 |  - |  - |  P0250700 |  XT07 |
| SDNC N 1010 E07 | - | - | P0250700 | XT07 |
| SDNC N 1212 F07 | - | - | P0250700 | XT07 |
| SDNC N 1616 H11 | CD110301 | T05003500 | P0351500 | XT15-S35 |
| SDNC N 2020 K11 | CD110301 | T05003500 | P0351500 | XT15-S35 |
| SDNC N 2525 M11 | CD110301 | T05003500 | P0351500 | XT15-S35 |

(S) CENTER SCREW TOOLHOLDERS



Axial: 0°
Radial: 0°

| Medium | Roughing to Medium | Roughing to Medium | Finishing to Fine Finishing |
|---|--|--|---|
| CP  (06) | ..MT-ST  (08-10-12) | ..MX-ST  (12) | LN  (06-08-12) |



| Order Code | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock |
|------------|-----------------|-----------------|----|-----|----|------|-------------|-------|-------|
| | | H=h | b | L1 | L2 | S | | | |
| 212148500 | SRDC N 1010 E06 | 10 | 10 | 70 | 10 | 8,0 | RC.. 0602M0 | 0,070 | ⊗ |
| 212148600 | SRDC N 1212 F06 | 12 | 12 | 80 | 12 | 11,0 | RC.. 0602M0 | 0,100 | ⊗ |
| 212058700 | SRDC N 1616 H06 | 16 | 16 | 100 | 16 | 13,0 | RC.. 0602M0 | 0,200 | ⊗ |
| 212053400 | SRDC N 2020 K06 | 20 | 20 | 125 | 20 | 15,0 | RC.. 0602M0 | 0,400 | ⊗ |
| 212040000 | SRDC N 2525 M06 | 25 | 25 | 150 | 25 | 17,5 | RC.. 0602M0 | 0,700 | ⊗ |
| 212148700 | SRDC N 1616 H08 | 16 | 16 | 100 | 16 | 13,0 | RC.. 0803M0 | 0,200 | ⊗ |
| 212024400 | SRDC N 2020 K08 | 20 | 20 | 125 | 20 | 15,0 | RC.. 0803M1 | 0,400 | ⊗ |
| 212148800 | SRDC N 2525 M08 | 25 | 25 | 150 | 25 | 17,5 | RC.. 0803M2 | 0,700 | ⊗ |
| 212049500 | SRDC N 2020 K10 | 20 | 20 | 125 | 22 | 15,0 | RC.. 10T3M0 | 0,400 | ⊗ |
| 212040100 | SRDC N 2525 M10 | 25 | 25 | 150 | 22 | 17,5 | RC.. 10T3M0 | 0,700 | ⊗ |
| 212259900 | SRDC N 2020 K12 | 20 | 20 | 125 | 28 | 16,0 | RC.. 1204M0 | 0,400 | ⊗ |
| 212050800 | SRDC N 2525 M12 | 25 | 25 | 150 | 28 | 18,5 | RC.. 1204M0 | 0,700 | ⊗ |
| 212058800 | SRDC N 3225 P12 | 32 | 25 | 170 | 28 | 18,5 | RC.. 1204M0 | 0,900 | ⊗ |
| 212148900 | SRDC N 3232 P12 | 32 | 32 | 170 | 28 | 22,0 | RC.. 1204M0 | 1,200 | ⊗ |









⊗ Stock Items | Itens de stock

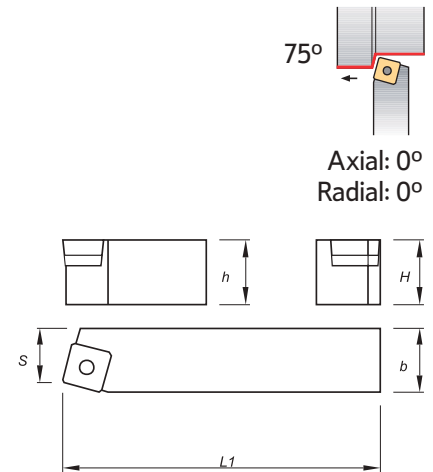
○ Available under request | Disponível sob consulta | Disponible bajo consulta









SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Shim | Shim Screw | Screw | Wrench |
|------------------|----------|------------|----------|----------|
| SRDC N 1010 E06 | - | - | P0250700 | XT07 |
| SRDC N 1212 F06 | - | - | P0250700 | XT07 |
| SRDC N 1616 H06 | - | - | P0250700 | XT07 |
| SRDC N 2020 K06 | - | - | P0250700 | XT07 |
| SRDC N 2525 M06 | - | - | P0250700 | XT07 |
| SRDC N 1616 H08 | - | - | P0300900 | XT08 |
| SRDC N 2020 K08 | - | - | P0300900 | XT08 |
| SRDC N 2525 M08 | - | - | P0300900 | XT08 |
| SRDC N 2020 K10 | CR100301 | T05003500 | P0351500 | XT15-S35 |
| SRDC N 2525 M10 | CR100301 | T05003500 | P0351500 | XT15-S35 |
| SRDC N 2020 K12 | CR120301 | T05003500 | P0351500 | XT15-S35 |
| SRDC N 2525 M12 | CR120301 | T05003500 | P0351500 | XT15-S35 |
| SRDC N 3225 P12 | CR120301 | T05003500 | P0351500 | XT15-S35 |
| SRDC N 3232 P12 | CR120301 | T05003500 | P0351500 | XT15-S35 |

(S) CENTER SCREW TOOLHOLDERS

| | | | |
|--|--|--|--|
| Finishing | Finishing | Finishing | Finishing |
| Flat  (09-12) | FP  (09) | FM  (09) | FK  (09) |
| Medium | Medium | Medium | Medium to Finishing |
| MP  (09-12) | MM  (09-12) | MK  (09-12) | LN  (09-12) |



| Order Code | | Reference | Dimensions (mm) | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | S | | | R | L |
| 212149100 | 212149000 | SSBC R/L 1212 F09 | 12 | 12 | 80 | 11 | SC.. 09T3.. | 0,100 |  |  |
| 212045700 | 212149200 | SSBC R/L 1616 H09 | 16 | 16 | 100 | 13 | SC.. 09T3.. | 0,200 |  |  |
| 212149400 | 212149300 | SSBC R/L 2020 K12 | 20 | 20 | 125 | 17 | SC.. 1204.. | 0,400 |  |  |
| 212149600 | 212149500 | SSBC R/L 2525 M12 | 25 | 25 | 150 | 22 | SC.. 1204.. | 0,700 |  |  |

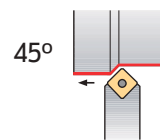
 Stock Items | Itens de stock

 Available under request | Disponivel sob consulta | Disponible bajo consulta

SPARE PARTS || Complementos | Repuestos

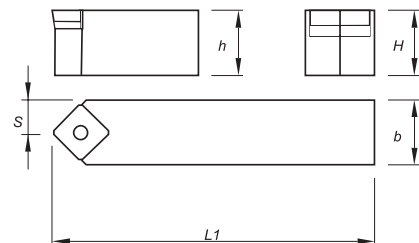
| Cutter Reference | Shim  | Shim Screw  | Screw  | Wrench  |
|-------------------|---|---|--|---|
| SSBC R/L 1212 F09 | - | - | P0401100 | XT15-S35 |
| SSBC R/L 1616 H09 | - | - | P0401100 | XT15-S35 |
| SSBC R/L 2020 K12 | CS120400 | T06004000 | P0401400 | XT15-S40 |
| SSBC R/L 2525 M12 | CS120400 | T06004000 | P0401400 | XT15-S40 |

(S) CENTER SCREW TOOLHOLDERS



Axial: 0°
Radial: 0°

| | | | |
|---------------------|-------------------|-------------------|---------------------|
| Finishing | Finishing | Finishing | Finishing |
| Flat (09-12) | FP (09) | FM (09) | FK (09) |
| Medium | Medium | Medium | Medium to Finishing |
| MP (09-12) | MM (09-12) | MK (09-12) | LN (09-12) |



| Order Code | Reference | Dimensions (mm) | | | | Insert | Kg | Stock |
|------------|-----------------|-----------------|----|-----|------|-------------|-------|-------|
| | | H=h | b | L1 | S | | | |
| 212149700 | SSDC N 1212 F09 | 12 | 12 | 80 | 6,0 | SC.. 09T3.. | 0,100 | |
| 212050900 | SSDC N 1616 H09 | 16 | 16 | 100 | 8,0 | SC.. 09T3.. | 0,200 | |
| 212046000 | SSDC N 2020 K12 | 20 | 20 | 125 | 10,0 | SC.. 1204.. | 0,400 | |
| 212076800 | SSDC N 2525 M12 | 25 | 25 | 150 | 12,5 | SC.. 1204.. | 0,700 | |









Stock Items | Itens de stock

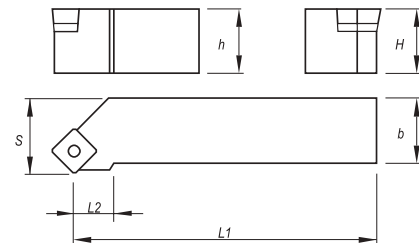
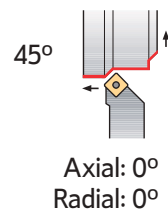
Available under request | Disponível sob consulta | Disponible bajo consulta









SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Shim | Shim Screw | Screw | Wrench |
|------------------|----------|----------------|-----------|------------|
| SSDC N 1212 F09 | - | - | P0401100 | XT15-S35 |
| SSDC N 1616 H09 | - | - | P0401100 | XT15-S35 |
| SSDC N 2020 K12 | CS120400 | T06004000 | P0401400 | XT15-S40 |
| SSDC N 2525 M12 | CS120400 | T06004000 | P0401400 | XT15-S40 |

(S) CENTER SCREW TOOLHOLDERS

| | | | |
|--|--|--|--|
| Finishing | Finishing | Finishing | Finishing |
| Flat  (09-12) | FP  (09) | FM  (09) | FK  (09) |
| Medium | Medium | Medium | Medium to Finishing |
| MP  (09-12) | MM  (09-12) | MK  (09-12) | LN  (09-12) |



| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212149900 | 212149800 | SSSC R/L 1212 F09 | 12 | 12 | 80 | 11 | 16 | SC.. 09T3.. | 0,100 |  |  |
| 212150100 | 212150000 | SSSC R/L 1616 H09 | 16 | 16 | 100 | 22 | 20 | SC.. 09T3.. | 0,200 |  |  |
| 212021900 | 212150200 | SSSC R/L 2020 K12 | 20 | 20 | 125 | 22 | 25 | SC.. 1204.. | 0,400 |  |  |
| 212042700 | 212021800 | SSSC R/L 2525 M12 | 25 | 25 | 150 | 22 | 32 | SC.. 1204.. | 0,700 |  |  |

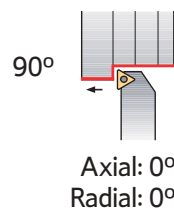
 Stock Items | Itens de stock









 Available under request | Disponível sob consulta | Disponible bajo consulta

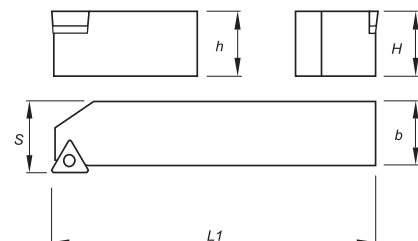
SPARE PARTS | Complementos | Repuestos















| Cutter Reference | Shim  | Shim Screw  | Screw  | Wrench  |
|-------------------|---|---|--|---|
| SSSC R/L 1212 F09 | - | - | P0401100 | XT15-S35 |
| SSSC R/L 1616 H09 | - | - | P0401100 | XT15-S35 |
| SSSC R/L 2020 K12 | CS120400 | T06004000 | P0401400 | XT15-S40 |
| SSSC R/L 2525 M12 | CS120400 | T06004000 | P0401400 | XT15-S40 |

(S) CENTER SCREW TOOLHOLDERS



| | | | |
|---|---|---|---|
| Finishing | Finishing | Finishing | Finishing |
| Flat  (09-11-16) | FP  (09-11-16) | FM  (09-11-16) | FK  (09-11-16) |
| Medium | Medium | Medium | Medium to Finishing |
| MP  (09-11-16) | MM  (09-11-16) | MK  (09-11-16) | LN  (11-16) |







| Order Code | | Reference | Dimensions (mm) | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|------|-------------|-------|---|---|
| R | L | | H=h | b | L1 | S | | | R | L |
| 212151400 | 212151300 | STAC R/L 0808 D09 | 8 | 8 | 60 | 8,5 | TC.. 0902.. | 0,050 |  |  |
| 212151600 | 212151500 | STAC R/L 1010 E09 | 10 | 10 | 70 | 10,5 | TC.. 0902.. | 0,070 |  |  |
| 212151800 | 212151700 | STAC R/L 1212 F11 | 12 | 12 | 80 | 12,5 | TC.. 1102.. | 0,100 |  |  |
| 212152000 | 212151900 | STAC R/L 1616 H11 | 16 | 16 | 100 | 16,5 | TC.. 1102.. | 0,200 |  |  |
| 212152200 | 212152100 | STAC R/L 1616 H16 | 16 | 16 | 100 | 16,5 | TC.. 16T3.. | 0,200 |  |  |
| 212260000 | 212260100 | STAC R/L 2020 K16 | 20 | 20 | 125 | 20,5 | TC.. 16T3.. | 0,400 |  |  |
| 212152600 | 212152400 | STAC R/L 2525 M16 | 25 | 25 | 150 | 25,5 | TC.. 16T3.. | 0,700 |  |  |

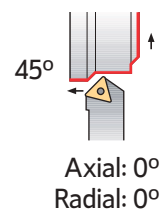
 Stock Items | Itens de stock



Available under request | Disponível sob consulta | Disponible bajo consulta

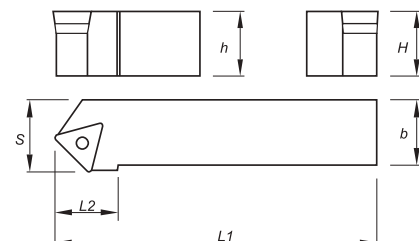
SPARE PARTS | Complementos | Repuestos

















| Cutter Reference | Shim | Shim Screw | Screw | Wrench |
|-------------------|---|---|---|---|
| |  |  |  |  |
| STAC R/L 0808 D09 | - | - | P0220600 | XT06 |
| STAC R/L 1010 E09 | - | - | P0220600 | XT06 |
| STAC R/L 1212 F11 | - | - | P0250700 | XT07 |
| STAC R/L 1616 H11 | - | - | P0250700 | XT07 |
| STAC R/L 1616 H16 | CT160302 | T05003500 | P0351500 | XT15-S35 |
| STAC R/L 2020 K16 | CT160302 | T05003500 | P0351500 | XT15-S35 |
| STAC R/L 2525 M16 | CT160302 | T05003500 | P0351500 | XT15-S35 |

(S) CENTER SCREW TOOLHOLDERS



| | | | |
|---|---|---|---|
| Finishing | Finishing | Finishing | Finishing |
| Flat | FP | FM | FK |
|  (09-11-16) |  (09-11-16) |  (09-11-16) |  (09-11-16) |
| Medium | Medium | Medium | Medium to Finishing |
| MP | MM | MK | LN |
|  (09-11-16) |  (09-11-16) |  (09-11-16) |  (11-16) |







| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212152800 | 212152700 | STDC R/L 0808 D09 | 8 | 8 | 60 | 11 | 10 | TC.. 0902.. | 0,050 |  |  |
| 212153000 | 212152900 | STDC R/L 1010 E09 | 10 | 10 | 70 | 11 | 11 | TC.. 0902.. | 0,070 |  |  |
| 212153200 | 212153100 | STDC R/L 1212 F11 | 12 | 12 | 80 | 16 | 13 | TC.. 1102.. | 0,100 |  |  |
| 212153400 | 212153300 | STDC R/L 1616 H11 | 16 | 16 | 100 | 16 | 17 | TC.. 1102.. | 0,200 |  |  |
| 212153600 | 212153500 | STDC R/L 1212 F16 | 12 | 12 | 80 | 21 | 17 | TC.. 16T3.. | 0,100 |  |  |
| 212153800 | 212153700 | STDC R/L 1616 H16 | 16 | 16 | 100 | 21 | 17 | TC.. 16T3.. | 0,200 |  |  |
| 212154000 | 212153900 | STDC R/L 2020 K16 | 20 | 20 | 125 | 21 | 22 | TC.. 16T3.. | 0,400 |  |  |
| 212154200 | 212154100 | STDC R/L 2525 M16 | 25 | 25 | 150 | 21 | 27 | TC.. 16T3.. | 0,700 |  |  |

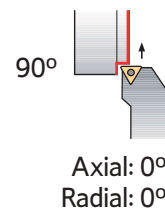
 Stock Items | Itens de stock









 Available under request | Disponível sob consulta | Disponible bajo consulta

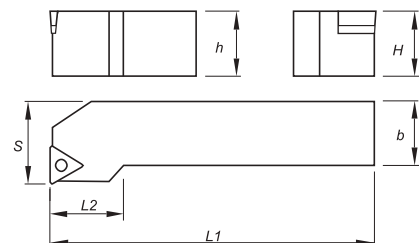
SPARE PARTS | Complementos | Repuestos

















| Cutter Reference | Shim | Shim Screw | Screw | Wrench |
|-------------------|---|---|---|---|
| STDC R/L 0808 D09 |  |  |  |  |
| STDC R/L 1010 E09 | - | - | P0220600 | XT06 |
| STDC R/L 1212 F11 | - | - | P0250700 | XT07 |
| STDC R/L 1616 H11 | - | - | P0250700 | XT07 |
| STDC R/L 1212 F16 | - | - | P0401100 | XT15-S35 |
| STDC R/L 1616 H16 | CT160302 | T05003500 | P0351500 | XT15-S35 |
| STDC R/L 2020 K16 | CT160302 | T05003500 | P0351500 | XT15-S35 |
| STDC R/L 2525 M16 | CT160302 | T05003500 | P0351500 | XT15-S35 |

(S) CENTER SCREW TOOLHOLDERS



| | | | |
|---|---|---|---|
| Finishing | Finishing | Finishing | Finishing |
| Flat  (09-11-16) | FP  (09-11-16) | FM  (09-11-16) | FK  (09-11-16) |
| Medium | Medium | Medium | Medium to Finishing |
| MP  (09-11-16) | MM  (09-11-16) | MK  (09-11-16) | LN  (11-16) |







| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212154400 | 212154300 | STFC R/L 0808 D09 | 8 | 8 | 60 | 16 | 10 | TC.. 0902.. | 0,050 |  |  |
| 212154600 | 212154500 | STFC R/L 1010 E09 | 10 | 10 | 70 | 16 | 12 | TC.. 0902.. | 0,070 |  |  |
| 212154800 | 212154700 | STFC R/L 1212 F11 | 12 | 12 | 80 | 18 | 16 | TC.. 1102.. | 0,100 |  |  |
| 212065800 | 212154900 | STFC R/L 1616 H11 | 16 | 16 | 100 | 22 | 20 | TC.. 1102.. | 0,200 |  |  |
| 212155100 | 212155000 | STFC R/L 1212 F16 | 12 | 12 | 80 | 18 | 16 | TC.. 16T3.. | 0,100 |  |  |
| 212056800 | 212155200 | STFC R/L 1616 H16 | 16 | 16 | 100 | 22 | 20 | TC.. 16T3.. | 0,200 |  |  |
| 212056600 | 212155300 | STFC R/L 2020 K16 | 20 | 20 | 125 | 22 | 25 | TC.. 16T3.. | 0,400 |  |  |
| 212155500 | 212155400 | STFC R/L 2525 M16 | 25 | 25 | 150 | 22 | 32 | TC.. 16T3.. | 0,700 |  |  |

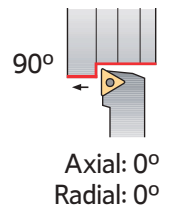
 Stock Items | Itens de stock

 Available under request | Disponível sob consulta | Disponible bajo consulta

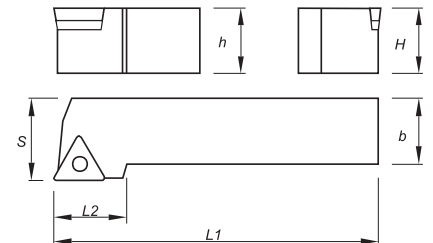
SPARE PARTS | Complementos | Repuestos

















| Cutter Reference | Shim  | Shim Screw  | Screw  | Wrench  |
|-------------------|---|---|--|---|
| STFC R/L 0808 D09 | - | - | P0220600 | XT06 |
| STFC R/L 1010 E09 | - | - | P0220600 | XT06 |
| STFC R/L 1212 F11 | - | - | P0250700 | XT07 |
| STFC R/L 1616 H11 | - | - | P0250700 | XT07 |
| STFC R/L 1212 F16 | - | - | P0401100 | XT15-S35 |
| STFC R/L 1616 H16 | CT160302 | T05003500 | P0351500 | XT15-S35 |
| STFC R/L 2020 K16 | CT160302 | T05003500 | P0351500 | XT15-S35 |
| STFC R/L 2525 M16 | CT160302 | T05003500 | P0351500 | XT15-S35 |

(S) CENTER SCREW TOOLHOLDERS



| | | | |
|---|---|---|---|
| Finishing | Finishing | Finishing | Finishing |
| Flat | FP | FM | FK |
|  (09-11-16) |  (09-11-16) |  (09-11-16) |  (09-11-16) |
| Medium | Medium | Medium | Medium to Finishing |
| MP | MM | MK | LN |
|  (09-11-16) |  (09-11-16) |  (09-11-16) |  (11-16) |







| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212155700 | 212155600 | STGC R/L 0808 D09 | 8 | 8 | 60 | 16 | 10 | TC.. 0902.. | 0,050 |  |  |
| 212155900 | 212155800 | STGC R/L 1010 E09 | 10 | 10 | 70 | 16 | 12 | TC.. 0902.. | 0,070 |  |  |
| 212156100 | 212156000 | STGC R/L 1212 F11 | 12 | 12 | 80 | 18 | 16 | TC.. 1102.. | 0,100 |  |  |
| 212046100 | 212156200 | STGC R/L 1616 H11 | 16 | 16 | 100 | 22 | 20 | TC.. 1102.. | 0,200 |  |  |
| 212156400 | 212156300 | STGC R/L 1212 F16 | 12 | 12 | 80 | 18 | 16 | TC.. 16T3.. | 0,100 |  |  |
| 212156600 | 212156500 | STGC R/L 1616 H16 | 16 | 16 | 100 | 22 | 20 | TC.. 16T3.. | 0,200 |  |  |
| 212156800 | 212156700 | STGC R/L 2020 K16 | 20 | 20 | 125 | 22 | 25 | TC.. 16T3.. | 0,400 |  |  |
| 212157000 | 212156900 | STGC R/L 2525 M16 | 25 | 25 | 150 | 22 | 32 | TC.. 16T3.. | 0,700 |  |  |

 Stock Items | Itens de stock

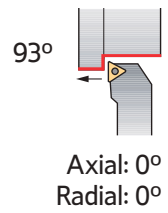
 Available under request | Disponível sob consulta | Disponible bajo consulta











SPARE PARTS | Complementos | Repuestos

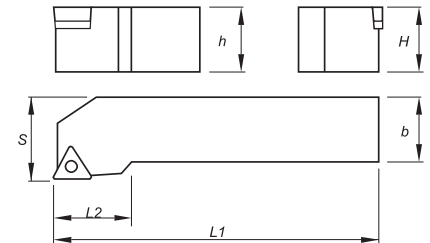
| Cutter Reference | Shim | Shim Screw | Screw | Wrench |
|-------------------|---|---|---|---|
| STGC R/L 0808 D09 |  |  |  |  |
| STGC R/L 1010 E09 | - | - | P0220600 | XT06 |
| STGC R/L 1212 F11 | - | - | P0250700 | XT07 |
| STGC R/L 1616 H11 | - | - | P0250700 | XT07 |
| STGC R/L 1212 F16 | - | - | P0401100 | XT15-S35 |
| STGC R/L 1616 H16 | CT160302 | T05003500 | P0351500 | XT15-S35 |
| STGC R/L 2020 K16 | CT160302 | T05003500 | P0351500 | XT15-S35 |
| STGC R/L 2525 M16 | CT160302 | T05003500 | P0351500 | XT15-S35 |

















C
TURNING
Insert selection
Overview
Negative inserts
Positive inserts
PCBN & PCD inserts
Heavy turning
External Toolholders
Internal Toolholders
Automatic Lathes
Spare Parts
Technical Data

(S) CENTER SCREW TOOLHOLDERS



| | | | | |
|---|---|---|---|---|
| Finishing | Finishing | Finishing | Finishing | Finishing wiper |
| Flat  (09-11-16) | FP  (09-11-16) | FM  (09-11-16) | FK  (09-11-16) | FW  (09-11-16) |
| Medium | Medium | Medium | Medium to Finishing wiper | Medium to Finishing |
| MP  (09-11-16) | MM  (09-11-16) | MK  (09-11-16) | MW  (11-16) | LN  (11-16) |







| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212157200 | 212157100 | STJC R/L 0808 D09 | 8 | 8 | 60 | 16 | 10 | TC.. 0902.. | 0,050 |  |  |
| 212157400 | 212157300 | STJC R/L 1010 E09 | 10 | 10 | 70 | 16 | 12 | TC.. 0902.. | 0,070 |  |  |
| 212157600 | 212157500 | STJC R/L 1212 F11 | 12 | 12 | 80 | 18 | 16 | TC.. 1102.. | 0,100 |  |  |
| 212035400 | 212035500 | STJC R/L 1616 H11 | 16 | 16 | 100 | 22 | 20 | TC.. 1102.. | 0,200 |  |  |
| 212157800 | 212157700 | STJC R/L 1212 F16 | 12 | 12 | 80 | 18 | 16 | TC.. 16T3.. | 0,100 |  |  |
| 212035600 | 212035700 | STJC R/L 1616 H16 | 16 | 16 | 100 | 22 | 20 | TC.. 16T3.. | 0,200 |  |  |
| 212036300 | 212031000 | STJC R/L 2020 K16 | 20 | 20 | 125 | 22 | 25 | TC.. 16T3.. | 0,400 |  |  |
| 212038600 | 212038700 | STJC R/L 2525 M16 | 25 | 25 | 150 | 22 | 32 | TC.. 16T3.. | 0,700 |  |  |









 Stock Items | Itens de stock

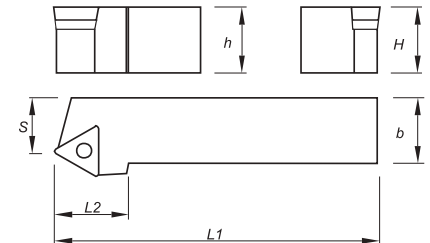
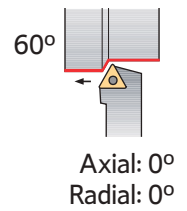
 Available under request | Disponível sob consulta | Disponible bajo consulta

















SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Shim  | Shim Screw  | Screw  | Wrench  |
|-------------------|---|---|--|---|
| STJC R/L 0808 D09 | - | - | P0220600 | XT06 |
| STJC R/L 1010 E09 | - | - | P0220600 | XT06 |
| STJC R/L 1212 F11 | - | - | P0250700 | XT07 |
| STJC R/L 1616 H11 | - | - | P0250700 | XT07 |
| STJC R/L 1212 F16 | - | - | P0401100 | XT15-S35 |
| STJC R/L 1616 H16 | CT160302 | T05003500 | P0351500 | XT15-S35 |
| STJC R/L 2020 K16 | CT160302 | T05003500 | P0351500 | XT15-S35 |
| STJC R/L 2525 M16 | CT160302 | T05003500 | P0351500 | XT15-S35 |

(S) CENTER SCREW TOOLHOLDERS

| | | | |
|---|---|---|---|
| Finishing | Finishing | Finishing | Finishing |
| Flat | FP | FM | FK |
|  (09-11-16) |  (09-11-16) |  (09-11-16) |  (09-11-16) |
| Medium | Medium | Medium | Medium to Finishing |
| MP | MM | MK | LN |
|  (09-11-16) |  (09-11-16) |  (09-11-16) |  (11-16) |







| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212158000 | 212157900 | STTC R/L 0808 D09 | 8 | 8 | 60 | 16 | 7 | TC.. 0902.. | 0,050 |  |  |
| 212158200 | 212158100 | STTC R/L 1010 E09 | 10 | 10 | 70 | 16 | 9 | TC.. 0902.. | 0,070 |  |  |
| 212158400 | 212158300 | STTC R/L 1212 F11 | 12 | 12 | 80 | 18 | 11 | TC.. 1102.. | 0,100 |  |  |
| 212047500 | 212158500 | STTC R/L 1616 H11 | 16 | 16 | 100 | 18 | 13 | TC.. 1102.. | 0,200 |  |  |
| 212158700 | 212158600 | STTC R/L 1212 F16 | 12 | 12 | 80 | 22 | 11 | TC.. 16T3.. | 0,100 |  |  |
| 212158900 | 212158800 | STTC R/L 1616 H16 | 16 | 16 | 100 | 22 | 13 | TC.. 16T3.. | 0,200 |  |  |
| 212159100 | 212159000 | STTC R/L 2020 K16 | 20 | 20 | 125 | 22 | 17 | TC.. 16T3.. | 0,400 |  |  |
| 212159300 | 212159200 | STTC R/L 2525 M16 | 25 | 25 | 150 | 22 | 22 | TC.. 16T3.. | 0,700 |  |  |

 Stock Items | Itens de stock

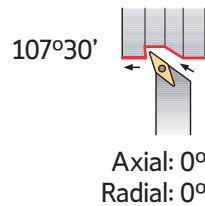
 Available under request | Disponível sob consulta | Disponible bajo consulta









SPARE PARTS || Complementos | Repuestos

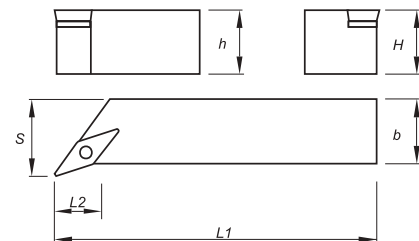
| Cutter Reference | Shim | Shim Screw | Screw | Wrench |
|-------------------|---|---|---|---|
| STTC R/L 0808 D09 |  |  |  |  |
| STTC R/L 1010 E09 | - | - | P0220600 | XT06 |
| STTC R/L 1212 F11 | - | - | P0250700 | XT07 |
| STTC R/L 1616 H11 | - | - | P0250700 | XT07 |
| STTC R/L 1212 F16 | - | - | P0401100 | XT15-S35 |
| STTC R/L 1616 H16 | CT160302 | T05003500 | P0351500 | XT15-S35 |
| STTC R/L 2020 K16 | CT160302 | T05003500 | P0351500 | XT15-S35 |
| STTC R/L 2525 M16 | CT160302 | T05003500 | P0351500 | XT15-S35 |











C
TURNING
Insert selection
Overview
Negative inserts
Positive inserts
PCBN & PCD inserts
Heavy turning
External Toolholders
Internal Toolholders
Automatic Lathes
Spare Parts
Technical Data

(S) CENTER SCREW TOOLHOLDERS



| | | | |
|---|---|---|--|
| Finishing | Finishing | Finishing | Finishing |
| Flat | FP | FM | FK |
|  (16) |  (16) |  (16) |  (16) |
| Medium | Medium | Medium | Medium to Finishing |
| MP | MM | MK | LN |
|  (16) |  (16) |  (16) |  (16-22) |



| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|------|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212161000 | 212160900 | SVHC R/L 2020 K16 | 20 | 20 | 125 | 15,4 | 25 | VC.. 1604.. | 0,400 |  |  |
| 212161200 | 212161100 | SVHC R/L 2525 M16 | 25 | 25 | 150 | 21,0 | 32 | VC.. 1604.. | 0,700 |  |  |
| 212161400 | 212161300 | SVHC R/L 3225 P16 | 32 | 25 | 170 | 21,0 | 32 | VC.. 1604.. | 0,900 |  |  |
| 212161500 | 212161600 | SVHC R/L 2525 M22 | 25 | 25 | 150 | 19,6 | 32 | VC.. 2205.. | 0,700 |  |  |
| 212161700 | 212161800 | SVHC R/L 3225 P22 | 32 | 25 | 170 | 19,6 | 32 | VC.. 2205.. | 0,900 |  |  |

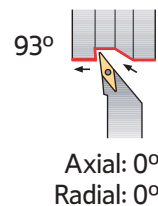
 Stock Items | Itens de stock








 Available under request | Disponível sob consulta | Disponible bajo consulta

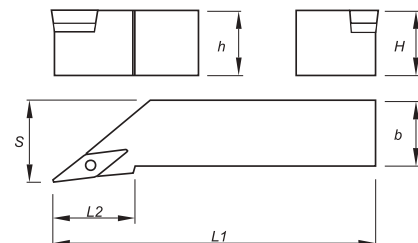
SPARE PARTS || Complementos | Repuestos







| Cutter Reference | Shim | Shim Screw | Screw | Wrench |
|-------------------|---|--|---|---|
| SVHC R/L 2020 K16 |  CV160300 |  T05003500 |  P0351500 |  XT15-S35 |
| SVHC R/L 2525 M16 |  CV160300 |  T05003500 |  P0351500 |  XT15-S35 |
| SVHC R/L 3225 P16 |  CV160300 |  T05003500 |  P0351500 |  XT15-S35 |
| SVHC R/L 2525 M22 |  CV220400 |  T06004000 |  P0401400 |  XT20-S40 |
| SVHC R/L 3225 P22 |  CV220400 |  T06004000 |  P0401400 |  XT20-S40 |

(S) CENTER SCREW TOOLHOLDERS



| | | | |
|---|---|---|---|
| Finishing | Finishing | Finishing | Finishing |
| Flat | FP | FM | FK |
|  |  |  |  |
| (16) | (16) | (16) | (16) |
| Medium | Medium | Medium | |
| MP | MM | MK | |
|  |  |  | |
| (16) | (16) | (16) | |



| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|--|--|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212055300 | 212363000 | SVJB R/L 2020 K16 | 20 | 20 | 125 | 37 | 25 | VB.. 1604.. | 0,400 |  |  |
| 212022200 | 212022000 | SVJB R/L 2525 M16 | 25 | 25 | 150 | 37 | 32 | VB.. 1604.. | 0,700 |  |  |
| 212022300 | 212022100 | SVJB R/L 3225 P16 | 32 | 25 | 170 | 37 | 32 | VB.. 1604.. | 0,900 |  |  |

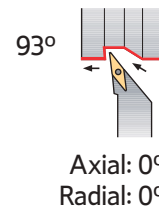
 Stock Items | Itens de stock









 Available under request | Disponível sob consulta | Disponible bajo consulta

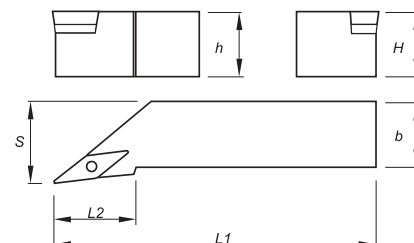
SPARE PARTS || Complementos | Repuestos















| Cutter Reference | Shim | Shim Screw | Screw | Wrench |
|-------------------|---|---|---|---|
| SVJB R/L 2020 K16 |  |  |  |  |
| SVJB R/L 2525 M16 | CV160300 | T05003500 | P0351500 | XT15-S35 |
| SVJB R/L 3225 P16 | CV160300 | T05003500 | P0351500 | XT15-S35 |

(S) CENTER SCREW TOOLHOLDERS



| | | | |
|--|--|--|--|
| Finishing | Finishing | Finishing | Finishing |
| Flat | FP | FM | FK |
|  (11-16) |  (11-16) |  (11-16) |  (11-16) |
| Medium | Medium | Medium | Medium to Finishing |
| MP | MM | MK | LN |
|  (11-16) |  (11-16) |  (11-16) |  (11-16) |





| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212161900 | 212162000 | SVJC R/L 1212 F11 | 12 | 12 | 80 | 25 | 16 | VC.. 1103.. | 0,100 |  |  |
| 212056400 | 212162100 | SVJC R/L 1616 H11 | 16 | 16 | 100 | 25 | 20 | VC.. 1103.. | 0,200 |  |  |
| 212162200 | 212162300 | SVJC R/L 2020 K11 | 20 | 20 | 125 | 25 | 25 | VC.. 1103.. | 0,400 |  |  |
| 212392400 | 212420900 | SVJC R/L 2525 M11 | 25 | 25 | 150 | 28 | 32 | VC.. 1103.. | 0,700 |  |  |
| 212031100 | 212031200 | SVJC R/L 2020 K16 | 20 | 20 | 125 | 37 | 25 | VC.. 1604.. | 0,400 |  |  |
| 212031300 | 212031400 | SVJC R/L 2525 M16 | 25 | 25 | 150 | 37 | 32 | VC.. 1604.. | 0,700 |  |  |
| 212162500 | 212162400 | SVJC R/L 3225 P16 | 32 | 25 | 170 | 37 | 32 | VC.. 1604.. | 0,900 |  |  |

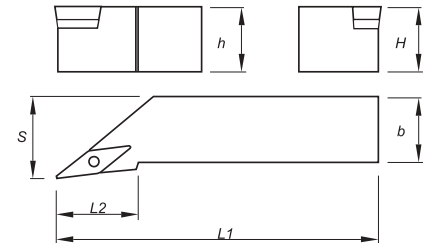
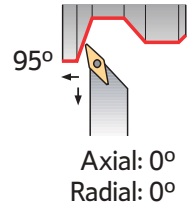
 Stock Items | Itens de stock

 Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Shim | Shim Screw | Screw | Wrench |
|-------------------|---|------------|----------|---|
| SVJC R/L 1212 F11 |  | - | - |  |
| SVJC R/L 1616 H11 | - | - | P0250700 | XT07 |
| SVJC R/L 2020 K11 | - | - | P0250700 | XT07 |
| SVJC R/L 2525 M11 | - | - | P0250700 | XT07 |
| SVJC R/L 2020 K16 | CV160300 | T05003500 | P0351500 | XT15-S35 |
| SVJC R/L 2525 M16 | CV160300 | T05003500 | P0351500 | XT15-S35 |
| SVJC R/L 3225 P16 | CV160300 | T05003500 | P0351500 | XT15-S35 |

(S) CENTER SCREW TOOLHOLDERS



| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|-------|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212041900 | 212162600 | SVLC R/L 1212 G13 | 12 | 12 | 90 | 25 | 16 | VCGT 1303.. | 0,100 | | |
| 212162800 | 212162700 | SVLC R/L 1616 H13 | 16 | 16 | 100 | 25 | 20 | VCGT 1303.. | 0,200 | | |
| 212163000 | 212162900 | SVLC R/L 2020 K13 | 20 | 20 | 125 | 28 | 25 | VCGT 1303.. | 0,400 | | |
| 212163200 | 212163100 | SVLC R/L 2525 M13 | 25 | 25 | 150 | 30 | 32 | VCGT 1303.. | 0,700 | | |

Stock Items | Itens de stock

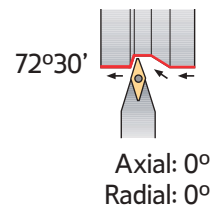
Available under request | Disponível sob consulta | Disponible bajo consulta








SPARE PARTS | Complementos | Repuestos

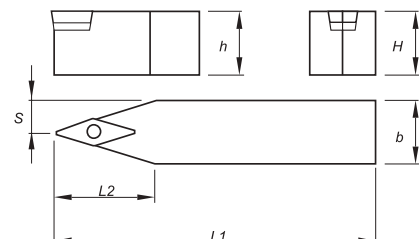
| Cutter Reference | Screw | Wrench |
|-------------------|----------|--------|
| | | |
| SVLC R/L 1212 G13 | P0300900 | XT08 |
| SVLC R/L 1616 H13 | P0300900 | XT08 |
| SVLC R/L 2020 K13 | P0300900 | XT08 |
| SVLC R/L 2525 M13 | P0300900 | XT08 |

C
TURNING
Insert selection
Overview
Negative inserts
Positive inserts
PCBN & PCD inserts
Heavy turning
External Toolholders
Internal Toolholders
Automatic Lathes
Spare Parts
Technical Data

(S) CENTER SCREW TOOLHOLDERS



| | | | |
|---|---|---|---|
| Finishing | Finishing | Finishing | Finishing |
| Flat | FP | FM | FK |
|  |  |  |  |
| (16) | (16) | (16) | (16) |
| Medium | Medium | Medium | |
| MP | MM | MK | |
|  |  |  | |
| (16) | (16) | (16) | |



| Order Code | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock |
|------------|-----------------|-----------------|----|-----|----|------|-------------|-------|-------|
| | | H=h | b | L1 | L2 | S | | | |
| 212260200 | SVVB N 2020 K16 | 20 | 20 | 125 | 37 | 10,6 | VB.. 1604.. | 0,400 | ☉ |
| 212169500 | SVVB N 2525 M16 | 25 | 25 | 150 | 37 | 13,1 | VB.. 1604.. | 0,700 | ☉ |
| 212260300 | SVVB N 3225 P16 | 32 | 25 | 170 | 37 | 13,1 | VB.. 1604.. | 0,900 | ☉ |

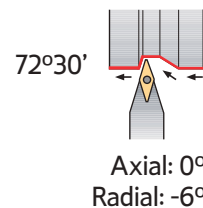
☉ Stock Items | Itens de stock









○ Available under request | Disponível sob consulta | Disponible bajo consulta

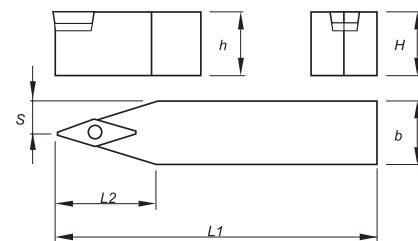
SPARE PARTS || Complementos | Repuestos







| Cutter Reference | Shim | Shim Screw | Screw | Wrench |
|------------------|---|---|---|---|
| SVVB N 2020 K16 |  |  |  |  |
| SVVB N 2525 M16 | CV160300 | T05003500 | P0351500 | XT15-S35 |
| SVVB N 3225 P16 | CV160300 | T05003500 | P0351500 | XT15-S35 |

(S) CENTER SCREW TOOLHOLDERS



| | | | |
|---|---|---|---|
| Finishing | Finishing | Finishing | Finishing |
| Flat | FP | FM | FK |
|  |  |  |  |
| (11-16) | (11-16) | (11-16) | (11-16) |
| Medium | Medium | Medium | Medium to Finishing |
| MP | MM | MK | LN |
|  |  |  |  |
| (11-16) | (11-16) | (11-16) | (11-16) |



| Order Code | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock |
|------------|-----------------|-----------------|----|-----|----|------|-------------|-------|---|
| | | H=h | b | L1 | L2 | S | | | |
| 212163300 | SVVC N 1212 F11 | 12 | 12 | 80 | 25 | 6,6 | VC.. 1103.. | 0,100 |  |
| 212163400 | SVVC N 1616 H11 | 16 | 16 | 100 | 25 | 8,6 | VC.. 1103.. | 0,200 |  |
| 212163500 | SVVC N 2020 K11 | 20 | 20 | 125 | 25 | 10,6 | VC.. 1103.. | 0,400 |  |
| 212042500 | SVVC N 2020 K16 | 20 | 20 | 125 | 37 | 10,6 | VC.. 1604.. | 0,400 |  |
| 212163600 | SVVC N 2525 M16 | 25 | 25 | 150 | 37 | 13,1 | VC.. 1604.. | 0,700 |  |
| 212022400 | SVVC N 3225 P16 | 32 | 25 | 170 | 37 | 13,1 | VC.. 1604.. | 0,900 |  |

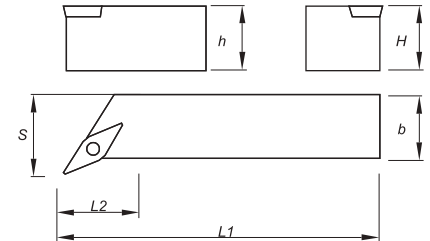
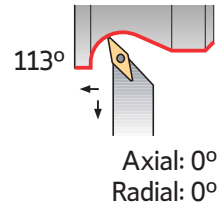
 Stock Items | Itens de stock

 Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Shim | Shim Screw | Screw | Wrench |
|------------------|---|---|---|---|
| |  |  |  |  |
| SVVC N 1212 F11 | - | - | P0250700 | XT07 |
| SVVC N 1616 H11 | - | - | P0250700 | XT07 |
| SVVC N 2020 K11 | - | - | P0250700 | XT07 |
| SVVC N 2020 K16 | CV160300 | T05003500 | P0351500 | XT15-S35 |
| SVVC N 2525 M16 | CV160300 | T05003500 | P0351500 | XT15-S35 |
| SVVC N 3225 P16 | CV160300 | T05003500 | P0351500 | XT15-S35 |

(S) CENTER SCREW TOOLHOLDERS



| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|------|----|-------------|-------|-------|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212163800 | 212163700 | SVXC R/L 1212 G13 | 12 | 12 | 90 | 11,5 | 16 | VCGT 1303.. | 0,100 | | |
| 212164000 | 212163900 | SVXC R/L 1616 H13 | 16 | 16 | 100 | 13,8 | 20 | VCGT 1303.. | 0,200 | | |
| 212164200 | 212164100 | SVXC R/L 2020 K13 | 20 | 20 | 125 | 10,4 | 25 | VCGT 1303.. | 0,400 | | |
| 212164400 | 212164300 | SVXC R/L 2525 M13 | 25 | 25 | 150 | 20,2 | 32 | VCGT 1303.. | 0,700 | | |

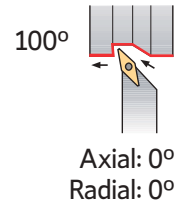
Stock Items | Itens de stock









Available under request | Disponível sob consulta | Disponible bajo consulta

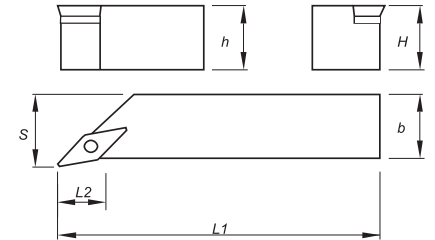
SPARE PARTS | Complementos | Repuestos







| Cutter Reference | Screw | Wrench |
|-------------------|----------|--------|
| | | |
| SVXC R/L 1212 G13 | P0300900 | XT08 |
| SVXC R/L 1616 H13 | P0300900 | XT08 |
| SVXC R/L 2020 K13 | P0300900 | XT08 |
| SVXC R/L 2525 M13 | P0300900 | XT08 |

(S) CENTER SCREW TOOLHOLDERS



| | | | |
|---|---|---|---|
| Finishing | Finishing | Finishing | Finishing |
| Flat | FP | FM | FK |
|  (16) |  (16) |  (16) |  (16) |
| Medium | Medium | Medium | Medium to Finishing |
| MP | MM | MK | LN |
|  (16) |  (16) |  (16) |  (16) |



| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|------|----|------------|-------|--|--|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212164600 | 212164500 | SVZC R/L 2020 K16 | 20 | 20 | 125 | 25,7 | 25 | VC..1604.. | 0,400 |  |  |
| 212164700 | 212044500 | SVZC R/L 2525 M16 | 25 | 25 | 150 | 28,5 | 32 | VC..1604.. | 0,700 |  |  |
| 212164900 | 212164800 | SVZC R/L 3225 P16 | 32 | 25 | 170 | 28,5 | 32 | VC..1604.. | 0,900 |  |  |

 Stock Items | Itens de stock

Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Shim | Shim Screw | Screw | Wrench |
|-------------------|---|--|---|---|
| SVZC R/L 2020 K16 |  CV160300 |  T05003500 |  P0351500 |  XT15-S35 |
| SVZC R/L 2525 M16 |  CV160300 |  T05003500 |  P0351500 |  XT15-S35 |
| SVZC R/L 3225 P16 |  CV160300 |  T05003500 |  P0351500 |  XT15-S35 |

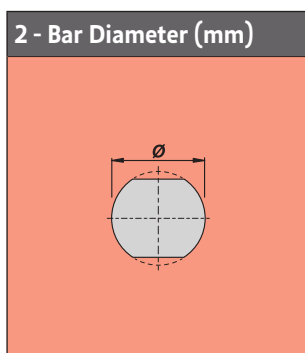
CODE KEY FOR INTERNAL TURNING TOOLHOLDERS

Sistema De Codificação Para Suportes De Torneamento Interno (ISO) | Codificación De Herramientas De Torneado Interior (ISO)

| | | | | | | | | | | |
|----------|-----------|----------|----------|----------|----------|----------|----------|-----------|----------|-----------|
| S | 25 | T | S | D | U | C | R | 11 | - | BT |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | | 10 |

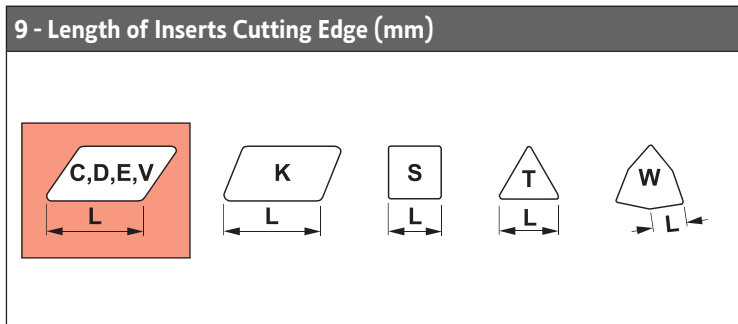
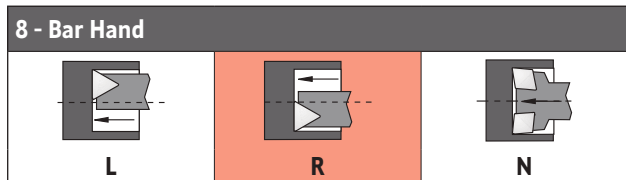
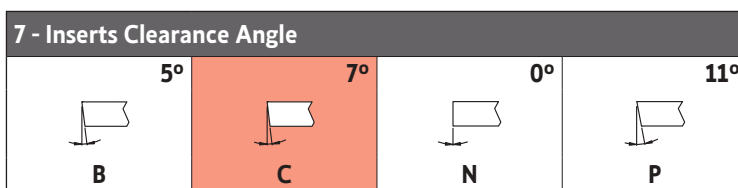
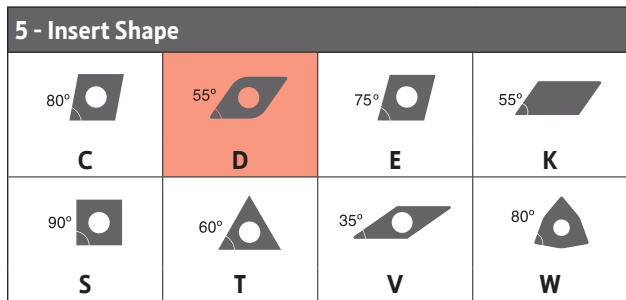
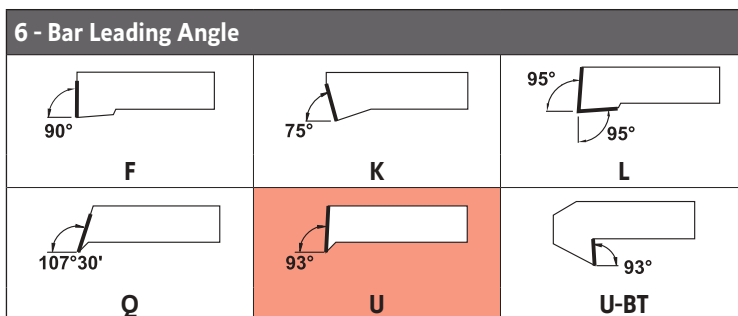
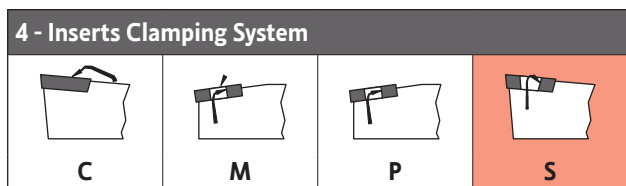
1 - Bar Type

| | | | |
|----------|--|--|--|
| A | Steel shank with internal coolant | | |
| E | Anti-vibration shank (heavy metal) with internal coolant | | |
| S | Steel shank | | |



3 - Bar Length (mm)

| | | | |
|----------|-----|----------|---------|
| H | 100 | T | 300 |
| J | 110 | U | 350 |
| K | 125 | V | 400 |
| L | 140 | W | 450 |
| M | 150 | Y | 500 |
| Q | 180 | X | Special |
| R | 200 | | |
| S | 250 | | |



10 - Manufacturer's Option



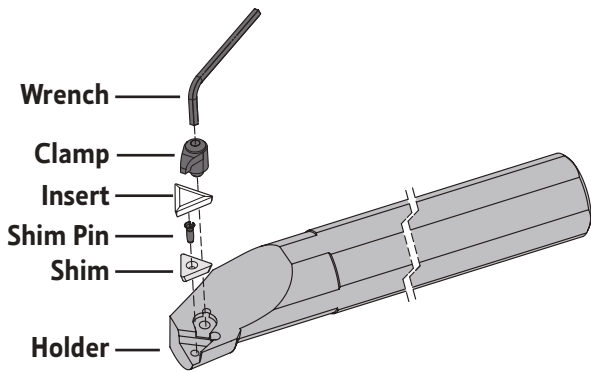
- C - 612 | Top Clamp Toolholders (C)
- C - 617 | Dimple Lock Toolholders (D)
- C - 620 | Wedge Clamp (M) & Double Lock (M-K) Toolholders
- C - 630 | Lever Lock Toolholders (P)
- C - 644 | Center Screw Toolholders (S)
- C - 668 | Anti-vibration tools
- C - 679 | Internal Toolholders set

INTERNAL TURNING

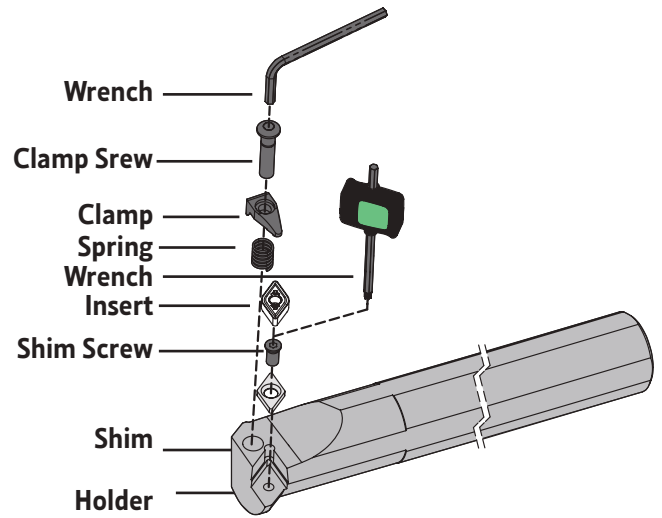
CLAMPING SYSTEMS FOR INTERNAL TOOLHOLDERS

Sistemas De Fixação Para Ferramentas De Torneamento Interno | Sistemas De Fijación Para Herramientas De Torneado Interior

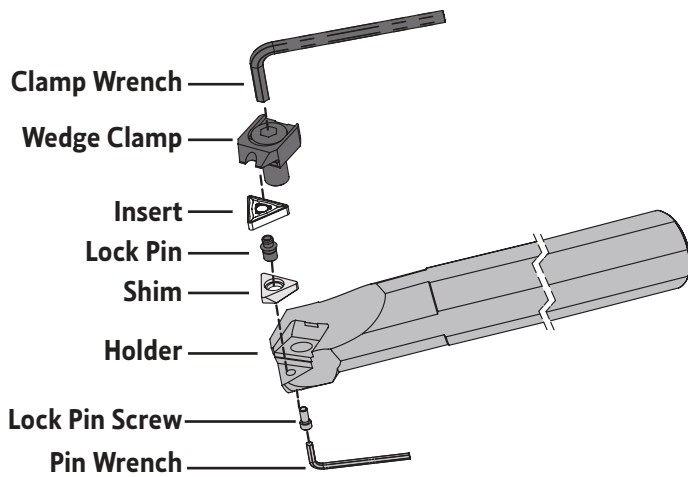
(C) TOP CLAMP SYSTEM



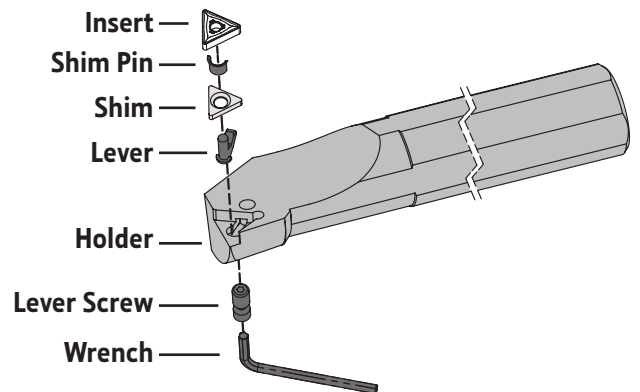
(D) DIMPLE LOCK SYSTEM



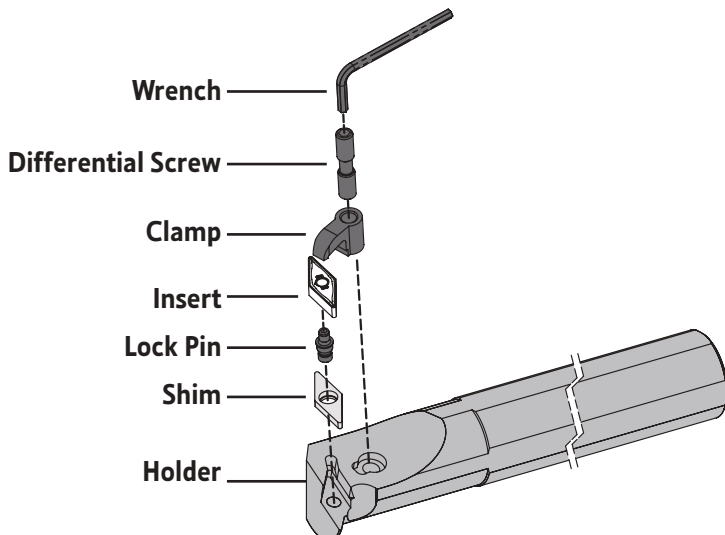
(M) WEDGE CLAMP SYSTEM



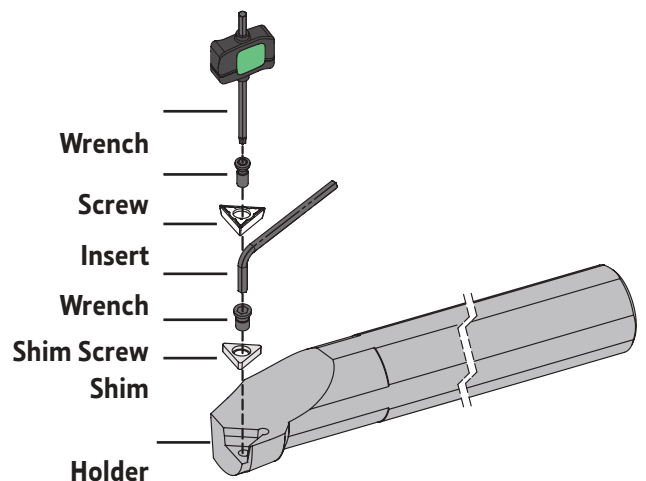
(P) LEVER LOCK SYSTEM



(M-K) DOUBLE LOCK SYSTEM





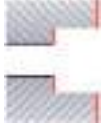
(S) CENTER SCREW SYSTEM



TURNING
Insert selection
Overview
Negative inserts
Positive inserts
PCBN & PCD inserts
Heavy turning
External Toolholders
Internal Toolholders
Automatic Lathes
Spare Parts
Technical Data

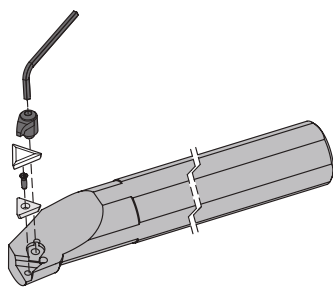
SUITABLE CLAMPING SYSTEM DEFINITION

Definição do sistema de fixação | Definición del sistema de Fijación

| Insert Shape & page | | Operation | Longitudinal turning | Profiling | Facing |
|---------------------|----------------------------|-----------|---|--|---|
| | | |  |  |  |
| Negative inserts | (C) TOP CLAMP SYSTEM | ● | ● | ● | |
| | (D) DIMPLE LOCK SYSTEM | ● ● | ● | | |
| | (M) WEDGE CLAMP SYSTEM | ● | ● | ● | |
| | (P) LEVER LOCK SYSTEM | ● ● | ● | ● | ● |
| Positive inserts | (C) TOP CLAMP SYSTEM | ● | | | |
| | (S) CENTER SCREW SYSTEM | ● ● | ● ● | ● ● | ● ● |
| | | | ● ● Recommended Insert Shape | ● Alternative Insert Shape | |

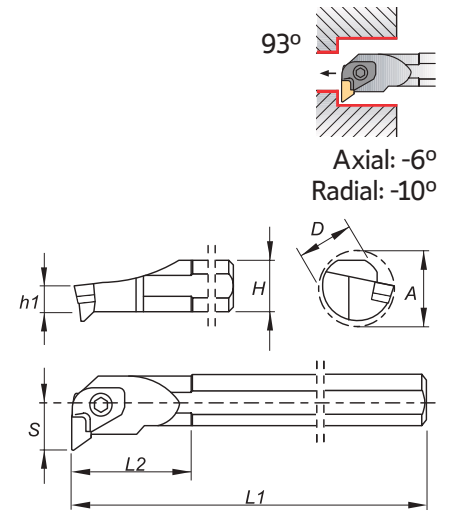
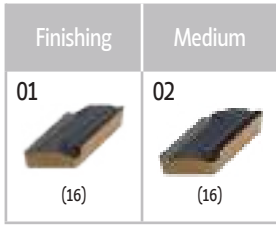
- TURNING
- Insert selection
- Overview
- Negative inserts
- Positive inserts
- PCBN & PCD inserts
- Heavy turning
- External Toolholders
- Internal Toolholders
- Automatic Lathes
- Spare Parts
- Technical Data

(C) TOP CLAMP SYSTEM



| CKUN 93° | CSKP 75° | CTFP 90° | CTUP 93° |
|-----------------------------|--|---|---|
| | | | |
| PAGE C - 613 KNUX 1604.. | PAGE C - 614 SP. 0903.. SP. 1203.. SP. 1904.. | PAGE C - 615 TP. 0903.. ... TP. 2204.. | PAGE C - 616 TP. 0903.. ... TP. 2204.. |

(C) TOP CLAMP TOOLHOLDERS



| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|------|----|-------------|-------|-------|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212038300 | 212028200 | S25T CKUN R/L 16 | 25 | 23 | 11,5 | 300 | 50 | 20,5 | 37 | KNUX 1604.. | 0,700 | ⊗ | ⊗ |
| 212028300 | 212028400 | S32U CKUN R/L 16 | 32 | 30 | 15,0 | 350 | 54 | 22,0 | 39 | KNUX 1604.. | 2,050 | ○ | ○ |
| 212329300 | 212329400 | S40V CKUN R/L 16 | 40 | 37 | 18,5 | 400 | 60 | 27,0 | 48 | KNUX 1604.. | 3,750 | ○ | ○ |
| 212329500 | 212329600 | S50W CKUN R/L 16 | 50 | 47 | 23,5 | 450 | 65 | 35,0 | 61 | KNUX 1604.. | 6,500 | ○ | ○ |




⊗ Stock Items | Itens de stock

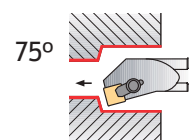
○ Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS || Complementos | Repuestos

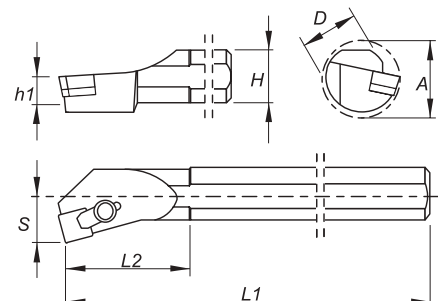
| Cutter Reference | Order separately | | | | | | |
|------------------|------------------|----------|----------------|--------|---------|----------|--------|
| | Shim | Shim Pin | Shim Pin Punch | Spring | Clamp | Screw | Wrench |
| S25T CKUN R 16 | - | - | BF04806 | M09513 | GAW1401 | DW142600 | SS40 |
| S32U CKUN R 16 | CK160501 | BE03000 | BF04808 | M09513 | GAW1401 | DW142600 | SS40 |
| S40V CKUN R 16 | CK160501 | BE03000 | BF04815 | M09513 | GAW1401 | DW142600 | SS40 |
| S50W CKUN R 16 | CK160501 | BE03000 | BF04815 | M09513 | GAW1401 | DW142600 | SS40 |
| S25T CKUN L 16 | - | - | BF04806 | M09513 | GAW1400 | DW142600 | SS40 |
| S32U CKUN L 16 | CK160500 | BE03000 | BF04808 | M09513 | GAW1400 | DW142600 | SS40 |
| S40V CKUN L 16 | CK160500 | BE03000 | BF04815 | M09513 | GAW1400 | DW142600 | SS40 |
| S50W CKUN L 16 | CK160500 | BE03000 | BF04815 | M09513 | GAW1400 | DW142600 | SS40 |















(C) TOP CLAMP TOOLHOLDERS

| Medium to Finishing | Finishing to Fine Finishing | Medium |
|---|--|--|
| Flat  (09-12-19) | 12  (09-12) | 13  (09-12) |



Axial: 6,5°
Radial: -1,25°



| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|-------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212027500 | 212027600 | S16R CSKP R/L 09 | 16 | 15 | 7,5 | 200 | 30 | 11 | 20 | SP.. 0903.. | 0,300 |  |  |
| 212027700 | 212027800 | S20S CSKP R/L 09 | 20 | 18 | 9,0 | 250 | 35 | 13 | 24 | SP.. 0903.. | 0,550 |  |  |
| 212329700 | 212027900 | S25T CSKP R/L 12 | 25 | 23 | 11,5 | 300 | 40 | 17 | 31 | SP.. 1203.. | 1,050 |  |  |
| 212028000 | 212028100 | S32U CSKP R/L 12 | 32 | 30 | 15,0 | 350 | 50 | 22 | 39 | SP.. 1203.. | 2,050 |  |  |
| 212329800 | 212329900 | S40V CSKP R/L 12 | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | SP.. 1203.. | 3,650 |  |  |
| 212330000 | 212330100 | S50W CSKP R/L 12 | 50 | 47 | 23,5 | 450 | 65 | 35 | 61 | SP.. 1203.. | 6,450 |  |  |
| 212330200 | 212330300 | S50W CSKP R/L 19 | 50 | 47 | 23,5 | 450 | 65 | 35 | 61 | SP.. 1904.. | 6,400 |  |  |

 Stock Items | Itens de stock




 Available under request | Disponível sob consulta | Disponible bajo consulta

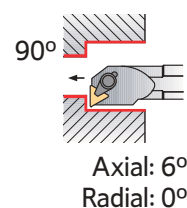
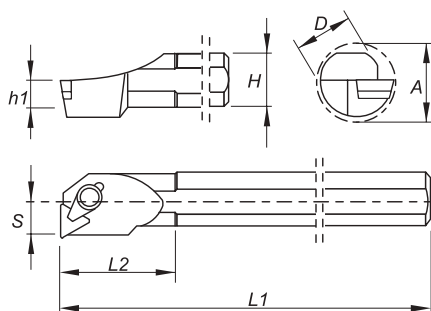
SPARE PARTS || Complementos | Repuestos

Complementary Accessories - Flat Inserts

| Cutter Reference | Shim | Shim Pin | Clamp | Wrench | Clamp | Chip Breaker 1 | Chip Breaker 2 |
|------------------|---|---|---|---|---|---|---|
| S16R CSKP R/L 09 |  |  |  |  |  |  |  |
| S16R CSKP R/L 09 | - | - | GS05000 | SS25 | - | QCS0900 | - |
| S20S CSKP R/L 09 | - | - | GS05000 | SS25 | - | QCS1200 | QCS1201 |
| S25T CSKP R/L 12 | - | - | GS06001 | SS30 | GS06003 | QCS1200 | QCS1201 |
| S32U CSKP R/L 12 | CS120300 | BE02100 | GS06001 | SS30 | GS06003 | QCS1200 | QCS1201 |
| S40V CSKP R/L 12 | CS120300 | BE02100 | GS06001 | SS30 | GS06003 | QCS1200 | QCS1201 |
| S50W CSKP R/L 12 | CS120300 | BE02100 | GS06001 | SS30 | GS06003 | QCS1200 | QCS1201 |
| S50W CSKP R/L 19 | CS190300 | BE03000 | GS08000 | SS40 | GS08001 | QCS1900 | QCS1901 |

(C) TOP CLAMP TOOLHOLDERS

| Medium to Finishing | Finishing to Fine Finishing | Medium |
|---|---|--|
| Flat  (11-16-22) | 12  (09-11-16) | 13  (09-11-16-22) |



| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|-------|-------|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212330400 | 212330500 | S10M CTFP R/L 09 | 10 | 9 | 4,5 | 150 | 25 | 7 | 13 | TP.. 0902.. | 0,060 | | |
| 212330600 | 212330700 | S12M CTFP R/L 09 | 12 | 11 | 5,5 | 150 | 25 | 9 | 16 | TP.. 0902.. | 0,150 | | |
| 212170200 | 212330800 | S12M CTFP R/L 11 | 12 | 11 | 5,5 | 150 | 25 | 9 | 16 | TP.. 1103.. | 0,150 | | |
| 212026800 | 212026900 | S16R CTFP R/L 11 | 16 | 15 | 7,5 | 200 | 30 | 11 | 20 | TP.. 1103.. | 0,300 | | |
| 212027000 | 212027100 | S20S CTFP R/L 11 | 20 | 18 | 9,0 | 250 | 35 | 13 | 24 | TP.. 1103.. | 0,550 | | |
| 212330900 | 212331000 | S16R CTFP R/L 16 | 16 | 15 | 7,5 | 200 | 30 | 11 | 20 | TP.. 1603.. | 0,300 | | |
| 212331100 | 212331200 | S20S CTFP R/L 16 | 20 | 18 | 9,0 | 250 | 35 | 13 | 24 | TP.. 1603.. | 0,550 | | |
| 212036700 | 212027200 | S25T CTFP R/L 16 | 25 | 23 | 11,5 | 300 | 40 | 17 | 31 | TP.. 1603.. | 0,700 | | |
| 212027300 | 212027400 | S32U CTFP R/L 16 | 32 | 30 | 15,0 | 350 | 50 | 22 | 39 | TP.. 1603.. | 2,050 | | |
| 212331300 | 212331700 | S40V CTFP R/L 16 | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | TP.. 1603.. | 3,750 | | |
| 212331800 | 212331900 | S50W CTFP R/L 16 | 50 | 47 | 23,5 | 450 | 65 | 35 | 61 | TP.. 1603.. | 6,500 | | |
| 212021300 | 212332000 | S40V CTFP R/L 22 | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | TP.. 2204.. | 3,750 | | |
| 212332100 | 212332200 | S50W CTFP R/L 22 | 50 | 47 | 23,5 | 450 | 65 | 35 | 61 | TP.. 2204.. | 6,500 | | |

Stock Items | Itens de stock




Available under request | Disponível sob consulta | Disponible bajo consulta

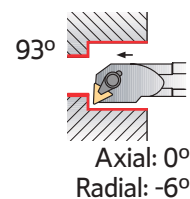
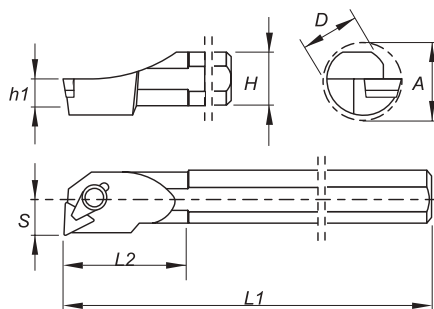
SPARE PARTS | Complementos | Repuestos



























Complementary Accessories - Flat Inserts

| Cutter Reference | Shim | Shim Pin | Clamp | Wrench | Clamp | Chip Breaker 1 | Chip Breaker 2 |
|------------------|----------|----------|---------|--------|---------|----------------|----------------|
| S10M CTFP R/L 09 | - | - | GS03000 | SS15 | - | - | - |
| S12M CTFP R/L 09 | - | - | GS03000 | SS15 | - | - | - |
| S12M CTFP R/L 11 | - | - | GS04000 | SS25 | - | - | - |
| S16R CTFP R/L 11 | - | - | GS05000 | SS25 | GS05003 | QCT1100 | QCT1101 |
| S20S CTFP R/L 11 | - | - | GS05000 | SS25 | GS05003 | QCT1100 | QCT1101 |
| S16R CTFP R/L 16 | - | - | GS06002 | SS30 | GS06003 | QCT1600 | QCT1601 |
| S20S CTFP R/L 16 | - | - | GS06002 | SS30 | GS06003 | QCT1600 | QCT1601 |
| S25T CTFP R/L 16 | - | - | GS06001 | SS30 | GS06003 | QCT1600 | QCT1601 |
| S32U CTFP R/L 16 | CT160301 | BE02100 | GS06000 | SS30 | GS06003 | QCT1600 | QCT1601 |
| S40V CTFP R/L 16 | CT160301 | BE02100 | GS06000 | SS30 | GS05005 | QCT1600 | QCT1601 |
| S50W CTFP R/L 16 | CT160301 | BE02100 | GS06000 | SS30 | GS05005 | QCT1600 | QCT1601 |
| S40V CTFP R/L 22 | CT220301 | BE03000 | GS08000 | SS40 | GS08001 | QCT2200 | QCT2201 |
| S50W CTFP R/L 22 | CT220301 | BE03000 | GS08000 | SS40 | GS08001 | QCT2200 | QCT2201 |

(C) TOP CLAMP TOOLHOLDERS

| Medium to Finish | Finishing to Fine Finishing | Medium |
|---|---|--|
| Flat  (11-16-22) | 12  (09-11-16) | 13  (09-11-16-22) |



| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|-------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212245500 | 212332300 | S10M CTUP R/L 09 | 10 | 9 | 4,5 | 150 | 25 | 7 | 13 | TP.. 0902.. | 0,060 |  |  |
| 212332400 | 212332500 | S12M CTUP R/L 09 | 12 | 11 | 5,5 | 150 | 25 | 9 | 16 | TP.. 0902.. | 0,150 |  |  |
| 212332600 | 212332700 | S12M CTUP R/L 11 | 12 | 11 | 5,5 | 150 | 25 | 9 | 16 | TP.. 1103.. | 0,150 |  |  |
| 212332800 | 212332900 | S16R CTUP R/L 11 | 16 | 15 | 7,5 | 200 | 30 | 11 | 20 | TP.. 1103.. | 0,300 |  |  |
| 212333000 | 212333100 | S20S CTUP R/L 11 | 20 | 18 | 9,0 | 250 | 35 | 13 | 24 | TP.. 1103.. | 0,550 |  |  |
| 212333200 | 212333300 | S16R CTUP R/L 16 | 16 | 15 | 7,5 | 200 | 30 | 11 | 20 | TP.. 1603.. | 0,300 |  |  |
| 212333400 | 212333500 | S20S CTUP R/L 16 | 20 | 18 | 9,0 | 250 | 35 | 13 | 24 | TP.. 1603.. | 0,550 |  |  |
| 212245600 | 212333600 | S25T CTUP R/L 16 | 25 | 23 | 11,5 | 300 | 40 | 17 | 31 | TP.. 1603.. | 0,700 |  |  |
| 212333700 | 212333800 | S32U CTUP R/L 16 | 32 | 30 | 15,0 | 350 | 50 | 22 | 39 | TP.. 1603.. | 2,050 |  |  |
| 212245700 | 212333900 | S40V CTUP R/L 16 | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | TP.. 1603.. | 3,750 |  |  |
| 212334000 | 212334100 | S50W CTUP R/L 16 | 50 | 47 | 23,5 | 450 | 65 | 35 | 61 | TP.. 1603.. | 6,500 |  |  |
| 212334200 | 212334300 | S40V CTUP R/L 22 | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | TP.. 2204.. | 3,750 |  |  |
| 212334400 | 212334500 | S50W CTUP R/L 22 | 50 | 47 | 23,5 | 450 | 65 | 35 | 61 | TP.. 2204.. | 6,500 |  |  |

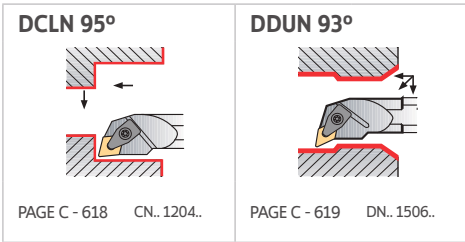
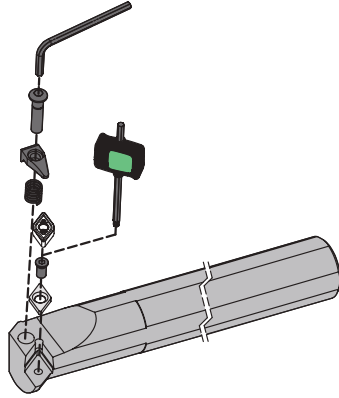
 Stock Items | Itens de stock

 Available under request | Disponible sob consulta | Disponible bajo consulta












SPARE PARTS | Complementos | Repuestos

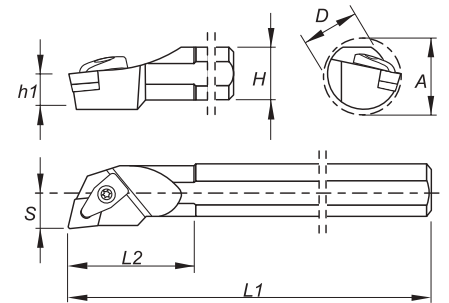
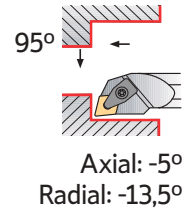
| Cutter Reference | Complementary Accessories - Flat Inserts | | | | | | |
|------------------|--|----------|---------|--------|---------|----------------|----------------|
| | Shim | Shim Pin | Clamp | Wrench | Clamp | Chip Breaker 1 | Chip Breaker 2 |
| S10M CTUP R/L 09 | - | - | GS03000 | SS15 | - | - | - |
| S12M CTUP R/L 09 | - | - | GS03000 | SS15 | - | - | - |
| S12M CTUP R/L 11 | - | - | GS04000 | SS25 | - | - | - |
| S16R CTUP R/L 11 | - | - | GS05000 | SS25 | GS05003 | QCT1100 | QCT1101 |
| S20S CTUP R/L 11 | - | - | GS05000 | SS25 | GS05003 | QCT1100 | QCT1101 |
| S16R CTUP R/L 16 | - | - | GS06002 | SS30 | GS06003 | QCT1600 | QCT1601 |
| S20S CTUP R/L 16 | - | - | GS06002 | SS30 | GS06003 | QCT1600 | QCT1601 |
| S25T CTUP R/L 16 | - | - | GS06001 | SS30 | GS06003 | QCT1600 | QCT1601 |
| S32U CTUP R/L 16 | CT160301 | BE02100 | GS06000 | SS30 | GS06003 | QCT1600 | QCT1601 |
| S40V CTUP R/L 16 | CT160301 | BE02100 | GS06000 | SS30 | GS05005 | QCT1600 | QCT1601 |
| S50W CTUP R/L 16 | CT160301 | BE02100 | GS06000 | SS30 | GS05005 | QCT1600 | QCT1601 |
| S40V CTUP R/L 22 | CT220301 | BE03000 | GS08000 | SS40 | GS08001 | QCT2200 | QCT2201 |
| S50W CTUP R/L 22 | CT220301 | BE03000 | GS08000 | SS40 | GS08001 | QCT2200 | QCT2201 |







(D) DIMPLE LOCK SYSTEM




(D) DIMPLE LOCK TOOLHOLDERS

| | | | | | |
|---|---|---|---|---|---|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium |
| Flat  (12) | MF  (12) | SF  (12) | LC  (12) | MS  (12) | MR  (12) |
| Medium | Medium | Medium Wiper | Roughing to Medium | Roughing | |
| PM  (12) | ST  (12) | MW  (12) | SS  (12) | HR  (12) | |









| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|-------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212334600 | 212334700 | S25T DCLN R/L 12 | 25 | 23 | 11,5 | 300 | 40 | 17 | 31 | CN.. 1204.. | 0,700 |  |  |
| 212334800 | 212334900 | S32U DCLN R/L 12 | 32 | 30 | 15,0 | 350 | 50 | 22 | 39 | CN.. 1204.. | 2,050 |  |  |
| 212335000 | 212335100 | S40V DCLN R/L 12 | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | CN.. 1204.. | 3,750 |  |  |
















 Stock Items | Itens de stock

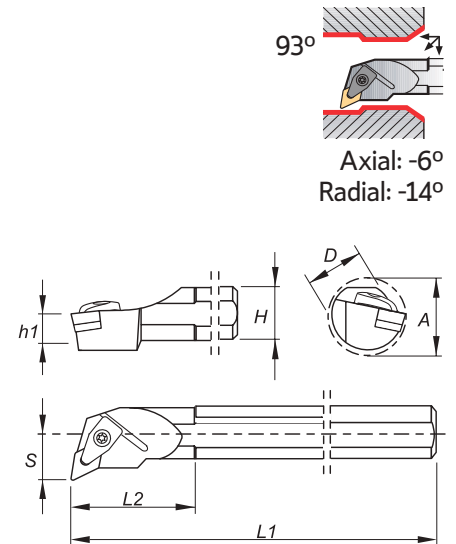
 Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Shim | Shim Screw | Spring | Clamp | Clamp Screw | Wrench |
|------------------|---|---|---|--|---|---|
| S25T DCLN R/L 12 |  |  |  |  |  |  |
| S32U DCLN R/L 12 | CC120300 | T06010000 | M09513 | GA07002 | D0602900 | SS40 |
| S40V DCLN R/L 12 | CC120300 | T06010000 | M09513 | GA07002 | D0602900 | SS40 |

(D) DIMPLE LOCK TOOLHOLDERS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium | Medium | Medium |
| Flat | MF | SF | LC | MS | MR | PM | ST |
|  |  |  |  |  |  |  |  |
| (15) | (15) | (15) | (15) | (15) | (15) | (15) | (15) |
| Medium Wiper | Roughing to Medium | Roughing | Roughing | Roughing to Medium | Medium to Finishing | Medium to Finishing | |
| MW | SS | HR | RP | O1 | O2 | O3 | |
|  |  |  |  |  |  |  | |
| (15) | (15) | (15) | (15) | (15) | (15) | (15) | |









| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|-------|-------|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212335200 | 212335300 | S32U DDUN R/L 15 | 32 | 30 | 15,0 | 350 | 50 | 22 | 39 | DN.. 1506.. | 2,050 | ○ | ○ |
| 212335400 | 212335500 | S40V DDUN R/L 15 | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | DN.. 1506.. | 3,750 | ○ | ○ |

⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

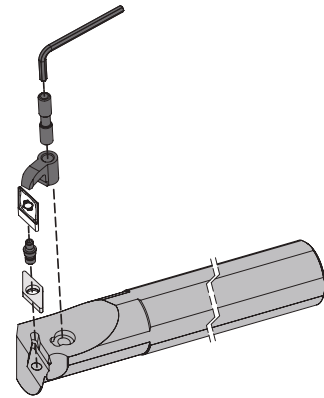
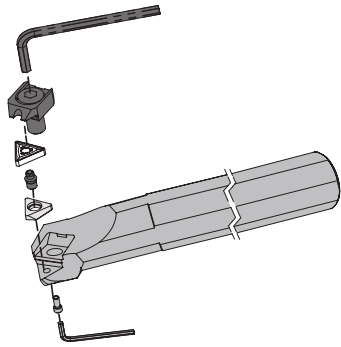
SPARE PARTS | Complementos | Repuestos

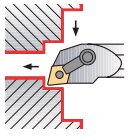
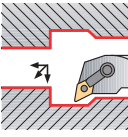
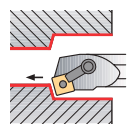
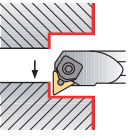
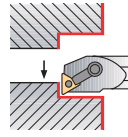
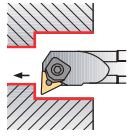
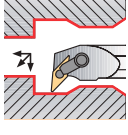
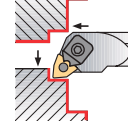
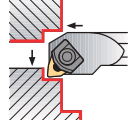
| Cutter Reference | Shim | Shim Screw | Spring | Clamp | Clamp Screw | Wrench |
|------------------|---|---|---|--|---|---|
| S32U DDUN R/L 15 |  |  |  |  |  |  |
| S40V DDUN R/L 15 | CD150501 | T06010000 | M09513 | GA07002 | D0602900 | SS40 |
| | CD150501 | T06010000 | M09513 | GA07002 | D0602900 | SS40 |

C
TURNING
Insert selection
Overview
Negative inserts
Positive inserts
PCBN & PCD inserts
Heavy turning
External Toolholders
Internal Toolholders
Automatic Lathes
Spare Parts
Technical Data












(M) WEDGE CLAMP SYSTEM

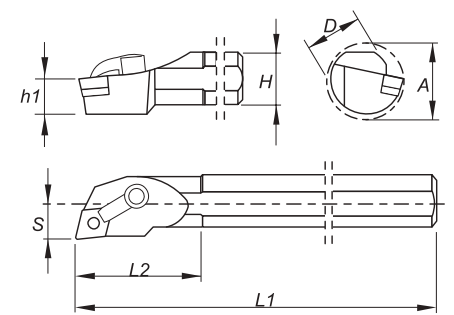
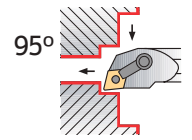
(M-K) DOUBLE LOCK SYSTEM



| | | | | | | |
|--|--|---|--|---|--|---|
| | MCLN-K 95°  PAGE C - 621 CN.. 1204.. | MDUN-K 93°  PAGE C - 622 DN.. 1506.. | MSKN-K 75°  PAGE C - 623 SN.. 1204.. | MTFN 90°  PAGE C - 624 TN.. 1604.. TN.. 2204.. | MTFN-K 90°  PAGE C - 625 TN.. 1604.. | MTUN 93°  PAGE C - 626 TN.. 1604.. TN.. 2204.. |
| | MVUN-K 93°  PAGE C - 627 VN.. 1604.. | MWLN 95°  PAGE C - 628 WN.. 0604.. WN.. 0804.. | MWLN-K 95°  PAGE C - 629 WN.. 0804.. | | | |

(M-K) DOUBLE LOCK TOOLHOLDERS

| | | | | | |
|--|--|--|--|--|--|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium |
| Flat  (12) | MF  (12) | SF  (12) | LC  (12) | MS  (12) | MR  (12) |
| Medium | Medium | Medium Wiper | Roughing to Medium | Roughing | |
| PM  (12) | ST  (12) | MW  (12) | SS  (12) | HR  (12) | |



| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|--------------------|-----------------|----|------|-----|----|----|----|-------------|-------|-------|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212335600 | 212335700 | S25T MCLN R/L 12-K | 25 | 23 | 11,5 | 300 | 33 | 17 | 31 | CN.. 1204.. | 0,700 | ⊗ | ⊗ |
| 212335800 | 212335900 | S32U MCLN R/L 12-K | 32 | 30 | 15,0 | 350 | 50 | 22 | 39 | CN.. 1204.. | 2,050 | ○ | ○ |
| 212336000 | 212336100 | S40V MCLN R/L 12-K | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | CN.. 1204.. | 3,750 | ○ | ○ |

⊗ Stock Items | Itens de stock

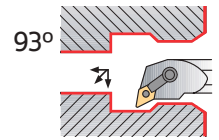
○ Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS || Complementos | Repuestos

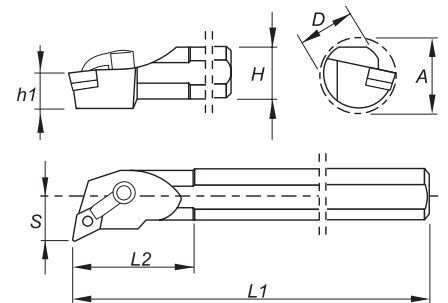
| Cutter Reference | Shim | Lock Pin | Lock Pin Punch | Clamp | Differential Screw | Clamp Wrench |
|--------------------|----------|----------|----------------|---------|--------------------|--------------|
| S25T MCLN R/L 12-K | - | BS1-402 | SS25 | GA06000 | F0602100 | SS30 |
| S32U MCLN R/L 12-K | CC120500 | BS1-400 | SS25 | GA06000 | F0602900 | SS30 |
| S40V MCLN R/L 12-K | CC120500 | BS1-400 | SS25 | GA06000 | F0602900 | SS30 |















C
TURNING
Insert selection
Overview
Negative inserts
Positive inserts
PCBN & PCD inserts
Heavy turning
External Toolholders
Internal Toolholders
Automatic Lathes
Spare Parts
Technical Data

(M-K) DOUBLE LOCK TOOLHOLDERS



Axial: -6°
Radial: -12°



| | | | | | | |
|---|---|---|---|---|---|---|
| Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium | Medium | Medium |
| MF | SF | LC | MS | MR | PM | ST |
|  |  |  |  |  |  |  |
| (15) | (15) | (15) | (15) | (15) | (15) | (15) |
| Medium Wiper | Roughing to Medium | Roughing | Roughing | Roughing to Medium | Medium to Finishing | Medium to Finishing |
| MW | SS | HR | RP | O1 | O2 | O3 |
|  |  |  |  |  |  |  |
| (15) | (15) | (15) | (15) | (15) | (15) | (15) |

| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|--------------------|-----------------|----|------|-----|----|----|----|-------------|-------|-------|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212245300 | 212336200 | S25T MDUN R/L 15-K | 25 | 23 | 11,5 | 300 | 40 | 17 | 31 | DN.. 1506.. | 0,700 | ⊗ | ⊗ |
| 212336300 | 212336400 | S32U MDUN R/L 15-K | 32 | 30 | 15,0 | 350 | 50 | 22 | 39 | DN.. 1506.. | 2,050 | ○ | ○ |
| 212245400 | 212336500 | S40V MDUN R/L 15-K | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | DN.. 1506.. | 3,750 | ○ | ○ |









⊗ Stock Items | Itens de stock

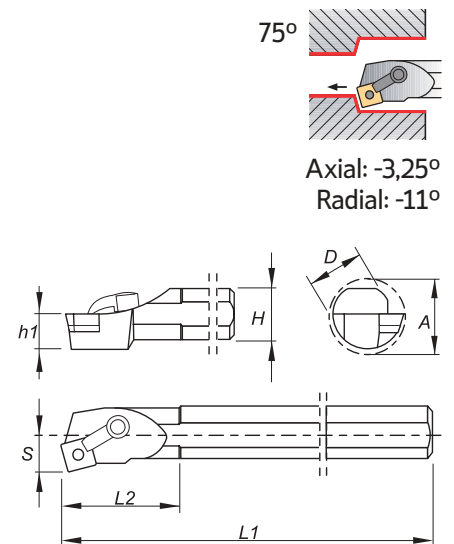
○ Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Shim | Lock Pin | Lock Pin Punch | Clamp | Differential Screw | Clamp Wrench |
|--------------------|----------|----------|----------------|---------|--------------------|--------------|
| S25T MDUN R/L 15-K | - | BS1-402 | SS25 | GA06001 | F0602100 | SS30 |
| S32U MDUN R/L 15-K | CD150501 | BS1-401 | SS25 | GA06001 | F0602900 | SS30 |
| S40V MDUN R/L 15-K | CD150501 | BS1-401 | SS25 | GA06001 | F0602900 | SS30 |

(M-K) DOUBLE LOCK TOOLHOLDERS

| | | | |
|---|---|---|---|
| Roughing | Finishing | Medium | Medium |
| Flat  (12) | MF  (12) | SF  (12) | MR  (12) |
| Medium | Medium | Roughing to Medium | Roughing |
| PM  (12) | ST  (12) | SS  (12) | HR  (12) |















| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|--------------------|-----------------|----|------|-----|----|----|----|-------------|-------|-------|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212336600 | 212336700 | S32U MSKN R/L 12-K | 32 | 30 | 15,0 | 350 | 50 | 22 | 39 | SN.. 1204.. | 2,050 | ○ | ○ |
| 212336800 | 212336900 | S40V MSKN R/L 12-K | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | SN.. 1204.. | 3,750 | ○ | ○ |












⊗ Stock Items | Itens de stock

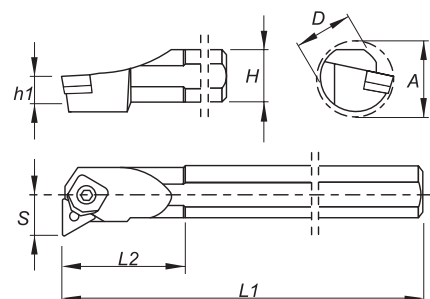
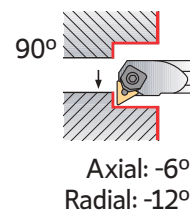
○ Available under request | Disponível sob consulta | Disponible bajo consulta

















SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Shim | Lock Pin | Lock Pin Punch | Clamp | Differential Screw | Clamp Wrench |
|--------------------|--|---|--|---|--|--|
| S32U MSKN R/L 12-K |  CS120500 |  BS1-400 |  SS25 |  GA06000 |  F0602900 |  SS30 |
| S40V MSKN R/L 12-K |  CS120500 |  BS1-400 |  SS25 |  GA06000 |  F0602900 |  SS30 |

(M-K) DOUBLE LOCK TOOLHOLDERS

| | | | | | |
|--|--|--|--|---|--|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium |
| Flat | MF | SF | LC | MS | MR |
|  (16-22) |  (16-22) |  (16-22) |  (16-22) |  (16) |  (16-22) |
| Medium | Medium | Roughing to Medium | Roughing | Medium to Finishing | |
| PM | ST | SS | HR | O1 | |
|  (16-22) |  (16-22) |  (16-22) |  (16-22) |  (16) | |








| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|--------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212050300 | 212338100 | S25T MTFN R/L 16 | 25 | 23 | 11,5 | 300 | 40 | 17 | 34 | TN.. 1604.. | 0,700 |  |  |
| 212168200 | 212338200 | S32U MTFN R/L 16 | 32 | 30 | 15,0 | 350 | 50 | 22 | 39 | TN.. 1604.. | 2,050 |  |  |
| 212338300 | 212338400 | S40V MTFN R/L 16 | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | TN.. 1604.. | 3,750 |  |  |
| 212338500 | 212338600 | S50W MTFN R/L 16 | 50 | 47 | 23,5 | 450 | 65 | 35 | 61 | TN.. 1604.. | 6,500 |  |  |
| 212421000 | 212421100 | S60Y MTFN R/L 16 | 60 | 57 | 28,5 | 600 | 75 | 43 | 80 | TN.. 1604.. | 12,600 |  |  |
| 212338700 | 212338800 | S40V MTFN R/L 22 | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | TN.. 2204.. | 3,750 |  |  |
| 212017500 | 212338900 | S50W MTFN R/L 22 | 50 | 47 | 23,5 | 450 | 65 | 35 | 61 | TN.. 2204.. | 6,500 |  |  |
| 212421800 | 212421900 | S60Y MTFN R/L 22 | 60 | 57 | 28,5 | 600 | 75 | 43 | 80 | TN.. 2204.. | 12,600 |  |  |












 Stock Items | Itens de stock

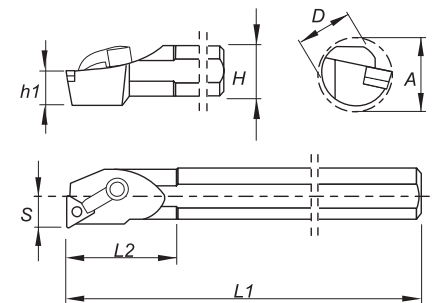
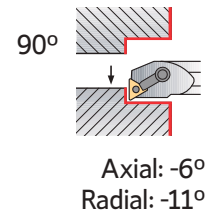
 Available under request | Disponível sob consulta | Disponible bajo consulta







SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Shim | Lock Pin | Lock Pin Punch | Wedge Clamp | Wrench |
|------------------|---|---|---|---|---|
| S25T MTFN R/L 16 |  |  |  |  |  |
| S32U MTFN R/L 16 | CT160302 | BC04501 | D0300691 | GW08001 | SS50 |
| S40V MTFN R/L 16 | CT160302 | BC04501 | D0300700 | GW08001 | SS50 |
| S50W MTFN R/L 16 | CT160302 | BC04501 | D0300700 | GW08001 | SS50 |
| S60Y MTFN R/L 16 | CT160302 | BC04501 | D0300691 | GW08001 | SS50 |
| S40V MTFN R/L 22 | CT220500 | BC06000 | D0400900 | GW08003 | SS50 |
| S50W MTFN R/L 22 | CT220500 | BC06000 | D0400900 | GW08003 | SS50 |
| S60Y MTFN R/L 22 | CT220500 | BC06000 | D0400900 | GW08003 | SS50 |

(M-K) DOUBLE LOCK TOOLHOLDERS

| | | | | | |
|--|--|--|--|---|--|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium |
| Flat | MF | SF | LC | MS | MR |
|  (16-22) |  (16-22) |  (16-22) |  (16-22) |  (16) |  (16-22) |
| Medium | Medium | Roughing to Medium | Roughing | Medium to Finishing | |
| PM | ST | SS | HR | O1 | |
|  (16-22) |  (16-22) |  (16-22) |  (16-22) |  (16) | |





















| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|--------------------|-----------------|----|------|-----|----|----|----|-------------|-------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212337000 | 212337100 | S25T MTFN R/L 16-K | 25 | 23 | 11,5 | 300 | 40 | 17 | 31 | TN.. 1604.. | 0,700 |  |  |
| 212337200 | 212337300 | S32U MTFN R/L 16-K | 32 | 30 | 15,0 | 350 | 50 | 22 | 39 | TN.. 1604.. | 2,050 |  |  |
| 212337400 | 212337500 | S40V MTFN R/L 16-K | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | TN.. 1604.. | 3,750 |  |  |













 Stock Items | Itens de stock

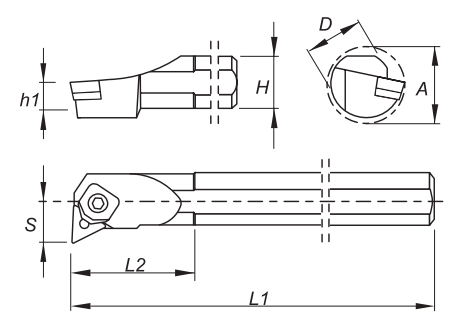
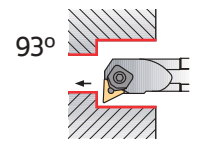
 Available under request | Disponible sob consulta | Disponible bajo consulta













SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Shim | Lock Pin | Lock Pin Wrench | Clamp | Differential Screw | Clamp Wrench |
|--------------------|---|--|---|--|---|---|
| S25T MTFN R/L 16-K |  CT160304 |  BS05000 |  SS20 |  GA06000 |  F0602900 |  SS30 |
| S32U MTFN R/L 16-K |  CT160304 |  BS05000 |  SS20 |  GA06000 |  F0602900 |  SS30 |
| S40V MTFN R/L 16-K |  CT160304 |  BS05000 |  SS20 |  GA06000 |  F0602900 |  SS30 |

(M) WEDGE CLAMP TOOLHOLDERS

| | | | | | |
|--|--|--|--|--|--|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium |
| Flat | MF | SF | LC | MS | MR |
|  (16-22) |  (16-22) |  (16-22) |  (16-22) |  (16) |  (16-22) |
| Medium | Medium | Medium wiper | Roughing to Medium | Roughing | Medium to Finishing |
| PM | ST | MW | SS | HR | O1 |
|  (16-22) |  (16-22) |  (16-22) |  (16-22) |  (16-22) |  (16) |








| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|-------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212339000 | 212339100 | S25T MTUN R/L 16 | 25 | 23 | 11,5 | 300 | 40 | 17 | 34 | TN.. 1604.. | 0,700 |  |  |
| 212339200 | 212339300 | S32U MTUN R/L 16 | 32 | 30 | 15,0 | 350 | 50 | 22 | 39 | TN.. 1604.. | 2,050 |  |  |
| 212339400 | 212339500 | S40V MTUN R/L 16 | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | TN.. 1604.. | 3,750 |  |  |
| 212339600 | 212339700 | S50W MTUN R/L 16 | 50 | 47 | 23,5 | 450 | 65 | 35 | 61 | TN.. 1604.. | 6,500 |  |  |
| 212339800 | 212339900 | S40V MTUN R/L 22 | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | TN.. 2204.. | 3,750 |  |  |
| 212340000 | 212340100 | S50W MTUN R/L 22 | 50 | 47 | 23,5 | 450 | 65 | 35 | 61 | TN.. 2204.. | 6,500 |  |  |










 Stock Items | Itens de stock

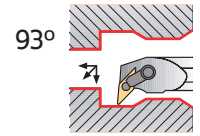
 Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS | Complementos | Repuestos

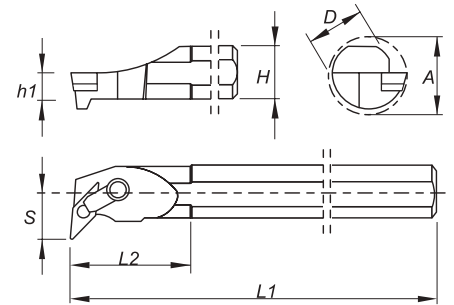
| Cutter Reference | Shim | Lock Pin | Lock Pin Punch | Wedge Clamp | Wrench |
|------------------|---|---|---|---|---|
| S25T MTUN R/L 16 |  |  |  |  |  |
| S32U MTUN R/L 16 | CT160302 | BC04501 | D0300691 | GW08001 | SS50 |
| S40V MTUN R/L 16 | CT160302 | BC04501 | D0300700 | GW08001 | SS50 |
| S50W MTUN R/L 16 | CT160302 | BC04501 | D0300700 | GW08001 | SS50 |
| S40V MTUN R/L 22 | CT220500 | BC06000 | D0400900 | GW08003 | SS50 |
| S50W MTUN R/L 22 | CT220500 | BC06000 | D0400900 | GW08003 | SS50 |







(M-K) DOUBLE LOCK TOOLHOLDERS


| | | | | |
|---|---|---|---|---|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium to Finishing |
| Flat | MF | SF | LC | MS |
|  (16) |  (16) |  (16) |  (16) |  (16) |
| Medium | Medium | Medium | Roughing to Medium | |
| MR | PM | ST | SS | |
|  (16) |  (16) |  (16) |  (16) | |



Axial: -5°
Radial: -15°







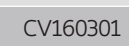













| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|--------------------|-----------------|----|------|-----|----|----|----|-------------|-------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212050400 | 212337600 | S25T MVUN R/L 16-K | 25 | 23 | 11,5 | 300 | 40 | 17 | 31 | VN.. 1604.. | 0,700 |  |  |
| 212337700 | 212337800 | S32U MVUN R/L 16-K | 32 | 30 | 15,0 | 350 | 50 | 22 | 39 | VN.. 1604.. | 2,050 |  |  |
| 212337900 | 212338000 | S40V MVUN R/L 16-K | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | VN.. 1604.. | 3,750 |  |  |












 Stock Items | Itens de stock

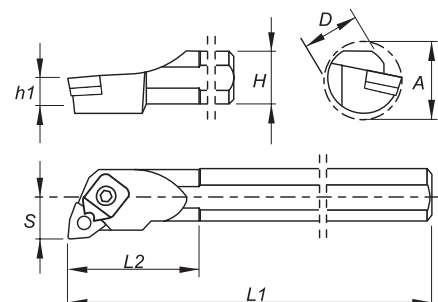
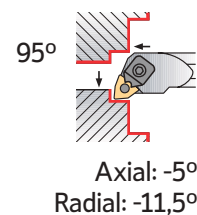
 Available under request | Disponível sob consulta | Disponible bajo consulta

















SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Shim | Lock Pin | Lock Pin Wrench | Clamp | Differential Screw | Clamp Wrench |
|--------------------|---|--|---|---|---|---|
| S25T MVUN R/L 16-K |  CV160301 |  BS05000 |  SS20 |  GA06001 |  F0602100 |  SS30 |
| S32U MVUN R/L 16-K |  CV160301 |  BS05000 |  SS20 |  GA06001 |  F0602900 |  SS30 |
| S40V MVUN R/L 16-K |  CV160301 |  BS05000 |  SS20 |  GA06001 |  F0602900 |  SS30 |

(M) WEDGE CLAMP TOOLHOLDERS

| | | | | | |
|--|--|--|--|--|---|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium |
| Flat  (08) | MF  (06-08) | SF  (06-08) | LC  (08) | MS  (06-08) | PM  (08) |
| Medium | Medium | Medium Wiper | Roughing to Medium | Roughing | |
| MR  (06-08) | ST  (08) | MW  (06-08) | SS  (06-08) | HR  (08) | |








| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|--------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212050500 | 212340200 | S20S MWLN R/L 06 | 20 | 18 | 9,0 | 250 | 36 | 13 | 27 | WN.. 0604.. | 0,550 |  |  |
| 212340300 | 212340400 | S25T MWLN R/L 06 | 25 | 23 | 11,5 | 300 | 40 | 17 | 31 | WN.. 0604.. | 0,700 |  |  |
| 212340500 | 212340600 | S32U MWLN R/L 06 | 32 | 30 | 15,0 | 350 | 50 | 22 | 39 | WN.. 0604.. | 2,050 |  |  |
| 212054400 | 212340700 | S25T MWLN R/L 08 | 25 | 23 | 11,5 | 300 | 40 | 17 | 31 | WN.. 0804.. | 0,700 |  |  |
| 212044100 | 212044000 | S32U MWLN R/L 08 | 32 | 30 | 15,0 | 350 | 50 | 22 | 39 | WN.. 0804.. | 2,050 |  |  |
| 212340800 | 212340900 | S40V MWLN R/L 08 | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | WN.. 0804.. | 3,750 |  |  |
| 212341000 | 212341100 | S50W MWLN R/L 08 | 50 | 47 | 23,5 | 450 | 65 | 35 | 61 | WN.. 0804.. | 6,500 |  |  |
| 212421200 | 212421300 | S60Y MWLN R/L 08 | 60 | 57 | 28,5 | 600 | 75 | 43 | 80 | WNM. 0804.. | 12,600 |  |  |












 Stock Items | Itens de stock

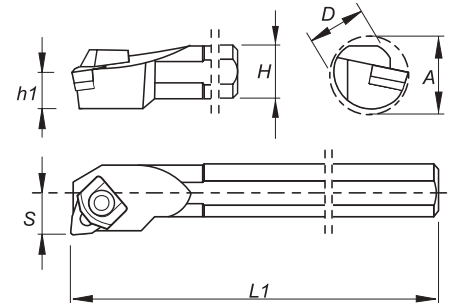
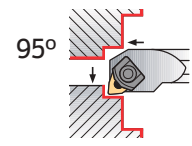
 Available under request | Disponível sob consulta | Disponible bajo consulta









SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Shim  | Lock Pin  | Lock Pin Punch  | Wedge Clamp  | Wrench  |
|------------------|---|---|---|--|---|
| S20S MWLN R/L 06 | - | BC04502 | D0300691 | GW05000 | SS25 |
| S25T MWLN R/L 06 | CW060300 | BC04501 | D0300691 | GW05000 | SS25 |
| S32U MWLN R/L 06 | CW060300 | BC04501 | D0300691 | GW05000 | SS25 |
| S25T MWLN R/L 08 | - | BC06001 | D0400691 | GW08000 | SS25 |
| S32U MWLN R/L 08 | CW080500 | BC06000 | D0400691 | GW08000 | SS25 |
| S40V MWLN R/L 08 | CW080500 | BC06000 | D0400691 | GW08000 | SS25 |
| S50W MWLN R/L 08 | CW080500 | BC06000 | D0400691 | GW08000 | SS25 |
| S60Y MWLN R/L 08 | CW080500 | BC06000 | D0400691 | GW08000 | SS25 |

(M-K) DOUBLE LOCK TOOLHOLDERS

| | | | | | |
|---|---|---|---|---|---|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium |
| Flat | MF | SF | LC | MS | PM |
|  (08) |  (08) |  (08) |  (08) |  (08) |  (08) |
| Medium | Medium | Medium Wiper | Roughing to Medium | Roughing | |
| MR | ST | MW | SS | HR | |
|  (08) |  (08) |  (08) |  (08) |  (08) | |







| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|--------------------|-----------------|----|------|-----|----|----|----|-------------|-------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212341200 | 212341300 | S25T MWLN R/L 08-K | 25 | 23 | 11,5 | 300 | 40 | 17 | 31 | WN.. 0804.. | 0,700 |  |  |
| 212341400 | 212341500 | S32U MWLN R/L 08-K | 32 | 30 | 15,0 | 350 | 50 | 22 | 39 | WN.. 0804.. | 2,050 |  |  |
| 212341600 | 212341700 | S40V MWLN R/L 08-K | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | WN.. 0804.. | 3,750 |  |  |
| 212341800 | 212341900 | S50W MWLN R/L 08-K | 50 | 47 | 23,5 | 450 | 65 | 35 | 61 | WN.. 0804.. | 6,500 |  |  |

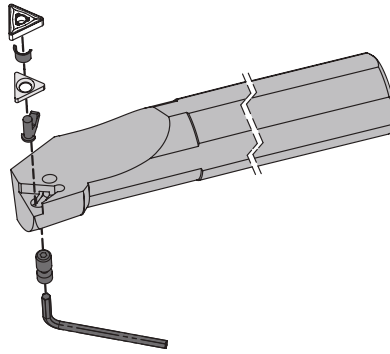
 Stock Items | Itens de stock

 Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS || Complementos | Repuestos















| Cutter Reference | Shim | Lock Pin | Lock Pin Screw | Wedge Clamp | Wrench |
|--------------------|----------|---|---|---|---|
| S25T MWLN R/L 08-K | - |  |  |  |  |
| S32U MWLN R/L 08-K | CW080500 | BC06001 | D0400691 | GW06000 | SS25 |
| S40V MWLN R/L 08-K | CW080500 | BC06000 | D0400691 | GW06000 | SS25 |
| S50W MWLN R/L 08-K | CW080500 | BC06000 | D0400691 | GW06000 | SS25 |

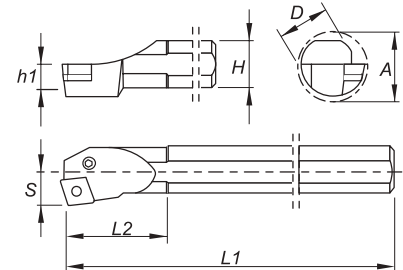
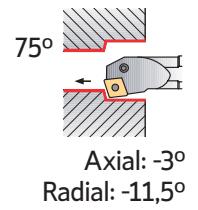
(P) LEVER LOCK SYSTEM



| | | | | | |
|--|--|--|--|--|--|
| <p>PCKN 75°</p> <p>PAGE C - 631 CN.. 1204.. CN.. 1606.. CN.. 1906..</p> | <p>PCLN 95°</p> <p>PAGE C - 632 CN.. 0903.. ... CN.. 1906..</p> | <p>A-PCLN 95°</p> <p>PAGE C - 633 CN.. 0903.. ... CN.. 1204..</p> | <p>PDUN 93°</p> <p>PAGE C - 634 DN.. 1104.. DN.. 1506..</p> | <p>A-PDUN 93°</p> <p>PAGE C - 635 DN.. 1104.. DN.. 1506..</p> | <p>PDUN 93° - BT</p> <p>PAGE C - 636 DN.. 1506..</p> |
| <p>PSKN 75°</p> <p>PAGE C - 637 SN.. 1204.. SN.. 1906..</p> | <p>A-PSKN 75°</p> <p>PAGE C - 638 SN.. 1204..</p> | <p>A-PSSN 45°</p> <p>PAGE C - 639 SN.. 1204..</p> | <p>PTFN 90°</p> <p>PAGE C - 640 TN.. 1604.. TN.. 2204..</p> | <p>A-PTFN 90°</p> <p>PAGE C - 641 TN.. 1604.. TN.. 2204..</p> | <p>PWLN 95°</p> <p>PAGE C - 642 WN.. 0604.. WN.. 0804..</p> |
| <p>A-PWLN 95°</p> <p>PAGE C - 643 WN.. 0604.. WN.. 0804..</p> | | | | | |

(P) LEVER LOCK TOOLHOLDERS

| | | | | | | |
|--|--|--|--|--|--|--|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium | Medium |
| Flat  (12-16-19) | MF  (12) | SF  (12) | LC  (12) | MS  (12) | MR  (12-16-19) | PM  (12) |
| Medium | Medium Wiper | Roughing to Medium | Roughing | Roughing | Heavy to Roughing | Heavy to Roughing |
| ST  (12-19) | MW  (12) | SS  (12-16-19) | HR  (12-16-19) | RP  (19) | HY  (19) | HZ  (19) |



| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|--------|-------|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212342000 | 212342100 | S25T PCKN R/L 12 | 25 | 23 | 11,5 | 300 | 40 | 17 | 31 | CN.. 1204.. | 0,700 | ⊗ | ⊗ |
| 212342200 | 212342300 | S32U PCKN R/L 12 | 32 | 30 | 15,0 | 350 | 50 | 22 | 39 | CN.. 1204.. | 2,050 | ○ | ○ |
| 212342400 | 212342500 | S40V PCKN R/L 12 | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | CN.. 1204.. | 3,750 | ○ | ○ |
| 212421400 | 212421500 | S50W PCKN R/L 12 | 50 | 47 | 23,5 | 450 | 60 | 35 | 61 | CN.. 1204.. | 6,500 | ○ | ○ |
| 212421600 | 212421700 | S60Y PCKN R/L 12 | 60 | 57 | 28,5 | 600 | 75 | 43 | 80 | CN.. 1204.. | 12,600 | ○ | ○ |
| 212342600 | 212342700 | S50W PCKN R/L 16 | 50 | 47 | 23,5 | 450 | 65 | 35 | 61 | CN.. 1606.. | 6,500 | ○ | ○ |
| 212422000 | 212422100 | S60Y PCKN R/L 16 | 60 | 57 | 28,5 | 600 | 75 | 43 | 80 | CN.. 1606.. | 12,600 | ○ | ○ |
| 212342800 | 212342900 | S50W PCKN R/L 19 | 50 | 47 | 23,5 | 450 | 65 | 35 | 61 | CN.. 1906.. | 6,500 | ○ | ○ |
| 212422200 | 212422300 | S60Y PCKN R/L 19 | 60 | 57 | 28,5 | 600 | 75 | 43 | 80 | CN.. 1906.. | 12,600 | ○ | ○ |

⊗ Stock Items | Itens de stock

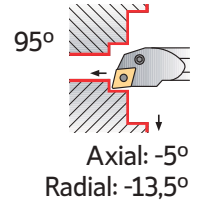
○ Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS | Complementos | Repuestos

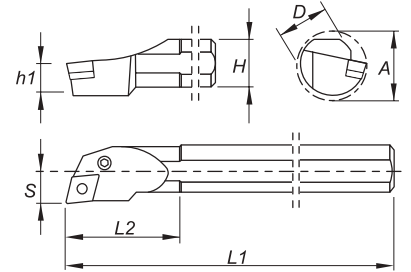
| Cutter Reference | Order separately | | | | | |
|------------------|------------------|----------|----------------|---------|-------------|--------|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench |
| S25T PCKN R/L 12 | - | - | - | AN12100 | PA0601300 | SS25 |
| S32U PCKN R/L 12 | CC120301 | BE05500 | BF47509 | AC13200 | PA0801700 | SS30 |
| S40V PCKN R/L 12 | CC120301 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| S50W PCKN R/L 12 | CC120301 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| S60Y PCKN R/L 12 | CC120301 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| S50W PCKN R/L 16 | CC160500 | BE07000 | BF65012 | AN17100 | PA0802300 | SS30 |
| S60Y PCKN R/L 16 | CC160500 | BE07000 | BF65012 | AN17100 | PA0802300 | SS30 |
| S50W PCKN R/L 19 | CC190500 | BE08500 | BF80012 | AN20800 | PA1002700 | SS40 |
| S60Y PCKN R/L 19 | CC190500 | BE08500 | BF0012 | AN20800 | PA1002700 | SS40 |

C
TURNING
Insert selection
Overview
Negative inserts
Positive inserts
PCBN & PCD inserts
Heavy turning
External Toolholders
Internal Toolholders
Automatic Lathes
Spare Parts
Technical Data

(P) LEVER LOCK TOOLHOLDERS



| | | | | | | |
|---------------------------|-------------------|-------------------------|----------------------|----------------|-------------------------|-------------------|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium | Medium |
| Flat (09-12-16-19) | MF (09-12) | SF (12) | LC (12) | MS (12) | MR (09-12-16-19) | PM (12) |
| Medium | Medium Wiper | Roughing to Medium | Roughing | Roughing | Heavy to Roughing | Heavy to Roughing |
| ST (09-12-16-19) | MW (12) | SS (09-12-16-19) | HR (12-16-19) | RP (19) | HY (19) | HZ (19) |



| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|--------|-------|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212247000 | 212343000 | S16R PCLN R/L 09 | 16 | 15 | 7,5 | 200 | 26 | 11 | 20 | CN.. 0903.. | 0,300 | | |
| 212050600 | 212343100 | S20S PCLN R/L 09 | 20 | 18 | 9,0 | 250 | 29 | 13 | 25 | CN.. 0903.. | 0,550 | | |
| 212247100 | 212343200 | S25T PCLN R/L 09 | 25 | 23 | 11,5 | 300 | 33 | 17 | 32 | CN.. 0903.. | 0,700 | | |
| 212048400 | 212343300 | S25T PCLN R/L 12 | 25 | 23 | 11,5 | 300 | 40 | 17 | 31 | CN.. 1204.. | 0,700 | | |
| 212169900 | 212343400 | S32U PCLN R/L 12 | 32 | 30 | 15,0 | 350 | 50 | 22 | 39 | CN.. 1204.. | 2,050 | | |
| 212247200 | 212017300 | S40V PCLN R/L 12 | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | CN.. 1204.. | 3,750 | | |
| 212343500 | 212343600 | S50W PCLN R/L 12 | 50 | 47 | 23,5 | 450 | 65 | 35 | 61 | CN.. 1204.. | 6,500 | | |
| 212423300 | 212423400 | S60Y PCLN R/L 12 | 60 | 57 | 28,5 | 600 | 75 | 43 | 80 | CN.. 1204.. | 12,600 | | |
| 212423500 | 212423600 | S40V PCLN R/L 16 | 40 | 37 | 18,5 | 400 | 50 | 27 | 48 | CN.. 1606.. | 3,750 | | |
| 212017700 | 212343700 | S50W PCLN R/L 16 | 50 | 47 | 23,5 | 450 | 65 | 35 | 61 | CN.. 1606.. | 6,500 | | |
| 212423700 | 212423800 | S60Y PCLN R/L 16 | 60 | 57 | 28,5 | 600 | 75 | 43 | 80 | CN.. 1606.. | 12,600 | | |
| 212017800 | 212017600 | S50W PCLN R/L 19 | 50 | 47 | 23,5 | 450 | 65 | 35 | 61 | CN.. 1906.. | 6,500 | | |
| 212423900 | 212424000 | S60Y PCLN R/L 19 | 60 | 57 | 28,5 | 600 | 75 | 43 | 80 | CN.. 1906.. | 12,600 | | |












Stock Items | Itens de stock

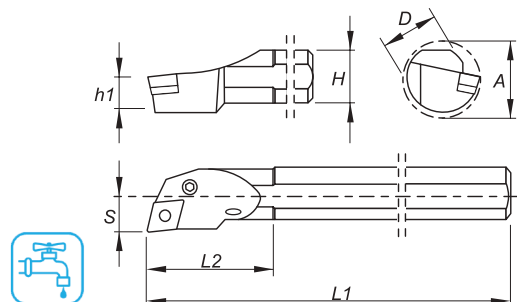
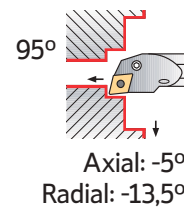
Available under request | Disponível sob consulta | Disponible bajo consulta











SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Order separately | | | | | |
|------------------|------------------|----------|----------------|---------|-------------|--------|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench |
| S16R PCLN R/L 09 | | | | | | |
| S20S PCLN R/L 09 | - | - | - | AN07800 | PA0501200 | SS20 |
| S25T PCLN R/L 09 | CC090300 | BE04400 | BF40009 | AN01200 | PA0601300 | SS25 |
| S25T PCLN R/L 12 | - | - | - | AN12100 | PA0601300 | SS25 |
| S32U PCLN R/L 12 | CC120301 | BE05500 | BF47509 | AC13200 | PA0801700 | SS30 |
| S40V PCLN R/L 12 | CC120301 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| S50W PCLN R/L 12 | CC120301 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| S60Y PCLN R/L 12 | CC120301 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| S40V PCLN R/L 16 | CC160500 | BE07000 | BF65012 | AN17100 | PA0802300 | SS30 |
| S50W PCLN R/L 16 | CC160500 | BE07000 | BF65012 | AN17100 | PA0802300 | SS30 |
| S60Y PCLN R/L 16 | CC160500 | BE07000 | BF65012 | AN17100 | PA0802300 | SS30 |
| S50W PCLN R/L 19 | CC190500 | BE08300 | BF80012 | AN20200 | PA1002700 | SS40 |
| S60Y PCLN R/L 19 | CC190500 | BE08300 | BF80012 | AN20200 | PA1002700 | SS40 |

(P) LEVER LOCK TOOLHOLDERS

| | | | | | |
|---|---|--|---|--|---|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium |
| Flat  (09-12) | MF  (09-12) | SF  (12) | LC  (12) | MS  (12) | MR  (09-12) |
| Medium | Medium | Medium Wiper | Roughing to Medium | Roughing | |
| PM  (12) | ST  (09-12) | MW  (12) | SS  (09-12) | HR  (12) | |









| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|-------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212343800 | 212343900 | A16M PCLN R/L 09 | 16 | 15 | 7,5 | 150 | 26 | 11 | 20 | CN.. 0903.. | 0,200 |  |  |
| 212344000 | 212344100 | A20Q PCLN R/L 09 | 20 | 18 | 9,0 | 180 | 29 | 13 | 25 | CN.. 0903.. | 0,400 |  |  |
| 212344200 | 212344300 | A25R PCLN R/L 12 | 25 | 23 | 11,5 | 200 | 40 | 17 | 31 | CN.. 1204.. | 0,700 |  |  |
| 212344400 | 212344500 | A32S PCLN R/L 12 | 32 | 30 | 15,0 | 250 | 50 | 22 | 39 | CN.. 1204.. | 1,400 |  |  |
| 212344600 | 212344700 | A40T PCLN R/L 12 | 40 | 37 | 18,5 | 300 | 60 | 27 | 48 | CN.. 1204.. | 2,650 |  |  |

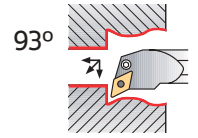
 Stock Items | Itens de stock

 Available under request | Disponível sob consulta | Disponible bajo consulta









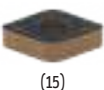






SPARE PARTS | Complementos | Repuestos

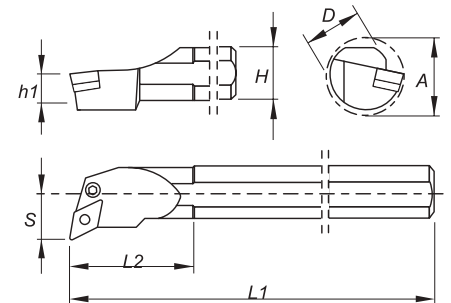
| Cutter Reference | Order separately | | | | | |
|------------------|---|---|---|---|---|---|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench |
| A16M PCLN R/L 09 |  |  |  |  |  |  |
| A20Q PCLN R/L 09 | - | - | - | AN07800 | PA0501200 | SS20 |
| A25R PCLN R/L 12 | - | - | - | AN12100 | PA0601300 | SS25 |
| A32S PCLN R/L 12 | CC120301 | BE05500 | BF47509 | AC13200 | PA0801700 | SS30 |
| A40T PCLN R/L 12 | CC120301 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |











(P) LEVER LOCK TOOLHOLDERS




Axial: -6°
Radial: -14°

| | | | | | | | |
|--|--|--|---|---|--|---|--|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium | Medium | Medium |
| Flat | MF | SF | LC | MS | MR | PM | ST |
|  (11-15) |  (11-15) |  (11-15) |  (15) |  (15) |  (11-15) |  (15) |  (11-15) |
| Medium Wiper | Roughing to Medium | Roughing | Roughing | Roughing to Medium | Medium to Finishing | Medium to Finishing | |
| MW | SS | HR | RP | O1 | O2 | O3 | |
|  (15) |  (11-15) |  (15) |  (15) |  (15) |  (15) |  (15) | |



| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|-------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212079300 | 212344800 | S25T PDUN R/L 11 | 25 | 23 | 11,5 | 300 | 35 | 17 | 32 | DN.. 1104.. | 0,700 |  |  |
| 212247300 | 212344900 | S32U PDUN R/L 11 | 32 | 30 | 15,0 | 350 | 40 | 22 | 40 | DN.. 1104.. | 2,050 |  |  |
| 212079400 | 212079500 | S32U PDUN R/L 15 | 32 | 30 | 15,0 | 350 | 50 | 22 | 39 | DN.. 1506.. | 2,050 |  |  |
| 212345000 | 212345100 | S40V PDUN R/L 15 | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | DN.. 1506.. | 3,750 |  |  |
| 212018000 | 212017900 | S50W PDUN R/L 15 | 50 | 47 | 23,5 | 450 | 65 | 35 | 61 | DN.. 1506.. | 6,500 |  |  |
















 Stock Items | Itens de stock

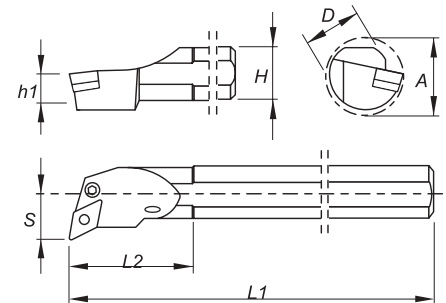
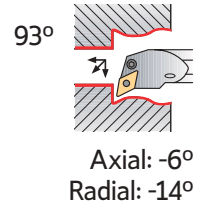
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





SPARE PARTS || Complementos | Repuestos


| Cutter Reference | Order separately | | | | | | for inserts DN.. 1504.. | |
|------------------|---|---|---|---|--|---|-------------------------|----------|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench | Shim | Shim Pin |
| S25T PDUN R/L 11 |  |  |  |  |  |  | - | - |
| S32U PDUN R/L 11 |  |  |  |  |  |  | - | - |
| S32U PDUN R/L 15 |  |  |  |  |  |  | CD150500 | BE05401 |
| S40V PDUN R/L 15 |  |  |  |  |  |  | CD150500 | BE05401 |
| S50W PDUN R/L 15 |  |  |  |  |  |  | CD150500 | BE05401 |

(P) LEVER LOCK TOOLHOLDERS

| | | | | | | | |
|--|--|--|---|---|--|---|--|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium | Medium | Medium |
| Flat | MF | SF | LC | MS | MR | PM | ST |
|  (11-15) |  (11-15) |  (11-15) |  (15) |  (15) |  (11-15) |  (15) |  (11-15) |
| Medium Wiper | Roughing to Medium | Roughing | Roughing | Roughing to Medium | Medium to Finishing | Medium to Finishing | |
| MW | SS | HR | RP | O1 | O2 | O3 | |
|  (15) |  (11-15) |  (15) |  (15) |  (15) |  (15) |  (15) | |



| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|-------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212345200 | 212345300 | A25R PDUN R/L 11 | 25 | 23 | 11,5 | 200 | 40 | 17 | 31 | DN.. 1104.. | 0,700 |  |  |
| 212345400 | 212345500 | A32S PDUN R/L 15 | 32 | 30 | 15,0 | 250 | 50 | 22 | 39 | DN.. 1506.. | 1,400 |  |  |
| 212345600 | 212345700 | A40T PDUN R/L 15 | 40 | 37 | 18,5 | 300 | 60 | 27 | 48 | DN.. 1506.. | 2,650 |  |  |

 Stock Items | Itens de stock



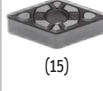





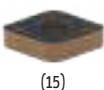
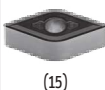





 Available under request | Disponível sob consulta | Disponible bajo consulta

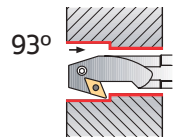
SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Order separately | | | | | | for inserts DN.. 1504.. | |
|------------------|---|---|---|---|--|---|-------------------------|----------|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench | Shim | Shim Pin |
| A25R PDUN R/L 11 |  |  |  |  |  |  | - | - |
| A32S PDUN R/L 15 |  |  |  |  |  |  | CD150500 | BE05401 |
| A40T PDUN R/L 15 |  |  |  |  |  |  | CD150500 | BE05401 |

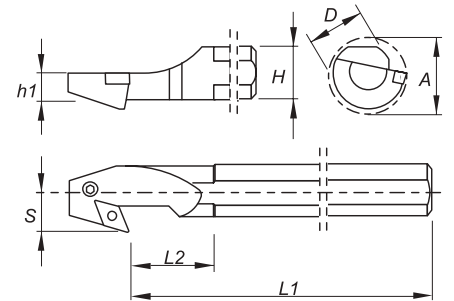
C
TURNING
Insert selection
Overview
Negative inserts
Positive inserts
PCBN & PCD inserts
Heavy turning
External Toolholders
Internal Toolholders
Automatic Lathes
Spare Parts
Technical Data

(P) LEVER LOCK TOOLHOLDERS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium | Medium | Medium |
| Flat | MF | SF | LC | MS | MR | PM | ST |
|  |  |  |  |  |  |  |  |
| (15) | (15) | (15) | (15) | (15) | (15) | (15) | (15) |
| Medium Wiper | Roughing to Medium | Roughing | Roughing | Roughing to Medium | Medium to Finishing | Medium to Finishing | |
| MW | SS | HR | RP | O1 | O2 | O3 | |
|  |  |  |  |  |  |  | |
| (15) | (15) | (15) | (15) | (15) | (15) | (15) | |



Axial: -6°
Radial: -14°



| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|---------------------|-----------------|----|------|-----|----|----|----|-------------|-------|-------|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212345800 | 212345900 | S32U PDUN R/L 15-BT | 32 | 30 | 15,0 | 350 | 50 | 22 | 39 | DN.. 1506.. | 2,050 | ○ | ○ |
| 212346000 | 212346100 | S40V PDUN R/L 15-BT | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | DN.. 1506.. | 3,750 | ○ | ○ |
| 212346200 | 212346300 | S50W PDUN R/L 15-BT | 50 | 47 | 23,5 | 450 | 65 | 35 | 61 | DN.. 1506.. | 6,500 | ○ | ○ |












⊗ Stock Items | Itens de stock

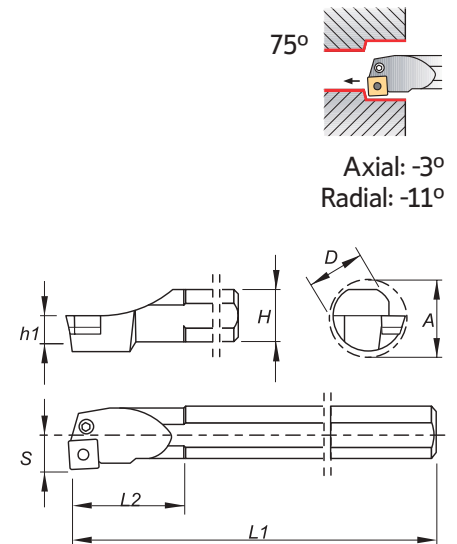
○ Available under request | Disponível sob consulta | Disponible bajo consulta















SPARE PARTS || Complementos | Repuestos


| Cutter Reference | Order separately | | | | | | for inserts DN.. 1504.. | |
|---------------------|------------------|----------|----------------|---------|-------------|--------|-------------------------|----------|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench | Shim | Shim Pin |
| S32U PDUN R/L 15-BT | - | - | - | AN14700 | PA0801700 | SS30 | - | - |
| S40V PDUN R/L 15-BT | CD150300 | BE05500 | BF47509 | AN14700 | PA0802101 | SS30 | CD150500 | BE05401 |
| S50W PDUN R/L 15-BT | CD150300 | BE05500 | BF47509 | AN14700 | PA0802101 | SS30 | CD150500 | BE05401 |

(P) LEVER LOCK TOOLHOLDERS

| | | | | | |
|--|--|--|--|---|--|
| Roughing | Finishing | Medium | Medium | Medium | Medium |
| Flat  (12-19) | MF  (12) | SF  (12) | MR  (12-19) | PM  (12) | ST  (12-19) |
| Roughing to Medium | Roughing | Roughing | Heavy to Roughing | Heavy to Roughing | |
| SS  (12-19) | HR  (12-19) | RP  (15-19) | HY  (19) | HZ  (19) | |



| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|--------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212050700 | 212346400 | S25T PSKN R/L 12 | 25 | 23 | 11,5 | 300 | 40 | 17 | 31 | SN.. 1204.. | 0,700 |  |  |
| 212346500 | 212346600 | S32U PSKN R/L 12 | 32 | 30 | 15,0 | 350 | 50 | 22 | 39 | SN.. 1204.. | 2,050 |  |  |
| 212346700 | 212346800 | S40V PSKN R/L 12 | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | SN.. 1204.. | 3,750 |  |  |
| 212424100 | 212424200 | S40V PSKN R/L 15 | 40 | 37 | 18,5 | 400 | 50 | 27 | 48 | SN.. 1506.. | 3,750 |  |  |
| 212424300 | 212424400 | S50W PSKN R/L 15 | 50 | 47 | 23,5 | 450 | 60 | 35 | 61 | SN.. 1506.. | 6,500 |  |  |
| 212346900 | 212347000 | S50W PSKN R/L 19 | 50 | 47 | 23,5 | 450 | 65 | 35 | 61 | SN.. 1906.. | 6,500 |  |  |
| 212424500 | 212424600 | S60Y PSKN R/L 19 | 60 | 57 | 28,5 | 600 | 75 | 43 | 80 | SN.. 1906.. | 12,600 |  |  |

 Stock Items | Itens de stock









 Available under request | Disponível sob consulta | Disponible bajo consulta

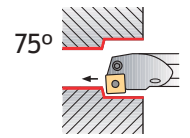
SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Order separately | | | | | |
|------------------|------------------|----------|----------------|---------|-------------|--------|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench |
| S25T PSKN R/L 12 | - | - | - | AN12100 | PA0601300 | SS25 |
| S32U PSKN R/L 12 | CS120302 | BE05500 | BF47509 | AC13200 | PA0801700 | SS30 |
| S40V PSKN R/L 12 | CS120302 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| S40V PSKN R/L 15 | CS150400 | BE07000 | BF65012 | AN17100 | PA0802300 | SS30 |
| S50W PSKN R/L 15 | CS150400 | BE07000 | BF65012 | AN17100 | PA0802300 | SS30 |
| S50W PSKN R/L 19 | CS190400 | BE08300 | BF80012 | AN20200 | PA1003000 | SS40 |
| S60Y PSKN R/L 19 | CS150400 | BE08300 | BF80012 | AN20200 | PA1003000 | SS40 |

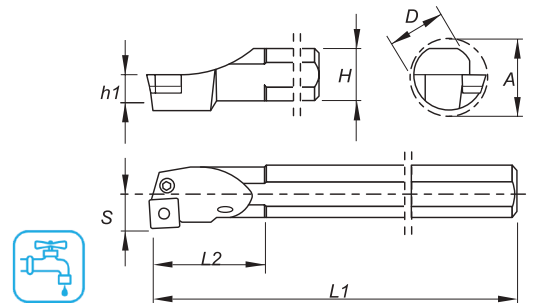
C
TURNING
Insert selection
Overview
Negative inserts
Positive inserts
PCBN & PCD inserts
Heavy turning
External Toolholders
Internal Toolholders
Automatic Lathes
Spare Parts
Technical Data







(P) LEVER LOCK TOOLHOLDERS

| | | | |
|---|---|---|---|
| Roughing | Finishing | Medium | Medium |
| Flat | MF | SF | MR |
|  (12) |  (12) |  (12) |  (12) |
| Medium | Medium | Roughing to Medium | Roughing |
| PM | ST | SS | HR |
|  (12) |  (12) |  (12) |  (12) |



Axial: -3°
Radial: -11°



| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|-------|--|--|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212347100 | 212347200 | A25R PSKN R/L 12 | 25 | 23 | 11,5 | 200 | 40 | 17 | 31 | SN.. 1204.. | 0,700 |  |  |
| 212347300 | 212347400 | A32S PSKN R/L 12 | 32 | 30 | 15,0 | 250 | 50 | 22 | 39 | SN.. 1204.. | 1,400 |  |  |
| 212347500 | 212347600 | A40T PSKN R/L 12 | 40 | 37 | 18,5 | 300 | 60 | 27 | 48 | SN.. 1204.. | 2,650 |  |  |









 Stock Items | Itens de stock

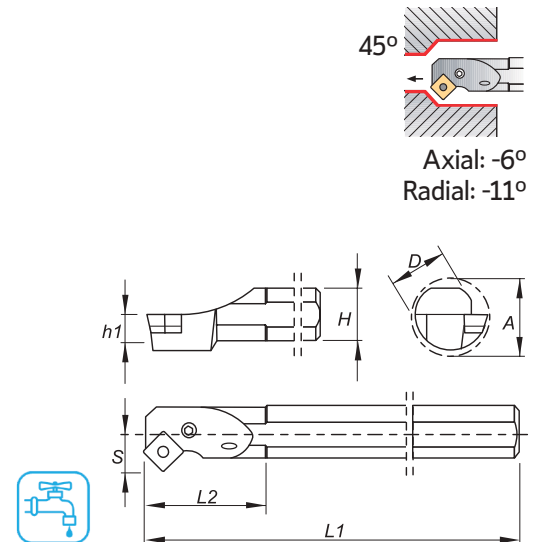
Available under request | Disponível sob consulta | Disponible bajo consulta





SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Order separately | | | | | |
|------------------|------------------|----------|----------------|---------|-------------|--------|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench |
| A25R PSKN R/L 12 | - | - | - | AN12100 | PA0601300 | SS25 |
| A32S PSKN R/L 12 | CS120302 | BE05500 | BF47509 | AC13200 | PA0801700 | SS30 |
| A40T PSKN R/L 12 | CS120302 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |

(P) LEVER LOCK TOOLHOLDERS

| | | | |
|---|---|---|---|
| Roughing | Finishing | Medium | Medium |
| Flat  (12) | MF  (12) | SF  (12) | MR  (12) |
| Medium | Medium | Roughing to Medium | Roughing |
| PM  (12) | ST  (12) | SS  (12) | HR  (12) |







| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|-------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212347700 | 212347800 | A25R PSSN R/L 12 | 25 | 23 | 11,5 | 200 | 40 | 17 | 31 | SN.. 1204.. | 0,700 |  |  |
| 212347900 | 212348000 | A32S PSSN R/L 12 | 32 | 30 | 15,0 | 250 | 50 | 22 | 39 | SN.. 1204.. | 2,050 |  |  |












 Stock Items | Itens de stock

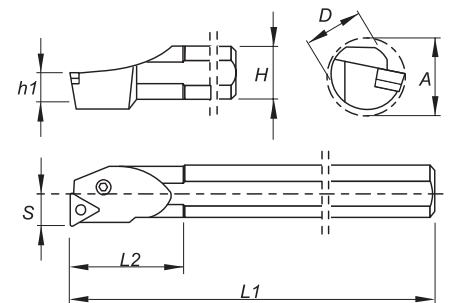
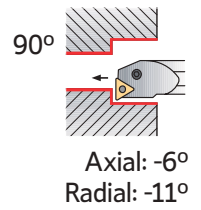
 Available under request | Disponível sob consulta | Disponible bajo consulta













SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Order separately | | | | | |
|------------------|---|---|---|---|---|---|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench |
| A25R PSKN R/L 12 |  |  |  |  |  |  |
| A32S PSKN R/L 12 | - | - | - | AN12100 | PA0601300 | SS25 |
| A32S PSKN R/L 12 | CS120302 | BE05500 | BF47509 | AC13200 | PA0801700 | SS30 |

(P) LEVER LOCK TOOLHOLDERS

| | | | | | |
|--|--|--|--|---|--|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium |
| Flat  (16-22) | MF  (16-22) | SF  (16-22) | LC  (16-22) | MS  (16) | MR  (16-22) |
| Medium | Medium | Roughing to Medium | Roughing | Medium to Finishing | |
| PM  (16-22) | ST  (16-22) | SS  (16-22) | HR  (16-22) | O1  (16) | |



| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|-------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212054300 | 212348100 | S25T PTFN R/L 16 | 25 | 23 | 11,5 | 300 | 40 | 17 | 31 | TN.. 1604.. | 0,700 |  |  |
| 212045000 | 212348200 | S32U PTFN R/L 16 | 32 | 30 | 15,0 | 350 | 50 | 22 | 39 | TN.. 1604.. | 2,050 |  |  |
| 212424700 | 212424800 | S40V PTFN R/L 16 | 40 | 37 | 18,5 | 400 | 50 | 27 | 48 | TN.. 1604.. | 3,750 |  |  |
| 212424900 | 212425000 | S50W PTFN R/L 16 | 50 | 47 | 23,5 | 450 | 60 | 35 | 61 | TN.. 1604.. | 6,500 |  |  |
| 212348300 | 212348400 | S40V PTFN R/L 22 | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | TN.. 2204.. | 3,750 |  |  |
| 212348500 | 212348600 | S50W PTFN R/L 22 | 50 | 47 | 23,5 | 450 | 65 | 35 | 61 | TN.. 2204.. | 6,500 |  |  |












 Stock Items | Itens de stock

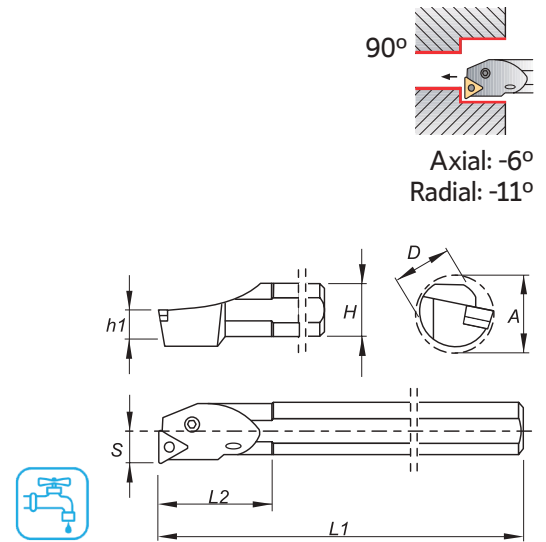
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





SPARE PARTS | Complementos | Repuestos


| Cutter Reference | Order separately | | | | | |
|------------------|---|---|---|---|---|---|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench |
| S25T PTFN R/L 16 |  |  |  |  |  |  |
| S32U PTFN R/L 16 | - | - | - | AN09500 | PA0501200 | SS20 |
| S40V PTFN R/L 16 | CT160303 | BE04400 | BF40009 | AN01200 | PA0601700 | SS25 |
| S50W PTFN R/L 16 | CT160303 | BE04400 | BF40009 | AN01200 | PA0601700 | SS25 |
| S40V PTFN R/L 22 | CT220302 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| S50W PTFN R/L 22 | CT220302 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |

(P) LEVER LOCK TOOLHOLDERS

| | | | | | |
|--|--|--|--|---|--|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium |
| Flat | MF | SF | LC | MS | MR |
|  (16-22) |  (16-22) |  (16-22) |  (16-22) |  (16) |  (16-22) |
| Medium | Medium | Roughing to Medium | Roughing | Medium to Finishing | |
| PM | ST | SS | HR | O1 | |
|  (16-22) |  (16-22) |  (16-22) |  (16-22) |  (16) | |









| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|-------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212348700 | 212348800 | A25R PTFN R/L 16 | 25 | 23 | 11,5 | 200 | 40 | 17 | 31 | TN.. 1604.. | 0,700 |  |  |
| 212348900 | 212349000 | A32S PTFN R/L 16 | 32 | 30 | 15,0 | 250 | 50 | 22 | 39 | TN.. 1604.. | 1,400 |  |  |
| 212349100 | 212349200 | A40T PTFN R/L 22 | 40 | 37 | 18,5 | 300 | 60 | 27 | 48 | TN.. 2204.. | 2,650 |  |  |

 Stock Items | Itens de stock

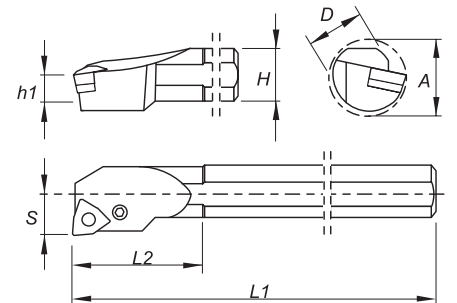
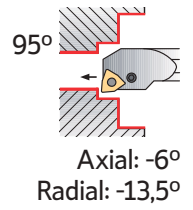
 Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Order separately | | | | | |
|------------------|---|---|---|---|---|---|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench |
| A25R PTFN R/L 16 |  |  |  |  |  |  |
| A25R PTFN R/L 16 | - | - | - | AN09500 | PA0501200 | SS20 |
| A32S PTFN R/L 16 | CT160303 | BE04400 | BF40009 | AN01200 | PA0601700 | SS25 |
| A40T PTFN R/L 22 | CT220302 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |

(P) LEVER LOCK TOOLHOLDERS

| | | | | | |
|-----------------|---------------|---------------------|---------------------|---------------|------------|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium |
| Flat (06-08) | MF (06-08) | SF (06-08) | LC (08) | MS (06-08) | PM (08) |
| Medium | Medium | Medium Wiper | Roughing to Medium | Roughing | |
| MR (06-08) | ST (08) | MW (06-08) | SS (06-08) | HR (08) | |



| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|------------|-------|-------|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212046300 | 212349300 | S16R PWLN R/L 06 | 16 | 15 | 7,5 | 200 | 24 | 11 | 20 | WN..0604.. | 0,300 | ⊗ | ⊗ |
| 212219100 | 212349400 | S20S PWLN R/L 06 | 20 | 18 | 9,0 | 250 | 36 | 13 | 27 | WN..0604.. | 0,550 | ⊗ | ⊗ |
| 212249900 | 212349500 | S25T PWLN R/L 06 | 25 | 23 | 11,5 | 300 | 40 | 17 | 31 | WN..0604.. | 0,700 | ⊗ | ⊗ |
| 212046400 | 212349600 | S25T PWLN R/L 08 | 25 | 23 | 11,5 | 300 | 40 | 17 | 31 | WN..0804.. | 0,700 | ⊗ | ⊗ |
| 212349700 | 212349800 | S32U PWLN R/L 08 | 32 | 30 | 15,0 | 350 | 50 | 22 | 39 | WN..0804.. | 2,050 | ○ | ○ |
| 212349900 | 212350000 | S40V PWLN R/L 08 | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | WN..0804.. | 3,750 | ○ | ○ |

⊗ Stock Items | Itens de stock

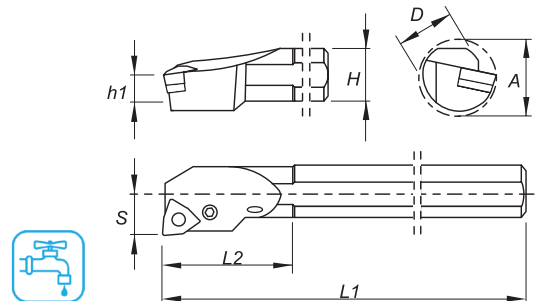
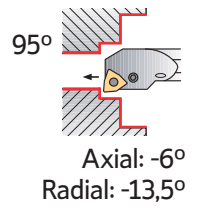
○ Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Order separately | | | | | |
|------------------|------------------|----------|----------------|---------|-------------|--------|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench |
| S16R PWLN R/L 06 | - | - | - | AN09500 | PA0501200 | SS20 |
| S20S PWLN R/L 06 | - | - | - | AN09500 | PA0501200 | SS20 |
| S25T PWLN R/L 06 | CW060301 | BE04400 | BF40009 | AN01200 | PA0601700 | SS25 |
| S25T PWLN R/L 08 | - | - | - | AC13200 | PA0801700 | SS30 |
| S32U PWLN R/L 08 | CW080300 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| S40V PWLN R/L 08 | CW080300 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |

(P) LEVER LOCK TOOLHOLDERS

| | | | | | |
|-----------------|---------------|---------------------|---------------------|---------------|------------|
| Roughing | Finishing | Medium to Finishing | Medium to Finishing | Medium | Medium |
| Flat (06-08) | MF (06-08) | SF (06-08) | LC (08) | MS (06-08) | PM (08) |
| Medium | Medium | Medium Wiper | Roughing to Medium | Roughing | |
| MR (06-08) | ST (08) | MW (06-08) | SS (06-08) | HR (08) | |



| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|------------|-------|-------|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212350100 | 212350200 | A16M PWLN R/L 06 | 16 | 15 | 7,5 | 150 | 24 | 11 | 20 | WN..0604.. | 0,200 | | |
| 212350300 | 212350400 | A20Q PWLN R/L 06 | 20 | 18 | 9,0 | 180 | 36 | 13 | 27 | WN..0604.. | 0,400 | | |
| 212350500 | 212350600 | A25R PWLN R/L 06 | 25 | 23 | 11,5 | 200 | 40 | 17 | 31 | WN..0604.. | 0,700 | | |
| 212350700 | 212350800 | A32S PWLN R/L 06 | 32 | 30 | 15,0 | 250 | 50 | 22 | 39 | WN..0604.. | 1,400 | | |
| 212350900 | 212351000 | A25R PWLN R/L 08 | 40 | 37 | 11,5 | 200 | 40 | 17 | 31 | WN..0804.. | 0,700 | | |
| 212351300 | 212351400 | A32S PWLN R/L 08 | 32 | 30 | 15,0 | 250 | 50 | 22 | 39 | WN..0804.. | 1,400 | | |
| 212351100 | 212351200 | A40T PWLN R/L 08 | 40 | 37 | 18,5 | 300 | 60 | 27 | 48 | WN..0804.. | 2,650 | | |

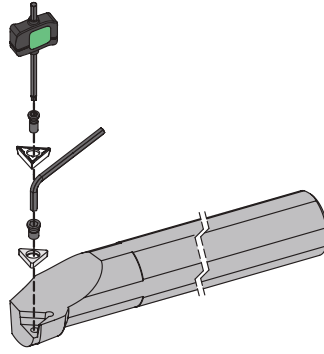
Stock Items | Itens de stock

Available under request | Disponivel sob consulta | Disponible bajo consulta

SPARE PARTS || Complementos | Repuestos














| Cutter Reference | Order separately | | | | | |
|------------------|------------------|----------|----------------|---------|-------------|--------|
| | Shim | Shim Pin | Shim Pin Punch | Lever | Lever Screw | Wrench |
| A16M PWLN R/L 06 | | | | | | |
| A20Q PWLN R/L 06 | - | - | - | AN09500 | PA0501200 | SS20 |
| A25R PWLN R/L 06 | CW060301 | BE04400 | BF40009 | AN01200 | PA0601700 | SS25 |
| A32S PWLN R/L 06 | CW060301 | BE04400 | BF40009 | AN01200 | PA0601700 | SS25 |
| A25R PWLN R/L 08 | - | - | - | AC13200 | PA0801700 | SS30 |
| A32S PWLN R/L 08 | CW080300 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |
| A40T PWLN R/L 08 | CW080300 | BE05500 | BF47509 | AN13100 | PA0802100 | SS30 |

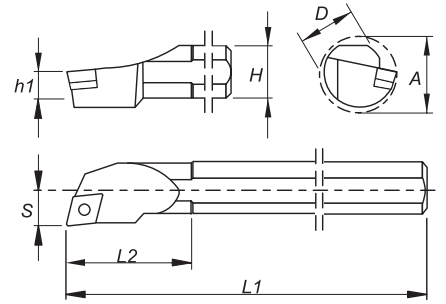
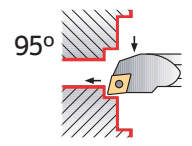
(S) CENTER SCREW SYSTEM



| | | | | | |
|--|--|--|--|---|--|
| <p>SCLC 95°</p> <p>PAGE C - 645 CC.. 0602.. CC.. 09T3.. CC.. 1204..</p> | <p>A-SCLC 95°</p> <p>PAGE C - 646 CC.. 0602.. CC.. 09T3.. CC.. 1204..</p> | <p>E-SCLC 95°</p> <p>PAGE C - 647 CC.. 0602.. CC.. 09T3..</p> | <p>SCLCN 95°</p> <p>PAGE C - 648 CC.. 0602.. CC.. 09T3.. CC.. 1204..</p> | | |
| <p>SDQC 107°30'</p> <p>PAGE C - 649 DC.. 0702.. DC.. 11T3..</p> | <p>A-SDQC 107°30'</p> <p>PAGE C - 650 DC.. 0702.. DC.. 11T3..</p> | | | | |
| <p>SDUC 93°</p> <p>PAGE C - 651 DC.. 0702.. DC.. 11T3..</p> | <p>A-SDUC 93°</p> <p>PAGE C - 652 DC.. 0702.. DC.. 11T3..</p> | <p>E-SDUC 93°</p> <p>PAGE C - 653 DC.. 0702..</p> | <p>SDUC 93° - BT</p> <p>PAGE C - 654 DC.. 0702.. DC.. 11T3..</p> | <p>A-SDUC 93° - BT</p> <p>PAGE C - 655 DC.. 0702.. DC.. 11T3..</p> | |
| <p>SSKC 75°</p> <p>PAGE C - 656 SC..09T3.. SC.. 1204..</p> | <p>A-SSKC 45°</p> <p>PAGE C - 657 SC.. 09T3..</p> | <p>STFC 90°</p> <p>PAGE C - 658 TC.. 0902.. TC.. 1102.. TC.. 16T3..</p> | <p>A-STFC 90°</p> <p>PAGE C - 659 TC.. 0902.. TC.. 1102.. TC.. 16T3..</p> | <p>E-STFC 90°</p> <p>PAGE C - 660 TC.. 0902.. TC.. 1102..</p> | |
| <p>STUC 93°</p> <p>PAGE C - 661 TC.. 1102.. TC.. 16T3..</p> | <p>SVQC 107°30'</p> <p>PAGE C - 662 VC.. 1103.. VC.. 1604..</p> | <p>A-SVQC 107°30'</p> <p>PAGE C - 663 VC.. 1103.. VC.. 1604..</p> | <p>SVUB 93°</p> <p>PAGE C - 664 VB.. 1604..</p> | <p>SVUC 93°</p> <p>PAGE C - 665 VC.. 1103.. VC.. 1604..</p> | <p>A-SVUC 93°</p> <p>PAGE C - 666 VC.. 1103.. VC.. 1604..</p> |
| <p>A-SVJC 93°</p> <p>PAGE C - 667 VC.. 1103.. VC.. 1604..</p> | | | | | |

(S) CENTER SCREW TOOLHOLDERS

| | | | | | | |
|---|---|---|---|---|---|---|
| Finishing | Finishing | Finishing | Finishing | Finishing | Finishing wiper | Medium to Finishing |
| Flat  (06-09-12) | FP  (06-09-12) | BO  (06-09-12) | FM  (06-09-12) | FK  (06-09-12) | FW  (06-09-12) | LM  (06-09-12) |
| Medium | Medium | Medium | Medium to Finishing wiper | Finishing to Fine finishing | Medium to Finishing | |
| MP  (06-09-12) | MM  (06-09-12) | MK  (06-09-12) | MW  (06-09-12) | FS  (06-09-12) | LN  (06-09-12) | |



| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|-------|-------|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212046700 | 212141400 | S08K SCLC R/L 06 | 8 | 7 | 3,5 | 125 | 16 | 5 | 11 | CC.. 0602.. | 0,040 | ⊗ | ⊗ |
| 212039800 | 212141500 | S10M SCLC R/L 06 | 10 | 9 | 4,5 | 150 | 25 | 7 | 13 | CC.. 0602.. | 0,060 | ⊗ | ⊗ |
| 212047300 | 212141600 | S12M SCLC R/L 06 | 12 | 11 | 5,5 | 150 | 25 | 9 | 16 | CC.. 0602.. | 0,150 | ⊗ | ⊗ |
| 212079200 | 212141700 | S12M SCLC R/L 09 | 12 | 11 | 5,5 | 150 | 25 | 9 | 16 | CC.. 09T3.. | 0,150 | ⊗ | ⊗ |
| 212315200 | 212315300 | S12Q SCLC R/L 09 | 12 | 11 | 5,5 | 180 | 25 | 9 | 16 | CC.. 09T3.. | 0,150 | ⊗ | ⊗ |
| 212041600 | 212044200 | S16R SCLC R/L 09 | 16 | 15 | 7,5 | 200 | 30 | 11 | 20 | CC.. 09T3.. | 0,300 | ⊗ | ⊗ |
| 212141900 | 212141800 | S20S SCLC R/L 09 | 20 | 18 | 9,0 | 250 | 35 | 13 | 24 | CC.. 09T3.. | 0,550 | ⊗ | ⊗ |
| 212142100 | 212142000 | S25T SCLC R7L 09 | 25 | 23 | 11,5 | 300 | 40 | 17 | 31 | CC.. 09T3.. | 0,550 | ⊗ | ⊗ |
| 212047400 | 212142200 | S20S SCLC R/L 12 | 20 | 18 | 9,0 | 250 | 35 | 13 | 24 | CC.. 1204.. | 0,550 | ⊗ | ⊗ |
| 212045500 | 212142300 | S25T SCLC R/L 12 | 25 | 23 | 11,5 | 300 | 40 | 17 | 31 | CC.. 1204.. | 0,700 | ⊗ | ⊗ |
| 212142500 | 212142400 | S32U SCLC R/L 12 | 32 | 30 | 15,0 | 350 | 50 | 22 | 39 | CC.. 1204.. | 2,050 | ○ | ○ |
| 212142700 | 212142600 | S40V SCLC R/L 12 | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | CC.. 1204.. | 3,750 | ○ | ○ |
| 212142900 | 212142800 | S50W SCLC R/L 12 | 50 | 47 | 23,5 | 450 | 65 | 35 | 61 | CC.. 1204.. | 6,500 | ○ | ○ |

⊗ Stock Items | Itens de stock












○ Available under request | Disponível sob consulta | Disponible bajo consulta

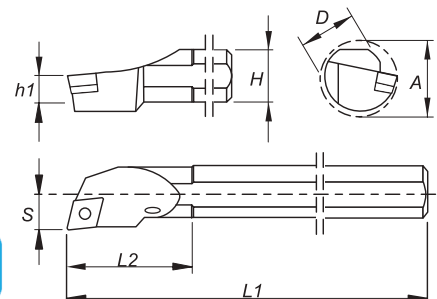
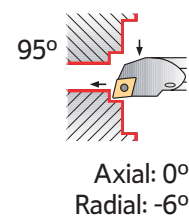
SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Shim | Shim S crew | Screw | Wrench |
|------------------|----------|-------------|----------|----------|
| S08K SCLC R/L 06 | - | - | P0200601 | XT07 |
| S10M SCLC R/L 06 | - | - | P0200601 | XT07 |
| S12M SCLC R/L 06 | - | - | P0200601 | XT07 |
| S12M SCLC R/L 09 | - | - | P0400802 | XT15-S35 |
| S12Q SCLC R/L 09 | - | - | P0400802 | XT15-S35 |
| S16R SCLC R/L 09 | - | - | P0400802 | XT15-S35 |
| S20S SCLC R/L 09 | - | - | P0400802 | XT15-S35 |
| S25T SCLC R7L 09 | - | - | P0400802 | XT15-S35 |
| S20S SCLC R/L 12 | - | - | P0501200 | XT15-S40 |
| S25T SCLC R/L 12 | - | - | P0501200 | XT15-S40 |
| S32U SCLC R/L 12 | CC120401 | T06004000 | P0401400 | XT15-S40 |
| S40V SCLC R/L 12 | CC120401 | T06004000 | P0401400 | XT15-S40 |
| S50W SCLC R/L 12 | CC120401 | T06004000 | P0401400 | XT15-S40 |

TURNING
Insert selection
Overview
Negative inserts
Positive inserts
PCBN & PCD inserts
Heavy turning
External Toolholders
Internal Toolholders
Automatic Lathes
Spare Parts
Technical Data

(S) CENTER SCREW TOOLHOLDERS

| | | | | | | |
|--|--|--|--|--|--|--|
| Finishing | Finishing | Finishing | Finishing | Finishing | Finishing wiper | Medium to Finishing |
| Flat  (06-09-12) | FP  (06-09-12) | BO  (06-09-12) | FM  (06-09-12) | FK  (06-09-12) | FW  (06-09) | LM  (06-09-12) |
| Medium | Medium | Medium | Medium to Finishing wiper | Finishing to Fine finishing | Medium to Finishing | |
| MP  (06-09-12) | MM  (06-09-12) | MK  (06-09-12) | MW  (06-09-12) | FS  (06-09) | LN  (06-09-12) | |



| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|-------|-------|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212315400 | 212315500 | A08F SCLC R/L 06 | 8 | 7 | 3,5 | 80 | 16 | 5 | 11 | CC.. 0602.. | 0,030 | | |
| 212315600 | 212315700 | A10H SCLC R/L 06 | 10 | 9 | 4,5 | 100 | 25 | 7 | 13 | CC.. 0602.. | 0,040 | | |
| 212315800 | 212315900 | A12K SCLC R/L 06 | 12 | 11 | 5,5 | 125 | 25 | 9 | 16 | CC.. 0602.. | 0,100 | | |
| 212316000 | 212316100 | A16M SCLC R/L 09 | 16 | 15 | 7,5 | 150 | 30 | 11 | 20 | CC.. 09T3.. | 0,200 | | |
| 212316200 | 212316300 | A20Q SCLC R/L 09 | 20 | 18 | 9,0 | 180 | 35 | 13 | 24 | CC.. 09T3.. | 0,400 | | |
| 212316400 | 212316500 | A25R SCLC R/L 09 | 25 | 23 | 11,5 | 200 | 40 | 17 | 31 | CC.. 09T3.. | 0,700 | | |
| 212316600 | 212316700 | A32S SCLC R/L 12 | 32 | 30 | 15,0 | 250 | 50 | 22 | 39 | CC.. 1204.. | 1,400 | | |
| 212316800 | 212316900 | A40T SCLC R/L 12 | 40 | 37 | 18,5 | 300 | 60 | 27 | 48 | CC.. 1204.. | 2,650 | | |














Stock Itens | Itens de stock

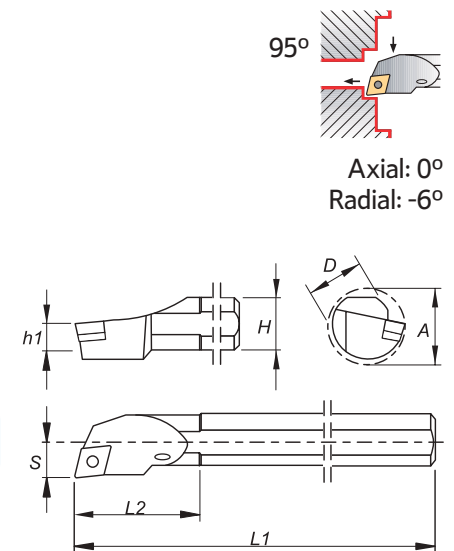
Available under request | Disponível sob consulta | Disponible bajo consulta









SPARE PARTS || Complementos | Repuestos


| Cutter Reference | Shim | Shim S crew | Screw | Wrench |
|------------------|----------|-------------|----------|----------|
| | | | | |
| A08F SCLC R/L 06 | - | - | P0200601 | XT07 |
| A10H SCLC R/L 06 | - | - | P0200601 | XT07 |
| A12K SCLC R/L 06 | - | - | P0200601 | XT07 |
| A16M SCLC R/L 09 | - | - | P0400802 | XT15-S35 |
| A20Q SCLC R/L 09 | - | - | P0400802 | XT15-S35 |
| A25R SCLC R/L 09 | - | - | P0400802 | XT15-S35 |
| A32S SCLC R/L 12 | CC120401 | T06004000 | P0401400 | XT15-S40 |
| A40T SCLC R/L 12 | CC120401 | T06004000 | P0401400 | XT15-S40 |

(S) CENTER SCREW TOOLHOLDERS

| | | | | | | |
|--|--|--|--|--|--|--|
| Finishing | Finishing | Finishing | Finishing | Finishing | Finishing wiper | Medium to Finishing |
| Flat  (06-09) | FP  (06-09) | BO  (06-09) | FM  (06-09) | FK  (06-09) | FW  (06-09) | LM  (06-09) |
| Medium | Medium | Medium | Medium to Finishing wiper | Finishing to Fine finishing | Medium to Finishing | |
| MP  (06-09) | MM  (06-09) | MK  (06-09) | MW  (06-09) | FS  (06-09) | LN  (06-09) | |




| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|-----|-----|----|----|----|-------------|-------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212317800 | 212317900 | E08K SCLC R/L 06 | 8 | 7 | 3,5 | 125 | 16 | 5 | 11 | CC.. 0602.. | 0,080 |  |  |
| 212318000 | 212318100 | E10M SCLC R/L 06 | 10 | 9 | 4,5 | 150 | 25 | 7 | 13 | CC.. 0602.. | 0,150 |  |  |
| 212317400 | 212318300 | E12Q SCLC R/L 06 | 12 | 11 | 5,5 | 180 | 25 | 9 | 16 | CC.. 0602.. | 0,250 |  |  |
| 212318400 | 212317600 | E16R SCLC R/L 09 | 16 | 15 | 7,5 | 200 | 30 | 11 | 20 | CC.. 09T3.. | 0,600 |  |  |

 Stock items | Itens de stock














 Available under request | Disponível sob consulta | Disponible bajo consulta

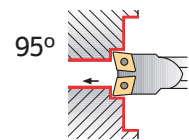
SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Screw | Wrench |
|------------------|----------|---|
| | |  |
| E08K SCLC R/L 06 | P0200601 | XT07 |
| E10M SCLC R/L 06 | P0200601 | XT07 |
| E12M SCLC R/L 06 | P0200601 | XT07 |
| E16R SCLC R/L 09 | P0400802 | XT15-S35 |

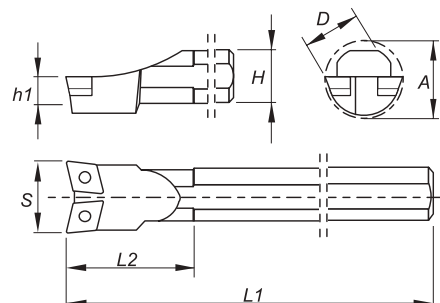
TURNING
Insert selection
Overview
Negative inserts
Positive inserts
PCBN & PCD inserts
Heavy turning
External Toolholders
Internal Toolholders
Automatic Lathes
Spare Parts
Technical Data

(S) CENTER SCREW TOOLHOLDERS

| | | | | | | |
|---|---|---|---|---|---|---|
| Finishing | Finishing | Finishing | Finishing | Finishing | Finishing wiper | Medium to Finishing |
| Flat  (06-09-12) | FP  (06-09-12) | BO  (06-09-12) | FM  (06-09-12) | FK  (06-09-12) | FW  (06-09) | LM  (06-09-12) |
| Medium | Medium | Medium | Medium to Finishing wiper | Finishing to Fine finishing | Medium to Finishing | |
| MP  (06-09-12) | MM  (06-09-12) | MK  (06-09-12) | MW  (06-09-12) | FS  (06-09) | LN  (06-09-12) | |



Axial: 0°
Radial: -9°







| Order Code | Reference | Dimensions (mm) | | | | | | | | Insert | Kg | Stock |
|------------|----------------|-----------------|----|------|-----|----|----|----|-------------|--------|----|-------|
| | | D | H | h1 | L1 | L2 | S | A | | | | |
| 212143000 | S12M SCLC N 06 | 12 | 11 | 5,5 | 150 | 25 | 18 | 20 | CC.. 0602.. | 0,150 | ⊗ | |
| 212143100 | S16R SCLC N 06 | 16 | 15 | 7,5 | 200 | 30 | 22 | 25 | CC.. 0602.. | 0,300 | ⊗ | |
| 212143200 | S20S SCLC N 06 | 20 | 18 | 9,0 | 250 | 35 | 26 | 30 | CC.. 0602.. | 0,550 | ⊗ | |
| 212143300 | S25T SCLC N 09 | 25 | 23 | 11,5 | 300 | 40 | 34 | 40 | CC.. 09T3.. | 0,700 | ⊗ | |
| 212143400 | S32U SCLC N 12 | 32 | 30 | 15,0 | 350 | 50 | 44 | 50 | CC.. 1204.. | 2,050 | ○ | |
| 212143500 | S40V SCLC N 12 | 40 | 37 | 18,5 | 400 | 60 | 54 | 60 | CC.. 1204.. | 3,750 | ○ | |
| 212143600 | S50W SCLC N 12 | 50 | 47 | 23,5 | 450 | 65 | 62 | 68 | CC.. 1204.. | 6,500 | ○ | |











⊗ Stock Items | Itens de stock

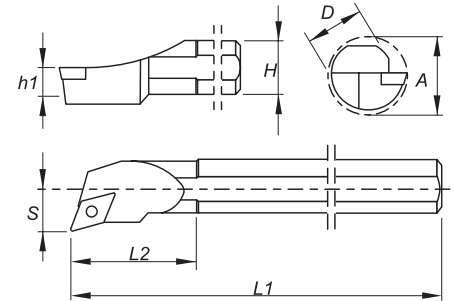
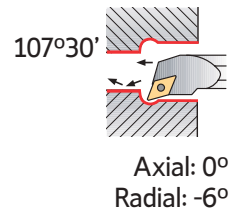
○ Available under request | Disponível sob consulta | Disponible bajo consulta

















SPARE PARTS || Complementos | Repuestos


| Cutter Reference | Shim  | Shim Screw  | Screw  | Wrench  |
|------------------|---|---|--|---|
| S12M SCLC N 06 | - | - | P0200601 | XT07 |
| S16R SCLC N 06 | - | - | P0200601 | XT07 |
| S20S SCLC N 06 | - | - | P0200601 | XT07 |
| S25T SCLC N 09 | - | - | P0400802 | XT15-S35 |
| S32U SCLC N 12 | CC120401 | T06004000 | P0401400 | XT15-S40 |
| S40V SCLC N 12 | CC120401 | T06004000 | P0401400 | XT15-S40 |
| S50W SCLC N 12 | CC120401 | T06004000 | P0401400 | XT15-S40 |

(S) CENTER SCREW TOOLHOLDERS

| | | | | |
|---|---|---|---|---|
| Finishing | Finishing | Finishing | Finishing | Medium to Finishing |
| Flat | FP | FM | FK | LM |
|  |  |  |  |  |
| (07-11) | (07-11) | (07-11) | (07-11) | (07-11) |
| Medium | Medium | Medium | Finishing to Fine Finishing | Finishing to Fine Finishing |
| MP | MM | MK | FS | LN |
|  |  |  |  |  |
| (07-11) | (07-11) | (07-11) | (07-11) | (07-11) |







| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|-------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212147000 | 212146900 | S10M SDQC R/L 07 | 10 | 9 | 4,5 | 150 | 25 | 7 | 13 | DC.. 0702.. | 0,060 |  |  |
| 212147200 | 212147100 | S12M SDQC R/L 07 | 12 | 11 | 5,5 | 150 | 25 | 9 | 16 | DC.. 0702.. | 0,150 |  |  |
| 212147400 | 212147300 | S16R SDQC R/L 07 | 16 | 15 | 7,5 | 200 | 30 | 11 | 20 | DC.. 0702.. | 0,300 |  |  |
| 212147600 | 212147500 | S20S SDQC R/L 07 | 20 | 18 | 9,0 | 250 | 35 | 13 | 24 | DC.. 0702.. | 0,550 |  |  |
| 212147800 | 212147700 | S20S SDQC R/L 11 | 20 | 18 | 9,0 | 250 | 35 | 13 | 24 | DC.. 11T3.. | 0,550 |  |  |
| 212148000 | 212147900 | S25T SDQC R/L 11 | 25 | 23 | 11,5 | 300 | 40 | 17 | 31 | DC.. 11T3.. | 0,700 |  |  |
| 212148100 | 212148200 | S32U SDQC R/L 11 | 32 | 30 | 15,0 | 350 | 50 | 22 | 39 | DC.. 11T3.. | 2,050 |  |  |
| 212148300 | 212148400 | S40V SDQC R/L 11 | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | DC.. 11T3.. | 3,750 |  |  |

 Stock Items | Itens de stock











 Available under request | Disponível sob consulta | Disponible bajo consulta

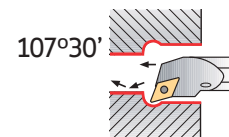
SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Shim | Shim Screw | Screw | Wrench |
|------------------|---|---|---|---|
| S10M SDQC R/L 07 |  |  |  |  |
| S12M SDQC R/L 07 | - | - | P0200601 | XT07 |
| S16R SDQC R/L 07 | - | - | P0250700 | XT07 |
| S20S SDQC R/L 07 | - | - | P0250700 | XT07 |
| S20S SDQC R/L 11 | - | - | P0401100 | XT15-S35 |
| S25T SDQC R/L 11 | - | - | P0401100 | XT15-S35 |
| S32U SDQC R/L 11 | CD110301 | T05003500 | P0351500 | XT15-S35 |
| S40V SDQC R/L 11 | CD110301 | T05003500 | P0351500 | XT15-S35 |

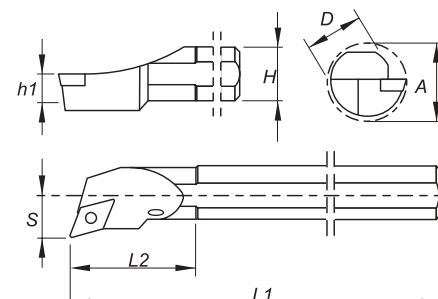
C
TURNING
Insert selection
Overview
Negative inserts
Positive inserts
PCBN & PCD inserts
Heavy turning
External Toolholders
Internal Toolholders
Automatic Lathes
Spare Parts
Technical Data













(S) CENTER SCREW TOOLHOLDERS

| | | | | |
|--|--|--|--|--|
| Finishing | Finishing | Finishing | Finishing | Medium to Finishing |
| Flat  (07-11) | FP  (07-11) | FM  (07-11) | FK  (07-11) | LM  (07-11) |
| Medium | Medium | Medium | Finishing to Fine Finishing | Finishing to Fine Finishing |
| MP  (07-11) | MM  (07-11) | MK  (07-11) | FS  (07-11) | LN  (07-11) |



Axial: 0°
Radial: -6°







| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|-------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212318600 | 212318700 | A12K SDQC R/L 07 | 12 | 11 | 5,5 | 125 | 25 | 9 | 16 | DC.. 0702.. | 0,100 |  |  |
| 212318800 | 212318900 | A16M SDQC R/L 07 | 16 | 15 | 7,5 | 150 | 30 | 11 | 20 | DC.. 0702.. | 0,200 |  |  |
| 212319000 | 212319100 | A20Q SDQC R/L 11 | 20 | 18 | 9,0 | 180 | 35 | 13 | 24 | DC.. 11T3.. | 0,400 |  |  |
| 212319200 | 212319300 | A25R SDQC R/L 11 | 25 | 23 | 11,5 | 200 | 40 | 17 | 31 | DC.. 11T3.. | 0,700 |  |  |
| 212319400 | 212319500 | A32S SDQC R/L 11 | 32 | 30 | 15,0 | 250 | 50 | 22 | 39 | DC.. 11T3.. | 1,400 |  |  |
| 212319600 | 212319700 | A40T SDQC R/L 11 | 40 | 37 | 18,5 | 300 | 60 | 27 | 48 | DC.. 11T3.. | 2,650 |  |  |

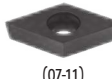




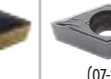






 Stock Items | Itens de stock

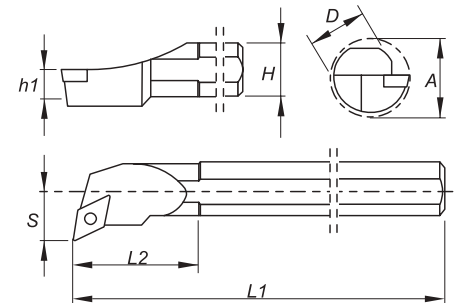
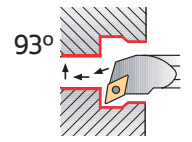
 Available under request | Disponível sob consulta | Disponible bajo consulta



















SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Shim | Shim Screw | Screw | Wrench |
|------------------|---|---|---|---|
| A12K SDQC R/L 07 |  |  |  |  |
| A16M SDQC R/L 07 | - | - | P0250700 | XT07 |
| A20Q SDQC R/L 11 | - | - | P0401100 | XT15-S35 |
| A25R SDQC R/L 11 | - | - | P0401100 | XT15-S35 |
| A32S SDQC R/L 11 | CD110301 | T05003500 | P0351500 | XT15-S35 |
| A40T SDQC R/L 11 | CD110301 | T05003500 | P0351500 | XT15-S35 |

(S) CENTER SCREW TOOLHOLDERS

| | | | | | |
|--|--|--|--|--|--|
| Finishing | Finishing | Finishing | Finishing | Finishing wiper | Medium to Finishing |
| Flat | FP | FM | FK | FW | LM |
|  (07-11) |  (07-11) |  (07-11) |  (07-11) |  (07-11) |  (07-11) |
| Medium | Medium | Medium | Medium to Finishing wiper | Finishing to Fine Finishing | Finishing to Fine Finishing |
| MP | MM | MK | MW | FS | LN |
|  (07-11) |  (07-11) |  (07-11) |  (11) |  (07-11) |  (07-11) |







| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|-------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212144700 | 212144600 | S10M SDUC R/L 07 | 10 | 9 | 4,5 | 150 | 25 | 7 | 13 | DC.. 0702.. | 0,060 |  |  |
| 212028500 | 212028600 | S12M SDUC R/L 07 | 12 | 11 | 5,5 | 150 | 25 | 9 | 16 | DC.. 0702.. | 0,150 |  |  |
| 212319800 | 212319900 | S12Q SDUC R/L 07 | 12 | 11 | 5,5 | 180 | 25 | 9 | 16 | DC.. 0702.. | 0,150 |  |  |
| 212028700 | 212028800 | S16R SDUC R/L 07 | 16 | 15 | 7,5 | 200 | 30 | 11 | 20 | DC.. 0702.. | 0,300 |  |  |
| 212144900 | 212144800 | S20S SDUC R/L 07 | 20 | 18 | 9,0 | 250 | 35 | 13 | 24 | DC.. 0702.. | 0,550 |  |  |
| 212036800 | 212028900 | S20S SDUC R/L 11 | 20 | 18 | 9,0 | 250 | 35 | 13 | 24 | DC.. 11T3.. | 0,550 |  |  |
| 212029000 | 212038400 | S25T SDUC R/L 11 | 25 | 23 | 11,5 | 300 | 40 | 17 | 31 | DC.. 11T3.. | 0,700 |  |  |
| 212145200 | 212145100 | S32U SDUC R/L 11 | 32 | 30 | 15,0 | 350 | 50 | 22 | 39 | DC.. 11T3.. | 2,050 |  |  |
| 212145400 | 212145300 | S40V SDUC R/L 11 | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | DC.. 11T3.. | 3,750 |  |  |

 Stock items | Itens de stock

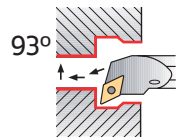
 Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS | Complementos | Repuestos













| Cutter Reference | Shim | Shim Screw | Screw | Wrench |
|------------------|---|---|---|---|
| S10M SDUC R/L 07 |  |  |  |  |
| S12M SDUC R/L 07 | - | - | P0200601 | XT07 |
| S12Q SDUC R/L 07 | - | - | P0250700 | XT07 |
| S16R SDUC R/L 07 | - | - | P0250700 | XT07 |
| S20S SDUC R/L 07 | - | - | P0250700 | XT07 |
| S20S SDUC R/L 11 | - | - | P0401100 | XT15-S35 |
| S25T SDUC R/L 11 | - | - | P0401100 | XT15-S35 |
| S32U SDUC R/L 11 | CD110301 | T05003500 | P0351500 | XT15-S40 |
| S40V SDUC R/L 11 | CD110301 | T05003500 | P0351500 | XT15-S40 |

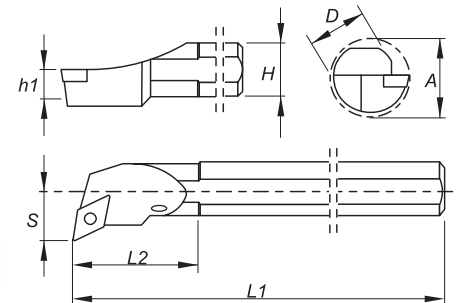
C
TURNING
Insert selection
Overview
Negative inserts
Positive inserts
PCBN & PCD inserts
Heavy turning
External Toolholders
Internal Toolholders
Automatic Lathes
Spare Parts
Technical Data













(S) CENTER SCREW TOOLHOLDERS



Axial: 0°
Radial: -6°

| | | | | | |
|--|--|--|--|--|--|
| Finishing | Finishing | Finishing | Finishing | Finishing wiper | Medium to Finishing |
| Flat  (07-11) | FP  (07-11) | FM  (07-11) | FK  (07-11) | FW  (07-11) | LM  (07-11) |
| Medium | Medium | Medium | Medium to Finishing wiper | Finishing to Fine Finishing | Finishing to Fine Finishing |
| MP  (07-11) | MM  (07-11) | MK  (07-11) | MW  (11) | FS  (07-11) | LN  (07-11) |



| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|-------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212320000 | 212320100 | A12K SDUC R/L 07 | 12 | 11 | 5,5 | 125 | 25 | 9 | 16 | DC.. 0702.. | 0,100 |  |  |
| 212320200 | 212320300 | A16M SDUC R/L 07 | 16 | 15 | 7,5 | 150 | 30 | 11 | 20 | DC.. 0702.. | 0,200 |  |  |
| 212320400 | 212320500 | A20Q SDUC R/L 11 | 20 | 18 | 9,0 | 180 | 35 | 13 | 24 | DC.. 11T3.. | 0,400 |  |  |
| 212320600 | 212320700 | A25R SDUC R/L 11 | 25 | 23 | 11,5 | 200 | 40 | 17 | 31 | DC.. 11T3.. | 0,700 |  |  |
| 212320800 | 212320900 | A32S SDUC R/L 11 | 32 | 30 | 15,0 | 250 | 50 | 22 | 39 | DC.. 11T3.. | 1,400 |  |  |
| 212321000 | 212321100 | A40T SDUC R/L 11 | 40 | 37 | 18,5 | 300 | 60 | 27 | 48 | DC.. 11T3.. | 2,650 |  |  |











 Stock Items | Itens de stock

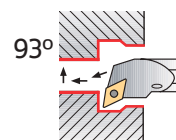
 Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS | Complementos | Repuestos

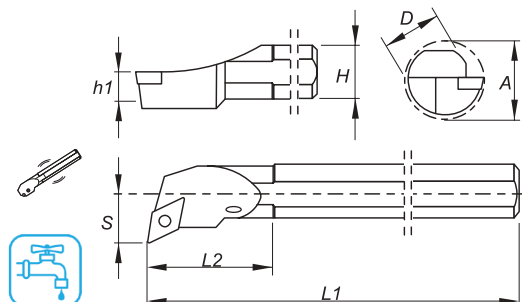
| Cutter Reference | Shim | Shim Screw | Screw | Wrench |
|------------------|---|---|---|---|
| A12K SDUC R/L 07 |  |  |  |  |
| A16M SDUC R/L 07 | - | - | P0250700 | XT07 |
| A20Q SDUC R/L 11 | - | - | P0401100 | XT15-S35 |
| A25R SDUC R/L 11 | - | - | P0401100 | XT15-S35 |
| A32S SDUC R/L 11 | CD110301 | T05003500 | P0351500 | XT15-S35 |
| A40T SDUC R/L 11 | CD110301 | T05003500 | P0351500 | XT15-S35 |







(S) CENTER SCREW TOOLHOLDERS

| | | | | |
|---|---|---|---|---|
| Finishing | Finishing | Finishing | Finishing | Finishing wiper |
| Flat | FP | FM | FK | FW |
|  (07) |  (07) |  (07) |  (07) |  (07) |
| Medium | Medium | Medium | Finishing to Fine Finishing | Finishing to Fine Finishing |
| MP | MM | MK | FS | LN |
|  (07) |  (07) |  (07) |  (07) |  (07) |



Axial: 0°
Radial: -6°




| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|-----|-----|----|----|----|-------------|-------|--|--|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212321800 | 212321300 | E10M SDUC R/L 07 | 10 | 9 | 4,5 | 150 | 25 | 7 | 13 | DC.. 0702.. | 0,150 |  |  |
| 212322000 | 212322100 | E12Q SDUC R/L 07 | 12 | 11 | 5,5 | 180 | 25 | 9 | 16 | DC.. 0702.. | 0,250 |  |  |
| 212322200 | 212321700 | E16R SDUC R/L 07 | 16 | 15 | 7,5 | 200 | 30 | 11 | 20 | DC.. 0702.. | 0,600 |  |  |













 Stock Items | Itens de stock

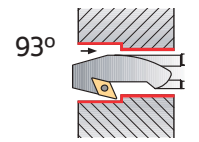
 Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS || Complementos | Repuestos

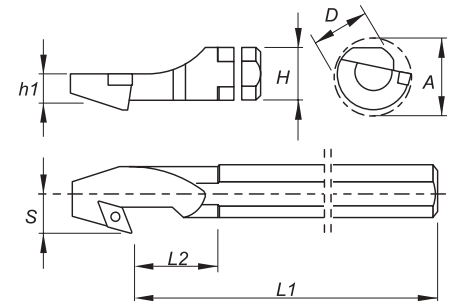
| Cutter Reference | Screw | Wrench |
|------------------|----------|---|
| | |  |
| E10M SDUC R/L 07 | P0200601 | XT07 |
| E12M SDUC R/L 07 | P0250700 | XT07 |
| E16R SDUC R/L 07 | P0250700 | XT07 |















(S) CENTER SCREW TOOLHOLDERS

| | | | | | |
|--|--|--|--|--|--|
| Finishing | Finishing | Finishing | Finishing | Finishing wiper | Medium to Finishing |
| Flat | FP | FM | FK | FW | LM |
|  (07-11) |  (07-11) |  (07-11) |  (07-11) |  (07-11) |  (07-11) |
| Medium | Medium | Medium | Medium to Finishing wiper | Finishing to Fine Finishing | Finishing to Fine Finishing |
| MP | MM | MK | MW | FS | LN |
|  (07-11) |  (07-11) |  (07-11) |  (11) |  (07-11) |  (07-11) |



Axial: 0°
Radial: -6°






| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|---------------------|-----------------|----|------|-----|----|----|----|-------------|-------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212145600 | 212145500 | S12M SDUC R/L 07-BT | 12 | 11 | 5,5 | 150 | 25 | 9 | 16 | DC.. 0702.. | 0,150 |  |  |
| 212145800 | 212145700 | S16R SDUC R/L 07-BT | 16 | 15 | 7,5 | 200 | 30 | 11 | 20 | DC.. 0702.. | 0,300 |  |  |
| 212146000 | 212145900 | S20S SDUC R/L 07-BT | 20 | 18 | 9,0 | 250 | 35 | 13 | 24 | DC.. 0702.. | 0,550 |  |  |
| 212146200 | 212146100 | S20S SDUC R/L 11-BT | 20 | 18 | 9,0 | 250 | 35 | 13 | 24 | DC.. 11T3.. | 0,550 |  |  |
| 212146400 | 212146300 | S25T SDUC R/L 11-BT | 25 | 23 | 11,5 | 300 | 40 | 17 | 31 | DC.. 11T3.. | 0,700 |  |  |
| 212146600 | 212146500 | S32U SDUC R/L 11-BT | 32 | 30 | 15,0 | 350 | 50 | 22 | 39 | DC.. 11T3.. | 2,050 |  |  |
| 212146800 | 212146700 | S40V SDUC R/L 11-BT | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | DC.. 11T3.. | 3,750 |  |  |













 Stock Items | Itens de stock

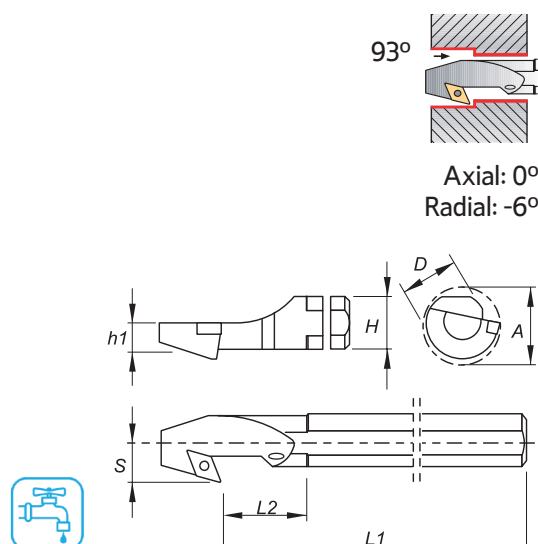
 Available under request | Disponível sob consulta | Disponible bajo consulta









SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Shim | Shim Screw | Screw | Wrench |
|---------------------|---|---|---|---|
| S12M SDUC R/L 07-BT |  |  |  |  |
| S16R SDUC R/L 07-BT | - | - | P0250700 | XT07 |
| S20S SDUC R/L 07-BT | - | - | P0250700 | XT07 |
| S20S SDUC R/L 11-BT | - | - | P0400802 | XT15-S35 |
| S25T SDUC R/L 11-BT | - | - | P0401100 | XT15-S35 |
| S32U SDUC R/L 11-BT | CD110301 | T05003500 | P0351500 | XT15-S35 |
| S40V SDUC R/L 11-BT | CD110301 | T05003500 | P0351500 | XT15-S35 |

(S) CENTER SCREW TOOLHOLDERS

| | | | | | |
|--|--|--|--|--|--|
| Finishing | Finishing | Finishing | Finishing | Finishing wiper | Medium to Finishing |
| Flat | FP | FM | FK | FW | LM |
|  (07-11) |  (07-11) |  (07-11) |  (07-11) |  (07-11) |  (07-11) |
| Medium | Medium | Medium | Medium to Finishing wiper | Finishing to Fine Finishing | Finishing to Fine Finishing |
| MP | MM | MK | MW | FS | LN |
|  (07-11) |  (07-11) |  (07-11) |  (11) |  (07-11) |  (07-11) |




| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|---------------------|-----------------|----|------|-----|----|----|----|-------------|-------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212322400 | 212322500 | A12K SDUC R/L 07-BT | 12 | 11 | 5,5 | 125 | 25 | 9 | 16 | DC.. 0702.. | 0,100 |  |  |
| 212322600 | 212322700 | A16M SDUC R/L 07-BT | 16 | 15 | 7,5 | 150 | 30 | 11 | 20 | DC.. 0702.. | 0,200 |  |  |
| 212322800 | 212322900 | A20Q SDUC R7L 11-BT | 20 | 18 | 9,0 | 180 | 35 | 13 | 24 | DC.. 11T3.. | 0,400 |  |  |
| 212323000 | 212323100 | A25R SDUC R/L 11-BT | 25 | 23 | 11,5 | 200 | 40 | 17 | 31 | DC.. 11T3.. | 0,700 |  |  |

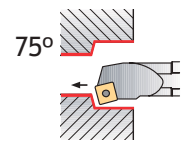
 Stock Items | Itens de stock

 Available under request | Disponível sob consulta | Disponible bajo consulta

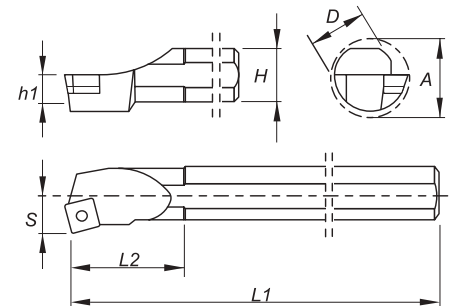
SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Screw | Wrench |
|---------------------|----------|---|
| | |  |
| A12K SDUC R/L 07-BT | P0250700 | XT07 |
| A16M SDUC R/L 07-BT | P0250700 | XT07 |
| A20Q SDUC R7L 11-BT | P0400802 | XT15-S35 |
| A25R SDUC R/L 11-BT | P0401100 | XT15-S35 |

(S) CENTER SCREW TOOLHOLDERS



| | | | |
|---------------------|-------------------|-------------------|---------------------|
| Finishing | Finishing | Finishing | Finishing |
| Flat (09-12) | FP (09) | FM (09) | FK (09) |
| Medium | Medium | Medium | Medium to Finishing |
| MP (09-12) | MM (09-12) | MK (09-12) | LN (09-12) |











| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|-------|-------|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212150400 | 212150300 | S16R SSKC R/L 09 | 16 | 15 | 7,5 | 200 | 30 | 11 | 20 | SC.. 09T3.. | 0,300 | | |
| 212150600 | 212150500 | S20S SSKC R/L 09 | 20 | 18 | 9,0 | 250 | 35 | 13 | 24 | SC.. 09T3.. | 0,550 | | |
| 212045800 | 212150700 | S25T SSKC R/L 09 | 25 | 23 | 11,5 | 300 | 40 | 17 | 31 | SC.. 09T3.. | 0,700 | | |
| 212045900 | 212150800 | S32U SSKC R/L 12 | 32 | 30 | 15,0 | 350 | 50 | 22 | 39 | SC.. 1204.. | 2,050 | | |
| 212151000 | 212150900 | S40V SSKC R/L 12 | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | SC.. 1204.. | 3,750 | | |
| 212151200 | 212151100 | S50W SSKC R/L 12 | 50 | 47 | 23,5 | 450 | 65 | 35 | 61 | SC.. 1204.. | 6,500 | | |

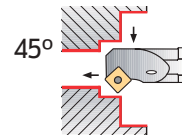
Stock Items | Itens de stock Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS || Complementos | Repuestos

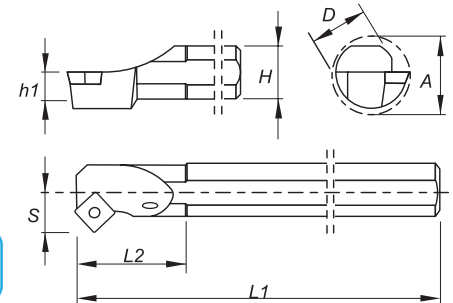
| Cutter Reference | Shim | Shim Screw | Screw | Wrench |
|------------------|----------|----------------|-----------|------------|
| S16R SSKC R/L 09 | - | - | P0400802 | XT15-S35 |
| S20S SSKC R/L 09 | - | - | P0400802 | XT15-S35 |
| S25T SSKC R/L 09 | - | - | P0400802 | XT15-S35 |
| S32U SSKC R/L 12 | CC120400 | T06004000 | P0401400 | XT15-S40 |
| S40V SSKC R/L 12 | CC120400 | T06004000 | P0401400 | XT15-S40 |
| S50W SSKC R/L 12 | CC120400 | T06004000 | P0401400 | XT15-S40 |







(S) CENTER SCREW TOOLHOLDERS

| | | | |
|---|---|---|---|
| Finishing | Finishing | Finishing | Finishing |
| Flat | FP | FM | FK |
|  (09) |  (09) |  (09) |  (09) |
| Medium | Medium | Medium | Medium to Finishing |
| MP | MM | MK | LN |
|  (09) |  (09) |  (09) |  (09) |



Axial: 0°
Radial: -8°




| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|-------|--|--|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212323200 | 212323300 | A16M SSSC R/L 09 | 16 | 15 | 7,5 | 150 | 30 | 11 | 20 | SC.. 09T3.. | 0,300 |  |  |
| 212323400 | 212323500 | A20Q SSSC R/L 09 | 20 | 18 | 9,0 | 180 | 35 | 13 | 24 | SC.. 09T3.. | 0,550 |  |  |
| 212323600 | 212323700 | A25R SSSC R/L 09 | 25 | 23 | 11,5 | 200 | 40 | 17 | 31 | SC.. 09T3.. | 0,700 |  |  |

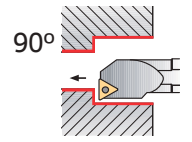
 Stock Items | Itens de stock

 Available under request | Disponível sob consulta | Disponible bajo consulta

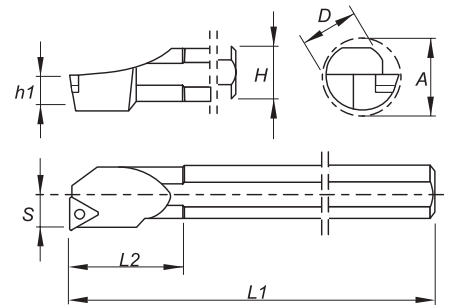
SPARE PARTS || Complementos | Repuestos









| Cutter Reference | Screw | Wrench |
|------------------|----------|---|
| | |  |
| A16M SSSC R/L 09 | P0400802 | XT15-S35 |
| A20Q SSSC R/L 09 | P0400802 | XT15-S35 |
| A25R SSSC R/L 09 | P0400802 | XT15-S35 |





















(S) CENTER SCREW TOOLHOLDERS




Axial: 0°
Radial: -6°







| | | | |
|---|---|---|---|
| Finishing | Finishing | Finishing | Finishing |
| Flat  (09-11-16) | FP  (09-11-16) | FM  (09-11-16) | FK  (09-11-16) |
| Medium | Medium | Medium | Medium to Finishing |
| MP  (09-11-16) | MM  (09-11-16) | MK  (09-11-16) | LN  (11-16) |

| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|-------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212159500 | 212159400 | S10M STFC R/L 09 | 10 | 9 | 4,5 | 150 | 25 | 7 | 13 | TC.. 0902.. | 0,060 |  |  |
| 212159700 | 212159600 | S12M STFC R/L 09 | 12 | 11 | 5,5 | 150 | 25 | 9 | 16 | TC.. 0902.. | 0,150 |  |  |
| 212039500 | 212159800 | S12M STFC R/L 11 | 12 | 11 | 5,5 | 150 | 25 | 9 | 16 | TC.. 1102.. | 0,150 |  |  |
| 212323800 | 212323900 | S12Q STFC R/L 11 | 12 | 11 | 5,5 | 180 | 25 | 9 | 16 | TC.. 1102.. | 0,050 |  |  |
| 212160000 | 212159900 | S16R STFC R/L 11 | 16 | 15 | 7,5 | 200 | 30 | 11 | 20 | TC.. 1102.. | 0,300 |  |  |
| 212021000 | 212160100 | S20S STFC R/L 11 | 20 | 18 | 9,0 | 250 | 35 | 13 | 24 | TC.. 1102.. | 0,550 |  |  |
| 212250700 | 212324000 | S20S STFC R/L 16 | 20 | 18 | 9,0 | 250 | 35 | 13 | 24 | TC.. 16T3.. | 0,550 |  |  |
| 212160300 | 212160200 | S25T STFC R/L 16 | 25 | 23 | 11,5 | 300 | 40 | 17 | 31 | TC.. 16T3.. | 0,700 |  |  |
| 212160500 | 212160400 | S32U STFC R/L 16 | 32 | 30 | 15,0 | 350 | 50 | 22 | 39 | TC.. 16T3.. | 2,050 |  |  |
| 212160700 | 212160600 | S40V STFC R/L 16 | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | TC.. 16T3.. | 3,750 |  |  |






 Stock Items | Itens de stock

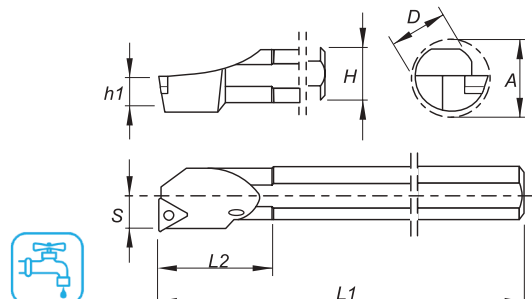
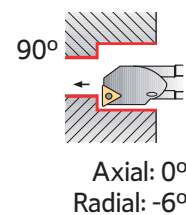
 Available under request | Disponível sob consulta | Disponible bajo consulta















SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Shim | Shim Screw | Screw | Wrench |
|------------------|---|---|---|---|
| S10M STFC R/L 09 |  |  |  |  |
| S12M STFC R/L 09 | - | - | P0220600 | XT06 |
| S12M STFC R/L 11 | - | - | P0250700 | XT07 |
| S12Q STFC R/L 11 | - | - | P0250700 | XT07 |
| S16R STFC R/L 11 | - | - | P0250700 | XT07 |
| S20S STFC R/L 11 | - | - | P0250700 | XT07 |
| S20S STFC R/L 16 | - | - | P0401100 | XT15-S35 |
| S25T STFC R/L 16 | - | - | P0401100 | XT15-S35 |
| S32U STFC R/L 16 | CT160302 | T05003500 | P0351500 | XT15-S35 |
| S40V STFC R/L 16 | CT160302 | T05003500 | P0351500 | XT15-S35 |

(S) CENTER SCREW TOOLHOLDERS

| | | | |
|---|---|---|---|
| Finishing | Finishing | Finishing | Finishing |
| Flat | FP | FM | FK |
|  |  |  |  |
| (09-11-16) | (09-11-16) | (09-11-16) | (09-11-16) |
| Medium | Medium | Medium | Medium to Finishing |
| MP | MM | MK | LN |
|  |  |  |  |
| (09-11-16) | (09-11-16) | (09-11-16) | (11-16) |







| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|-------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212324100 | 212324200 | A10H STFC R/L 09 | 10 | 9 | 4,5 | 100 | 25 | 7 | 13 | TC.. 0902.. | 0,040 |  |  |
| 212324300 | 212324400 | A12K STFC R/L 11 | 12 | 11 | 5,5 | 125 | 25 | 9 | 16 | TC.. 1102.. | 0,100 |  |  |
| 212324500 | 212324600 | A16M STFC R/L 11 | 16 | 15 | 7,5 | 150 | 30 | 11 | 20 | TC.. 1102.. | 0,200 |  |  |
| 212324700 | 212324800 | A20Q STFC R/L 11 | 20 | 18 | 9,0 | 180 | 35 | 13 | 24 | TC.. 1102.. | 0,400 |  |  |
| 212324900 | 212325000 | A25R STFC R/L 16 | 25 | 23 | 11,5 | 200 | 40 | 17 | 31 | TC.. 16T3.. | 0,700 |  |  |
| 212325100 | 212325200 | A32S STFC R/L 16 | 32 | 30 | 15,0 | 250 | 50 | 22 | 39 | TC.. 16T3.. | 1,400 |  |  |
| 212325300 | 212325400 | A40T STFC R/L 16 | 40 | 37 | 18,5 | 300 | 60 | 27 | 48 | TC.. 16T3.. | 2,650 |  |  |

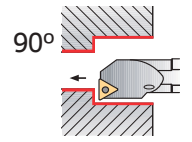
 Stock items | Itens de stock

 Available under request | Disponível sob consulta | Disponible bajo consulta

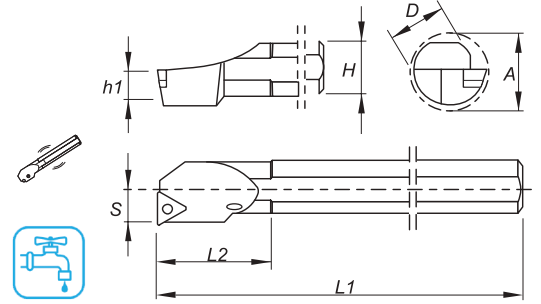
SPARE PARTS | Complementos | Repuestos









| Cutter Reference | Shim | Shim Screw | Screw | Wrench |
|------------------|---|---|---|---|
| |  |  |  |  |
| A10H STFC R/L 09 | - | - | P0220600 | XT06 |
| A12K STFC R/L 11 | - | - | P0250700 | XT07 |
| A16M STFC R/L 11 | - | - | P0250700 | XT07 |
| A20Q STFC R/L 11 | - | - | P0250700 | XT07 |
| A25R STFC R/L 16 | - | - | P0401100 | XT15-S35 |
| A32S STFC R/L 16 | CT160302 | T05003500 | P0351500 | XT15-S35 |
| A40T STFC R/L 16 | CT160302 | T05003500 | P0351500 | XT15-S35 |





(S) CENTER SCREW TOOLHOLDERS




Axial: 0°
Radial: -6°





| | | | |
|--|--|--|--|
| Finishing | Finishing | Finishing | Finishing |
| Flat | FP | FM | FK |
|  (09-11) |  (09-11) |  (09-11) |  (09-11) |
| Medium | Medium | Medium | Medium to Finishing |
| MP | MM | MK | LN |
|  (09-11) |  (09-11) |  (09-11) |  (11) |

| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|-----|-----|----|----|----|-------------|-------|--|--|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212326200 | 212326300 | E12Q STFC R/L 11 | 12 | 11 | 5,5 | 180 | 25 | 9 | 16 | TC.. 1102.. | 0,250 |  |  |
| 212326400 | 212326500 | E16R STFC R/L 11 | 16 | 15 | 7,5 | 200 | 30 | 11 | 20 | TC.. 1102.. | 0,600 |  |  |









 Stock Items | Itens de stock

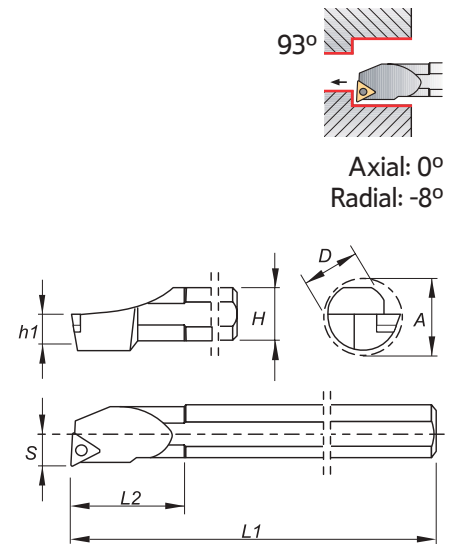
 Available under request | Disponível sob consulta | Disponible bajo consulta











SPARE PARTS || Complementos | Repuestos

| Cutter Reference | Screw | Wrench |
|------------------|---|---|
| E12M STFC R/L 11 |  P0250700 |  XT07 |
| E16R STFC R/L 11 | P0400802 | XT15-S35 |

(S) CENTER SCREW TOOLHOLDERS

| | | | | |
|--|--|--|--|--|
| Finishing | Finishing | Finishing | Finishing | Finishing wiper |
| Flat  (11-16) | FP  (11-16) | FM  (11-16) | FK  (11-16) | FW  (11-16) |
| Medium | Medium | Medium | Medium to Finishing wiper | Medium to Finishing |
| MP  (11-16) | MM  (11-16) | MK  (11-16) | MW  (11-16) | LN  (11-16) |



| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|-------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212029100 | 212029200 | S12M STUC R/L 11 | 12 | 11 | 5,5 | 150 | 25 | 9 | 16 | TC.. 1102.. | 0,150 |  |  |
| 212029300 | 212029400 | S16R STUC R/L 16 | 16 | 15 | 7,5 | 200 | 30 | 11 | 20 | TC.. 16T3.. | 0,300 |  |  |
| 212036900 | 212029500 | S20S STUC R/L 16 | 20 | 18 | 9,0 | 250 | 35 | 13 | 24 | TC.. 16T3.. | 0,550 |  |  |
| 212029600 | 212029700 | S25T STUC R/L 16 | 25 | 23 | 11,5 | 300 | 40 | 17 | 31 | TC.. 16T3.. | 0,700 |  |  |
| 212160800 | 212044600 | S32U STUC R/L 16 | 32 | 30 | 15,0 | 350 | 50 | 22 | 39 | TC.. 16T3.. | 2,050 |  |  |

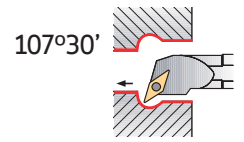
 Stock Items | Itens de stock

 Available under request | Disponível sob consulta | Disponible bajo consulta









SPARE PARTS | Complementos | Repuestos

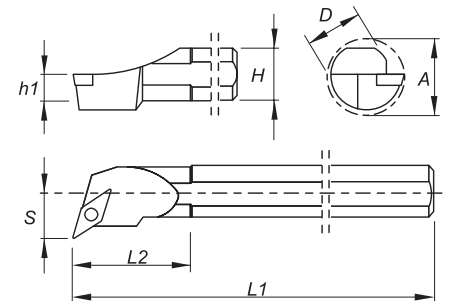
| Cutter Reference | Shim  | Shim Screw  | Screw  | Wrench  |
|------------------|---|---|--|---|
| S12M STUC R/L 11 | - | - | P0250700 | XT07 |
| S16R STUC R/L 16 | - | - | P0401100 | XT15-S35 |
| S20S STUC R/L 16 | - | - | P0401100 | XT15-S35 |
| S25T STUC R/L 16 | - | - | P0401100 | XT15-S35 |
| S32U STUC R/L 16 | CT160302 | T05003500 | P0351500 | XT15-S35 |











(S) CENTER SCREW TOOLHOLDERS



Axial: 0°
Radial: -6°

| | | | |
|---|---|---|---|
| Finishing | Finishing | Finishing | Finishing |
| Flat | FP | FM | FK |
|  |  |  |  |
| (11-16) | (11-16) | (11-16) | (11-16) |
| Medium | Medium | Medium | Medium to Finishing |
| MP | MM | MK | LN |
|  |  |  |  |
| (11-16) | (11-16) | (11-16) | (11-16) |







| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|-------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212165000 | 212165100 | S16R SVQC R/L 11 | 16 | 15 | 7,5 | 200 | 30 | 11 | 20 | VC.. 1103.. | 0,300 |  |  |
| 212165200 | 212165300 | S20S SVQC R/L 11 | 20 | 18 | 9,0 | 250 | 35 | 13 | 24 | VC.. 1103.. | 0,550 |  |  |
| 212165500 | 212165400 | S16R SVQC R/L 13 | 16 | 15 | 7,5 | 200 | 30 | 13 | 22 | VC.. 1103.. | 0,300 |  |  |
| 212165700 | 212165600 | S20S SVQC R/L 13 | 20 | 18 | 9,0 | 250 | 35 | 13 | 24 | VC.. 1103.. | 0,550 |  |  |
| 212165900 | 212165800 | S25T SVQC R/L 16 | 25 | 23 | 11,5 | 300 | 40 | 17 | 31 | VC.. 1604.. | 0,700 |  |  |




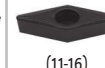




 Stock Items | Itens de stock

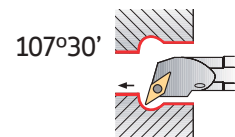
 Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS || Complementos | Repuestos

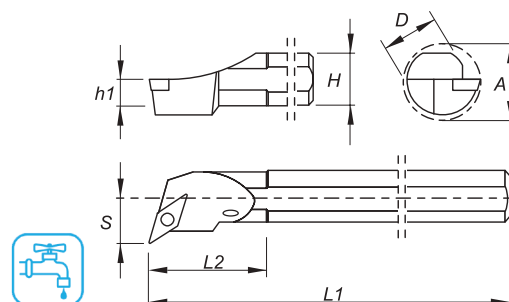
| Cutter Reference | Shim | Shim Screw | Screw | Wrench |
|------------------|---|---|---|---|
| S16R SVQC R/L 11 |  |  |  |  |
| S20S SVQC R/L 11 | - | - | P0250700 | XT07 |
| S16R SVQC R/L 13 | - | - | P0300900 | XT08 |
| S20S SVQC R/L 13 | - | - | P0300900 | XT08 |
| S25T SVQC R/L 16 | CV160300 | T05003500 | P0351500 | XT15-S35 |











(S) CENTER SCREW TOOLHOLDERS

| | | | |
|---|---|---|---|
| Finishing | Finishing | Finishing | Finishing |
| Flat | FP | FM | FK |
|  |  |  |  |
| (11-16) | (11-16) | (11-16) | (11-16) |
| Medium | Medium | Medium | Medium to Finishing |
| MP | MM | MK | LN |
|  |  |  |  |
| (11-16) | (11-16) | (11-16) | (11-16) |



Axial: 0°
Radial: -6°




| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|-------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212326600 | 212326700 | A16M SVQC R/L 11 | 16 | 15 | 7,5 | 150 | 30 | 11 | 20 | VC.. 1103.. | 0,200 |  |  |
| 212326800 | 212326900 | A20Q SVQC R/L 11 | 20 | 18 | 9,0 | 180 | 35 | 13 | 24 | VC.. 1103.. | 0,400 |  |  |
| 212327000 | 212327100 | A25R SVQC R/L 16 | 25 | 23 | 11,5 | 200 | 40 | 17 | 31 | VC.. 1604.. | 0,700 |  |  |
| 212327200 | 212327300 | A32S SVQC R/L 16 | 32 | 30 | 15,0 | 250 | 50 | 22 | 39 | VC.. 1604.. | 1,400 |  |  |
| 212327400 | 212327500 | A40T SVQC R/L 16 | 40 | 37 | 18,5 | 300 | 60 | 27 | 48 | VC.. 1604.. | 2,650 |  |  |

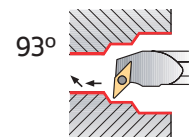
 Stock Items | Itens de stock

 Available under request | Disponível sob consulta | Disponible bajo consulta








SPARE PARTS || Complementos | Repuestos

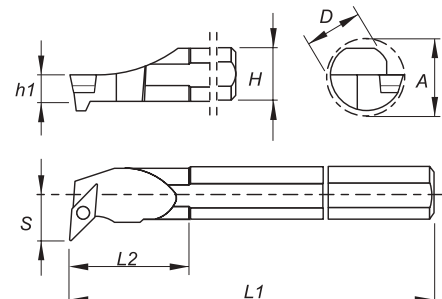
| Cutter Reference | Shim | Shim Screw | Screw | Wrench |
|------------------|---|---|---|---|
| A16M SVQC R/L 11 |  |  |  |  |
| A20Q SVQC R/L 11 | - | - | P0250700 | XT07 |
| A25R SVQC R/L 16 | CV160300 | T05003500 | P0351500 | XT15-S35 |
| A32S SVQC R/L 16 | CV160300 | T05003500 | P0351500 | XT15-S35 |
| A40T SVQC R/L 16 | CV160300 | T05003500 | P0351500 | XT15-S35 |







(S) CENTER SCREW TOOLHOLDERS



Axial: 0°
Radial: -5°

| | | | |
|---|---|---|---|
| Finishing | Finishing | Finishing | Finishing |
| Flat | FP | FM | FK |
|  (16) |  (16) |  (16) |  (16) |
| Medium | Medium | Medium | |
| MP | MM | MK | |
|  (16) |  (16) |  (16) | |



| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|-------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212056200 | 212327600 | S25T SVUB R/L 16 | 25 | 23 | 11,5 | 300 | 40 | 17 | 31 | VB.. 1604.. | 0,700 |  |  |
| 212327700 | 212327800 | S32U SVUB R/L 16 | 32 | 30 | 15,0 | 350 | 50 | 22 | 39 | VB.. 1604.. | 2,050 |  |  |
| 212327900 | 212328000 | S40V SVUB R/L 16 | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | VB.. 1604.. | 3,750 |  |  |









 Stock Items | Itens de stock

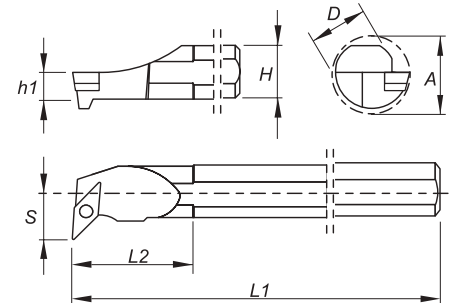
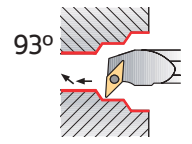
 Available under request | Disponível sob consulta | Disponible bajo consulta











SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Shim | Shim Screw | Screw | Wrench |
|------------------|---|--|---|---|
| S25T SVUB R/L 16 |  CV160300 |  T05003500 |  P0351500 |  XT15-S35 |
| S32U SVUB R/L 16 | CV160300 | T05003500 | P0351500 | XT15-S35 |
| S40V SVUB R/L 16 | CV160300 | T05003500 | P0351500 | XT15-S35 |

(S) CENTER SCREW TOOLHOLDERS

| | | | |
|---|---|---|---|
| Finishing | Finishing | Finishing | Finishing |
| Flat | FP | FM | FK |
|  |  |  |  |
| (11-16) | (11-16) | (11-16) | (11-16) |
| Medium | Medium | Medium | Medium to Finishing |
| MP | MM | MK | LN |
|  |  |  |  |
| (11-16) | (11-16) | (11-16) | (11-16) |



| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|-------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212166000 | 212166100 | S16R SVUC R/L 11 | 16 | 15 | 7,5 | 200 | 30 | 11 | 20 | VC.. 1103.. | 0,300 |  |  |
| 212166200 | 212166300 | S20S SVUC R/L 11 | 20 | 18 | 9,0 | 250 | 35 | 13 | 24 | VC.. 1103.. | 0,550 |  |  |
| 212328100 | 212166400 | S25T SVUC R/L 16 | 25 | 23 | 11,5 | 300 | 40 | 17 | 31 | VC.. 1604.. | 0,700 |  |  |
| 212328200 | 212166500 | S32U SVUC R/L 16 | 32 | 30 | 15,0 | 350 | 50 | 22 | 39 | VC.. 1604.. | 2,050 |  |  |
| 212166700 | 212166600 | S40V SVUC R/L 16 | 40 | 37 | 18,5 | 400 | 60 | 27 | 48 | VC.. 1604.. | 3,750 |  |  |

 Stock Items | Itens de stock

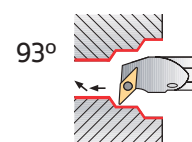
 Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS || Complementos | Repuestos









| Cutter Reference | Shim | Shim Screw | Screw | Wrench |
|------------------|---|---|---|---|
| S16R SVUC R/L 11 |  |  |  |  |
| S20S SVUC R/L 11 | - | - | P0250700 | XT07 |
| S25T SVUC R/L 16 | CV160300 | T05003500 | P0351500 | XT15-S35 |
| S32U SVUC R/L 16 | CV160300 | T05003500 | P0351500 | XT15-S35 |
| S40V SVUC R/L 16 | CV160300 | T05003500 | P0351500 | XT15-S35 |

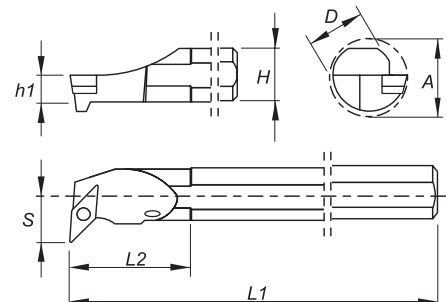
C
TURNING
Insert selection
Overview
Negative inserts
Positive inserts
PCBN & PCD inserts
Heavy turning
External Toolholders
Internal Toolholders
Automatic Lathes
Spare Parts
Technical Data











(S) CENTER SCREW TOOLHOLDERS



Axial: 0°
Radial: -5°

| | | | |
|---|---|---|---|
| Finishing | Finishing | Finishing | Finishing |
| Flat | FP | FM | FK |
|  |  |  |  |
| (11-16) | (11-16) | (11-16) | (11-16) |
| Medium | Medium | Medium | Medium to Finishing |
| MP | MM | MK | LN |
|  |  |  |  |
| (11-16) | (11-16) | (11-16) | (11-16) |



| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|----|----|-------------|-------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | A | | | R | L |
| 212328300 | 212328400 | A16M SVUC R/L 11 | 16 | 15 | 7,5 | 150 | 30 | 11 | 20 | VC.. 1103.. | 0,200 |  |  |
| 212328500 | 212328600 | A20Q SVUC R/L 11 | 20 | 18 | 9,0 | 180 | 35 | 13 | 24 | VC.. 1103.. | 0,400 |  |  |
| 212328700 | 212328800 | A25R SVUC R/L 16 | 25 | 23 | 11,5 | 200 | 40 | 17 | 31 | VC.. 1604.. | 0,700 |  |  |
| 212328900 | 212329000 | A32S SVUC R/L 16 | 32 | 30 | 15,0 | 250 | 50 | 22 | 39 | VC.. 1604.. | 1,400 |  |  |
| 212329100 | 212329200 | A40T SVUC R/L 16 | 40 | 37 | 18,5 | 300 | 60 | 27 | 48 | VC.. 1604.. | 2,650 |  |  |









 Stock items | Itens de stock

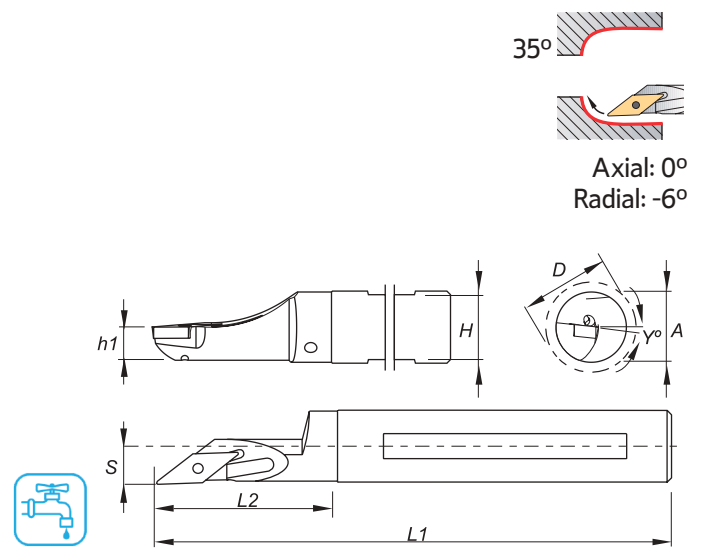
 Available under request | Disponível sob consulta | Disponible bajo consulta







SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Shim | Shim Screw | Screw | Wrench |
|------------------|---|---|---|---|
| A16M SVUC R/L 11 |  |  |  |  |
| A20Q SVUC R/L 11 | - | - | P0250700 | XT07 |
| A25R SVUC R/L 16 | CV160300 | T05003500 | P0351500 | XT15-S35 |
| A32S SVUC R/L 16 | CV160300 | T05003500 | P0351500 | XT15-S35 |
| A40T SVUC R/L 16 | CV160300 | T05003500 | P0351500 | XT15-S35 |

(S) CENTER SCREW TOOLHOLDERS

| | | | |
|---|---|---|---|
| Finishing | Finishing | Finishing | Finishing |
| Flat | FP | FM | FK |
|  |  |  |  |
| (11-16) | (11-16) | (11-16) | (11-16) |
| Medium | Medium | Medium | Medium to Finishing |
| MP | MM | MK | LN |
|  |  |  |  |
| (11-16) | (11-16) | (11-16) | (11-16) |




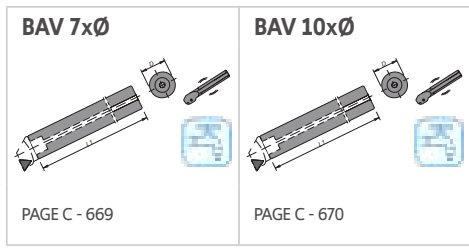
| Order Code | | Reference | Dimensions (mm) | | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|------|-----|----|---|----|----|-------------|-------|---|---|
| R | L | | D | H | h1 | L1 | L2 | S | Y° | A | | | R | L |
| 212362400 | 212362500 | A16M SVJC R/L 11 | 16 | 15 | 7,5 | 150 | 22 | 2 | 6 | 22 | VC.. 1103.. | 0,200 |  |  |
| 212362600 | 212362700 | A20Q SVJC R/L 11 | 20 | 18 | 9,0 | 180 | 25 | 2 | 5 | 25 | VC.. 1103.. | 0,300 |  |  |
| 212362800 | 212362900 | A25R SVJC R/L 16 | 25 | 23 | 11,5 | 200 | 28 | 2 | 4 | 28 | VC.. 1604.. | 0,650 |  |  |

 Stock Items | Itens de stock

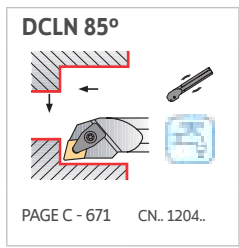
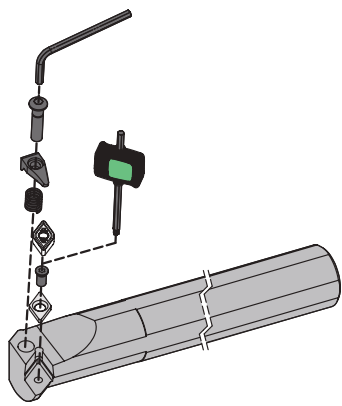
 Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS || Complementos | Repuestos

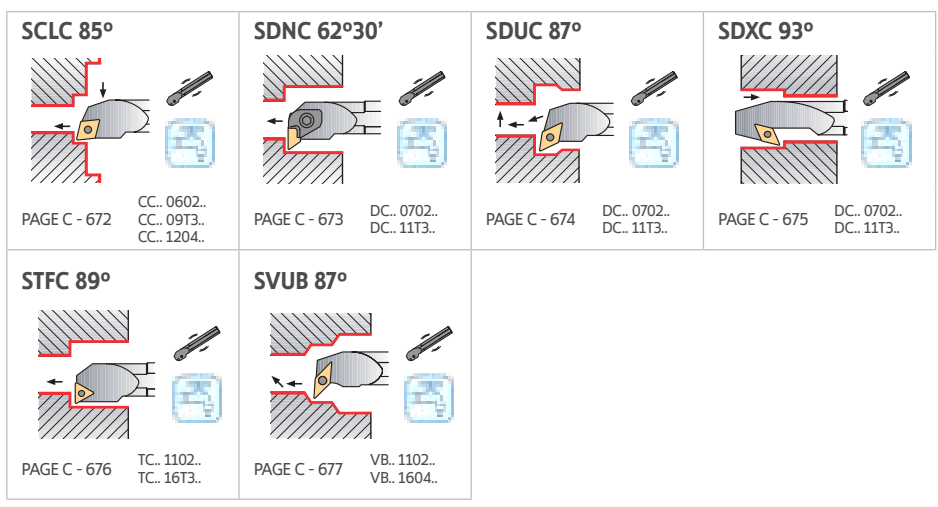
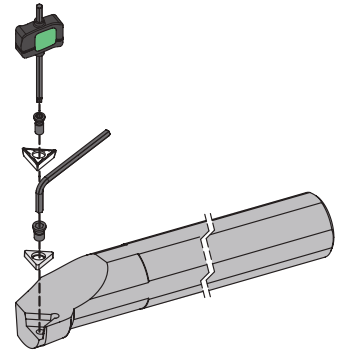
| Cutter Reference | Screw | Wrench |
|------------------|----------|---|
| | |  |
| A16M SVJC R/L 11 | P0250700 | XT07 |
| A20Q SVJC R/L 11 | P0250700 | XT07 |
| A25R SVJC R/L 16 | P0401100 | XT15-S35 |

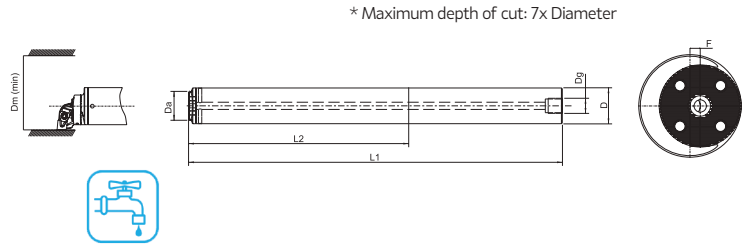


(D) DIMPLE LOCK ANTI VIBRATION FOR INTERNAL TURNING



(S) CENTER SCREW ANTI VIBRATION FOR INTERNAL TURNING

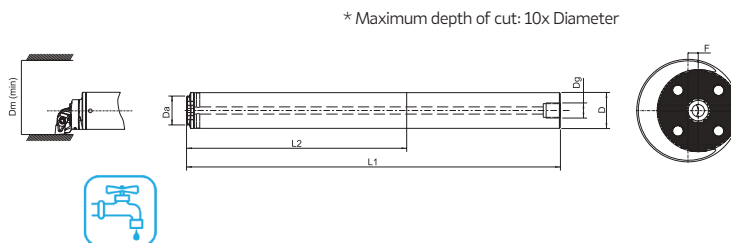




| Order Code | Reference | Dimensions (mm) | | | | | | | Stock |
|------------|-------------|-----------------|-----|---------|----|-----|-----|-------|-------|
| | | ØD | ØDa | Dm(min) | F | L1 | L2 | ØDg | |
| 212454800 | AVB16-16-7D | 16 | 16 | 20 | - | 156 | 100 | G1/8" | ⊗ |
| 212454900 | AVB20-20-7D | 20 | 20 | 25 | - | 200 | 125 | G1/4" | ⊗ |
| 212455000 | AVB25-25-7D | 25 | 25 | 32 | - | 255 | 155 | G1/4" | ⊗ |
| 212455100 | AVB32-32-7D | 32 | 32 | 40 | - | 320 | 190 | G3/8" | ⊗ |
| 212455200 | AVB40-40-7D | 40 | 40 | 50 | - | 408 | 240 | G1/2" | ○ |
| 212455300 | AVB50-40-7D | 50 | 40 | 60 | 5 | 518 | 305 | G1/2" | ○ |
| 212455400 | AVB60-40-7D | 60 | 40 | 72 | 10 | 628 | 380 | G3/4" | ○ |

⊗ Stock Items | Itens de stock

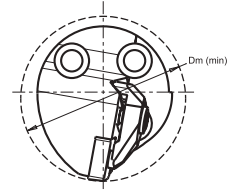
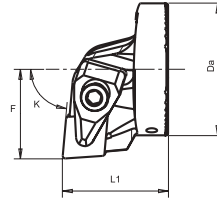
○ Available under request | Disponível sob consulta | Disponible bajo consulta



| Order Code | Reference | Dimensions (mm) | | | | | | | Stock |
|------------|--------------|-----------------|-----|----------|----|-----|-----|-------|-------|
| | | ØD | ØDa | ØDm(min) | F | L1 | L2 | ØDg | |
| 212455500 | AVB25-25-10D | 25 | 25 | 32 | - | 330 | 255 | G1/4" | ⊗ |
| 212455600 | AVB32-32-10D | 32 | 32 | 40 | - | 416 | 320 | G3/8" | ⊗ |
| 212455700 | AVB40-40-10D | 40 | 40 | 50 | - | 528 | 410 | G1/2" | ○ |
| 212455800 | AVB50-40-10D | 50 | 40 | 60 | 5 | 668 | 520 | G1/2" | ○ |
| 212455900 | AVB60-40-10D | 60 | 40 | 72 | 10 | 808 | 630 | G3/4" | ○ |

⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta



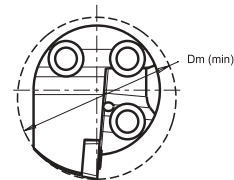
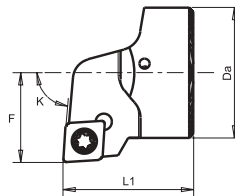
| L | R | Reference | Dimensions (mm) | | | | | | Stock | |
|-----------|-----------|-------------------|-----------------|-----|----|----|----|-----------|-------|---|
| | | | ØDa | ØDm | F | L1 | L2 | Insert | L | R |
| 212459100 | 212456000 | AVH32 DCLN R/L-12 | 32 | 40 | 22 | 38 | - | CN.. 1204 | ○ | ⊗ |
| 212459200 | 212456100 | AVH40 DCLN R/L-12 | 40 | 50 | 27 | 38 | - | CN.. 1204 | ○ | ○ |

⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS || Complementos | Repuestos

| Spring | Clamp | Clamp Screw | Wrench |
|---|---|---|---|
|  |  |  |  |
| M09513 | GA07002 | D0602900 | XT15-S35 |
| M09513 | GA07002 | D0602900 | XT15-S35 |



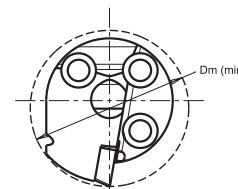
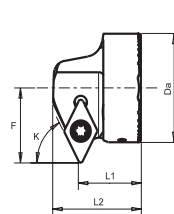
| L | R | Reference | Dimensions (mm) | | | | | | Stock | |
|-----------|-----------|-------------------|-----------------|-----|----|----|----|-----------|-------|---|
| | | | ØDa | ØDm | F | L1 | L2 | Insert | L | R |
| 212459300 | 212456100 | AVH16 SCLC R/L-06 | 16 | 20 | 11 | 20 | - | CC.. 0602 | ⊗ | ⊗ |
| 212459400 | 212456200 | AVH20 SCLC R/L-09 | 20 | 25 | 13 | 20 | - | CC.. 09T3 | ⊗ | ⊗ |
| 212459500 | 212456300 | AVH25 SCLC R/L-09 | 25 | 32 | 17 | 20 | - | CC.. 09T3 | ⊗ | ⊗ |
| 212459600 | 212456400 | AVH32 SCLC R/L-09 | 32 | 40 | 22 | 32 | - | CC.. 09T3 | ⊗ | ⊗ |
| 212459700 | 212456500 | AVH40 SCLC R/L-12 | 40 | 50 | 27 | 38 | - | CC.. 1204 | ○ | ○ |

⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS | Complementos | Repuestos

| Reference | Shim | Shim Screw | Screw | Wrench |
|-------------------|---|---|---|---|
| AVH16 SCLC R/L-06 |  |  |  |  |
| AVH16 SCLC R/L-06 | - | - | P0250700 | XT07 |
| AVH20 SCLC R/L-09 | - | - | P0401100 | XT15-S35 |
| AVH25 SCLC R/L-09 | - | - | P0401100 | XT15-S35 |
| AVH32 SCLC R/L-09 | - | - | P0401100 | XT15-S35 |
| AVH40 SCLC R/L-12 | CC120401 | T06004000 | P0401400 | XT15-S40 |



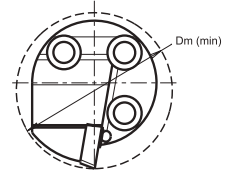
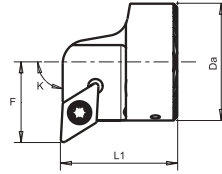
| L | R | Reference | Dimensions (mm) | | | | | | Stock | |
|-----------|-----------|-------------------|-----------------|-----|----|----|------|-----------|-------|---|
| | | | ØDa | ØDm | F | L1 | L2 | Insert | L | R |
| 212460800 | 212457700 | AVH16 SDNC R/L-07 | 16 | 22 | 13 | 15 | 19,5 | DC.. 0702 | | |
| 212460900 | 212457800 | AVH20 SDNC R/L-07 | 20 | 27 | 15 | 15 | 19,5 | DC.. 0702 | | |
| 212461000 | 212457900 | AVH25 SDNC R/L-07 | 25 | 33 | 18 | 15 | 19,5 | DC.. 0702 | | |
| 212461100 | 212458000 | AVH32 SDNC R/L-11 | 32 | 40 | 22 | 20 | 28 | DC.. 11T3 | | |
| 212461200 | 212458100 | AVH40 SDNC R/L-11 | 40 | 50 | 27 | 20 | 28 | DC.. 11T3 | | |

Stock Items | Itens de stock

Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS || Complementos | Repuestos

| Reference | Shim | Shim Screw | Screw | Wrench |
|-------------------|----------|------------|----------|----------|
| AVH16 SDNC R/L-07 | | | | |
| AVH16 SDNC R/L-07 | - | - | P0250700 | XT07 |
| AVH20 SDNC R/L-07 | - | - | P0250700 | XT07 |
| AVH25 SDNC R/L-11 | - | - | P0401100 | XT15-S35 |
| AVH32 SDNC R/L-11 | CD110301 | T05003500 | P0351500 | XT15-S35 |
| AVH40 SDNC R/L-11 | CD110301 | T05003500 | P0351500 | XT15-S35 |



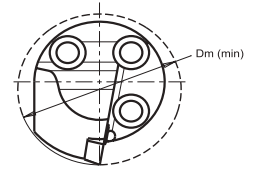
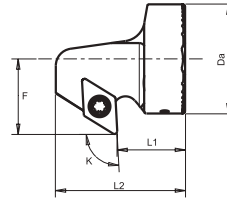
| L | R | Reference | Dimensions (mm) | | | | | | Stock | |
|-----------|-----------|-------------------|-----------------|-----|----|----|----|-----------|-------|---|
| | | | ØDa | ØDm | F | L1 | L2 | Insert | L | R |
| 212459800 | 212456700 | AVH16 SDUC R/L-07 | 16 | 20 | 11 | 20 | - | DC.. 0702 | | |
| 212459900 | 212456800 | AVH20 SDUC R/L-07 | 20 | 25 | 13 | 20 | - | DC.. 0702 | | |
| 212460000 | 212456900 | AVH25 SDUC R/L-11 | 25 | 32 | 17 | 20 | - | DC.. 11T3 | | |
| 212460100 | 212457000 | AVH32 SDUC R/L-11 | 32 | 40 | 22 | 32 | - | DC.. 11T3 | | |
| 212460200 | 212457100 | AVH40 SDUC R/L-11 | 40 | 50 | 27 | 32 | - | DC.. 11T3 | | |

Stock Items | Itens de stock

Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS || Complementos | Repuestos

| Reference | Shim | Shim Screw | Screw | Wrench |
|-------------------|----------|------------|----------|----------|
| AVH16 SDUC R/L-07 | | | | |
| AVH16 SDUC R/L-07 | - | - | P0250700 | XT07 |
| AVH20 SDUC R/L-07 | - | - | P0250700 | XT07 |
| AVH25 SDUC R/L-11 | - | - | P0401100 | XT15-S35 |
| AVH32 SDUC R/L-11 | CD110301 | T05003500 | P0351500 | XT15-S35 |
| AVH40 SDUC R/L-11 | CD110301 | T05003500 | P0351500 | XT15-S35 |



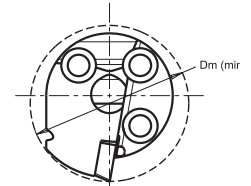
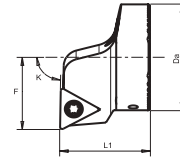
| L | R | Reference | Dimensions (mm) | | | | | | Stock | |
|-----------|-----------|-------------------|-----------------|-----|----|----|------|-----------|-------|---|
| | | | ØDa | ØDm | F | L1 | L2 | Insert | L | R |
| 212460300 | 212457200 | AVH16 SDXC R/L-07 | 16 | 22 | 13 | 15 | 26,5 | DC.. 0702 | | |
| 212460400 | 212457300 | AVH20 SDXC R/L-07 | 20 | 27 | 15 | 15 | 26,5 | DC.. 0702 | | |
| 212460500 | 212457400 | AVH25 SDXC R/L-07 | 25 | 33 | 18 | 15 | 26,5 | DC.. 0702 | | |
| 212460600 | 212457500 | AVH32 SDXC R/L-11 | 32 | 40 | 22 | 20 | 38 | DC.. 11T3 | | |
| 212460700 | 212457600 | AVH40 SDXC R/L-11 | 40 | 50 | 27 | 20 | 38 | DC.. 11T3 | | |

Stock items | Itens de stock

Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS || Complementos | Repuestos

| Reference | Shim | Shim Screw | Screw | Wrench |
|-------------------|----------|------------|----------|----------|
| AVH16 SDXC R/L-07 | | | | |
| AVH16 SDXC R/L-07 | - | - | P0250700 | XT07 |
| AVH20 SDXC R/L-07 | - | - | P0250700 | XT07 |
| AVH25 SDXC R/L-11 | - | - | P0401100 | XT15-S35 |
| AVH32 SDXC R/L-11 | CD110301 | T05003500 | P0351500 | XT15-S35 |
| AVH40 SDXC R/L-11 | CD110301 | T05003500 | P0351500 | XT15-S35 |







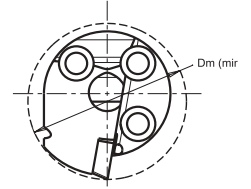
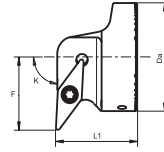
| L | R | Reference | Dimensions (mm) | | | | | | Stock | |
|-----------|-----------|-------------------|-----------------|-----|----|----|----|-----------|-------|---|
| | | | ØDa | ØDm | F | L1 | L2 | Insert | L | R |
| 212461700 | 212458600 | AVH16 STFC R/L-11 | 16 | 20 | 11 | 20 | - | TC.. 1102 | ○ | ⊗ |
| 212461800 | 212458700 | AVH20 STFC R/L-11 | 20 | 25 | 13 | 20 | - | TC.. 1102 | ○ | ⊗ |
| 212461900 | 212458800 | AVH25 STFC R/L-11 | 25 | 32 | 17 | 20 | - | TC.. 1102 | ○ | ⊗ |
| 212462000 | 212458900 | AVH32 STFC R/L-16 | 32 | 40 | 22 | 32 | - | TC.. 16T3 | ○ | ○ |
| 212462100 | 212459000 | AVH40 STFC R/L-16 | 40 | 50 | 27 | 32 | - | TC.. 16T3 | ○ | ○ |

⊗ Stock Items | Itens de stock

○ Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS || Complementos | Repuestos

| Reference | Shim | Shim Screw | Screw | Wrench |
|-------------------|---|---|---|---|
| AVH16 STFC R/L-11 |  |  |  |  |
| AVH16 STFC R/L-11 | - | - | - | XT07 |
| AVH20 STFC R/L-11 | - | - | - | XT07 |
| AVH25 STFC R/L-16 | - | - | P0401100 | XT15-S35 |
| AVH32 STFC R/L-16 | CT160302 | T05003500 | P0351500 | XT15-S35 |
| AVH40 STFC R/L-16 | CT160302 | T05003500 | P0351500 | XT15-S35 |



| L | R | Reference | Dimensions (mm) | | | | | | Stock | |
|-----------|-----------|-------------------|-----------------|-----|----|----|----|-----------|-------|---|
| | | | ØDa | ØDm | F | L1 | L2 | Insert | L | R |
| 212461300 | 212458200 | AVH20 SVUB R/L-11 | 20 | 27 | 16 | 20 | - | VB.. 1102 | ○ | ⊗ |
| 212461400 | 212458300 | AVH25 SVUB R/L-11 | 25 | 31 | 17 | 25 | - | VB.. 1102 | ○ | ⊗ |
| 212461500 | 212458400 | AVH32 SVUB R/L-16 | 32 | 40 | 22 | 32 | - | VB.. 1604 | ○ | ⊗ |
| 212461600 | 212458500 | AVH40 SVUB R/L-16 | 40 | 50 | 27 | 32 | - | VB.. 1604 | ○ | ○ |

⊗ Stock Items | Itens de stock

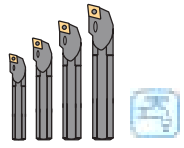
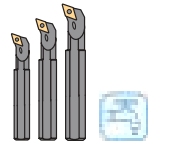
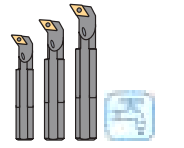
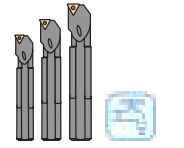
○ Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS || Complementos | Repuestos

| Reference | Shim | Shim Screw | Screw | Wrench |
|-------------------|----------|------------|----------|----------|
| AVH20 SVUB R/L-11 | - | - | P0250700 | XT07 |
| AVH25 SVUB R/L-11 | - | - | P0250700 | XT07 |
| AVH32 SVUB R/L-16 | CV160300 | T05003500 | P0351500 | XT15-S35 |
| AVH40 SVUB R/L-16 | CV160300 | T05003500 | P0351500 | XT15-S35 |

Tooling solutions for Wind Energy Industry
















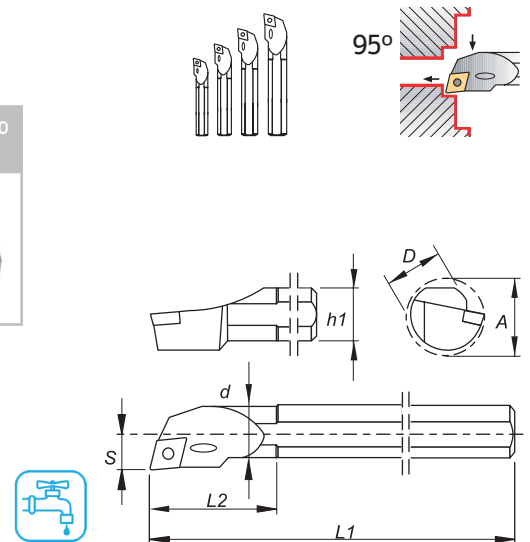
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|--|--|--|---|
| <p>PK SCLC 95°</p>  <p>PAGE C - 680 CC.. 0602..</p> | <p>PK SDQC 107°30'</p>  <p>PAGE C - 681 DC.. 0702..</p> | <p>PK SDUC 93°</p>  <p>PAGE C - 682 DC.. 0702..</p> | <p>PK STFC 90°</p>  <p>PAGE C - 683 TC.. 1102..</p> |
|--|--|--|---|













INTERNAL TOOLHOLDERS SET

Conjuntos de ferramentas de torneamento interno | Grupos de herramientas de torneado interno

| | | | | | | |
|---|---|---|---|---|---|---|
| Finishing | Finishing | Finishing | Finishing | Finishing | Finishing wiper | Medium to Finishing |
| Flat  (06) | FP  (06) | BO  (06) | FM  (06) | FK  (06) | FW  (06) | LM  (06) |
| Medium | Medium | Medium | Medium to Finishing wiper | Finishing to Fine finishing | Medium to Finishing | |
| MP  (06) | MM  (06) | MK  (06) | MW  (06) | FS  (06) | LN  (06) | |





| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|-----|----|---|----|----|-------------|-------|---|---|
| R Pack | R | | D | d | L1 | L2 | S | A | h1 | | | Pack | R |
| 212359300 | 212250500 | A0608H SCLC R 06 | 8 | 6 | 100 | 25 | 4 | 10 | 7 | CC.. 0602.. | 0,400 |  |  |
| | 212359400 | A0810J SCLC R 06 | 10 | 8 | 110 | 32 | 6 | 12 | 9 | CC.. 0602.. | | |  |
| | 212250600 | A1012K SCLC R 06 | 12 | 10 | 125 | 38 | 7 | 14 | 11 | CC.. 0602.. | | |  |
| | 212167900 | A1216M SCLC R 06 | 16 | 12 | 150 | 50 | 9 | 18 | 15 | CC.. 0602.. | | |  |

| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|-----|----|---|----|----|-------------|-------|---|---|
| L Pack | L | | D | d | L1 | L2 | S | A | L1 | | | Pack | L |
| 212359500 | 212359600 | A0608H SCLC L 06 | 8 | 6 | 100 | 25 | 4 | 10 | 7 | CC.. 0602.. | 0,400 |  |  |
| | 212359700 | A0810J SCLC L 06 | 10 | 8 | 110 | 32 | 6 | 12 | 9 | CC.. 0602.. | | |  |
| | 212359800 | A1012K SCLC L 06 | 12 | 10 | 125 | 38 | 7 | 14 | 11 | CC.. 0602.. | | |  |
| | 212359900 | A1216M SCLC L 06 | 16 | 12 | 150 | 50 | 9 | 18 | 15 | CC.. 0602.. | | |  |

 Stock items | Itens de stock  Available under request | Disponível sob consulta | Disponible bajo consulta

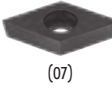










SPARE PARTS || Complementos | Repuestos

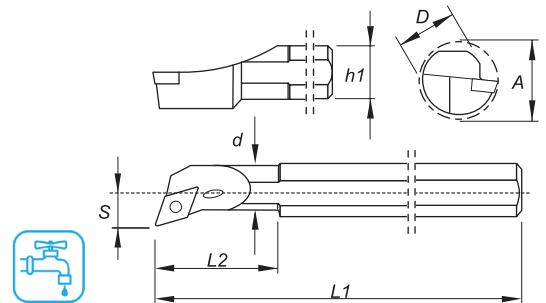
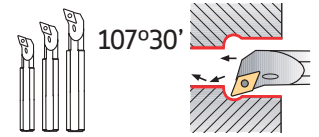
| Cutter Reference | Screw  | Wrench  |
|--------------------|--|---|
| A0608H SCLC R/L 06 | P0200601 | XT07 |
| A0810J SCLC R/L 06 | P0200601 | XT07 |
| A1012K SCLC R/L 06 | P0250700 | XT07 |
| A1216M SCLC R/L 06 | P0250700 | XT07 |





PK SDQC 107°30' || TOOLHOLDERS | Ferros de torno | Herramientas de torneado





INTERNAL TOOLHOLDERS SET

Conjuntos de ferramentas de torneamento interno | Grupos de herramientas de torneado interno

| | | | | | |
|---|---|---|---|---|---|
| Finishing | Finishing | Finishing | Finishing | Finishing wiper | Medium to Finishing |
| Flat | FP | FM | FK | FW | LM |
|  (07) |  (07) |  (07) |  (07) |  (07) |  (07) |
| Medium | Medium | Medium | Finishing to Fine Finishing | Finishing to Fine Finishing | |
| MP | MM | MK | FS | LN | |
|  (07) |  (07) |  (07) |  (07) |  (07) | |




| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|-----|----|----|------|----|-------------|-------|---|--|
| R Pack | R | | D | d | L1 | L2 | S | A | h1 | | | Pack | R |
| 212360000 | 212360100 | A0810J SDQC R 07 | 10 | 8 | 110 | 32 | 7 | 12,5 | 9 | DC.. 0702.. | 0,350 |  |  |
| | 212360200 | A1012K SDQC R 07 | 12 | 10 | 125 | 38 | 9 | 15,5 | 11 | DC.. 0702.. | | |  |
| | 212360300 | A1216M SDQC R 07 | 16 | 12 | 150 | 50 | 11 | 19,5 | 15 | DC.. 0702.. | | |  |

| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|-----|----|----|------|----|-------------|-------|---|---|
| L Pack | L | | D | d | L1 | L2 | S | A | L1 | | | Pack | L |
| 212360400 | 212360500 | A0810J SDQC L 07 | 10 | 8 | 110 | 32 | 7 | 12,5 | 9 | DC.. 0702.. | 0,350 |  |  |
| | 212360600 | A1012K SDQC L 07 | 12 | 10 | 125 | 38 | 9 | 15,5 | 11 | DC.. 0702.. | | |  |
| | 212360700 | A1216M SDQC L 07 | 16 | 12 | 150 | 50 | 11 | 19,5 | 15 | DC.. 0702.. | | |  |

 Stock Items | Itens de stock

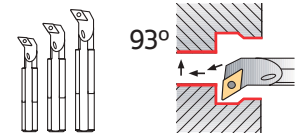
 Available under request | Disponível sob consulta | Disponible bajo consulta

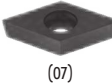










SPARE PARTS || Complementos | Repuestos

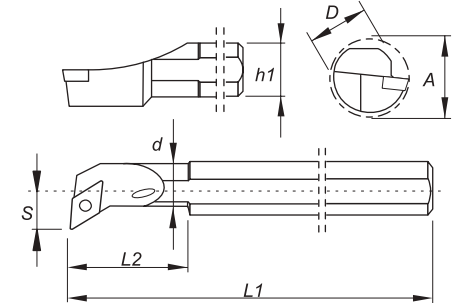
| Cutter Reference | Screw | Wrench |
|--------------------|----------|---|
| | |  |
| A0810J SDQC R/L 07 | P0200601 | XT07 |
| A1012K SDQC R/L 07 | P0250700 | XT07 |
| A1216M SDQC R/L 07 | P0250700 | XT07 |





INTERNAL TOOLHOLDERS SET




Conjuntos de ferramentas de torneamento interno | Grupos de herramientas de torneado interno




| | | | | | |
|---|---|---|---|---|---|
| Finishing | Finishing | Finishing | Finishing | Finishing wiper | Medium to Finishing |
| Flat | FP | FM | FK | FW | LM |
|  (07) |  (07) |  (07) |  (07) |  (07) |  (07) |
| Medium | Medium | Medium | Finishing to Fine Finishing | Finishing to Fine Finishing | |
| MP | MM | MK | FS | LN | |
|  (07) |  (07) |  (07) |  (07) |  (07) | |




| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|-----|----|----|------|----|-------------|-------|---|--|
| R Pack | R | | D | d | L1 | L2 | S | A | h1 | | | Pack | R |
| 212360800 | 212360900 | A0810J SDUC R 07 | 10 | 8 | 110 | 32 | 7 | 12,5 | 9 | DC.. 0702.. | 0,350 |  |  |
| | 212361000 | A1012K SDUC R 07 | 12 | 10 | 125 | 38 | 9 | 15,5 | 11 | DC.. 0702.. | | |  |
| | 212361100 | A1216M SDUC R 07 | 16 | 12 | 150 | 50 | 11 | 19,5 | 15 | DC.. 0702.. | | |  |

| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|-----|----|----|------|----|-------------|-------|---|---|
| L Pack | L | | D | d | L1 | L2 | S | A | L1 | | | Pack | L |
| 212361200 | 212361300 | A0810J SDUC L 07 | 10 | 8 | 110 | 32 | 7 | 12,5 | 9 | DC.. 0702.. | 0,350 |  | |
| | 212361400 | A1012K SDUC L 07 | 12 | 10 | 125 | 38 | 9 | 15,5 | 11 | DC.. 0702.. | | |  |
| | 212361500 | A1216M SDUC L 07 | 16 | 12 | 150 | 50 | 11 | 19,5 | 15 | DC.. 0702.. | | |  |

 Stock Items | Itens de stock


 Available under request | Disponível sob consulta | Disponible bajo consulta

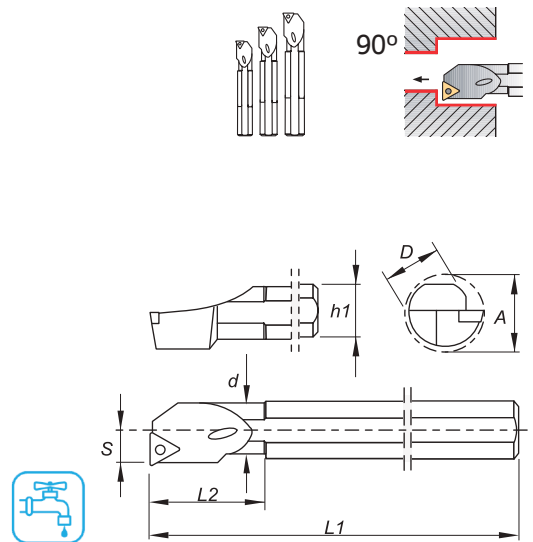
SPARE PARTS || Complementos | Repuestos





| Cutter Reference | Screw | Wrench |
|--------------------|----------|---|
| | |  |
| A0810J SDUC R/L 07 | P0200601 | XT07 |
| A1012K SDUC R/L 07 | P0250700 | XT07 |
| A1216M SDUC R/L 07 | P0250700 | XT07 |





INTERNAL TOOLHOLDERS SET

Conjuntos de ferramentas de torneamento interno | Grupos de herramientas de torneado interno

| | | | |
|---|---|---|---|
| Finishing | Finishing | Finishing | Finishing |
| Flat | FP | FM | FK |
|  (11) |  (11) |  (11) |  (11) |
| Medium | Medium | Medium | Medium to Finishing |
| MP | MM | MK | LN |
|  (11) |  (11) |  (11) |  (11) |





| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|-----|----|----|------|----|-------------|-------|---|--|
| R Pack | R | | D | d | L1 | L2 | S | A | h1 | | | Pack | R |
| 212361600 | 212361700 | A0810J STFC R 11 | 10 | 8 | 110 | 32 | 7 | 12,5 | 9 | TC.. 1102.. | 0,350 |  |  |
| | 212361800 | A1012K STFC R 11 | 12 | 10 | 125 | 38 | 9 | 15,5 | 11 | TC.. 1102.. | | |  |
| | 212361900 | A1216M STFC R 11 | 16 | 12 | 150 | 50 | 11 | 19,5 | 15 | TC.. 1102.. | | |  |

| Order Code | | Reference | Dimensions (mm) | | | | | | | Insert | Kg | Stock | |
|------------|-----------|------------------|-----------------|----|-----|----|----|------|----|-------------|-------|---|---|
| L Pack | L | | D | d | L1 | L2 | S | A | L1 | | | Pack | L |
| 212362000 | 212362100 | A0810J STFC L 11 | 10 | 8 | 110 | 32 | 7 | 12,5 | 9 | TC.. 1102.. | 0,350 |  |  |
| | 212362200 | A1012K STFC L 11 | 12 | 10 | 125 | 38 | 9 | 15,5 | 11 | TC.. 1102.. | | |  |
| | 212362300 | A1216M STFC L 11 | 16 | 12 | 150 | 50 | 11 | 19,5 | 15 | TC.. 1102.. | | |  |

 Stock Items | Itens de stock

 Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS || Complementos | Repuestos

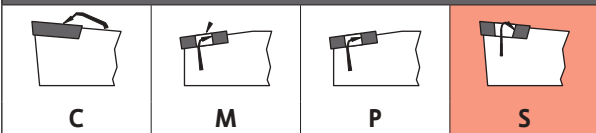
| Cutter Reference | Screw | Wrench |
|--------------------|---|---|
| |  |  |
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| A1012K STFC R/L 11 | P0250700 | XT07 |
| A1216M STFC R/L 11 | P0250700 | XT07 |

CODE KEY FOR AUTOMATIC LATHES (ISO)

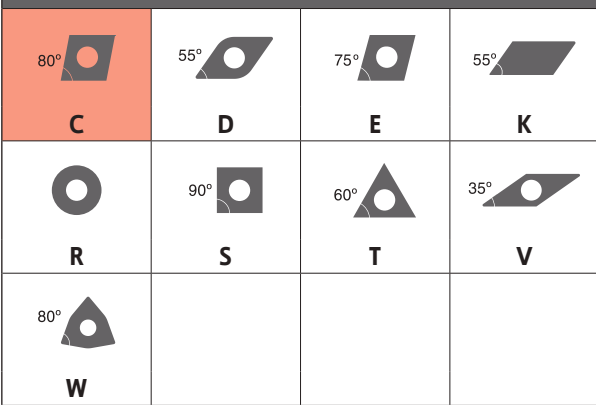
Sistema De Codificação Para Tornos Automáticos (Iso) | Codificación De Herramientas De Tornos Automáticos (Iso)

| | | | | | | | | |
|----------|----------|----------|----------|----------|-----------|-----------|----------|-----------|
| S | C | A | C | R | 12 | 12 | M | 09 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

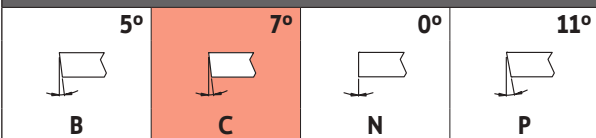
1 - Inserts Clamping System



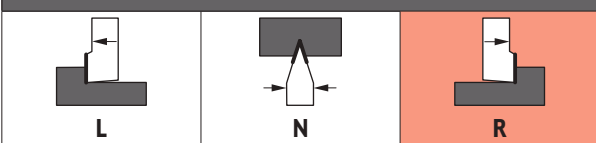
2 - Insert Shape



4 - Inserts Clearance Angle



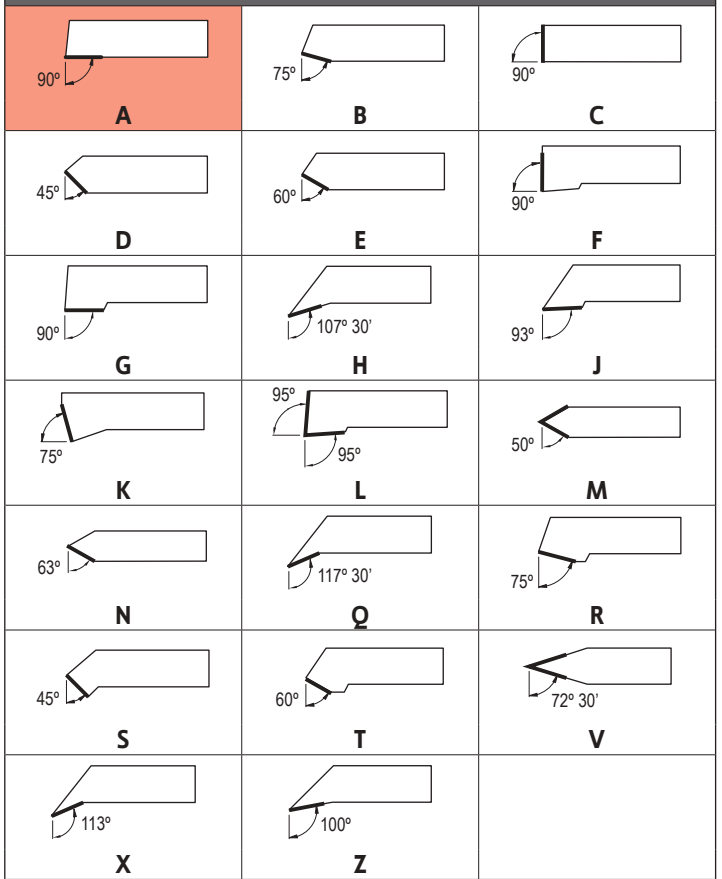
5 - Tool Hand



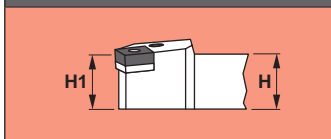
8 - Length of Holder (mm)

| | | | | |
|--|----------|-----|----------|---------|
| | D | 60 | P | 170 |
| | E | 70 | R | 200 |
| | F | 80 | S | 250 |
| | H | 100 | T | 300 |
| | K | 125 | U | 350 |
| | L | 140 | V | 400 |
| | M | 150 | X | Special |

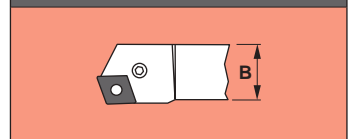
3 - Toolholder Leading Angle



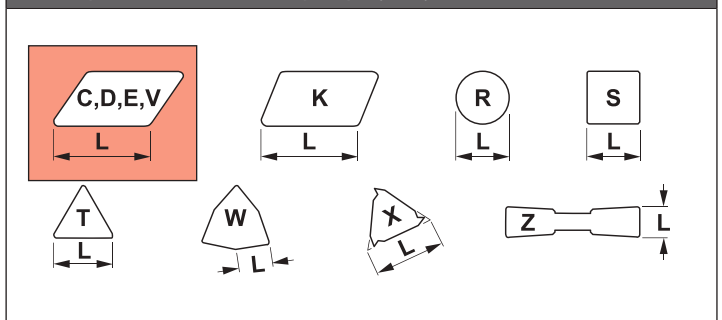
6 - Height of Shank (mm)



7 - Width of Shank (mm)



9 - Length of Inserts Cutting Edge (mm)





C - 608 | Code Key

C - 610 | Overview

C - 611 | Center Screw Toolholders (S)

AUTOMATIC LATHES



TURNING

Insert selection

Overview

Negative inserts

Positive inserts

PCBN & PCD inserts

Heavy turning

External Toolholders

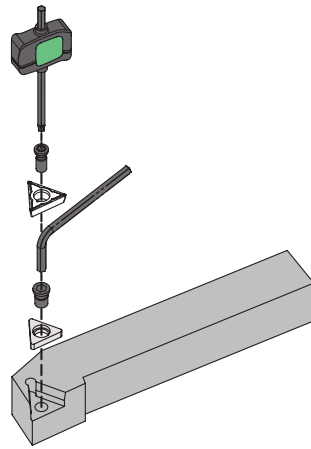
Internal Toolholders

Automatic Lathes

Spare Parts

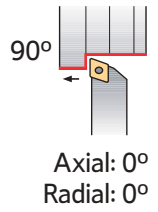
Technical Data

CENTER SCREW TOOLHOLDERS

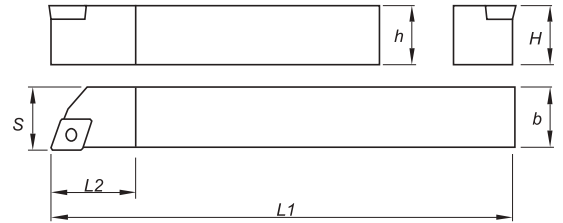


| | | | | | |
|--|--|--|--|---|--|
| <p>SCAC 90°</p> <p>PAGE C - 687 CC.. 0602.. CC.. 09T3..</p> | <p>SCLC 95°</p> <p>PAGE C - 688 CC.. 0602.. CC.. 09T3..</p> | <p>SDAC 90°</p> <p>PAGE C - 689 DC.. 0702.. DC.. 11T3..</p> | <p>SDJC 93°</p> <p>PAGE C - 690 DC.. 0702.. DC.. 11T3..</p> | <p>SDNC 62°30'</p> <p>PAGE C - 691 DC.. 0702.. DC.. 11T3..</p> | <p>STJC 93°</p> <p>PAGE C - 692 TC.. 1102..</p> |
| <p>SVAC 90°</p> <p>PAGE C - 693 VC.. 1103.. VC.. 1604..</p> | <p>SVJC 93°</p> <p>PAGE C - 694 VC.. 1103.. VC.. 1604..</p> | <p>SVVC 72°30'</p> <p>PAGE C - 695 VC.. 1103..</p> | | | |

CENTER SCREW TOOLHOLDERS



| | | | | | |
|-----------|-----------|-----------|---------------------------|-----------------------------|---------------------|
| Finishing | Finishing | Finishing | Finishing | Finishing | Medium to Finishing |
| Flat | FP | BO | FM | FK | LM |
| (06-09) | (06-09) | (06-09) | (06-09) | (06-09) | (06-09) |
| Medium | Medium | Medium | Medium to Finishing wiper | Finishing to Fine finishing | Medium to Finishing |
| MP | MM | MK | MW | FS | LN |
| (06-09) | (06-09) | (06-09) | (06-09) | (06-09) | (06-09) |



| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|-------|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212251300 | 212251400 | SCAC R/L 0808 M06 | 8 | 8 | 150 | 8 | 8 | CC.. 0602.. | 0,070 | | |
| 212251500 | 212251600 | SCAC R/L 1010 M06 | 10 | 10 | 150 | 10 | 10 | CC.. 0602.. | 0,110 | | |
| 212251700 | 212251800 | SCAC R/L 1212 M06 | 12 | 12 | 150 | 12 | 12 | CC.. 0602.. | 0,150 | | |
| 212251900 | 212252000 | SCAC R/L 1616 M06 | 16 | 16 | 150 | 16 | 16 | CC.. 0602.. | 0,280 | | |
| 212252100 | 212252200 | SCAC R/L 1212 M09 | 12 | 12 | 150 | 12 | 12 | CC.. 09T3.. | 0,150 | | |
| 212252300 | 212252400 | SCAC R/L 1616 M09 | 16 | 16 | 150 | 16 | 16 | CC.. 09T3.. | 0,280 | | |

Stock Items | Itens de stock

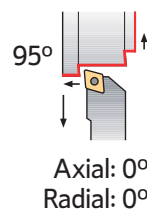
Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS | Complementos | Repuestos

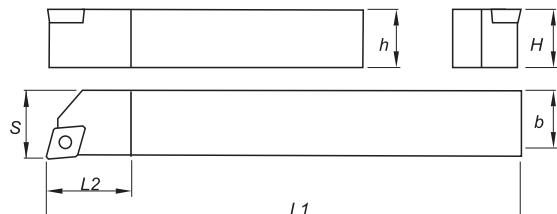
| Cutter Reference | Screw | Wrench |
|-------------------|----------|----------|
| | | |
| SCAC R/L 0808 M06 | P0250700 | XT07 |
| SCAC R/L 1010 M06 | P0250700 | XT07 |
| SCAC R/L 1212 M06 | P0250700 | XT07 |
| SCAC R/L 1616 M06 | P0250700 | XT07 |
| SCAC R/L 1212 M09 | P0401100 | XT15-S35 |
| SCAC R/L 1616 M09 | P0401100 | XT15-S35 |

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PCBN & PCD inserts
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Internal Toolholders
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CENTER SCREW TOOLHOLDERS



| | | | | | |
|-----------|-----------|-----------|---------------------------|-----------------------------|---------------------|
| Finishing | Finishing | Finishing | Finishing | Finishing | Medium to Finishing |
| Flat | FP | BO | FM | FK | LM |
| (06-09) | (06-09) | (06-09) | (06-09) | (06-09) | (06-09) |
| Medium | Medium | Medium | Medium to Finishing wiper | Finishing to Fine finishing | Medium to Finishing |
| MP | MM | MK | MW | FS | LN |
| (06-09) | (06-09) | (06-09) | (06-09) | (06-09) | (06-09) |



| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|-------|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212252500 | 212252600 | SCLC R/L 0808 M06 | 8 | 8 | 150 | 8 | 8 | CC.. 0602.. | 0,070 | | |
| 212252700 | 212252800 | SCLC R/L 1010 M06 | 10 | 10 | 150 | 10 | 10 | CC.. 0602.. | 0,110 | | |
| 212252900 | 212253000 | SCLC R/L 1212 M06 | 12 | 12 | 150 | 12 | 12 | CC.. 0602.. | 0,150 | | |
| 212253100 | 212253200 | SCLC R/L 1616 M06 | 16 | 16 | 150 | 16 | 16 | CC.. 0602.. | 0,280 | | |
| 212253300 | 212253400 | SCLC R/L 1212 M09 | 12 | 12 | 150 | 12 | 12 | CC.. 09T3.. | 0,150 | | |
| 212253500 | 212250400 | SCLC R/L 1616 M09 | 16 | 16 | 150 | 16 | 16 | CC.. 09T3.. | 0,280 | | |

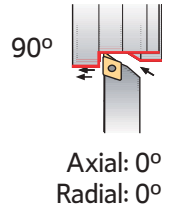
Stock Items | Itens de stock











Available under request | Disponível sob consulta | Disponible bajo consulta

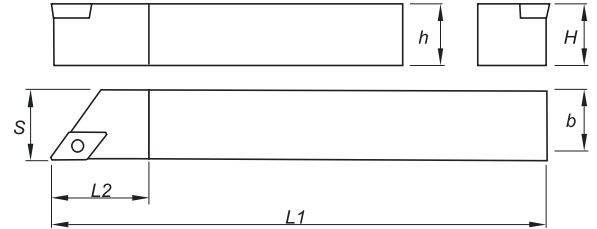
SPARE PARTS | Complementos | Repuestos













| Cutter Reference | Screw | Wrench |
|-------------------|----------|----------|
| | | |
| SCLC R/L 0808 M06 | P0250700 | XT07 |
| SCLC R/L 1010 M06 | P0250700 | XT07 |
| SCLC R/L 1212 M06 | P0250700 | XT07 |
| SCLC R/L 1616 M06 | P0250700 | XT07 |
| SCLC R/L 1212 M09 | P0401100 | XT15-S35 |
| SCLC R/L 1616 M09 | P0401100 | XT15-S35 |

CENTER SCREW TOOLHOLDERS



| | | | | |
|--|--|--|--|--|
| Finishing | Finishing | Finishing | Finishing | Medium to Finishing |
| Flat | FP | FM | FK | LM |
|  (07-11) |  (07-11) |  (07-11) |  (07-11) |  (07-11) |
| Medium | Medium | Medium | Finishing to Fine Finishing | Finishing to Fine Finishing |
| MP | MM | MK | FS | LN |
|  (07-11) |  (07-11) |  (07-11) |  (07-11) |  (07-11) |





| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|------|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212253600 | 212253700 | SDAC R/L 0808 M07 | 8 | 8 | 150 | 12,7 | 8 | DC.. 0702.. | 0,070 |  |  |
| 212253800 | 212253900 | SDAC R/L 1010 M07 | 10 | 10 | 150 | 15,0 | 10 | DC.. 0702.. | 0,110 |  |  |
| 212254000 | 212254100 | SDAC R/L 1212 M07 | 12 | 12 | 150 | 15,0 | 12 | DC.. 0702.. | 0,150 |  |  |
| 212254200 | 212254300 | SDAC R/L 1616 M07 | 16 | 16 | 150 | 16,0 | 16 | DC.. 0702.. | 0,280 |  |  |
| 212254400 | 212254500 | SDAC R/L 1212 M11 | 12 | 12 | 150 | 18,0 | 12 | DC.. 11T3.. | 0,150 |  |  |
| 212254600 | 212254700 | SDAC R/L 1616 M11 | 16 | 16 | 150 | 20,0 | 16 | DC.. 11T3.. | 0,280 |  |  |

 Stock Items | Itens de stock

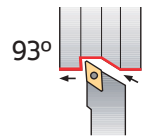
 Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS | Complementos | Repuestos













| Cutter Reference | Screw | Wrench |
|-------------------|---|---|
| |  |  |
| SDAC R/L 0808 M07 | P0250700 | XT07 |
| SDAC R/L 1010 M07 | P0250700 | XT07 |
| SDAC R/L 1212 M07 | P0250700 | XT07 |
| SDAC R/L 1616 M07 | P0250700 | XT07 |
| SDAC R/L 1212 M11 | P0401100 | XT15-S35 |
| SDAC R/L 1616 M11 | P0401100 | XT15-S35 |

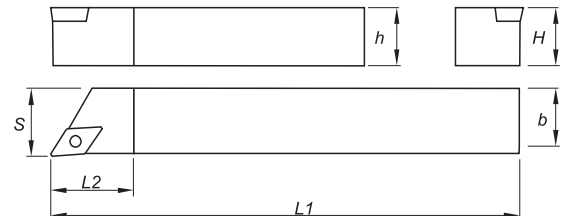
C
TURNING
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PCBN & PCD inserts
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








CENTER SCREW TOOLHOLDERS



Axial: 0°
Radial: 0°

| | | | | | |
|--|--|--|--|--|--|
| Finishing | Finishing | Finishing | Finishing | Finishing wiper | Medium to Finishing |
| Flat | FP | FM | FK | FW | LM |
|  (07-11) |  (07-11) |  (07-11) |  (07-11) |  (07-11) |  (07-11) |
| Medium | Medium | Medium | Medium to Finishing wiper | Finishing to Fine Finishing | Finishing to Fine Finishing |
| MP | MM | MK | MW | FS | LN |
|  (07-11) |  (07-11) |  (07-11) |  (11) |  (07-11) |  (07-11) |




| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212254800 | 212254900 | SDJC R/L 0808 M07 | 8 | 8 | 150 | 8 | 8 | DC.. 0702.. | 0,070 |  |  |
| 212255000 | 212255100 | SDJC R/L 1010 M07 | 10 | 10 | 150 | 10 | 10 | DC.. 0702.. | 0,110 |  |  |
| 212255200 | 212255300 | SDJC R/L 1212 M07 | 12 | 12 | 150 | 12 | 12 | DC.. 0702.. | 0,150 |  |  |
| 212255400 | 212255500 | SDJC R/L 1616 M07 | 16 | 16 | 150 | 16 | 16 | DC.. 0702.. | 0,280 |  |  |
| 212255600 | 212255700 | SDJC R/L 1212 M11 | 12 | 12 | 150 | 12 | 12 | DC.. 11T3.. | 0,150 |  |  |
| 212255800 | 212255900 | SDJC R/L 1616 M11 | 16 | 16 | 150 | 16 | 16 | DC.. 11T3.. | 0,280 |  |  |

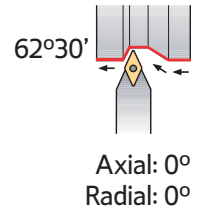
 Stock Items | Itens de stock

 Available under request | Disponível sob consulta | Disponible bajo consulta

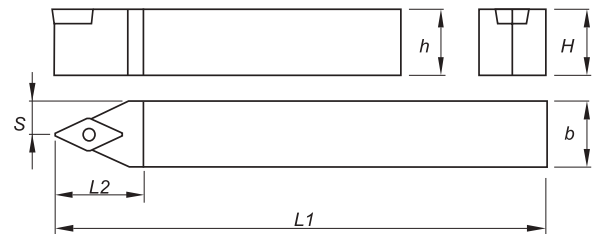
SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Screw | Wrench |
|-------------------|----------|---|
| | |  |
| SDJC R/L 0808 M07 | P0250700 | XT07 |
| SDJC R/L 1010 M07 | P0250700 | XT07 |
| SDJC R/L 1212 M07 | P0250700 | XT07 |
| SDJC R/L 1616 M07 | P0250700 | XT07 |
| SDJC R/L 1212 M11 | P0401100 | XT15-S35 |
| SDJC R/L 1616 M11 | P0401100 | XT15-S35 |

CENTER SCREW TOOLHOLDERS



| | | | | |
|-----------|-----------|-----------|-----------------------------|-----------------------------|
| Finishing | Finishing | Finishing | Finishing | Medium to Finishing |
| Flat | FP | FM | FK | LM |
| | | | | |
| (07-11) | (07-11) | (07-11) | (07-11) | (07-11) |
| Medium | Medium | Medium | Finishing to Fine Finishing | Finishing to Fine Finishing |
| MP | MM | MK | FS | LN |
| | | | | |
| (07-11) | (07-11) | (07-11) | (07-11) | (07-11) |



| Order Code | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock |
|------------|-----------------|-----------------|----|-----|----|-----|-------------|-------|-------|
| | | H=h | b | L1 | L2 | S | | | |
| 212256000 | SDNC N 1010 M07 | 10 | 10 | 150 | 15 | 5,2 | DC.. 0702.. | 0,100 | |
| 212256100 | SDNC N 1212 M11 | 12 | 12 | 150 | 21 | 6,2 | DC.. 11T3.. | 0,140 | |
| 212256200 | SDNC N 1616 M11 | 16 | 16 | 150 | 21 | 8,6 | DC.. 11T3.. | 0,270 | |

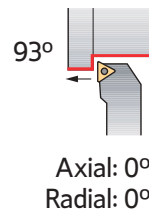
Stock Items | Itens de stock










Available under request | Disponível sob consulta | Disponible bajo consulta

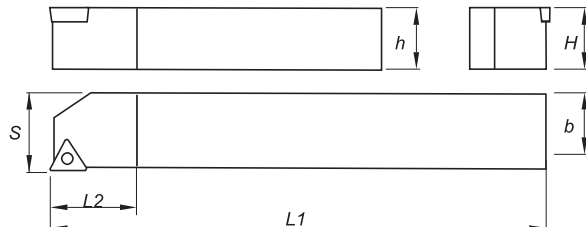
SPARE PARTS | Complementos | Repuestos







| Cutter Reference | Screw | Wrench |
|------------------|----------|----------|
| | | |
| SDNC N 1010 M07 | P0250700 | XT07 |
| SDNC N 1212 M11 | P0401100 | XT15-S35 |
| SDNC N 1616 M11 | P0401100 | XT15-S35 |

CENTER SCREW TOOLHOLDERS



| | | | | |
|---|---|---|---|---|
| Finishing | Finishing | Finishing | Finishing | Finishing wiper |
| Flat  (09-11-16) | FP  (09-11-16) | FM  (09-11-16) | FK  (09-11-16) | FW  (09-11-16) |
| Medium | Medium | Medium | Medium to Finishing | |
| MP  (09-11-16) | MM  (09-11-16) | MK  (09-11-16) | LN  (11-16) | |





| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212256300 | 212256400 | STJC R/L 1010 M11 | 10 | 10 | 150 | 16 | 10 | TC.. 1102.. | 0,110 |  |  |
| 212256500 | 212256600 | STJC R/L 1212 M11 | 12 | 12 | 150 | 16 | 12 | TC.. 1102.. | 0,150 |  |  |
| 212256700 | 212256800 | STJC R/L 1616 M11 | 16 | 16 | 150 | 16 | 16 | TC.. 1102.. | 0,280 |  |  |

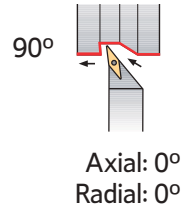
 Stock Items | Itens de stock









 Available under request | Disponível sob consulta | Disponible bajo consulta

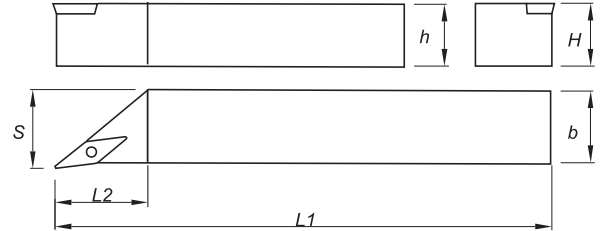
SPARE PARTS | Complementos | Repuestos













| Cutter Reference | Screw  | Wrench  |
|-------------------|--|---|
| STJC R/L 1010 M11 | P0250700 | XT07 |
| STJC R/L 1212 M11 | P0250700 | XT07 |
| STJC R/L 1616 M11 | P0250700 | XT07 |

CENTER SCREW TOOLHOLDERS



| | | | |
|--|--|--|--|
| Finishing | Finishing | Finishing | Finishing |
| Flat  (11-16) | FP  (11-16) | FM  (11-16) | FK  (11-16) |
| Medium | Medium | Medium | Medium to Finishing |
| MP  (11-16) | MM  (11-16) | MK  (11-16) | LN  (11-16) |




| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212256900 | 212257000 | SVAC R/L 0808 M11 | 8 | 8 | 150 | 26 | 8 | VC.. 1103.. | 0,070 |  |  |
| 212257100 | 212257200 | SVAC R/L 1010 M11 | 10 | 10 | 150 | 26 | 10 | VC.. 1103.. | 0,100 |  |  |
| 212257300 | 212257400 | SVAC R/L 1212 M11 | 12 | 12 | 150 | 26 | 12 | VC.. 1103.. | 0,140 |  |  |
| 212257500 | 212257600 | SVAC R/L 1616 M11 | 16 | 16 | 150 | 26 | 16 | VC.. 1103.. | 0,270 |  |  |
| 212257700 | 212257800 | SVAC R/L 1212 M16 | 12 | 12 | 150 | 40 | 12 | VC.. 1604.. | 0,140 |  |  |
| 212257900 | 212258000 | SVAC R/L 1616 M16 | 16 | 16 | 150 | 40 | 16 | VC.. 1604.. | 0,270 |  |  |

 Stock Items | Itens de stock

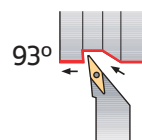
 Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS | Complementos | Repuestos









| Cutter Reference | Screw | Wrench |
|-------------------|----------|---|
| | |  |
| SVAC R/L 0808 M11 | P0250700 | XT07 |
| SVAC R/L 1010 M11 | P0250700 | XT07 |
| SVAC R/L 1212 M11 | P0250700 | XT07 |
| SVAC R/L 1616 M11 | P0250700 | XT07 |
| SVAC R/L 1212 M16 | P0401100 | XT15-S35 |
| SVAC R/L 1616 M16 | P0401100 | XT15-S35 |

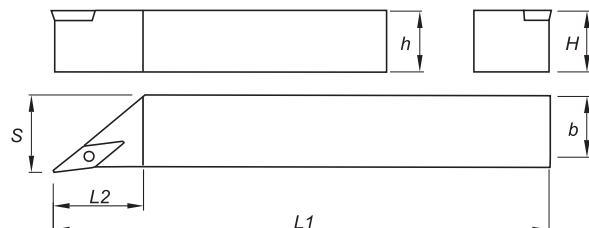
C
TURNING
Insert selection
Overview
Negative inserts
Positive inserts
PCBN & PCD inserts
Heavy turning
External Toolholders
Internal Toolholders
Automatic Lathes
Spare Parts
Technical Data













CENTER SCREW TOOLHOLDERS



Axial: 0°
Radial: 0°

| | | | |
|--|--|--|--|
| Finishing | Finishing | Finishing | Finishing |
| Flat  (11-16) | FP  (11-16) | FM  (11-16) | FK  (11-16) |
| Medium | Medium | Medium | Medium to Finishing |
| MP  (11-16) | MM  (11-16) | MK  (11-16) | LN  (11-16) |





| Order Code | | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock | |
|------------|-----------|-------------------|-----------------|----|-----|----|----|-------------|-------|---|---|
| R | L | | H=h | b | L1 | L2 | S | | | R | L |
| 212258100 | 212258200 | SVJC R/L 0808 M11 | 8 | 8 | 150 | 26 | 8 | VC.. 1103.. | 0,070 |  |  |
| 212258300 | 212258400 | SVJC R/L 1010 M11 | 10 | 10 | 150 | 26 | 10 | VC.. 1103.. | 0,100 |  |  |
| 212258500 | 212258600 | SVJC R/L 1212 M11 | 12 | 12 | 150 | 26 | 12 | VC.. 1103.. | 0,140 |  |  |
| 212258700 | 212258800 | SVJC R/L 1616 M11 | 16 | 16 | 150 | 26 | 16 | VC.. 1103.. | 0,270 |  |  |
| 212258900 | 212259000 | SVJC R/L 1212 M16 | 12 | 12 | 150 | 40 | 12 | VC.. 1604.. | 0,140 |  |  |
| 212259100 | 212259200 | SVJC R/L 1616 M16 | 16 | 16 | 150 | 40 | 16 | VC.. 1604.. | 0,270 |  |  |

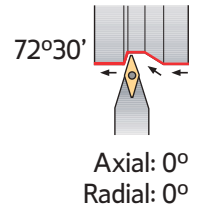
 Stock Items | Itens de stock

Available under request | Disponível sob consulta | Disponible bajo consulta

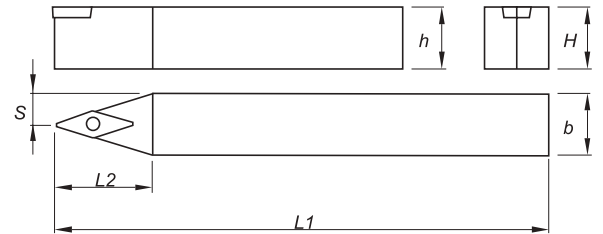
SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Screw  | Wrench  |
|-------------------|--|---|
| SVJC R/L 0808 M11 | P0250700 | XT07 |
| SVJC R/L 1010 M11 | P0250700 | XT07 |
| SVJC R/L 1212 M11 | P0250700 | XT07 |
| SVJC R/L 1616 M11 | P0250700 | XT07 |
| SVJC R/L 1212 M16 | P0401100 | XT15-S35 |
| SVJC R/L 1616 M16 | P0401100 | XT15-S35 |

CENTER SCREW TOOLHOLDERS



| | | | |
|-----------|-----------|-----------|---------------------|
| Finishing | Finishing | Finishing | Finishing |
| Flat | FP | FM | FK |
| | | | |
| Medium | Medium | Medium | Medium to Finishing |
| MP | MM | MK | LN |
| | | | |



| Order Code | Reference | Dimensions (mm) | | | | | Insert | Kg | Stock |
|------------|-----------------|-----------------|----|-----|----|-----|-------------|-------|-------|
| | | H=h | b | L1 | L2 | S | | | |
| 212259300 | SVVC N 0808 M11 | 8 | 8 | 150 | 21 | 4,3 | VC.. 1103.. | 0,070 | |
| 212259400 | SVVC N 1010 M11 | 10 | 10 | 150 | 21 | 5,3 | VC.. 1103.. | 0,100 | |
| 212259500 | SVVC N 1212 M11 | 12 | 12 | 150 | 21 | 6,3 | VC.. 1103.. | 0,140 | |
| 212259600 | SVVC N 1616 M11 | 16 | 16 | 150 | 21 | 8,3 | VC.. 1103.. | 0,260 | |

Stock Items | Itens de stock

Available under request | Disponível sob consulta | Disponible bajo consulta

SPARE PARTS | Complementos | Repuestos

| Cutter Reference | Screw | Wrench |
|------------------|----------|--------|
| | | |
| SVVC N 0808 M11 | P0250700 | XT07 |
| SVVC N 1010 M11 | P0250700 | XT07 |
| SVVC N 1212 M11 | P0250700 | XT07 |
| SVVC N 1616 M11 | P0250700 | XT07 |

SPARE PARTS

CHIP BREAKERS | Quebra Aparas | Rompevirutas

| | | | | | |
|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| QCS0900 290071500 | QCS1200 290071700 | QCS1201 290072200 | QCS1900 290071900 | QCS1901 290072400 | QCS0901 290072600 |
| QCS0902 290072900 | QCS1202 290072700 | QCT1100 290071600 | QCT1101 290072100 | QCT1600 290071800 | QCT1601 290072300 |
| QCT2200 290072000 | QCT2201 290072500 | | | | |

CLAMPS (C HOLDERS) | Grampos (Suportes C) | Tornillos Para Brida (Soportes C)

| | | | | | |
|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| GS03000 290065100 | GS04000 290009700 | GS05002 290065900 | GS05000 290055800 | GS05004 290066500 | GS05001 290065800 |
| GS05003 290066000 | GS06001 290047700 | GS06002 290046300 | GS06003 290066200 | GS06000 290010500 | GS05005 290005900 |
| GS08001 290066600 | GS08000 290030100 | | | | |

CLAMPS (D HOLDERS) | Grampos (Suportes D) | Bridas (Soportes D)

| | | | | | |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| <p>GA05001 290082000</p> | <p>GA07002 290082100</p> | <p>GA07001 290066300</p> | <p>GA07003 290082200</p> | <p>GAW1400 290031800</p> | <p>GAW1401 290066400</p> |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|

DIFFERENTIALS SCREWS | Parafusos Diferenciales | Tornillos Diferenciales

| | | |
|--|--|--|
| <p>F0602100 290062700 Allen 3</p> | <p>F0802900 290062300 Allen 4</p> | <p>F0602100 290062700 Allen 3</p> |
|--|--|--|

LEVERS | Alavanca | Palanca

| | | | | | |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| <p>AN07800 290048700</p> | <p>AN01200 290031200</p> | <p>AN13100 290009000</p> | <p>AN17100 290047200</p> | <p>AN17200 290070500</p> | <p>AN20800 290047300</p> |
| <p>AN25200 290070600</p> | <p>AN14700 290071400</p> | <p>AN09500 290052800</p> | <p>AC11700 290019200</p> | <p>AC13300 290019300</p> | <p>AC18700 290070800</p> |
| <p>AC23000 290070900</p> | <p>AC26700 290071000</p> | <p>AC13200 290071300</p> | <p>AC18000 290070700</p> | <p>AN12100 290071100</p> | <p>AN20200 290071200</p> |

SPARE PARTS

LEVER SCREWS | Parafusos Para Alavanca | Tornillos De Palanca

| | | | | | |
|--|--|--|--|--|--|
| PA0501000 290048800 Allen 2 | PA0501200 290063000 Allen 2 | PA0501400 290019000 Allen 2 | PA0601300 290063200 Allen 2,5 | PA0601700 290018900 Allen 2,5 | PA0602100 290064400 Allen 2,5 |
| PA0801700 290063800 Allen 3 | PA0802100 290011900 Allen 3 | PA0802101 290063300 Allen 3 | PA0802300 290047100 Allen 3 | PA0802400 290064500 Allen 3 | PA1002700 290048600 Allen 4 |
| PA1003000 290064600 Allen 4 | PA1203600 290063100 Allen 5 | | | | |

LOCK PINS | Cavilhas De Bloqueio | Pines De Bloqueo

| | | | | | |
|--|--|--|--|--|---------------------------------|
| BC04502 290063500 | BC04501 290063600 | BC04500 290063400 | BC06001 290063700 | BC06000 290053500 | BC08000 290064200 |
| BS05000 290054400 Allen 2 | BS1-402 290064300 Allen 2,5 | BS1-400 290063900 Allen 2,5 | BS1-401 290064000 Allen 2,5 | BS3-800 290064100 Allen 4 | |

SCREWS (ALLEN) | Parafusos (Allen) | Tornillos (Allen)


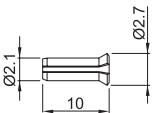

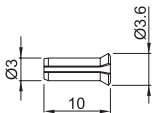

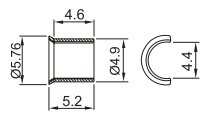

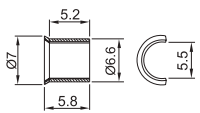

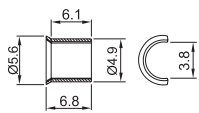

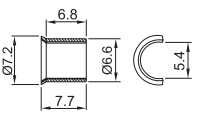

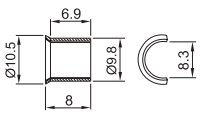

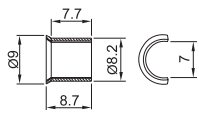

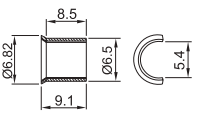

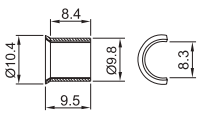

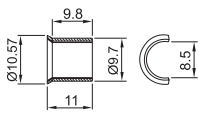

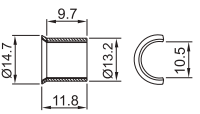

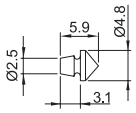

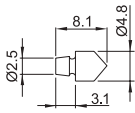

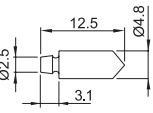

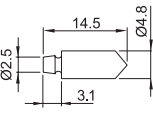
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|---|--|---|---|---|---|
| <p>D0300691 290064800 Allen 2</p> | <p>D0400691 290064900 Allen 2.5</p> | <p>T05003500 290020100 Allen 3.5</p> | <p>T05008000 290082300 Allen 2</p> | <p>T06004000 290008700 Allen 4</p> | <p>T06010000 290082400 Allen 2.5</p> |
| <p>T06015000 290082500 Allen 3</p> | <p>D0300700 290012000 Allen 5</p> | <p>D0400900 290053700 Allen 5</p> | <p>D0401200 290082600 Allen 5</p> | <p>D0500801 290082700 Allen 5</p> | <p>D0501200 290082800 Allen 5</p> |
| <p>D0601400 290062800 Allen 5</p> | <p>D0602200 290062900 Allen 5</p> | <p>D0602900 290082900 Allen 4</p> | <p>D0601200 290083000 Allen 4</p> | <p>D0801600 290083100 Allen 4</p> | <p>DW142600 290018200 Allen 4</p> |
| <p>D0702800 290048100 Allen 4</p> | | | | | |

SCREWS (TORX) | Parafusos (torx) | Tornillos (torx)


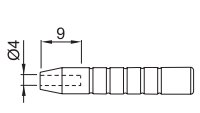

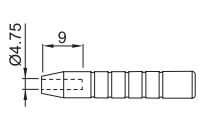

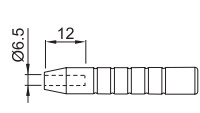

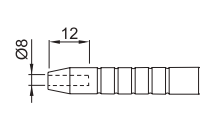

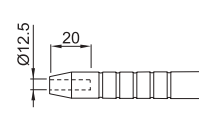
| | | | | | |
|---|---|---|---|---|---|
| <p>P0220600 290026000 TorxT-6</p> | <p>P0250700 290013400 TorxT-7</p> | <p>P0200601 290010700 TorxT-7</p> | <p>P0300900 290007500 TorxT-8</p> | <p>P0351500 290020000 TorxT-15</p> | <p>P0401400 290031100 TorxT-15</p> |
| <p>P0400802 290006500 TorxT-15</p> | <p>P0401100 290007000 TorxT-15</p> | <p>P0501200 290026200 TorxT-20</p> | <p>P0801411 290062600 TorxT-25</p> | | |

SPARE PARTS

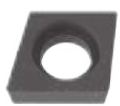
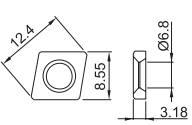
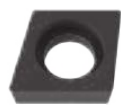
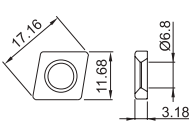
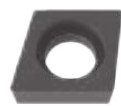
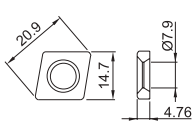
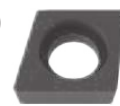
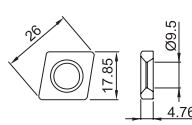
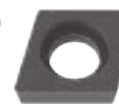
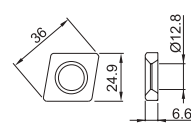

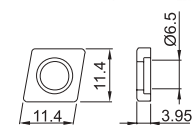

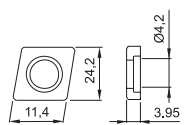

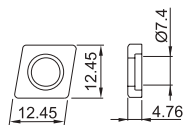

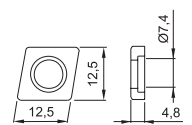

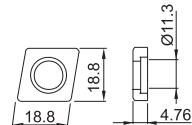
SHIM PINS | Pino calço | Pino cuña

| | | | | | |
|---|---|---|---|---|---|
| BE02100 290020500   | BE03000 290038900   | BE04400 290007300   | BE05500 290069200   | BE03800 290019100   | BE05401 290069900   |
| BE08300 290069700   | BE07000 290069300   | BE05400 290069400   | BE08301 290069800   | BE08500 290069500   | BE10500 290069600   |
| BF04806 290070000   | BF04808 290070100   | BF04813 290018100   | BF04815 290070200   | | |

SHIM PIN PUNCHES | Calço | Cuña

| | | | | |
|---|---|---|---|---|
| BF40009 290033200   | BF47509 290020600   | BF65012 290061900   | BF80012 290062000   | BF12520 290062100   |
|---|---|---|---|---|

SHIMS (C SHAPES) | Colchões (Pastilhas C) | Placas Base (Plaquetas C)

| | | | | | |
|--|--|--|--|--|--|
| CC090300 290067800   | CC120301 212127000   | CC160500 290046400   | CC190500 212169300   | CC250700 290067900   | CC120401 212166800   |
| CC120600 290083200   | CC120500 290055200   | CC120300 290083300   | CC190502 290073200   | | |

SHIMS (D SHAPES) | Colchões (Pastilhas D) | Placas Base (Plaquitas D)

| | | | | | |
|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| <p>CD110300 290068000</p> | <p>CD110301 212166900</p> | <p>CD110302 290083400</p> | <p>CD150300 290068100</p> | <p>CD150500 290068200</p> | <p>CD150501 290073300</p> |
|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|

SHIMS (R SHAPES) | Colchões (Pastilhas R) | Placas Base (Plaquitas R)

| | | | | | |
|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| <p>CR090300 290068700</p> | <p>CR100300 212054600</p> | <p>CR100301 212167100</p> | <p>CR120300 212054700</p> | <p>CR120301 212167200</p> | <p>CR120302 290068800</p> |
| <p>CR150500 290068900</p> | <p>CR160500 290068300</p> | <p>CR190500 290069000</p> | <p>CR200500 290068400</p> | <p>CR250600 290068500</p> | <p>CR250601 290069100</p> |
| <p>CR320600 290068600</p> | | | | | |

SHIMS (S SHAPES) | Colchões (Pastilhas S) | Placas Base (Plaquitas S)

| | | | | | |
|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| <p>CS090300 290067100</p> | <p>CS090301 290067500</p> | <p>CS120300 212056100</p> | <p>CS120400 212044300</p> | <p>CS120302 290067600</p> | <p>CS120500 290053800</p> |
| <p>CS120600 290083500</p> | <p>CS150400 290083900</p> | <p>CS190501 290083600</p> | <p>CS190300 290067200</p> | <p>CS190400 290084000</p> | <p>CS250600 290053000</p> |

SPARE PARTS

SHIMS (T SHAPES) | Colchões (Pastilhas T) | Placas Base (Plaquetas T)

| | | | | | |
|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| CT160301 212026000 | CT160303 212039600 | CT160302 212039900 | CT160304 290073400 | CT160600 290083700 | CT220301 212127500 |
| CT220302 290061700 | CT220500 290052700 | CT220600 290083800 | CT270500 290061500 | CT330500 290067400 | |

SHIMS (V SHAPES) | Colchões (Pastilhas V) | Placas Base (Plaquetas V)

| | | |
|----------------------------------|----------------------------------|----------------------------------|
| CV160301 290054300 | CV160300 212044400 | CV220400 212167000 |
|----------------------------------|----------------------------------|----------------------------------|

SHIMS (W SHAPES) | Colchões (Pastilhas W) | Placas Base (Plaquetas W)

| | | | |
|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| CW060301 212169100 | CW060300 290067000 | CW080300 212169200 | CW080500 290053400 |
|----------------------------------|----------------------------------|----------------------------------|----------------------------------|

SHIMS (KNUX SHAPES) | Colchões (Pastilhas Knux) | Placas Base (Plaquetas Knux)

| | |
|----------------------------------|----------------------------------|
| CK160500 212127100 | CK160501 290067300 |
|----------------------------------|----------------------------------|

SPRINGS | Mola | Muelle

| | |
|--------------------------------|--------------------------------|
| M06511 290070300 | M09513 290054100 |
|--------------------------------|--------------------------------|

WEDGE CLAMPS (M HOLDERS) | Grampos Cunhas (Suportes M) | Tornillos Para Cuñas (Soportes M)

| | | | | |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| <p>GW05000 290065200</p> | <p>GW08000 290053300</p> | <p>GW08001 290065300</p> | <p>GW08002 290009400</p> | <p>GW08003 290065700</p> |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|

WEDGE CLAMPS (M-K HOLDERS) | Grampos Cunhas (Suportes M-K) | Tornillos Para Cuñas (Soportes M-K)

| | | | | | |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| <p>GW05001 290065400</p> | <p>GW06000 290065500</p> | <p>GW06001 290065600</p> | <p>GA06000 290066700</p> | <p>GA06001 290066800</p> | <p>GA06002 290053600</p> |
| <p>GA06003 290066900</p> | | | | | |

WRENCHES (ALLEN) | Chaves (Allen) | Llaves (Allen)

| | | | | | |
|--|--|--|--|--|--|
| <p>SS15 290070400 Allen 1,5</p> | <p>SS20 290020300 Allen 2</p> | <p>SS25 290019800 Allen 2,5</p> | <p>SS30 290038400 Allen 3</p> | <p>SS40 290021200 Allen 4</p> | <p>SS50 290021300 Allen 5</p> |
|--|--|--|--|--|--|

WRENCHES (TORX) | Chaves (Torx) | Llaves (Torx)

| | | | | |
|---|---|--|--|--|
| <p>XT07 290012900 Torx 7</p> | <p>XT08 290011700 Torx 8</p> | <p>XT15-S35 290012400 Torx 15 & Allen 3,5</p> | <p>XT15-S40 290046500 Torx 15 & Allen 4</p> | <p>XT20-S40 290013200 Torx 20 & Allen 4</p> |
|---|---|--|--|--|

TURNING GRADES | Graus de torneamento | Calidades para torneado

| | 1 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | | |
|------------------------|------------|---------------------------|---------------------------|---------------------------|--------|--------|--------|----|--------|----|----|------|-----|
| TURNING | P STEEL | | PH7910 | | | | | | | | | PVD | |
| | | | | PH7920 | | | | | | | | | |
| | | | PHG105 | | | | | | | | | | CVD |
| | | | | PHG115 | | | | | | | | | |
| | | | | PH5115 | | | | | | | | | |
| | | | | | | PHG125 | | | | | | | |
| | | | | | | PH5125 | | | | | | | |
| | | | | | | | PHG135 | | | | | | |
| | | | | | | | PHG140 | | | | | | |
| | | | | | | | PH5740 | | | | | | |
| M STAINLESS SEEL | | PHH910 <small>NEW</small> | | | | | | | | | | PVD | |
| | | PH7910 | | | | | | | | | | | |
| | | | PHH920 <small>NEW</small> | | | | | | | | | | |
| | | | | PH7920 | | | | | | | | CVD | |
| | | | PHS215 | | | | | | | | | | |
| | | | | PHS225 | | | | | | | | | |
| | | | | | | PHS240 | | | | | | | |
| | | | | | | | | | PHS228 | | | | |
| K CAST IRON | | | PH5705 | | | | | | | | | CVD | |
| | | | PH5320 | | | | | | | | | | |
| | | | | | PH5740 | | | | | | | | |
| | | | PBH920 | | | | | | | | | PCBN | |
| | | | | PBY930 <small>NEW</small> | | | | | | | | | |
| | | | | PBY940 <small>NEW</small> | | | | | | | | | |

TURNING GRADES | Graus de torneamento | Calidades para torneado

| | 1 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | | |
|---|---|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|----|----|----|----|----|--|---------|
| N ALUMINIUM & NON FERROUS | | PH0910 | | | | | | | | | | | UNCOTED |
| | | PDP410 | | | | | | | | | | | PCD |
| | | PDP403 | | | | | | | | | | | |
| S HEAT RESISTANT / TITANIUM ALLOYS | | | PHH910 <small>NEW</small> | | | | | | | | | | PVD |
| | | | PH7910 | | | | | | | | | | |
| | | | | PHH920 <small>NEW</small> | | | | | | | | | PCBN |
| | | | | PH7920 | | | | | | | | | |
| | | | | | | PBH920 <small>NEW</small> | | | | | | | |
| | | | PBY603 <small>NEW</small> | | | | | | | | | | |
| H HARDENED MATERIALS | | PBY603 <small>NEW</small> | | | | | | | | | | | PCBN |
| | | | PBY620 <small>NEW</small> | | | | | | | | | | |
| | | | | | PBY920 <small>NEW</small> | | | | | | | | |
| | | | | | PBY930 <small>NEW</small> | | | | | | | | |
| | | | | | PBY940 <small>NEW</small> | | | | | | | | |



TURNING

Insert selection

Overview

Negative inserts

Positive inserts

PCBN & PCD inserts

Heavy turning

External Toolholders

Internal Toolholders

Automatic Lathes

Spare Parts

Technical Data

TURNING GRADES DESCRIPTION

PVD GRADES

PHH...

A thin PVD coating. 1st choice for finishing operations stainless steels and HRSA.



PHH910 NEW
M05-M10
S05-S15

An hard micro grain substrate combined with a thin optimized nanostructure PVD coating with excellent heat dissipation

The solution for Stainless steel and HRSA from medium turning to finishing.
For continuous to semi-interrupted turning.
First choice for HRSA.

PHH920 NEW
M10-M25
S15-S30

A micro grain substrate combined with a thin optimized nanostructure PVD coating with excellent heat dissipation

Solution for general turning of stainless steels and HRSA.



PH7...

A thin PVD coating recommended for finishing operations on steels and suitable for stainless steels and HRSA. Work well on "gummy" materials.



PH7910
P05-P10
M05-M10
S05-S15

PH7920
P10-P35
M05-M10
S05-S15

CVD GRADES

PHS...

A medium temperature CVD coating with great adhesion and great heat dissipation properties. 1st choice for machining stainless steels.



PHS215
M10-M25

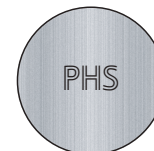
Suitable for high to medium cutting speeds in stainless steel. Ideal for turning on good condition of cut (continuous cut).

PHS225
M15-M30

First choice for general application on turning of stainless steel.

PHS240
M25-M45

First choice for roughing to heavy roughing operations with interrupted cut at medium to low cutting speeds on stainless steel.



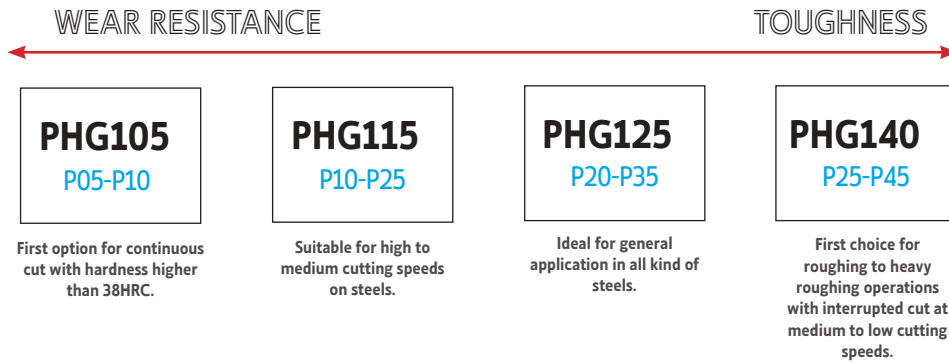
PH0910

Uncoated carbide micro-grain grade combining a good abrasive wear resistance and toughness. Suitable for rough to finish operations of aluminum alloys.

PH0910
N01-N20

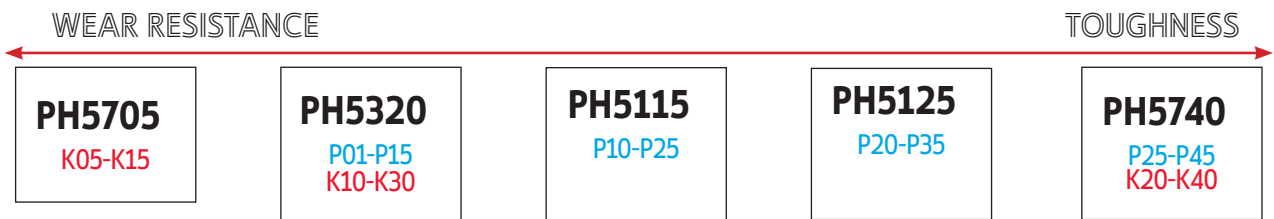
PHG...

A medium temperature CVD coating with great adhesion and great wear protection. 1st choice for machining steels.



PH5...

A thick CVD coating with smooth surface. 1st choice for machining cast irons.



PCBN

PCBN insert excel in the finishing and semi-finishing process of hardened steels as well as hard cast iron and HRSA.



PCD

PCD insert are an achievement of extreme significance for the machining of Non-Ferrous Materials, such as high-silicon aluminium, metal matrix composites (MMC) and carbon fiber reinforced plastics (CFRP).



General purpose Fine surface finishing. <14% silicon aluminium alloy

Highest abrasion resistance Bimodal grain structure for increased diamond percentage content. >14% silicon aluminium alloy

GRADES COMPARATIVE CHART

PVD COATED GRADES | GRAUS REVESTIDOS A PVD | CALIDADES CON RECUBRIMIENTO PVD

| ISO | Palbit | Sandvik | Kennametal | Iscar | Seco | Mitsubishi | Sumitomo | Tungaloy | Walter | Kyocera | Taegutec | Korloy | Ceratizit |
|----------|--------|---------|--------------------------------------|---|--|--------------------------|--|------------------|---|--|--|----------------------------|---|
| Material | | | | | | | | | | | | | |
| P | P01 | PH7910 | | | | | | | | PR915 PR1005 | PV3030 | PC8110 | |
| | P10 | PH7910 | GC1525 GC1025 | KC5010 KC5510 KU10T | IC250 IC350 IC507 IC570 IC807 IC907 IC908 | CP200 TS2001 | VP10MF | AH710 | | PR915 PR1005 PR930 PR1025 PR1115 PR1225 PR1425 | PV3010 PV3030 TT7080 TT1040 | PC230 | |
| | P20 | PH7920 | GC1525 GC1025 GC1125 | KC5025 KC5525 KC7215 KC7315 KU25T | IC228 IC250 IC308 IC328 IC350 IC354 IC507 IC528 IC570 IC807 IC808 IC907 IC908 IC928 IC1008 IC1028 IC3028 | CP250 TS2500 | VP10RT VP20RT VP15TF VP20MF | AC520U | AH710 AH725 AH120 SH730 GH730 GH130 | PR930 PR1025 PR1115 PR1225 | TT7220 TT9020 TT7080 TT9080 TT7070 | PC5300 PC8115 | SR226 GM127 |
| | P30 | PH7920 | GC1025 GC1125 | KC7015 KC7020 KU25T KC7235 | IC228 IC250 IC328 IC330 IC354 IC528 IC1008 IC1028 IC3028 | CP500 | VP10RT VP20RT VP20MF | AC530U | AH725 AH120 SH730 GH730 GH130 AH740 J740 | | TT9030 TT7030 TT7080 TT9030 TT9080 | PC8115 | GM40 CTP1235 CTP2235 SR226 GM127 |
| M | M01 | PH7910 | GC1005 | | IC520 | TS2000 CP200 | VP10MF | | WSM10 | PR915 | TT5080 | | |
| | M10 | PH7910 | GC1005 GC1025 GC1125 GC1105 | KC5010 KC5510 KC6005 KC6015 | IC330 IC354 IC507 IC520 IC570 IC807 IC907 IC3028 | CP200 TS2000 | VP10MF | AH710 | WSM20 | PR915 PR1025 PR1225 PR1425 | TT5030 PV3010 PV3030 TT9030 | PC8110 PC9030 | |
| | M20 | PH7920 | GC1005 GC1025 GC1125 GC1105 | KC5025 KC5525 KC7020 KC7025 | IC250 IC330 IC354 IC808 IC908 IC1008 IC1028 IC3028 | CP250 TS2500 CP500 | VP10RT VP20RT VP15TF VP20MF | AC520U | WSM30 | PR1025 PR1125 PR1225 PR915 PR930 | TT5030 PV3030 TT9020 TT9030 | PC9030 PC8110 PC8115 | CTP2120 CTP1235 SR226 GM127 |
| | M30 | PH7920 | GC1125 GC2035 | KC7030 KC7225 | IC228 IC250 IC328 IC330 IC1008 IC1028 IC3028 | CP500 | VP10RT VP20RT VP15TF VP20MF MP7035 | AC520U AC530U | GH330 AH725 AH120 AH730 GH730 GH130 J740 AH645 | PR1125 | TT9030 TT9080 TT8030 | PC9030 | CTP2240 CTP1235 CTP2235 SR226 GM127 |
| STEEL | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

PH7910 = Best available choice

| ISO | | Palbit | Sandvik | Kennametal | Iscar | Seco | Mitsubishi | Sumitomo | Tungaloy | Walter | Kyocera | Taegutec | Korloy | Ceratizit |
|---|-----|--------------------------------|----------------------------|----------------------------|-----------------------------------|---|----------------------------|------------------|-------------------------|--------|---------|------------------|----------------------------|-----------------------|
| Material | | | | | | | | | | | | | | |
| S HEAT RESISTENT / TITANIUM ALLOYS | S01 | PH7910 PHH910 | | | IC507 IC907 | | MP9005 VP05RT | | AH905 AH905 SH730 | WDSM10 | PR915 | | PC8110 | |
| | S10 | PH7910 PHH910 | GC1105 GC1005 GC1025 | KC5010 KC5410 KC5510 | IC507 IC903 IC300 IC808 | CP200 CP250 TS2000 TS2500 CP250 | MP9015 VP10RT MP9015 | AC510U | AH110 AH120 | WSM20 | PR915 | TT5030 TT5030 | PC8110 PC8115 PC8105 | CM40 SR226 CM45 |
| | S20 | PH7920 PHH920 | GC1025 GC1125 | KC5025 KC5525 | IC908 IC928 IC3028 IC806 | TS2500 CP500 | MT9015 VP20RT | AC510U AC520U | AH120 AH720 | WSM30 | PR1125 | TT8020 TT8030 | PC8815 PC5300 | CTP2440 GM127 |
| | S30 | PH7920 PHH920 | GC1125 | | | | VP15TF | AC520U | AH725 | | PR1125 | TT8020 | PC5400 | CTP2135 |

PHH910 = Best available choice



TURNING

Insert selection

Overview

Negative inserts

Positive inserts

PCBN & PCD inserts

Heavy turning

External Toolholders

Internal Toolholders

Automatic Lathes

Spare Parts

Technical Data

GRADES COMPARATIVE CHART

CVD COATED GRADES | GRAUS REVESTIDOS A CVD | CALIDADES CON RECUBRIMIENTO CVD

| ISO | Palbit | Sandvik | Kennametal | Iscar | Seco | Mitsubishi | Sumitomo | Tungaloy | Walter | Kyocera | Taegutec | Korloy | Ceratizit | |
|----------|--------|--------------------------------------|--|--|--|--------------------------------------|--|--|-------------------------|------------------|--|--|----------------------------|---|
| Material | | | | | | | | | | | | | | |
| P | P05 | PHG105 | GC4205 GC4005 | KCP05 KC9105 | IC9150 IC8150 IC428 | TP0500 TP1500 | UE6105 | AC810P AC700G | T9105 T9005 | WPP01 | CA510 CA5505 | TT1300 | NC3010 | |
| | P10 | PHG105 PH5115 PHG115 | GC4315 GC4215 GC4015 GC4325 | KCP10B KCP10 KCP25 KCP110 | IC9150 IC9015 IC8150 IC8250 | TP1500 TP2500 | UE6105 MC6015 UE6110 MY5015 | AC810P AC700G AC820P AC2000 | T9105 T9005 T9115 | WPP01 WPP05 | CAS510 CA5505 CA515 CA5515 | TT1300 TT7310 TT7400 | NC3215 | CTC1110 CTC1115 CTC3110 TCC410 |
| | P20 | PH5115 PHG115 PH5125 PHG125 | GC4315 GC4215 GC4015 GC4325 GC4225 GC4025 | KCP25B KCP25 KCP125 | IC9015 IC8250 IC9050 IC9250 IC8350 | TP2500 | MC6015 UE6110 MC6025 UE6020 MY5015 | AC820P AC2000 AC830P | T9115 T9125 | WPP10S WPP20S | CA515 CA5515 CA525 CA5525 CR9025 | TT3500 TT5100 TT7400 KT7300 TT7800 | NC3220 NC3120 | CTC1110 CTC1115 CTC1125 CTC1130 CTC1425 |
| | P30 | PH5125 PHG125 | GC4325 GC4225 GC4025 GC4235 GC4035 | KCP30 KCP40 KCP8050 | IC8350 IC9250 IC9350 | TP3500 TP3000 | MC025 UE6020 UE6035 UH6400 | AC830P AC630M | T9125 T9135 T9035 | WPP30S | CA525 CA5525 CA530 CA5335 CR9025 | TT3500 TT5100 TT7400 KT7300 | NC3215 NC3225 NC3120 | CTC1125 CTC1130 CTC1135 CTC1425 |
| | P40 | PHG140 PH5740 | GC4235 GC4035 | KCP30 KCP40 KC9040 KC9240 KC9245 | IC9350 | TP3500 TP3000 | UE6035 UH6400 | AC630M | T9135 T9035 | | CA530 CA5535 | TT5100 TT7100 KT7300 TT7800 | NC500H NC5330 | CTC1135 CTC1435 CTC2135 |
| | M | M10 | PHS215 | GC2015 | KCM15 | IC9250 IC6015 IC8250 | TM2000 | MC7015 US7020 | AC610M | T9115 | WAM20 | CA6515 | | NC9020 |
| M20 | | PHS215 PHS225 | GC2015 | KCM15 KC9225 | IC9250 IC6015 IC9025 IC656 | TM2000 | MC7015 US7020 MC7025 | AC610M AC6030M AC630M | T6020 T9125 | | CA6515 CA6525 | TT5100 | NC9020 | CTC1115 CTC1125 CTC1130 CTC1135 |
| M30 | | PHS225 PHS240 | GC2025 | KCM25 KC9230 | IC9350 IC6025 IC635 | TM4000 | MC7025 US735 | AC6030M AC630M | T6030 | | CA6525 | TT5100 TT7100 | NC9025 | CTC1125 CTC1135 CTC1425 CTC1435 CTC2135 |
| M40 | | PHS240 | GC2025 | KCM35 KC9240 KC9245 | IC6025 IC9350 | TM4000 | US735 | AC6030M AC630M | | | | TT7100 | NC9025 | CTC2135 |
| M50 | | PHS228 | GC2035 | KC9245 | IC9350 | | | | | | | | NC9035 | |
| K | K05 | PH5705 | GC3205 GC3210 | KCK05 | IC5005 IC9007 | TH1500 TK1001 TK1000 | MC5005 UC5105 | AC405K AC410K | T5105 | WAK10 | CA4505 CA4010 | | | |
| | K10 | PH5705 PH5320 | GC3205 GC3210 GC3215 | KCK15B KCK15B KC920 KC9315 | IC5005 IC5010 IC9150 IC428 IC4028 | TK1001 TK1000 TK2000 TK2001 | MC5015 UC5115 MY5015 | AC405K AC410K AC415K AC420K AC700G | T5115 | WAK20 | CA4515 CA4110 CA4115 | TT3100 TT7310 TT8115 | NC6205 NC6210 NC6215 | CTC1110 CTC1115 CTC3110 TCC410 CTC3215 |
| | K20 | PH5320 | GC3215 | KCK20 KC9110 KC9325 | IC5010 IC8150 IC9150 IC9015 IC418 | TK2001 TK2000 | MC5015 UC5115 UE6110 MY5015 | AC415K AC420K AC700G AC820P | T5115 T5125 | WAK30 | CA4515 CA4115 CA4120 | TT7310 TT8115 | NC6215 | CTC1115 CTC1125 CTC1130 CTC1425 CTC3215 |
| | K30 | PH5740 | | KC9125 KC9325 | IC9015 IC418 | | UE6110 | AC820P | T5125 | | | | | TSC30 |

UNCOATED GRADES | GRAUS NÃO REVESTIDOS | CALIDADES SIN RECUBRIMIENTO

| ISO | | Palbit | Sandvik | Kennametal | Iscar | Seco | Mitsubishi | Sumitomo | Tungaloy | Walter | Kyocera | Taegutec | Korloy | Ceratzit |
|-----------|-----|--------|-------------|---------------------|----------------------|-----------------|------------|----------|----------|--------|---------------|----------|--------|----------|
| Material | | | | | | | | | | | | | | |
| ALUMINIUM | N01 | PH0910 | H10 | | IC20 | | | | KS05F | WK1 | KW10 | K10 | | |
| | N10 | | H10 H13A | KU10 K313 K68 | IC20 IC08 IC28 | 890 HX KX | HTi10 | | TH10 | WK1 | KW10 KWK15 | K10 | H01 | |
| | N20 | | H10 H13A | KU10 K313 K68 | IC08 IC28 | HX KX 883 | | H1 | KS15F | WK1 | KW10 KWK15 | | H01 | |

PH7910 = Best available choice

- TURNING
- Insert selection
- Overview
- Negative inserts
- Positive inserts
- PCBN & PCD inserts
- Heavy turning
- External Toolholders
- Internal Toolholders
- Automatic Lathes
- Spare Parts
- Technical Data

CHIP BREAKER COMPARATIVE CHART | Tabela de equivalências de quebra-apanas | Tabla de comparación de rompevirutas
 NEGATIVES | NEGATIVAS | NEGATIVAS

| Application | | Palbit | Sandvik | Kennametal | Iscar | Seco | Tungaloy | Mitsubishi | Sumitomo | Walter | Kyocera | Taegutec | Korloy | Ceratizit |
|-----------------|----------------------------|-----------------|------------------------|---------------------|----------------------|--------------------|---------------------------------------|-------------------------|----------------------|----------------------|---------------------------------|---------------------------|----------------------------|-----------------------|
| Mat. | Operations | | | | | | | | | | | | | |
| STEEL | Finishing | MF | QF | FS, LF | SF, PP TF | | O1 TF | PK FH | FA | | DP | FA | VF, HU | |
| | Medium to Finishing | MF, LC | PF, QF, LC MF, R/L-K | FF, FN | F3P, NF, SF | FF2, FF1 | TS, TSF, ZF 11, NS, AS, TQ, NM, CB, C | SA, FY, C, SH, MP | SU, FL, SE, SX | NF3, NS6 | PQ, VFCJ PQ, GP, PP, HQ, GS, CQ | FG, VF, EA FC, MC, ML, MP | VL | CF, TF |
| | Medium Wiper | MW* | WL, WF, WMX WM, WR | FW, MW, RW | WF, WG | W-MF2, W-MF3 | AFW, FW, ASW, SW | SW | LW, SEW, GUW | NF, NM | WP, WQ | WS, WT | | TFQ, TMQ |
| | Medium to Roughing | PM, MR, GR, MA | PM, QM, XM, XRM | P, MN | M3P, M3M, PP, TF, GN | MR7, MR6, M5, M6 | TM, AM, DM, ZM All-round | MA, MH, MP | GU GE, UX | NMT, NM4 | HS, PT, GT, CS, PS | PC, MT MC, MG- | VM | TMF, TMM M50 |
| | Roughing | HR, RP", GR, MA | HM, PR MR | RN, RP MR | NR MR | MR6, R5 | TH, THS | RP, GH HZ, HL | MU, ME HG | NM5, NM6 NM9 | PH All-round | RT | GR, HR | TM, TRM |
| | Heavy Roughing | RP", HY", HZ" | PR, MR, HR, QR | RM RH | R3P, NM | R4, RR6 | TU, TRS, TUS | HM, HX HV | HG, HP HU, HW HF | NR6, NRF NRR | PX | HT, HD RX, RH HY, HZ | GH, VT | TRR, TR, R28, R58 R88 |
| STAINLESS STEEL | Finishing | SF, GS | MF, SM, XF, LC, R/L-K | FP | TF, VL | FF2, FF1, MF1 | SF, SA, SS | GM, MS, SH, LM | EX, EG, SU, EF | NF4 NMS | GU, MQ | EA, SF, SU, FG | VP2 | CF, F30 M34 F32, TF |
| | Medium | MS, SF, GS | MM, QM, SM XM, XRM | MP, P | M3M, PP | MF2, FF2, MF5 | SM S | MM, MA ES | GU HM | NM4 | TK MU | EM, ET | VP3, HS | TMF, M42 M30, M52 |
| | Roughing | SS, RP, HZ" | MR HM, PR | UP, RP | MR, MH | M5, M6, R8, RS, R6 | TH, SH, TU | GH, RM, HZ | EM, MU | NR4, NRT, NRS | MS | "GR, VM, VH, GH" | TM, M60, TRM, TMR, TRR R80 | |
| CAST IRON | Medium to Finishing | ST | KF, XF | FN | GN | M4, M5 | CF | LK, MA | UZ | | C | FG | B25 | CF |
| | Medium | ST, HR, FLAT | KM, QM, XM, XRM | RP, UN | | FLAT | CM All-round | MK GK | GZ | NM5 | ZS All-round | MT MG | FLAT | M50 |
| | Roughing to Heavy Roughing | HR, FLAT, HZ" | KR Without chipbreaker | Without chipbreaker | | MR7, M5 | CH Without chip-breaker | RK Without chip-breaker | Without chip-breaker | Without chip-breaker | GC Without chip-breaker | RT | GR | TMR, TR R28, R58, R88 |
| ALUMINIUM | Medium | MS | MF, QM | MS, MP MG | PP | - | P | | AX | | AH, A3 | ML | HA | F32 |
| S | Finishing | GS, SF, MS | SF, SM O1 | FS, LS MS | | MF1, M1 | HRF | FJ, LS | EF EX | NFT NF4 | MQ | SF | VP1 | |
| | Medium | SF, SS, DOMX | MM, QM SMR | UP, P, NGP RP | PP | MR3, MR4 | HRM, HMM, SA | MS RS GJ | EG MU | NMS NM4, NRS, NR4 | TK MS MU | SU | VP2, VP3 | M34, M52 |

MS = Best available choice

*=Wiper

"= Single face insert

CHIP BREAKER COMPARATIVE CHART | Tabela de equivalências de quebra-afaras | Tabla de comparación de rompevirutas
 POSITIVES | POSITIVAS | POSITIVAS - CLEARANCE ANGLE 5°, 7° AND 11° *

| Application | | Palbit | Sandvik | Kennametal | Iscar | Seco | Tungaloy | Mitsubishi | Sumitomo | Walter | Kyocera | Taegutec | Korloy | Ceratizit |
|--------------------|---------------------------|------------|-------------------|----------------|------------------------|------------------|--------------------------|----------------|------------------------------------|---------------|------------------------|----------|------------------|--------------|
| Mat. | Operations | | | | | | | | | | | | | |
| STEEL | Fine Finishing | FS | UM | UF | SF | F1, MF2 | 01 | FV, SMG | FC, FW | PF2 | CF, CK | FA | HFP | F32 |
| | Finishing | FS, FP | R/L-K, PF, XF, UF | 11, GM, LF | PF, SM, 14, 17, 19, XL | FF1, F2, M3, MF2 | PSF, PF, SS, PS, PSS, TS | FP, FV, SV, LP | FP, FZ, LU, FK, SS, SC, SU, SK, SF | PF5, PF4, PS5 | CQ, GK, GP, HQ, XP, XQ | FG, GF | VF, VL, F | SF, SMF, SMQ |
| | Finishing Wiper | FW* | WF | FW | WF | W-F1 | TSW, W08 | SW | LUW, SDW | PF | | | | |
| | Finishing to Medium | MP | PM | MF, MP, GM, MR | DT, HQ | MF2 | PM, 23, 24, RS | MP, MV | SU, UM, UJ | PM5 | VF, MF | MT, PC | HMP, C25, M, CMX | SM |
| | Finishing to Medium Wiper | MW* | WM | MW | WG | | | MW | | PM | | WT | | |
| STAINLESS STEEL | Fine Finishing | FS | UM | LF, GM | SM | F1, MF2, FF1 | PSF | FJ | FC | PF2 | GQ, GF | FG | HFP | |
| | Finishing | FS, FM, LM | MF, UF, R/L-K | MF | PF, 14 | F2, M3 | SS, PSS | FM, FV, SV | SU | PF4 | MQ | FA | VF, F | SF, SMF, SMQ |
| | Finishing Wiper | FW* | WF | FW | WF | W-F1 | | SW | | PF | | | | |
| | Finishing to Medium | MM, LM | MM, XM | MF, MP | SM | MF2, M5 | PM | MM, MV | UM | PM5 | XQ, VF | MT, PC | HMP, C25, M | F23, F43, SM |
| | Finishing to Medium Wiper | MW* | WM | MW | WG | | | MW | | PM | | WT | | |
| CAST IRON | Finishing | FK | KF | 11 | PF | M3 | | FV | SK | | GK | FA | HMP | SF |
| | Finishing Wiper | FW* | WF | FW | PF | W-F1 | | SW | LUW | PF | | MT, PC | | |
| | Finishing to Medium | MK, FLAT | KM, KR | MF, MP, FLAT | PM5, 19, FLAT | M5 | CM, FLAT | MV, MK, FLAT | UM, FLAT | PM5, PS5 | FLAT | FALT | C25, HMP, FLAT | 25P, 27, 29 |
| | Finishing to Medium Wiper | MW* | WM | MW | | W-F2 | | MW | | PM | | WT | | |
| ALUMINIUM | Medium | LN | AL | HP, GT | AF, AS | AL | AL, PP | AZ, R/L-F | AG, AX, AY | PF2, PM2 | AH, A3 | FL | AK, AR | 23P, 25P, 27 |
| HRSA | Fine Finishing | FS | UM | LF | SM | F1, MF2 | PSF, PF, SS, PS, PSS, TS | FJ | FC | PF2 | GQ | | HFP | SF |
| | Finishing | FM, LM | MF, UF, R/L-K | GM | PF, 14 | F1 | PSS, PS | FV | FX, FY | PF4 | MQ | FA | HFP | F23, F43, SM |
| | Finishing Wiper | FW* | WF | FW | WF | | | | | PF | | | | |
| | Finishing to Medium | MM, LM | MM, XM | MF | SM | | PM | MV | SI | PM5 | MQ | FG | HMP | SM, 25P, 29 |
| | Finishing to Medium Wiper | MW* | WM | MW | WG | | | | | PM | | | | |
| Medium to Roughing | GS | | | | | | | | | | | | | |

CHIP BREAKER SPECIFICATIONS

NEGATIVES | NEGATIVAS | NEGATIVAS

| Insert Type | Application | Tolerance Class | Major field of Application | Geometry | Cutting Edge* | | Cutting Conditions** | | Available Shapes | | | | | | | | |
|-------------------------|--------------------|-----------------|----------------------------|----------|--------------------|--------------|----------------------|-----------------------|------------------|-------|-------|-------|-------|-------|-------|-------|--|
| | | | | | at the nose radius | at the flank | Feed Fn (mm/rev) | Depth of cut DOC (mm) | KN __ | CN __ | DN __ | RN __ | SN __ | TN __ | VN __ | WN __ | |
| | | | | | | | | | | | | | | | | | |
| Knux's | Finishing | U | P M K | 01 | | | 0,20 to 0,35 | 1,00 to 6,00 | | | | | | | | | |
| | Medium | U | P M K | 02 | | | 0,40 to 0,70 | 1,50 to 6,00 | | | | | | | | | |
| NEGATIVES - double side | Medium Finishing | M | P M | 01 | | | 0,12 to 0,50 | 1,00 to 6,50 | | | | | | | | | |
| | Roughing to Medium | M | P M | 02 | | | 0,14 to 0,50 | 0,70 to 5,00 | | | | | | | | | |
| | Medium Finishing | M | P M | 03 | | | 0,15 to 0,50 | 0,80 to 6,00 | | | | | | | | | |
| | | M | P M | MF | | | 0,05 to 0,60 | 0,10 to 2,50 | | | | | | | | | |
| | Medium Finishing | M | M N S | MS | | | 0,10 to 0,80 | 0,20 to 4,50 | | | | | | | | | |
| | Medium Finishing | | M S | NEW GS | | | 0,10 to 0,60 | 0,40 to 2,00 | | | | | | | | | |
| | Medium Finishing | M | M S | SF | | | 0,10 to 0,55 | 0,60 to 3,00 | | | | | | | | | |
| | Medium Finishing | M | P | LC | | | 0,07 to 0,50 | 0,60 to 3,00 | | | | | | | | | |
| | Medium Finishing | M | K | ST | | | 0,10 to 0,50 | 0,15 to 10,50 | | | | | | | | | |
| | Medium Finishing | M | P | MR | | | 0,10 to 0,70 | 0,30 to 9,00 | | | | | | | | | |

* T-Land varies according to the IC (IC reference used: 12,7mm)
 ** Cutting Conditions varies according to the Insert shape, IC and Nose Radius

NEGATIVES | NEGATIVAS | NEGATIVAS










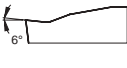


















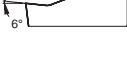







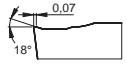
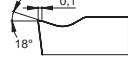



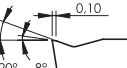



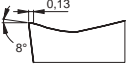






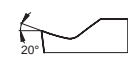















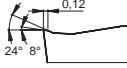
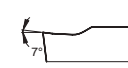






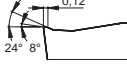
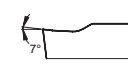






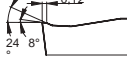







| Insert Type | Application | Tolerance Class | Major field of Application | Geometry | Cutting Edge* | | Cutting Conditions** | | Available Shapes | | | | | | | |
|-------------------------|-----------------------------|-----------------|----------------------------|----------|--------------------|--------------|----------------------|-----------------------|------------------|-------|-------|-------|-------|-------|-------|-------|
| | | | | | at the nose radius | at the flank | Feed Fn (mm/rev) | Depth of cut DOC (mm) | KN __ | CN __ | DN __ | RN __ | SN __ | TN __ | VN __ | WN __ |
| | | | | | | | | | | | | | | | | |
| NEGATIVES - double side | Medium Finishing | M | P | PM | | | 0,10 to 0,60 | 0,30 to 9,00 | | | | | | | | |
| | Medium Finishing | M | K | Flat | | | 0,08 to 2,50 | 0,10 to 15,00 | | | | | | | | |
| | Medium Wiper | M | P M K | MW | | | 0,15 to 0,90 | 0,30 to 6,00 | | | | | | | | |
| | Roughing to Medium roughing | M | M S | SS | | | 0,10 to 1,00 | 0,30 to 8,50 | | | | | | | | |
| | Roughing to Medium roughing | M | P NEW | MA | | | 0,30 to 0,70 | 1,20 to 8,00 | | | | | | | | |
| | Roughing | M | P M K | HR | | | 0,20 to 1,20 | 0,80 to 15,00 | | | | | | | | |
| NEGATIVES - Single side | Roughing to Medium roughing | M | P NEW | GR | | | 0,20 to 1,50 | 0,80 to 8,00 | | | | | | | | |
| | Roughing | M | P M | RP | | | 0,30 to 1,50 | 2,00 to 12,00 | | | | | | | | |
| | Heavy Roughing to Roughing | M | P M | HY | | | 0,35 to 1,60 | 2,00 to 15,00 | | | | | | | | |
| | Heavy Roughing | M | P K | HZ | | | 0,35 to 1,60 | 2,40 to 17,00 | | | | | | | | |

* T-Land varies according to the IC (IC reference used: 12,7mm)

** Cutting Conditions varies according to the Insert shape, IC and Nose Radius

CHIP BREAKER SPECIFICATIONS

POSITIVES | POSITIVAS | POSITIVAS

| Insert Type | Application | Tolerance Class | Major field of Application | Geometry | Cutting Edge* | | Cutting Conditions** | | Available Shapes | | | | | | | |
|---------------------------------------|-----------------------------|-----------------|----------------------------|----------|---|---|---------------------------------|--------------------------|---|--|---|---|---|---|---|---|
| | | | | | at the nose radius | at the flank | Feed F _n (mm/rev) | Depth of cut DOC (mm) | CC __ | DC __ | RC __ | SC __ | TC __ | VC __ | VB __ | |
| | | | | |  |  | | | 80°  | 55°  |  | 90°  | 60°  | 35°  | 35°  | |
| POSITIVES - Clearance angle 5° and 7° | Fine Finishing | M | P | FP |  |  | 0,03 to 0,45 | 0,06 to 2,40 |  |  | |  |  |  |  | |
| | | M | P M S | BO |  |  | 0,05 to 0,30 | 0,30 to 1,50 |  | | | | | | | |
| | | M | M S | FM |  |  | 0,03 to 0,45 | 0,06 to 2,40 |  |  | |  |  |  |  | |
| | | M | K | FK |  |  | 0,03 to 0,30 | 0,06 to 2,40 |  |  | |  |  |  |  | |
| | Fine Finishing wiper | M | P M K S | FW |  |  | 0,05 to 0,50 | 0,30 to 3,50 |  |  | | |  | | | |
| | | M | M S | LM |  |  | 0,08 to 0,35 | 0,20 to 3,00 |  |  | | | | | | |
| | Finishing to fine finishing | G | P M S | FS |  |  | 0,01 to 0,25 | 0,10 to 3,00 |  |  | | |  |  | | |
| | | G | N | LN |  |  | 0,05 to 1,60 | 0,05 to 7,00 |  |  |  |  |  |  |  | |
| | Medium | M | K | Flat |  |  | 0,04 to 0,80 | 0,05 to 6,30 |  |  | | |  |  |  |  |
| | | M | P | MP |  |  | 0,06 to 0,60 | 0,19 to 3,60 |  |  | | |  |  |  |  |
| | | M | M S | MM |  |  | 0,06 to 0,60 | 0,19 to 3,60 |  |  | | |  |  |  |  |
| | | M | K | MK |  |  | 0,06 to 0,60 | 0,19 to 3,60 |  |  | | |  |  |  |  |

* T-Land varies according to the IC (IC reference used: 12,7mm)
 ** Cutting Conditions varies according to the Insert shape, IC and Nose Radius

POSITIVES | POSITIVAS | POSITIVAS

| Insert Type | Application | Tolerance Class | Major field of Application | Geometry | Cutting Edge* | | Cutting Conditions** | | Available Shapes | | | | | | | |
|---------------------------------------|---------------------|-----------------|----------------------------|-------------|--------------------|--------------|---------------------------------|--------------------------|------------------|-------|-------|-------|-------|-------|-------|--|
| | | | | | at the nose radius | at the flank | Feed F _n (mm/rev) | Depth of cut DOC (mm) | CC __ | DC __ | RC __ | SC __ | TC __ | VC __ | VB __ | |
| | | | | | | | | | 80° | 55° | | 90° | 60° | 35° | 35° | |
| POSITIVES - Clearance angle 5° and 7° | Finishing Wiper | M | P M K S | MW | | | 0,10 to 0,50 | 0,50 to 4,00 | | | | | | | | |
| | Medium | M | P M S | CP | | | 0,04 to 0,17 | 0,50 to 2,40 | | | | | | | | |
| | Medium to finishing | | P M | RF | | | 0,25 to 2,50 | 2,50 to 10,00 | | | | | | | | |
| | Roughing to Medium | | | P M K | ST | | | 0,05 to 3,20 | 0,80 to 12,80 | | | | | | | |
| | | | M | P M K | RM | | | 0,80 to 2,50 | 3,20 to 13,00 | | | | | | | |
| | | | | P M | RR | | | 0,80 to 2,50 | 3,20 to 13,00 | | | | | | | |
| Medium to Roughing | M | M S | GS | | | 0,05 to 4,00 | 0,40 to 5,00 | | | | | | | | | |

* T-Land varies according to the IC (IC reference used: 12,7mm)
 ** Cutting Conditions varies according to the Insert shape, IC and Nose Radius

| Insert Type | Application | Tolerance Class | Major field of Application | Geometry | Cutting Edge* | | Cutting Conditions** | | Available Shapes | |
|---------------------------------|-----------------------------|-----------------|----------------------------|----------|--------------------|--------------|---------------------------------|--------------------------|------------------|-------|
| | | | | | at the nose radius | at the flank | Feed F _n (mm/rev) | Depth of cut DOC (mm) | CC __ | DC __ |
| | | | | | | | | | 80° | 55° |
| POSITIVES - Clearance angle 11° | Medium to Finishing | U | P M K S | Flat | | | 0,05 to 2,20 | 1,00 to 10,00 | | |
| | Finishing to Fine Finishing | M | P M K | 12 | | | 0,03 to 0,55 | 0,10 to 3,00 | | |
| | Medium | M | P M | 13 | | | 0,03 to 0,55 | 0,20 to 7,00 | | |

* T-Land varies according to the IC (IC reference used: 12,7mm)
 ** Cutting Conditions varies according to the Insert shape, IC and Nose Radius

CUTTING SPEED (m/min) || Velocidade de corte (m/min) | Velocidad de corte (m/min)

- TURNING
- Insert selection
- Overview
- Negative inserts
- Positive inserts
- PCBN & PCD inserts
- Heavy turning
- External Toolholders
- Internal Toolholders
- Automatic Lathes
- Spare Parts
- Technical Data

| ISO | Material | Grade fn (mm/r) | CVD Coating | | | | | | | | | | | | | | |
|-----------------|------------------|--------------------|-------------------|---------|---------|---------|---------|---------|-------------|---------|---------|-------------------|---------|---------|-------------|---------|---------|
| | | | ← Wear Resistance | | | | | | | | | | | | Toughness → | | |
| | | | PHG105 | | | PH5115 | | | PHG115 | | | PH5125 | | | PHG125 | | |
| HB (brinell) | 0.2 | 0.4 | 0.8 | 0.2 | 0.4 | 0.8 | 0.2 | 0.4 | 0.8 | 0.2 | 0.4 | 0.8 | 0.2 | 0.4 | 0.8 | | |
| P | Unalloyed steel | 125-170 | 280-380 | 210-300 | 200-250 | 240-340 | 170-260 | 160-210 | 250-350 | 180-270 | 170-220 | 190-285 | 160-230 | 140-205 | 200-295 | 170-240 | 150-215 |
| | Low-alloy steel | 180-350 | 220-280 | 200-260 | 170-210 | 180-240 | 160-220 | 130-170 | 190-250 | 170-230 | 140-180 | 160-220 | 130-200 | 110-180 | 170-230 | 140-210 | 120-190 |
| | High-alloy steel | 200-325 | 165-250 | 150-235 | 140-230 | 125-210 | 110-195 | 100-190 | 135-220 | 120-205 | 110-200 | 115-205 | 100-175 | 90-160 | 125-215 | 110-185 | 100-170 |
| P | Material | Grade fn (mm/r) | CVD Coating | | | | | | | | | PVD Coating | | | | | |
| | | | ← Wear Resistance | | | | | | Toughness → | | | ← Wear Resistance | | | Toughness → | | |
| | | | PHG140 | | | PH5740 | | | PH7910 | | | PH7920 | | | | | |
| HB (brinell) | 0.2 | 0.4 | 0.8 | 0.2 | 0.4 | 0.8 | 0.2 | 0.4 | 0.8 | 0.2 | 0.4 | 0.8 | 0.2 | 0.4 | 0.8 | | |
| P | Unalloyed steel | 125-170 | 135-230 | 120-210 | 115-200 | 125-220 | 110-200 | 105-190 | 140-245 | 130-225 | 115-220 | 130-230 | 120-220 | 110-210 | - | - | - |
| | Low-alloy steel | 180-350 | 125-205 | 105-185 | 95-185 | 115-195 | 95-175 | 85-175 | 130-230 | 125-225 | 125-215 | 125-220 | 115-210 | 100-200 | - | - | - |
| | High-alloy steel | 200-325 | 105-205 | 75-175 | 50-135 | 95-195 | 65-165 | 40-125 | - | - | - | - | - | - | - | - | - |

| ISO | Material | Grade fn (mm/r) | CVD Coating | | | | | | | | | | | |
|-----------------|-----------------------------------|--------------------|-------------------|---------|---------|---------|---------|---------|---------|-------------|--------|-------------|---------|---------|
| | | | ← Wear Resistance | | | | | | | Toughness → | | | | |
| | | | PHS215 | | | PHS225 | | | PHS240 | | | | | |
| HB (brinell) | 0.2 | 0.4 | 0.6 | 0.2 | 0.4 | 0.6 | 0.2 | 0.4 | 0.6 | 0.2 | 0.4 | 0.6 | | |
| M | SS - Ferritic/martensitic | 200-330 | 125-260 | 100-220 | 80-200 | 115-230 | 90-180 | 70-160 | 110-230 | 85-175 | 70-140 | - | - | - |
| | SS - Austenitic | 180-330 | 120-255 | 95-215 | 75-195 | 110-225 | 85-175 | 65-155 | 105-225 | 80-170 | 65-135 | - | - | - |
| | SS - Austenitic-ferritic (Duplex) | 230-260 | 110-245 | 85-205 | 65-185 | 100-215 | 75-165 | 55-145 | 95-215 | 70-160 | 55-125 | - | - | - |
| M | Material | Grade fn (mm/r) | PVD Coating | | | | | | | | | | | |
| | | | ← Wear Resistance | | | | | | | | | Toughness → | | |
| | | | PH7910 | | | PHH910 | | | PH7920 | | | PHH920 | | |
| HB (brinell) | 0.2 | 0.4 | 0.6 | 0.2 | 0.4 | 0.6 | 0.2 | 0.4 | 0.6 | 0.2 | 0.4 | 0.6 | | |
| M | SS - Ferritic/martensitic | 200-330 | 120-220 | 110-210 | 105-205 | 130-230 | 120-220 | 115-215 | 110-210 | 100-200 | 95-195 | 120-220 | 110-210 | 105-205 |
| | SS - Austenitic | 180-330 | 115-215 | 105-205 | 95-195 | 125-225 | 115-215 | 105-205 | 105-205 | 95-195 | 85-185 | 115-215 | 105-205 | 95-195 |
| | SS - Austenitic-ferritic (Duplex) | 230-260 | 105-202 | 100-195 | 90-185 | 115-212 | 110-205 | 100-195 | 95-192 | 90-185 | 80-175 | 105-202 | 100-195 | 90-185 |

| ISO | Material | Grade fn (mm/r) | CVD Coating | | | | | | | | |
|-----------------|-------------------|--------------------|-------------------|---------|---------|---------|---------|---------|-------------|---------|---------|
| | | | ← Wear Resistance | | | | | | Toughness → | | |
| | | | PH5705 | | | PH5320 | | | PH5740 | | |
| HB (brinell) | 0.2 | 0.4 | 0.6 | 0.2 | 0.4 | 0.6 | 0.2 | 0.4 | 0.6 | | |
| K | Marble cast iron | 130-230 | 160-360 | 140-280 | 120-235 | 150-330 | 130-240 | 110-220 | 110-230 | 100-215 | 100-190 |
| | Grey cast iron | 180-220 | 220-380 | 190-330 | 150-290 | 200-330 | 170-280 | 150-230 | 150-230 | 140-220 | 110-210 |
| | Nodular cast iron | 160-380 | 150-280 | 135-265 | 120-220 | 140-250 | 125-230 | 110-220 | 125-220 | 115-205 | 105-185 |

| ISO | Material | Grade fn (mm/r) | Uncoated | |
|-----|--------------------------|--------------------|----------|--------|
| | | | PH0910 | |
| | | | 0.15 | 0.8 |
| N | Aluminium alloys | 60-130 | 375-2400 | 40-240 |
| | Cooper and cooper alloys | 90-110 | 375-630 | 35-65 |

| ISO | Material | Grade fn (mm/r) | PVD Coating | | | | | | | | | | | |
|-----------------|---|--------------------|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|-------------|--------|--------|
| | | | ← Wear Resistance | | | | | | | | | Toughness → | | |
| | | | PH7910 | | | PHH910 | | | PH7920 | | | PHH920 | | |
| HB (brinell) | 0.1 | 0.3 | 0.5 | 0.2 | 0.4 | 0.6 | 0.1 | 0.3 | 0.5 | 0.2 | 0.4 | 0.6 | | |
| S | Heat resistant super alloys (Iron base) | 200-280 | 65-140 | 60-130 | 50-110 | 75-150 | 70-140 | 60-120 | 60-135 | 55-125 | 45-105 | 70-145 | 65-135 | 55-115 |
| | Heat resistant super alloys (Nickel base) | 250-320 | 45-120 | 40-110 | 30-100 | 55-130 | 50-120 | 40-110 | 40-115 | 35-105 | 25-95 | 50-125 | 45-115 | 35-105 |
| | Heat resistant super alloys (Cobalt base) | 200-320 | 45-115 | 40-105 | 30-90 | 55-125 | 50-115 | 40-100 | 40-110 | 35-100 | 25-85 | 50-120 | 45-110 | 35-95 |
| | Titanium alloys (400<-or<-1050[MPa]) | - | 50-130 | 45-120 | 40-100 | 60-140 | 55-130 | 50-110 | 45-125 | 40-115 | 35-95 | 55-135 | 50-125 | 45-105 |

SELECTION GUIDE (GRADES AND CHIP-BREAKERS) FOR NEGATIVE INSERTS

Guia De Seleção (Graus E Quebra-Aparas) para pastilhas negativas | Guía De Selección (Calidades Y Rompevirutas) para plaquitas negativas

SELECTION GUIDE FOR NEGATIVE INSERTS - SINGLE SIDE ...NMM'S

| ISO | Material workplace | Stability | Medium | | Roughing | | Medium roughing | | Insert | | | Holders |
|-----|--|-----------|--------------|------------------|--------------|------------------|-----------------|------------------|--------|-----------------------------|------|------------------------|
| | | | Chip-breaker | Grade | Chip-breaker | Grade | Chip-breaker | Grade | Type | | | Type |
| P | Unalloy steel HB 110 DIN C15 C45 | | RP | PH5125 PHG125 | RP | PH5125 PHG125 | HZ | PH5125 PHG125 | 0° | Conventional Nose Radius | #NMM | D##N M##N M##N-K |
| | | | RP | PH5125 PHG125 | HY | PH5125 PHG125 | HZ | PH5125 PHG125 | | | | |
| | | | RP | PH5125 PHG125 | HY | PH5740 PHG140 | HZ | PH5740 PHG140 | | | | |
| | Low Alloyed Steel HB180 DIN 21NiCrM02 36CrNiM04 | | RP | PH5125 PHG125 | RP | PH5125 PHG125 | HZ | PH5125 PHG125 | 0° | Conventional Nose Radius | #NMM | D##N M##N M##N-K |
| | | | RP | PH5125 PHG125 | HY | PH5125 PHG125 | HZ | PH5125 PHG125 | | | | |
| | | | RP | PH5125 PHG125 | HY | PH5125 PHG125 | HZ | PH5125 PHG125 | | | | |
| | High alloyed steel HB 200 DIN 34CrNiMo6 42CrMo4 | | RP | PH5125 PHG125 | RP | PH5125 PHG125 | HZ | PH5125 PHG125 | 0° | Conventional Nose Radius | #NMM | D##N M##N M##N-K |
| | | | RP | PH5125 PHG125 | HY | PH5125 PHG125 | HZ | PH5125 PHG125 | | | | |
| | | | RP | PH5125 PHG125 | HZ | PH5740 PHG140 | HZ | PH5740 PHG140 | | | | |
| | High alloyed steel HB 400 DIN X40CrMoV5 X45GrSi93 | | RP | PH5125 PHG125 | RP | PH5125 PHG125 | HZ | PH5125 PHG125 | 0° | Conventional Nose Radius | #NMM | D##N M##N M##N-K |
| | | | RP | PH5125 PHG125 | HY | PH5125 PHG125 | HZ | PH5125 PHG125 | | | | |
| | | | RP | PH5125 PHG125 | HZ | PH5125 PHG125 | HZ | PH5125 PHG125 | | | | |
| M | Ferritic/ martensitic stainless steel DIN X12CrMoS17 X6CrMo17 | | RP | PHS225 | RP | PHS225 | HY | PHS225 | 0° | Conventional Nose Radius | #NMM | D##N M##N M##N-K |
| | | | RP | PHS225 | HY | PHS225 | HY | PHS225 | | | | |
| | | | RP | PHS225 | HY | PHS240 | HY | PHS240 | | | | |
| | Austenitic stainless steel DIN X5CrNi189 X5CrNiMo18 | | RP | PHS225 | RP | PHS225 | HS | PHS225 | 0° | Conventional Nose Radius | #NMM | D##N M##N M##N-K |
| | | | RP | PHS225 | RP | PHS225 | HY | PHS225 | | | | |
| | | | RP | PHS225 | HY | PHS240 | HY | PHS240 | | | | |
| | Duplex stainless steel DIN X2CrNiMoSi19 X8CrNiMo27 | | RP | PHS225 | RP | PHS225 | HY | PHS225 | 0° | Conventional Nose Radius | #NMM | D##N M##N M##N-K |
| | | | RP | PHS225 | RP | PHS225 | HY | PHS240 | | | | |
| | | | RP | PHS225 | HY | PHS240 | HY | PHS240 | | | | |
| K | Grey cast iron HB 220 DIN GG15 GG25 GG35 | | HZ | PH5320 | HZ | PH5320 | HY | PH5125 | 0° | Conventional Nose Radius | #NMM | D##N M##N M##N-K |
| | | | HZ | PH5320 | HZ | PH5320 | HY | PH5125 | | | | |
| | | | HZ | PH5740 | HZ | PH5740 | HY | PH5740 | | | | |
| | Nodular cast iron HB 180 DIN GGG40 GGG50 GGG70 | | HZ | PH5320 | HZ | PH5320 | HY | PH5125 | 0° | Conventional Nose Radius | #NMM | D##N M##N M##N-K |
| | | | HZ | PH5740 | HZ | PH5740 | HY | PH5125 | | | | |
| | | | HZ | PH5740 | HZ | PH5740 | HY | PH5740 | | | | |

Stable cutting

General cutting

Unstable cutting

SELECTION GUIDE (GRADES AND CHIP-BREAKERS) FOR NEGATIVE INSERTS

SELECTION GUIDE FOR NEGATIVE INSERTS - DOUBLE SIDE ...NMG'S

| ISO | Material workplace | Stability | Medium | | Roughing | | Medium roughing | | Insert | | | Holders |
|-----|--|-----------|--------------|-----------------------------|--------------|---------------|-----------------|---------------|--------------------------|------------------------------|--------------|--|
| | | | Chip-breaker | Grade | Chip-breaker | Grade | Chip-breaker | Grade | Type | | Type | |
| P | Unalloyed steel HB 110 DIN C15 C45 C60 | | MF | PH5115 PHG115 | LC | PH5115 PHG115 | MR PM | PH5115 PHG115 | Negative double side | Conventional Nose Radius | #NMG | D##N M##N M##N-K P##N |
| | | | MF | PH5115 PHG115 | LC | PH5125 PHG125 | MR PM | PH5125 PHG125 | | | | |
| | | | MF | PH5125 PHG125 | LC | PH5125 PHG125 | MR | PH5125 PHG125 | 0° | | | |
| | | | MW | PH5115 PHG115 | MW | PH5115 PHG115 | MW | PH5115 PHG115 | | | | |
| | | | MW | PH5115 PHG115 | MW | PH5115 PHG115 | MW | PH5115 PHG115 | 0° | Wiper Nose Radius | CNMG WNMG | D##N 95° M##N 95° M##N-K 95° P##N 95° |
| | | | MW | PH5125 PHG125 | MW | PH5125 PHG125 | MW | PH5125 PHG125 | | | | |
| | Low alloyed Steel HB 180 DIN 21NiCrMo2 36CrNiMo4 34CrMo4 | | MF | PH7910 | MR PM | PH5115 PHG115 | HR | PH5115 PHG115 | Negative double side | Conventional Nose Radius | #NMG | D##N M##N M##N-K P##N |
| | | | MF | PH5115 PHG115 | MR PM | PH5125 PHG125 | HR | PH5125 PHG125 | | | | |
| | | | MF | PH5125 PHG125 | MR / PM | PH5125 PHG125 | HR | PH5125 PHG125 | 0° | | | |
| | | | MW | PH5115 PHG115 | MW | PH5115 PHG115 | MW | PH5115 PHG115 | | | | |
| | | | MW | PH5115 PHG115 | MW | PH5115 PHG115 | MW | PH5115 PHG115 | 0° | Wiper Nose Radius | CNMG WNMG | D##N 95° M##N 95° M##N-K 95° P##N 95° |
| | | | MW | PH5125 PHG125 | MW | PH5125 PHG125 | MW | PH5125 PHG125 | | | | |
| | High alloyed steel HB 200 DIN 34CrNiMo6 42CrMo4 | | MF | PH7910 | MR / PM | PH5115 PHG115 | HR | PH5115 PHG115 | Negative double side | Conventional Nose Radius | #NMG | D##N M##N M##N-K P##N |
| | | | MF | PH5115 PHG115 | MR / PM | PH5125 PHG125 | HR | PH5125 PHG125 | | | | |
| | | | MF | PH5125 PHG125 | MR / PM | PH5125 PHG125 | HR | PH5125 PHG125 | 0° | | | |
| | | | MW | PH5115 PHG115 | MW | PH5115 PHG115 | MW | PH5115 PHG115 | | | | |
| | | | MW | PH5115 PHG115 | MW | PH5115 PHG115 | MW | PH5115 PHG115 | 0° | Wiper Nose Radius | CNMG WNMG | D##N 95° M##N 95° M##N-K 95° P##N 95° |
| | | | MW | PH5125 PHG125 | MW | PH5125 PHG125 | MW | PH5125 PHG125 | | | | |
| | High alloyed steel HB 400 DIN X40CrMoV5 X45GrS193 | | MF ST | PH7910 PH5705 | MR PM | PH5115 PHG115 | HR | PH5115 PHG115 | Negative double side | Conventional Nose Radius | #NMG | D##N M##N M##N-K P##N |
| | | | MF ST | PH5115 PHG115 PH5320 PHG105 | MR PM | PH5115 PHG125 | HR | PH5115 PHG115 | | | | |
| | | | MF | PH5115 PHG115 | MR PM | PH5125 PHG125 | HR | PH5125 PHG125 | 0° | | | |
| | | | MW | PH5115 PHG115 | MW | PH5115 PHG115 | MW | PH5115 PHG115 | | | | |
| | | | MW | PH5115 PHG115 | MW | PH5115 PHG115 | MW | PH5115 PHG115 | 0° | Wiper Nose Radius | CNMG WNMG | D##N 95° M##N 95° M##N-K 95° P##N 95° |
| | | | MW | PH5115 PHG115 | MW | PH5115 PHG115 | MW | PH5125 PHG125 | | | | |
| M | Ferritic/martensitic stainless steel DIN X12CrMoS17 X6CrMo17 | | SF, GS | PH7920 PHH920 | SS | PH7920 | HR | PHS225 | Negative double side | Conventional Nose Radius | #NMG | D##N M##N M##N-K |
| | | | SF, GS | PH7920 PHH920 | SS | PH7920 | HR | PHS225 | | | | |
| | | | SF, GS | PH7920 PHH920 | SS | PH7920 | HR | PHS240 | 0° | | | |
| | | | MW | PHS215 | MW | PHS215 | - | - | | | | |
| | | | MW | PHS215 | MW | PHS225 | - | - | 0° | Wiper Nose Radius | CNMG WNMG | D##N 95° M##N 95° M##N-K 95° P##N 95° |
| | | | MW | PHS225 | MW | PHS240 | - | - | | | | |

Stable cutting

General cutting

Unstable cutting

DOUBLE SIDE ...NMG'S

| ISO | Material workplace | Stability | Medium | | Roughing | | Medium roughing | | Insert | | | Holders |
|-----|----------------------------|-----------|--------------|----------------|--------------|---------------|-----------------|--------|----------------------|--------------------------|--------------|--|
| | | | Chip-breaker | Grade | Chip-breaker | Grade | Chip-breaker | Grade | Type | | | Type |
| M | Austenitic stainless steel | | GS, SF | PH7920 PHH910 | SS | PH7920 | HR | PHS225 | Negative double side | Conventional Nose Radius | #NMG | D##N M##N M##N-K P##N |
| | | | GS, GS | PH7910 PHH7920 | SS | PH7920 | HR | PHS225 | | | | |
| | | | GS, SF | PH7920 PHH920 | SS | PH7920 | HR | PHS240 | | | | |
| | | | MW | PHS215 | MW | PHS215 | - | - | Negative double side | Wiper Nose Radius | CNMG WNMG | D##N 95° M##N 95° M##N-K 95° P##N 95° |
| | | | MW | PHS215 | MW | PHS225 | - | - | | | | |
| | | | MW | PHS225 | MW | PHS240 | - | - | | | 0° | |
| | Duplex stainless steel | | GS, SF | PH7920 PHH920 | SS | PH7910 | HR | PHS225 | Negative double side | Conventional Nose Radius | #NMG | D##N M##N M##N-K P##N |
| | | | GS, SF | PH7920 PHH920 | SS | PH7920 | HR | PHS225 | | | | |
| | | | GS, SF | PH7920 PHH920 | SS HR | PHS240 | HR | PHS240 | | | | |
| | | | MW | PHS215 | - | - | - | - | Negative double side | Wiper Nose Radius | CNMG WNMG | D##N 95° M##N 95° M##N-K 95° P##N 95° |
| | | | - | - | - | - | - | - | | | | |
| | | | - | - | - | - | - | - | | | 0° | |
| K | Grey cast iron | | Flat | PH5705 | Flat | PH5320 | HR | PH5705 | Negative double side | Conventional Nose Radius | #NMG | D##N M##N M##N-K P##N |
| | | | ST | PH5320 | ST | PH5705 | HR | PH5705 | | | | |
| | | | ST | PH5320 | ST | PH5320 | HR | PH5320 | | | | |
| | | | MW | PH5320 | MW | PH5320 | - | - | Negative double side | Wiper Nose Radius | CNMG WNMG | D##N 95° M##N 95° M##N-K 95° P##N 95° |
| | | | MW | PH5320 | MW | PH5320 | - | - | | | | |
| | | | MW | PH5320 | MW | PH5320 | - | - | | | 0° | |
| | Nodular cast iron | | Flat | PH5705 | ST | PH5705 | HR | PH5705 | Negative double side | Conventional Nose Radius | #NMG | D##N M##N M##N-K P##N |
| | | | ST | PH5320 | ST | PH5320 | HR | PH5320 | | | | |
| | | | ST | PH5320 | ST | PH5320 | HR | PH5320 | | | | |
| | | | MW | PH5320 | MW | PH5320 | - | - | Negative double side | Wiper Nose Radius | CNMG WNMG | D##N 95° M##N 95° M##N-K 95° P##N 95° |
| | | | MW | PH5320 | MW | PH5320 | - | - | | | | |
| | | | MW | PH5320 | MW | PH5320 | - | - | | | 0° | |
| S | Titanium Alloys | | GS, SF | PH7910 PHH910 | MS | PH7910 PHH910 | SS | PH7920 | Negative double side | Conventional Nose Radius | #NMG | D##N M##N M##N-K P##N |
| | | | GS, SF | PH7910 PHH910 | MS | PH7910 PHH910 | SS | PH7920 | | | | |
| | | | GS, SF | PH7910 PHH910 | MS | PH7910 PHH910 | SS | PH7920 | | | | |

Stable cutting

General cutting

Unstable cutting

SELECTION GUIDE (GRADES AND CHIP-BREAKERS) FOR NEGATIVE INSERTS

Guia De Seleção (Graus E Quebra-Aparas) para pastilhas negativas | Guía De Selección (Calidades Y Rompevirutas) para plaquitas negativas

DOUBLE SIDE ...NMG'S

| ISO | Material Workplace | Stability | Medium | | Roughing | | Medium roughing | | Insert | | | Holders |
|-----|--|-----------|--------------|------------------|--------------|------------------|-----------------|--------|--------|--|------|--------------------------------|
| | | | Chip-breaker | Grade | Chip-breaker | Grade | Chip-breaker | Grade | Type | | | Type |
| S | Super Alloys DIN NiCr19Co11MoTi NiFe35Cr14MoTi CoCr20W15Ni | | GS, SF | PH7910 PHH910 | MS | PH7910 PHH910 | SS | PH7920 | 0° | | #NMG | D##N M##N M##N-K P##N |
| | | | GS, SF | PH7910 PHH910 | MS SS | PH7910 PHH910 | SS | PH7920 | | | | |
| | | | GS, SF | PH7910 PHH910 | MS SS | PH7910 PHH910 | SS | PH7920 | | | | |
| N | Aluminium Alloys DIN AW7075 AlSi12 CuZn37 | | MS | PH0910 | MS | PH0910 | - | - | 0° | | #NMG | D##N M##N M##N-K P##N |
| | | | MS | PH0910 | MS | PH0910 | - | - | | | | |
| | | | MS | PH0910 | MS | PH0910 | - | - | | | | |

Stable cutting General cutting Unstable cutting

SINGLE SIDE...CMT'S, BMT'S, CGT'S, RCMX'S, RCMT'S

| ISO | Material Workplace | Stability | Medium | | Roughing | | Medium roughing | | Insert | | | Holders |
|-----|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-------------------|--------------------------|--------------|--------------|
| | | | Chip-breaker | Grade | Chip-breaker | Grade | Chip-breaker | Grade | Type | | | Type |
| P | Unalloyed steel HB 110 DIN C15 C45 C60 | | FP | PH5115 PHG115 | MP | PH5115 PHG115 | MP | PH5115 PHG115 | | Conventional nose radius | #CMT #BMT | S##C S##B |
| | | | FP | PH5115 PHG115 | MP | PH5125 PHG125 | MP | PH5125 PHG125 | | | | |
| | | | FP | PH5125 PHG125 | MP | PH5125 PHG125 | MP | PH5125 PHG125 | | Wiper nose radius | CCMT | S##C 95° |
| | | | FW | PH5115 PHG115 | MW | PH5115 PHG115 | - | - | | | | |
| | | | FW | PH5115 PHG115 | MW | PH5115 PHG115 | - | - | | | | |
| | | | FW | PH5115 PHG115 | MW | PH5115 PHG115 | - | - | | | | |
| | | FW | PH5115 PHG115 | MW | PH5115 PHG115 | - | - | | | | | |
| | | FW | PH5115 PHG115 | MW | PH5115 PHG115 | - | - | | | | | |
| | Low alloyed Steel HB 180 DIN 21NiCrMo2 36CrNiMo4 34CrMo4 | | FP | PH5115 PHG115 | MP | PH5115 PHG115 | MP | PH5115 PHG115 | | Conventional nose radius | #CMT #BMT | S##C S##B |
| | | | FP | PH5115 PHG115 | MP | PH5125 PHG125 | MP | PH5125 PHG125 | | | | |
| | | | FP | PH5125 PHG125 | MP | PH5125 PHG125 | MP | PH5125 PHG125 | | Wiper nose radius | CCMT | S##C 95° |
| | | | FW | PH5115 PHG115 | MW | PH5115 PHG115 | - | - | | | | |
| | | | FW | PH5115 PHG115 | MW | PH5115 PHG115 | - | - | | | | |
| | | | FW | PH5115 PHG115 | MW | PH5115 PHG115 | - | - | | | | |
| | | FW | PH5115 PHG115 | MW | PH5115 PHG115 | - | - | | | | | |
| | | FW | PH5115 PHG115 | MW | PH5115 PHG115 | - | - | | | | | |
| | High alloyed Steel HB 200 DIN 34CrNiMo6 42CrMo4 | | FP | PH5115 PHG115 | MP | PH5115 PHG115 | MP | PH5115 PHG115 | | Conventional nose radius | #CMT #BMT | S##C S##B |
| | | | FP | PH5115 PHG115 | MP | PH5125 PHG125 | MP | PH5125 PHG125 | | | | |
| | | FP | PH5125 PHG125 | MP | PH5125 PHG125 | MP | PH5125 PHG125 | | Wiper nose radius | CCMT | S##C 95° | |
| | | FW | PH5115 PHG115 | MW | PH5115 PHG115 | - | - | | | | | |
| | | FW | PH5115 PHG115 | MW | PH5115 PHG115 | - | - | | | | | |
| | | FW | PH5115 PHG115 | MW | PH5115 PHG115 | - | - | | | | | |
| | FW | PH5115 PHG115 | MW | PH5115 PHG115 | - | - | | | | | | |
| | FW | PH5115 PHG115 | MW | PH5115 PHG115 | - | - | | | | | | |

Stable cutting General cutting Unstable cutting

SELECTION GUIDE (GRADES AND CHIP-BREAKERS) FOR POSITIVE INSERTS

Guia De Seleção (Graus E Quebra-Aparas) para pastilhas positivas | Guía De Selección (Calidades Y Rompevirutas) para plaquitas positivas

SINGLE SIDE...CMT'S, BMT'S, CGT'S, RCMX'S, RCMT'S

| ISO | Material Workplace | Stability | Medium | | Roughing | | Medium roughing | | Insert | | | Holders | |
|-----|---|-----------|--------------|--------------------------------------|--------------|--------------------------------------|-----------------|------------------|--------|----------------------|--------------------------|--------------|--------------|
| | | | Chip-breaker | Grade | Chip-breaker | Grade | Chip-breaker | Grade | Type | | | Type | |
| M | High alloyed Steel HB 400 DIN X40CrMoV5 X45GrSi93 | | FP FK | PH5115 PHG115 PH5705 | MP MK | PH5115 PHG115 PH5320 PHG105 | MP | PH5115 PHG115 | | Positive single side | Conventional nose radius | #CMT #BMT | S##C S##B |
| | | | FP FK | PH5115 PHG115 PH5320 PHG105 | MP MK | PH5115 PHG115 PH5320 PHG105 | MP | PH5115 PHG115 | | | | | |
| | | | FP | PH5115 PHG115 | MP | PH5125 PHG125 | MP | PH5125 PHG125 | | | | | |
| | | | FW | PH5115 PHG115 | MW | PH5115 PHG115 | - | - | | Positive single side | Wiper nose radius | CCMT | S##C 95° |
| | | | FW | PH5115 PHG115 | MW | PH5115 PHG115 | - | - | | | | DCMT TCMT | S##C 93° |
| | | | FW | PH5115 PHG115 | MW | PH5115 PHG115 | - | - | | | | | |
| M | Duplex stainless steel DIN X2CrNiMoSi19 X8CrNiMo27 X2CrNiMoN22 | | FM | PH7910 | LM MM | PH7910 | MM | PHS215 | | Positive single side | Conventional nose radius | #CMT #BMT | S##C S##B |
| | | | FM LM | PH7910 | MM | PH7910 | MM | PHS215 | | | | | |
| | | | FM LM | PH7920 | MM | PH7920 | MM | PHS215 | | | | | |
| | | | FW | PH7920 | MW | PHS215 | - | - | | Positive single side | Wiper nose radius | CCMT | S##C 95° |
| | | | FW | PH7920 | MW | PHS225 | - | - | | | | DCMT TCMT | S##C 93° |
| | | | - | - | - | - | - | - | | | | | |
| | Austenitic stainless steel DIN X2CrNiMoSi19 X8CrNiMo27 X2CrNiMoN22 | | FM LM | PH7910 PHH910 | LM MM | PH7910 PHH910 | MM | PHS215 | | Positive single side | Conventional nose radius | #CMT #BMT | S##C S##B |
| | | | FM LM | PH7920 PHH920 | MM | PH7920 PHH920 | MM | PHS215 | | | | | |
| | | | FM LM | PHS225 | MM | PHS215 | MM | PHS215 | | | | | |
| | | | MW | PH7920 | MW | PH7920 | - | - | | Positive single side | Wiper nose radius | CCMT | S##C 95° |
| | | | MW | PHS215 | MW | PHS215 | - | - | | | | DCMT TCMT | S##C 93° |
| | | | MW | PHS215 | MW | PHS215 | - | - | | | | | |
| | Duplex stainless steel DIN X2CrNiMoSi19 X8CrNiMo27 X2CrNiMoN22 | | FM LM | PH7910 PHH910 | LM MM | PH7910 PHH910 | MM | PHS215 | | Positive single side | Conventional nose radius | #CMT #BMT | S##C S##B |
| | | | FM LM | PH7910 | MM | PH7910 | MM | PHS215 | | | | | |
| | | | FM LM | PHS225 | MM | PHS215 | MM | PHS215 | | | | | |
| | | | - | - | - | - | - | - | | Positive single side | Wiper nose radius | CCMT | S##C 95° |
| | | | - | - | - | - | - | - | | | | DCMT TCMT | S##C 93° |
| | | | - | - | - | - | - | - | | | | | |

Stable cutting

General cutting

Unstable cutting

SELECTION GUIDE (GRADES AND CHIP-BREAKERS) FOR POSITIVE INSERTS

Guia De Seleção (Graus E Quebra-Aparas) para pastilhas positivas | Guía De Selección (Calidades Y Rompevirutas) para plaquitas positivas

SINGLE SIDE ...CMT'S, BMT'S, CGT'S, RCMX'S, RCMT'S

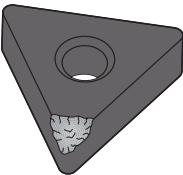
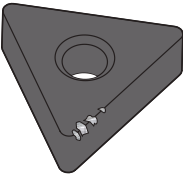
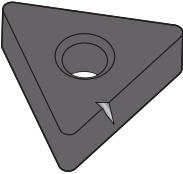
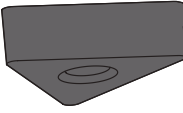
| ISO | Material Workplace | Stability | Medium | | Roughing | | Medium roughing | | Insert | | | Holders |
|-----|---|-----------|--------------|--------|--------------|--------|-----------------|--------|--------------------------|------------------------------|--------------|--------------|
| | | | Chip-breaker | Grade | Chip-breaker | Grade | Chip-breaker | Grade | Type | | Type | |
| K | Grey cast iron HB 220 DIN GG15 GG25 GG35 | ● | FK | PH5705 | MK | PH5705 | MK | PH5705 | Positive single side | Conventional nose radius | #CMT #BMT | S##C S##B |
| | | | FK | PH5705 | MK | PH5705 | MK | PH5320 | | | | |
| | | ✖ | MK | PH5320 | MK | PH5320 | MK | PH5320 | Positive single side | Wiper nose radius | CCMT | S##C 95° |
| | | | FW | PH5705 | MW | PH5320 | - | - | | | | |
| | | ● | FW | PH5705 | MW | PH5320 | - | - | Positive single side | Wiper nose radius | DCMT TCMT | S##C 93° |
| | | | MW | PH5320 | MW | PH5320 | - | - | | | | |
| | Nodular Cast Iron HB 220 DIN GG15 GG25 GG35 | ● | FK | PH5705 | MK | PH5320 | MK | PH5320 | Positive single side | Conventional nose radius | #CMT #BMT | S##C S##B |
| | | | FK | PH5705 | MK | PH5320 | MK | PH5320 | | | | |
| | | ✖ | MK | PH5320 | MK | PH5320 | MK | PH5320 | Positive single side | Wiper nose radius | CCMT | S##C 95° |
| | | | FW | PH5705 | MW | PH5320 | - | - | | | | |
| | | ● | FW | PH5705 | MW | PH5320 | - | - | Positive single side | Wiper nose radius | DCMT TCMT | S##C 93° |
| | | | MW | PH5320 | MW | PH5320 | - | - | | | | |
| S | Titanium Alloys DIN TiAl5Sn2.5 TiAl6V4 TiAl6V4ELI | ● | FS | PHH910 | FM | PHH910 | MM | PH7920 | Positive single side | Conventional nose radius | #CMT #BMT | S##C S##B |
| | | | FM | PH7920 | MM | PH7920 | MM | PH7920 | | | | |
| | | ✖ | MM | PH7920 | MM | PH7920 | MM | PH7920 | Positive single side | Wiper nose radius | CCMT | S##C 95° |
| | | | FW | PH7920 | FW | PH7920 | - | - | | | | |
| | | ● | FW | PH7920 | MW | PH7920 | - | - | Positive single side | Wiper nose radius | DCMT TCMT | S##C 93° |
| | | | MW | PH7920 | MW | PH7920 | - | - | | | | |
| | Super alloys DIN NiCr19Co11MoTi NiFe35Cr14MoTi CoCr20W15Ni | ● | FS | PHH910 | FM | PHH910 | MM | PHH920 | Positive single side | Conventional nose radius | #CMT #BMT | S##C S##B |
| | | | FM | PHH920 | FM | PHH920 | FM | PHH920 | | | | |
| | | ✖ | MM | PHH920 | MM | PHH920 | MM | PHH920 | Positive single side | Wiper nose radius | CCMT | S##C 95° |
| | | | FW | PH7920 | FW | PH7920 | - | - | | | | |
| | | ● | FW | PH7920 | MW | PH7920 | - | - | Positive single side | Wiper nose radius | DCMT TCMT | S##C 93° |
| | | | MW | PH7920 | MW | PH7920 | - | - | | | | |
| N | Aluminium Alloys DIN AW7075 AISI12 CuZn37 | ● | LN | PH0910 | LN | PH0910 | - | - | Positive single side | Conventional nose radius | #CMT #BMT | S##C S##B |
| | | ● | LN | PH0910 | LN | PH0910 | - | - | | | | |
| | | ✖ | LN | PH0910 | LN | PH0910 | - | - | | | | |

● Stable cutting

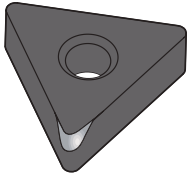
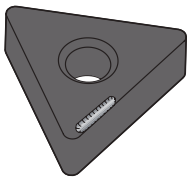
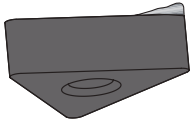
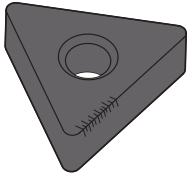
● General cutting

✖ Unstable cutting

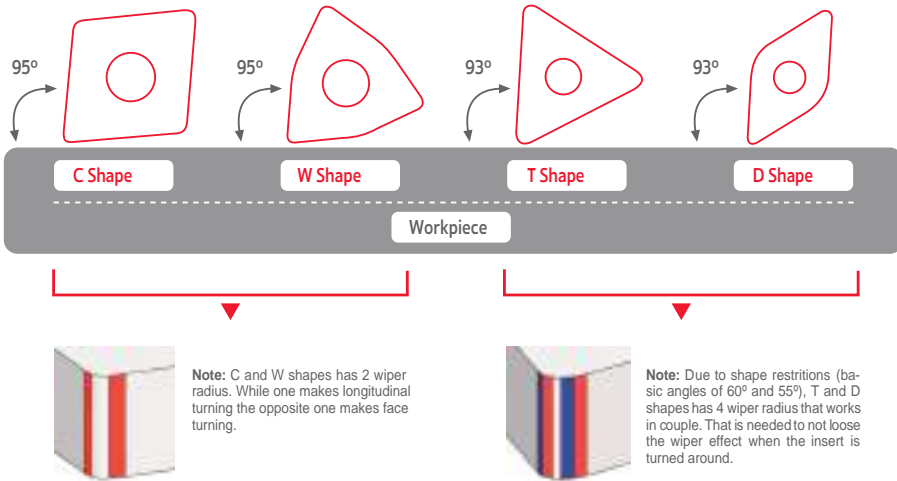
TOOL LIFE PROBLEMS | Problemas na vida útil da ferramenta | Problemas con la vida útil de la herramienta

| Problem Problema | Possible Solution Solução Solución | | |
|--|--|--|--|
| <ul style="list-style-type: none"> • Breakage or too short tool life • Ruptura ou vida útil muito curta • Rotura o vida de la herramienta demasiado corto | <ul style="list-style-type: none"> • Step 1. Reduce the cutting conditions (first feed rate, then cutting depth). • Step 2. Look at the wear pattern on the insert and use the table below as a guideline for improvement. • Passo 1. Reduza as condições de corte (primeiro o avanço / rotação depois a profundidade de corte). • Passo 2. Verique o desgaste da pastilha e use as recomendações abaixo para otimizar a operação. • Paso 1. Reducir las condiciones de corte (primero el avance, después la profundidad de corte). • Paso 2. Comprobar el patrón de desgaste en la plaquita y usar la siguiente tabla como guía para la mejora. | | |
| <ul style="list-style-type: none"> • Insert fracture • Fratura da Pastilha • Fractura de la Plaquita  | <ul style="list-style-type: none"> • Reduce the feed rate (Fn). • Reduce the depth of cut (Ap). • Select a tougher grade (ex: P10 -> ... -> P40). • Use a more rigid toolholder. • Increase nose radius (Re). • Select a stronger chipbreaker. • Reduce the toolholder length. • Select larger shank size. • Reduza o avanço/rotação (Fn). • Reduza a profundidade de corte (Ap). • Selecione uma classe mais tenaz (ex: P10 -> ... -> P40). • Use um suporte mais rígido. • Aumente o raio de canto (Re). • Selecione um quebra- aparas mais resistente. • Reduza o comprimento do suporte. • Escolha uma largura de haste superior. • Reducir el avance (Fn). • Reducir la profundidad de corte (Ap). • Seleccionar una calidad más tenaz (ex: P10 -> ... -> P40). • Utilice un portaherramientas más rígido. • Aumente el radio de punta (Re). • Seleccionar un rompevirutas más robusto. • Reducir la longitud del portaherramientas. • Elija un ancho de vara superior. | | |
| <ul style="list-style-type: none"> • Edge chipping • Fragmentação da aresta • Fragmentación de la arista  | <ul style="list-style-type: none"> • Increase the cutting speed (Vc). • Reduce the feed rate (Fn). • Select a stronger chipbreaker. • Select a tougher grade (ex: P10 -> ... -> P40). • Reduce the rake angle. • Increase honing edges. • Reduce the toolholder length. • Select larger shank size. • Aumente a velocidade de corte (Vc). • Reduza o avanço/rotação (Fn). • Selecione um quebra- aparas mais resistente. • Selecione uma classe mais tenaz (ex: P10 -> ... -> P40). • Diminua o ângulo de ataque. • Aumente arestas boleadas. • Reduza o comprimento do suporte. • Escolha uma largura de haste superior. • Reducir el ángulo de ataque. • Aumentar aristas redondeadas. • Reducir la longitud del portaherramientas. • Elija un ancho de vara superior. • Aumentar la velocidad de corte (Vc). • Reducir el avance (Fn). • Seleccionar un rompevirutas más robusto. • Seleccionar una calidad más tenaz (ex: P10 -> ... -> P40). | | |
| <ul style="list-style-type: none"> • Notch wear • Desgaste de entalhe • Mellado  | <ul style="list-style-type: none"> • Reduce the cutting speed (Vc). • Reduce the feed rate (Fn). • Select a tool with a smaller setting angle (Kr°). • Select a more wear-resistant grade (ex: P40 -> ... -> P10). • Reduza a velocidade de corte (Vc). • Reduza o avanço/rotação (Fn). • Selecione uma ferramenta com um ângulo de posição menor (Kr°). • Selecione uma classe mais resistente ao desgaste (ex: P40 -> ... -> P10). • Reducir la velocidad de corte (Vc). • Reducir el avance (Fn). • Seleccionar una herramienta con un ángulo de posición menor (Kr°). • Seleccionar una calidad más resistente al desgaste (ex: P40 -> ... -> P10). | | |
| <ul style="list-style-type: none"> • Plastic deformation • Deformação plástica • Deformación plástica  | <ul style="list-style-type: none"> • Reduce the cutting speed (Vc). • Reduce the feed rate (Fn). • Select a more wear-resistant grade (ex: P40 -> ... -> P10). • Use more coolant and correct it volume/accuracy. • Choose grade with better heat conductivity. • Increase the rake angle. • Increase nose radius (Re). • Increase relief angle. • Reduza a velocidade de corte (Vc). • Reduza o avanço/rotação (Fn). • Selecione uma classe mais resistente ao desgaste (ex: P40 -> ... -> P10). • Utilize refrigeração em abundância e corrija o seu volume/precisão. • Escolha um grau com melhor condutividade térmica. • Aumente o ângulo de ataque. • Aumente o raio de canto (Re). • Aumente o ângulo de alívio superior. • Reducir la velocidad de corte (Vc). • Reducir el avance (Fn). • Seleccionar una calidad más resistente al desgaste (ex: P40 -> ... -> P10). • Usar abundante caudal de refrigerante y corregir el volumen / precisión. • Elija un grado con una mejor conductividad térmica. • Aumente el ángulo de ataque. • Aumente el radio de punta (Re). • Aumente el ángulo de alívio superior. | | |

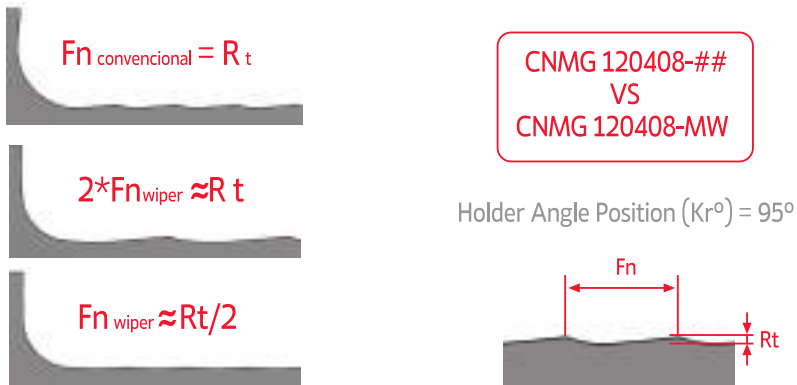
TOOL LIFE PROBLEMS | Problemas na vida útil da ferramenta | Problemas con la vida útil de la herramienta

| Problem Problema | Possible Solution Solução Solución | | |
|---|--|--|---|
| <ul style="list-style-type: none"> • Flank wear • Desgaste do flanco • Desgaste de la superficie  | <ul style="list-style-type: none"> • Reduce the cutting speed (Vc). • Select a more wear-resistant grade (ex: P40 -> ... -> P10). • Select a toolholder or chipbreaker which allow a bigger relief angle. • Increase the rake angle. • Increase nose radius (Re). • Reduce honing edges. | <ul style="list-style-type: none"> • Reduza a velocidade de corte (Vc). • Selecione uma classe mais resistente ao desgaste (ex: P40 -> ... -> P10). • Selecione um suporte ou quebra-apanas que permita um ângulo de alívio superior. • Aumente o ângulo de ataque. • Aumente o raio de canto (Re). • Reduza arestas boleadas. | <ul style="list-style-type: none"> • Reducir la velocidad de corte (Vc). • Seleccionar una calidad más resistente al desgaste (ex: P40 -> ... -> P10). • Seleccionar un portaherramientas o rompevirutas que permiten un ángulo de alivio superior. • Aumente el ángulo de ataque. • Aumente el radio de punta (Re). • Reducir aristas redondeadas. |
| <ul style="list-style-type: none"> • Crater wear • Craterização • Craterización  | <ul style="list-style-type: none"> • Reduce the cutting speed (Vc). • Reduce the feed rate (Fn). • Select a more wear-resistant grade (ex: P40 -> ... -> P10). • Use coolant. • Increase the rake angle. • Increase nose radius (Re). | <ul style="list-style-type: none"> • Reduza a velocidade de corte (Vc). • Reduza o avanço/rotação (Fn). • Selecione uma classe mais resistente ao desgaste (ex: P40 -> ... -> P10). • Utilize refrigeração. • Aumente o ângulo de ataque. • Aumente o raio de canto (Re). | <ul style="list-style-type: none"> • Reducir la velocidad de corte (Vc). • Reducir el avance (Fn). • Seleccionar una calidad más resistente al desgaste (ex: P40 -> ... -> P10). • Usar refrigerante. • Aumente el ángulo de ataque. • Aumente el radio de punta (Re). |
| <ul style="list-style-type: none"> • Built-up edge • Aresta postiça • Recrecimiento del filo  | <ul style="list-style-type: none"> • Increase the cutting speed (Vc). • Reduce the feed rate (Fn). • Use water-insoluble coolant fluid. • Select a more easy-cutting chipbreaker. • Increase the rake angle. • Reduce honing edges. • Select grade with low tendency to adhesion. | <ul style="list-style-type: none"> • Aumente a velocidade de corte (Vc). • Reduza o avanço/rotação (Fn). • Utilize fluido refrigerante insolúvel em água. • Selecione um quebra-apanas mais positivo. • Aumente o ângulo de ataque. • Reduza arestas boleadas. • Selecione um grau com baixa tendência a aderência. | <ul style="list-style-type: none"> • Aumentar la velocidad de corte (Vc). • Reducir el avance (Fn). • Utilice fluido refrigerante insoluble en agua. • Seleccionar un rompevirutas de corte más suave. • Aumente el ángulo de ataque. • Reducir aristas redondeadas. • Seleccionar un grado con baja tendencia a la adhesión. |
| <ul style="list-style-type: none"> • Thermal cracks • Trincas térmicas • Grietas en el filo  | <ul style="list-style-type: none"> • Reduce the cutting speed (Vc). • Increase the feed rate (Fn). • Use more coolant and correct it volume/accuracy. • Reduce honing edges. • Select a tougher grade (ex: P10 -> ... -> P40). • Increase the rake angle. | <ul style="list-style-type: none"> • Reduza a velocidade de corte (Vc). • Aumente o avanço/rotação (Fn). • Utilize refrigeração em abundância e corrija o seu volume/precisão. • Reduza arestas boleadas. • Selecione uma classe mais tenaz (ex: P10 -> ... -> P40). • Aumente o ângulo de ataque. | <ul style="list-style-type: none"> • Reducir la velocidad de corte (Vc). • Aumentar el avance (Fn). • Usar abundante caudal de refrigerante y corregir el volumen / precisión. • Reducir aristas redondeadas. • Seleccionar una calidad más tenaz (ex: P10 -> ... -> P40). • Aumente el ángulo de ataque. |

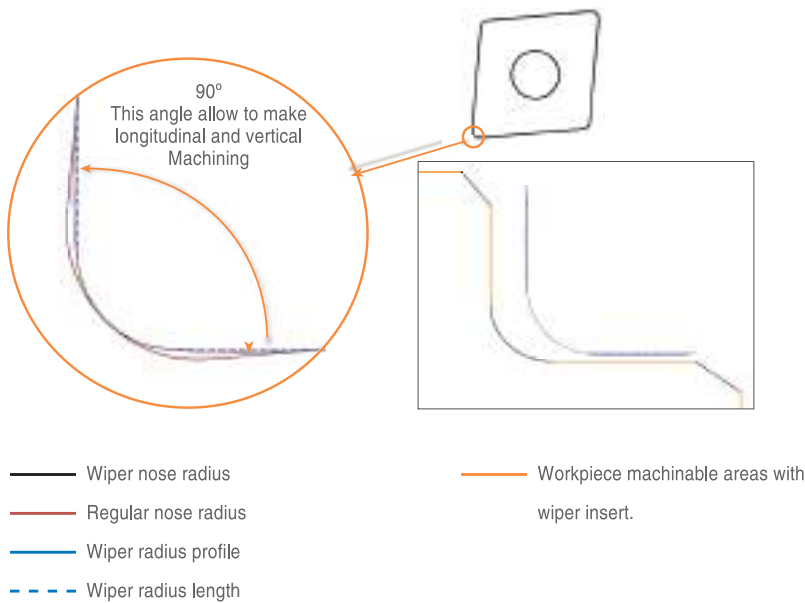
THE ANGLE POSITION (KR°)



THE WIPER PURPOSE IS BASED ON PRODUCTIVITY:



EXAMPLE CNMG 120404-MW WITH ANGLE POSITION OF 95°



Note: wiper radius length must be parallel to machinable workpiece areas.



D

D - GROOVING & PARTING OFF

D - 730 | Inserts overview

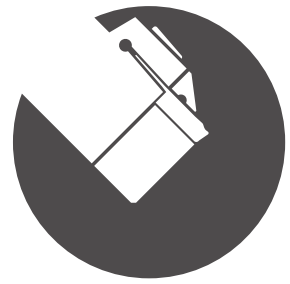
D - 732 | GROOVING PLUS

D - 732 | Inserts code key

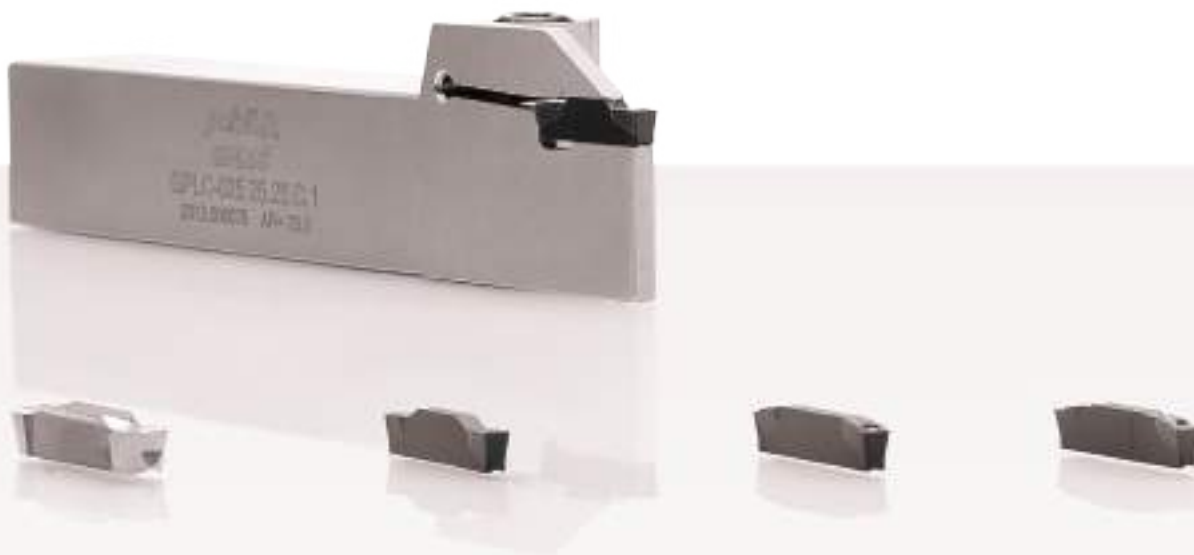
D - 733 | GP Inserts

D - 736 | Blades & Toolholders code key

D - 742 | GROOVING & PARTING OFF



GROOVING & PARTING OFF



D - 742 | Inserts code key & Overview

D - 743 | Inserts

D - 747 | Blades code key

D - 751 | Trigon Inserts

D - 754 | Trigon Toolholders

D - 758 | SAL (Swiss Automatic Lathes)

D - 760 | Inserts & toolholders code key

D - 762 | Toolholders

D - 763 | Inserts

D - 766 | Technical data

D - 768 | LIGHT GROOVING

D - 772 | FORMING GROOVING


D - 776 | SPARE PARTS

D - 777 | TECHNICAL DATA

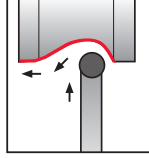



GENERAL INSERTS OVERVIEW

D
 GROOVING & PARTING OFF
 Grooving Plus
 Grooving & Parting Off
 SAL - Swiss Automatic Lathes
 Light Grooving
 Forming Grooving
 Technical Data


| Operation Insert Type + Chipbreaker | | Parting Off | General Grooving | Turning | Profiling | Threading |
|---|--|---|---|---|---|---|
| | |  |  |  |  |  |
|  | GP...-N01-MC GP...-R01-MC GP...-L01-MC |  |  | | | |
|  | GP...-N02-MC GP...-R02-MC GP...-L02-MC |  |  | | | |
|  | GP...-N02-MG |  |  | | | |
|  | GP...-N02-MM |  |  |  | | |
|  | GP...-N02-MP | | | |  | |
|  | GP...-N02-NP | | | |  | |
|  | GCMX... |  |  | | | |
|  | SANCAR... |  |  | | | |

 First choice | Primeira opção | Primera opción

 Alternative | Alternativa

| Insert Type + Chipbreaker | | Operation | | Parting Off | General Grooving | Turning | Profiling | Threading |
|---|--------|---|--|--|---|---|---|---|
| | |  |  |  |  |  | | |
|  | TRIGON | |  | | | | |  |
|  | SAL GS | |  | | | | | |
|  | SAL GR | |  | | | |  | |
|  | SAL P |  | | | | | | |
|  | SAL PT | | | | | | |  |
|  | SAL TP | | | | |  | | |
|  | LG | | | |  | | | |
|  | FG | | | | | |  | |

 First choice | Primeira opção | Primera opción

 Alternative | Alternativa

GP INSERTS CODE KEY

Chave de codificação para pastilhas GP | Llave de codificación para plaquitas GP

For R or L Insert type

| | | | | | | | | | |
|-----------|-------------|----------|------------|---|------------|----------|-----------|---|-----------|
| GP | 0300 | B | 020 | - | 050 | R | 02 | - | MC |
| 1 | 2 | 3 | 4 | | 5 | 6 | 7 | | 8 |

For N Insert type

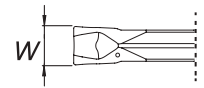
| | | | | | | | | |
|-----------|-------------|----------|------------|---|----------|-----------|---|-----------|
| GP | 0300 | B | 020 | - | N | 02 | - | MC |
| 1 | 2 | 3 | 4 | | 6 | 7 | | 8 |

1 - Product Line

GP - Grooving Plus

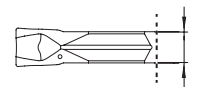
2 - Cutting Width

0200 - 2,00mm | 0300 - 3,00mm | 0400 - 4,00mm | 0500 - 5,00mm | 0600 - 6,00mm



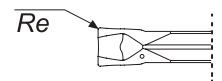
3 - Seat Size

A - GP0200 | B - GP0300 | C - GP0400 | D - GP0500 | E - GP0600

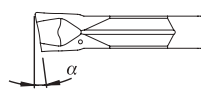


4 - Cutting Radius

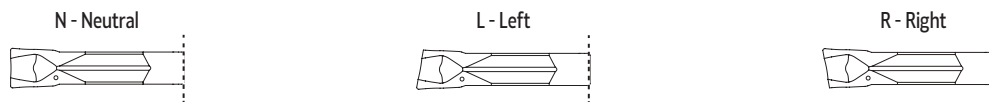
020 - 0,20mm | 025 - 0,25mm | 040 - 0,40mm | 600 - 6,00mm



5 - Relief Angle



6 - Insert Type



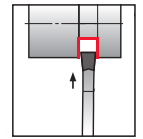
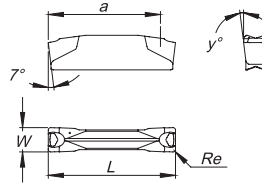
7 - N° of Cutting Edges



8 - Chipbreaker

MC - Medium Cut Off | MG - Medium Grooving | MM - Medium Multi Function | MP - Medium Profiling | NP - Non-Ferrous Profiling

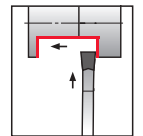
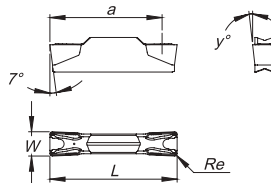
GP...02-MG | Medium Grooving



| (1) Geometry code | (2) Grade code | P | | | | M | | | K | | S | | Dimensions (mm) | | | | | | Cutting Conditions | | | |
|-------------------|-------------------|-----|----|-----|----|-----|----|-----|-----|----|-----|----|-----------------|-----|------|----|------|-----|------------------------|-----------|------|------|
| | | CVD | | PVD | | CVD | | PVD | CVD | | PVD | | W | Re | L | x° | a | y° | Seat ² Size | fn (mm/r) | Min | Max |
| | | L8 | U6 | G4 | T1 | U6 | G4 | T1 | L6 | U6 | G4 | T1 | | | | | | | | | | |
| 1130398 | GP0300B020-N02-MG | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 3,0 | 0,2 | 21,0 | - | 18,5 | 6,5 | B | 0,06 | 0,05 | 0,10 |
| 1130399 | GP0400C040-N02-MG | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 4,0 | 0,4 | 21,0 | - | 18,5 | 6,5 | C | 0,08 | 0,05 | 0,15 |
| 1130400 | GP0500D040-N02-MG | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 5,0 | 0,4 | 21,0 | - | 18,5 | 6,0 | D | 0,13 | 0,05 | 0,25 |

⊗ First choice | Primeira opção | 1ª opción
 ⊗ Stock item | Produto de stock | Itens de stock
 ⊗ Available under request | Disponível sobre consulta
 ⊗ Insert order code = (1) Geometry Code + (2) Grade Code
⊗ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock
 2 - Correspond to a Specific Holder

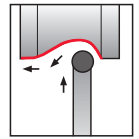
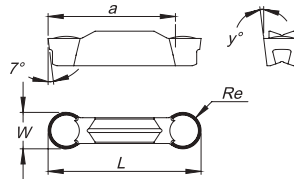
GP...02-MM | Medium Multi Function



| (1) Geometry code | (2) Grade code | P | | | | M | | | | K | | | S | | | Dimensions (mm) | | | | | | Cutting Conditions | | | | | |
|-------------------|-------------------|-----|----|-----|----|-----|----|-----|----|-----|----|----|-----|----|----|-----------------|-----|------|----------------|-----|------------------------|--------------------|-----|-----|-----------|------|------|
| | | CVD | | PVD | | CVD | | PVD | | CVD | | | PVD | | | W | Re | L | a ¹ | y° | Seat ² Size | Ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| | | U6 | G4 | T1 | P4 | U6 | G4 | T1 | P4 | L6 | U6 | 25 | G4 | T1 | P4 | | | | | | | | | | | | |
| 1130401 | GP0300B040-N02-MM | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 3,0 | 0,4 | 21,0 | 18,5 | 6,0 | B | 0,8 | 0,4 | 1,5 | 0,09 | 0,05 | 0,12 |
| 1130402 | GP0400C040-N02-MM | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 4,0 | 0,4 | 21,0 | 18,5 | 6,0 | C | 1,1 | 0,6 | 2,0 | 0,12 | 0,07 | 0,15 |
| 1130403 | GP0500D040-N02-MM | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 5,0 | 0,4 | 21,0 | 18,5 | 5,5 | D | 1,5 | 0,8 | 2,5 | 0,14 | 0,10 | 0,18 |

⊗ First choice | Primeira opção | 1ª opción
 ⊗ Stock item | Produto de stock | Itens de stock
 ⊗ Available under request | Disponível sobre consulta
 ⊗ Insert order code = (1) Geometry Code + (2) Grade Code
⊗ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock
 1 - When using inserts with 1 Cutting edge, the "a" measure is given by the Toolholder | 2 - Correspond to a Specific Holder

GP...02-MP | Medium Profiling



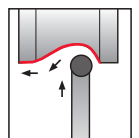
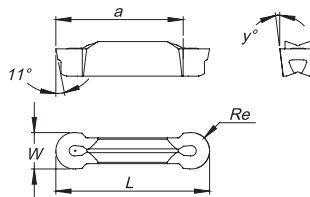
| (1) Geometry code | (2) Grade code | P | | M | | K | S | | Dimensions (mm) | | | | | Cutting Conditions | | | | | | |
|-------------------|-------------------|--------|--------|--------|--------|--------|--------|--------|-----------------|-----|------|------|-----|------------------------|---------|------|------|-----------|------|------|
| | | PVD | | PVD | | CVD | PVD | | | | | | | | | | | | | |
| | | G4 | T1 | G4 | T1 | L6 | G4 | T1 | W | Re | L | a | y° | Seat ² Size | Ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| 1130607 | GP0300B150-N02-MP | PH7920 | PHP920 | PH7920 | PHP920 | PH5320 | PH7920 | PHP920 | 3,0 | 1,5 | 21,1 | 18,5 | 7,0 | B | 0,7 | 0,04 | 1,1 | 0,09 | 0,04 | 0,12 |
| 1130404 | GP0600E300-N02-MP | PH7920 | PHP920 | PH7920 | PHP920 | PH5320 | PH7920 | PHP920 | 6,0 | 3,0 | 25,2 | 21,0 | 7,0 | E | 1,50 | 0,04 | 2,20 | 0,18 | 0,15 | 0,22 |

⊗ First choice | Primeira opção | 1ª opción
 ⊗ Stock item | Produto de stock | Itens de stock
 ○ Available under request | Disponível sobre consulta
 Insert order code = (1) Geometry Code + (2) Grade Code

⊗ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock

2 - Correspond to a Specific Holder

GP...02-NP | Non-Ferrous Profiling



| (1) Geometry code | (2) Grade code | N | | Dimensions (mm) | | | | | Cutting Conditions | | | | | | | |
|-------------------|-------------------|--------|--------|-----------------|-----|------|----|------|--------------------|------------------------|---------|------|------|-----------|------|------|
| | | UNC | | | | | | | | | | | | | | |
| | | 10 | | W | Re | L | x° | a | y° | Seat ² Size | Ap (mm) | Min | Max | fn (mm/r) | Min | Max |
| 1130405 | GP0600E300-N02-NP | PH0910 | PH0910 | 6,0 | 3,0 | 25,4 | - | 18,5 | 7,0 | E | 1,30 | 0,50 | 2,50 | 0,20 | 0,15 | 0,25 |

⊗ First choice | Primeira opção | 1ª opción
 ⊗ Stock item | Produto de stock | Itens de stock
 ○ Available under request | Disponível sobre consulta
 Insert order code = (1) Geometry Code + (2) Grade Code

⊗ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock

2 - Correspond to a Specific Holder

BLADES & TOOLHOLDERS CODE KEY

Chave de codificação para lâminas | Llave de codificación de lamas

For Blades

| | | | | | | | |
|-----------|----------|----------|---|------------|-----------|-----------|-----------|
| GP | N | C | - | 080 | 25 | .A | .0 |
| 1 | 2 | 3 | | 5 | 6 | 7 | 8 |

For Toolholders

| | | | | | | | | |
|-----------|----------|----------|---|------------|------------|--------------|-----------|-----------|
| GP | R | C | - | 100 | 010 | 25.25 | .A | .1 |
| 1 | 2 | 3 | | 4 | 5 | 6 | 7 | 8 |

1 - Product Line

GP - Grooving Plus

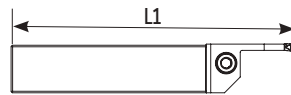
2 - Work Side



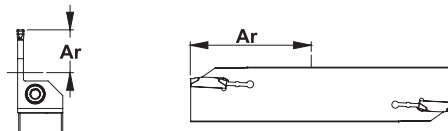
3 - Tool Type

C - Frontal

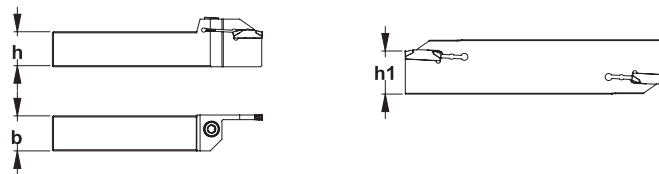
4 - Total toolholder length



5 - Maximum Depth of Cut

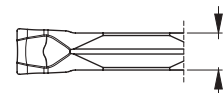


6 - Shaft | Cutting Unit Dimension



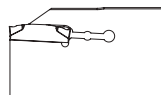
7 - Seat Size

A - 1,60mm | B - 2,30mm | C - 3,30mm | D - 4,30mm | E - 4,00mm | F - 6,60mm

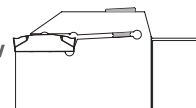


8 - Clamping System

0 - Spring



1 - Screw



GPNC



Order separately

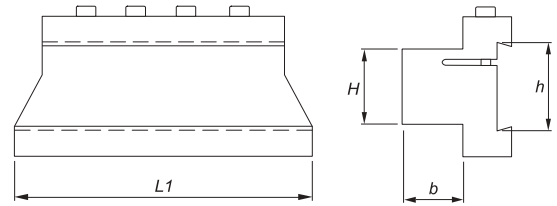
| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | | | | Insert | Toolholder | | Wrench* | Stock |
|----------------------|---------------------------------------|---|-----|----|------|-----|---|-----------|---------|------------|------------|---------|-------|
| | | ar | L1 | h | h1 | b | W | Seat Size | | CPTS | DPTS | | |
| 213010000 | GPNC-020 25.A.0 | 20 | 150 | 32 | 25,0 | 1,5 | 2 | A | GP02... | CPTS 32... | DPTS 32... | LE25-30 | ☉ |
| 213009900 | GPNC-055 25.B.0 | 55 | 150 | 32 | 25,0 | 2,3 | 3 | B | GP03... | CPTS 32... | DPTS 32... | LE25-30 | ☉ |
| 213009700 | GPNC-055 25.C.0 | 55 | 150 | 32 | 25,0 | 2,3 | 4 | C | GP04... | CPTS 32... | DPTS 32... | LE25-30 | ☉ |

☉ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

*Note: Wrench must be ordered separately

Note: For inserts with 2 cutting edges, the ar is defined by the insert

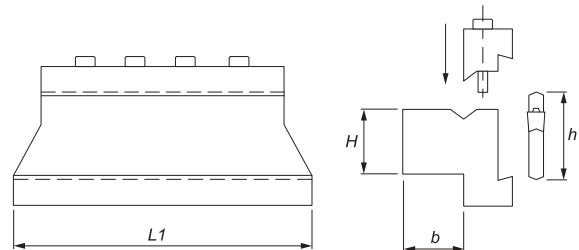
CPTS



| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Screw | Wrench | Stock |
|----------------------|---------------------------------------|---|-----|----|----|-------|----------|--------|-------|
| | | h | L1 | H | b | | | | |
| 290006200 | CPTS 3220 | 32 | 100 | 20 | 20 | 0,700 | D0603600 | SS50 | ☉ |
| 290005000 | CPTS 3225 | 32 | 110 | 25 | 25 | 0,950 | D0603600 | SS50 | ☉ |
| 290006300 | CPTS 3232 | 32 | 120 | 32 | 32 | 1,400 | D0603600 | SS50 | ☉ |

☉ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

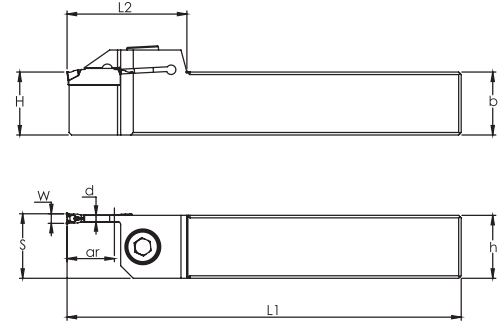
DPTS



| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Screw | Wrench | Stock |
|----------------------|---------------------------------------|---|-----|----|----|-------|----------|--------|-------|
| | | h | L1 | H | b | | | | |
| 290073600 | DPTS 3220 | 32 | 100 | 20 | 20 | 0,750 | D0603600 | SS50 | ☉ |
| 290073700 | DPTS 3225 | 32 | 110 | 25 | 25 | 1,00 | D0603600 | SS50 | ☉ |
| 290073800 | DPTS 3232 | 32 | 120 | 32 | 32 | 1,450 | D0603600 | SS50 | ☉ |

☉ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

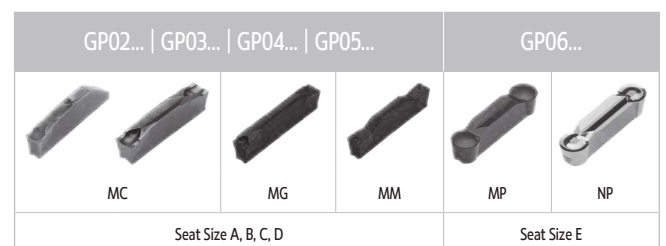
GPLC



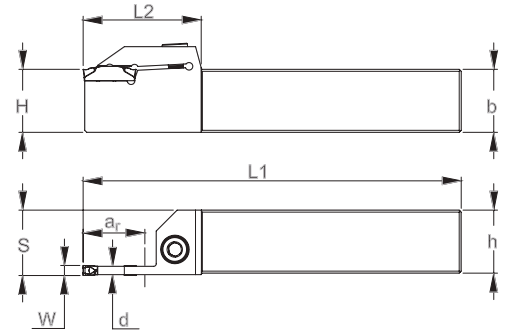
| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | | | | | Seat Size | Insert | Screw | Wrench | Nm | Stock |
|----------------------|---------------------------------------|---|-----|----|----|----|----|-------|---|-----------|---------|----------|--------|-----|-------|
| | | ar | L1 | h | b | H | L2 | S | W | | | | | | |
| 183020800 | GPLC-100 010 16.16.A.1 | 10 | 100 | 16 | 16 | 16 | 30 | 16,25 | 2 | A | GP02... | D0602200 | SS50 | 3,0 | ○ |
| 183020900 | GPLC-100 015 16.16.A.1 | 15 | 100 | 16 | 16 | 16 | 38 | 16,25 | 2 | | GP02... | D0602200 | SS50 | 4,0 | ⊗ |
| 183021000 | GPLC-125 010 20.20.A.1 | 10 | 125 | 20 | 20 | 20 | 32 | 20,25 | 2 | | GP02... | D0602600 | SS50 | 3,0 | ○ |
| 183021100 | GPLC-125 015 20.20.A.1 | 15 | 125 | 20 | 20 | 20 | 38 | 20,25 | 2 | | GP02... | D0602600 | SS50 | 4,0 | ⊗ |
| 183021200 | GPLC-150 010 25.25.A.1 | 10 | 150 | 25 | 25 | 25 | 34 | 25,25 | 2 | | GP02... | D0603100 | SS50 | 3,0 | ⊗ |
| 183021300 | GPLC-150 020 25.25.A.1 | 20 | 150 | 25 | 25 | 25 | 42 | 25,25 | 2 | | GP02... | D0603100 | SS50 | 4,0 | ⊗ |
| 183021400 | GPLC-100 010 16.16.B.1 | 10 | 100 | 16 | 16 | 16 | 30 | 16,5 | 3 | B | GP03... | D0602200 | SS50 | 3,5 | ○ |
| 183021500 | GPLC-100 015 16.16.B.1 | 15 | 100 | 16 | 16 | 16 | 38 | 16,5 | 3 | | GP03... | D0602200 | SS50 | 4,5 | ⊗ |
| 183021600 | GPLC-125 010 20.20.B.1 | 10 | 125 | 20 | 20 | 20 | 32 | 20,5 | 3 | | GP03... | D0602600 | SS50 | 3,5 | ○ |
| 183021700 | GPLC-125 015 20.20.B.1 | 15 | 125 | 20 | 20 | 20 | 38 | 20,5 | 3 | | GP03... | D0602600 | SS50 | 4,5 | ⊗ |
| 183021800 | GPLC-150 010 25.25.B.1 | 10 | 150 | 25 | 25 | 25 | 34 | 25,5 | 3 | | GP03... | D0603100 | SS50 | 3,5 | ⊗ |
| 183021900 | GPLC-150 020 25.25.B.1 | 20 | 150 | 25 | 25 | 25 | 42 | 25,5 | 3 | | GP03... | D0603100 | SS50 | 5,0 | ⊗ |
| 183022000 | GPLC-125 013 20.20.C.1 | 13 | 125 | 20 | 20 | 20 | 32 | 20,5 | 4 | C | GP04... | D0602600 | SS50 | 5,0 | ○ |
| 183022100 | GPLC-125 019 20.20.C.1 | 19 | 125 | 20 | 20 | 20 | 38 | 20,5 | 4 | | GP04... | D0602600 | SS50 | 6,0 | ⊗ |
| 183022200 | GPLC-150 013 25.25.C.1 | 13 | 150 | 25 | 25 | 25 | 34 | 25,5 | 4 | | GP04... | D0603100 | SS50 | 5,0 | ⊗ |
| 183022300 | GPLC-150 023 25.25.C.1 | 23 | 150 | 25 | 25 | 25 | 42 | 25,5 | 4 | | GP04... | D0603100 | SS50 | 7,0 | ⊗ |
| 183022400 | GPLC-125 013 20.20.D.1 | 13 | 125 | 20 | 20 | 20 | 32 | 20,5 | 5 | D | GP05... | D0602600 | SS50 | 5,0 | ○ |
| 183022500 | GPLC-125 019 20.20.D.1 | 19 | 125 | 20 | 20 | 20 | 38 | 20,5 | 5 | | GP05... | D0602600 | SS50 | 6,0 | ⊗ |
| 183022600 | GPLC-150 013 25.25.D.1 | 13 | 150 | 25 | 25 | 25 | 34 | 25,5 | 5 | | GP05... | D0603100 | SS50 | 5,0 | ⊗ |
| 183022700 | GPLC-150 023 25.25.D.1 | 23 | 150 | 25 | 25 | 25 | 42 | 25,5 | 5 | | GP05... | D0603100 | SS50 | 6,5 | ⊗ |
| 183022800 | GPLC-150 015 25.25.E.1 | 15 | 150 | 25 | 25 | 25 | 34 | 26 | 6 | E | GP06... | D0603100 | SS50 | 5,5 | ⊗ |
| 183022900 | GPLC-150 023 25.25.E.1 | 23 | 150 | 25 | 25 | 25 | 42 | 26 | 6 | | GP06... | D0603100 | SS50 | 7,0 | ⊗ |

⊗ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Note: For inserts with 2 cutting edges, the ar is defined by the insert



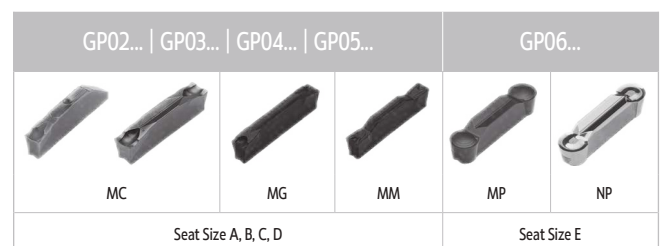
GPRC



| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | | | | | Seat Size | Insert | Screw | Wrench | Nm | Stock |
|----------------------|---------------------------------------|---|-----|----|----|----|----|-------|---|-----------|---------|----------|--------|-----|-------|
| | | ar | L1 | h | b | H | L2 | S | W | | | | | | |
| 183018400 | GPRC-100 010 16.16.A.1 | 10 | 100 | 16 | 16 | 16 | 30 | 16,25 | 2 | A | GP02... | D0602200 | SS50 | 3,0 | ○ |
| 183018500 | GPRC-100 015 16.16.A.1 | 15 | 100 | 16 | 16 | 16 | 38 | 16,25 | 2 | | GP02... | D0602200 | SS50 | 4,0 | ⊗ |
| 183018600 | GPRC-125 010 20.20.A.1 | 10 | 125 | 20 | 20 | 20 | 32 | 20,25 | 2 | | GP02... | D0602600 | SS50 | 3,0 | ○ |
| 183018700 | GPRC-125 015 20.20.A.1 | 15 | 125 | 20 | 20 | 20 | 38 | 20,25 | 2 | | GP02... | D0602600 | SS50 | 4,0 | ⊗ |
| 183018800 | GPRC-150 010 25.25.A.1 | 10 | 150 | 25 | 25 | 25 | 34 | 25,25 | 2 | | GP02... | D0603100 | SS50 | 3,0 | ⊗ |
| 183018900 | GPRC-150 020 25.25.A.1 | 20 | 150 | 25 | 25 | 25 | 42 | 25,25 | 2 | | GP02... | D0603100 | SS50 | 4,0 | ⊗ |
| 183019000 | GPRC-100 010 16.16.B.1 | 10 | 100 | 16 | 16 | 16 | 30 | 16,5 | 3 | B | GP03... | D0602200 | SS50 | 3,5 | ○ |
| 183019100 | GPRC-100 015 16.16.B.1 | 15 | 100 | 16 | 16 | 16 | 38 | 16,5 | 3 | | GP03... | D0602200 | SS50 | 4,5 | ⊗ |
| 183019200 | GPRC-125 010 20.20.B.1 | 10 | 125 | 20 | 20 | 20 | 32 | 20,5 | 3 | | GP03... | D0602600 | SS50 | 3,5 | ○ |
| 183019300 | GPRC-125 015 20.20.B.1 | 15 | 125 | 20 | 20 | 20 | 38 | 20,5 | 3 | | GP03... | D0602600 | SS50 | 4,5 | ⊗ |
| 183019400 | GPRC-150 010 25.25.B.1 | 10 | 150 | 25 | 25 | 25 | 34 | 25,5 | 3 | | GP03... | D0603100 | SS50 | 3,5 | ⊗ |
| 183019500 | GPRC-150 020 25.25.B.1 | 20 | 150 | 25 | 25 | 25 | 42 | 25,5 | 3 | | GP03... | D0603100 | SS50 | 5,0 | ⊗ |
| 183018300 | GPRC-125 013 20.20.C.1 | 13 | 125 | 20 | 20 | 20 | 32 | 20,5 | 4 | C | GP04... | D0602600 | SS50 | 5,0 | ○ |
| 183018200 | GPRC-125 019 20.20.C.1 | 19 | 125 | 20 | 20 | 20 | 38 | 20,5 | 4 | | GP04... | D0602600 | SS50 | 6,0 | ⊗ |
| 183018100 | GPRC-150 013 25.25.C.1 | 13 | 150 | 25 | 25 | 25 | 34 | 25,5 | 4 | | GP04... | D0603100 | SS50 | 5,0 | ⊗ |
| 183018000 | GPRC-150 023 25.25.C.1 | 23 | 150 | 25 | 25 | 25 | 42 | 25,5 | 4 | | GP04... | D0603100 | SS50 | 7,0 | ⊗ |
| 183017900 | GPRC-125 013 20.20.D.1 | 13 | 125 | 20 | 20 | 20 | 32 | 20,5 | 5 | D | GP05... | D0602600 | SS50 | 5,0 | ○ |
| 183017800 | GPRC-125 019 20.20.D.1 | 19 | 125 | 20 | 20 | 20 | 38 | 20,5 | 5 | | GP05... | D0602600 | SS50 | 6,0 | ⊗ |
| 183017700 | GPRC-150 013 25.25.D.1 | 13 | 150 | 25 | 25 | 25 | 34 | 25,5 | 5 | | GP05... | D0603100 | SS50 | 5,0 | ⊗ |
| 183017600 | GPRC-150 023 25.25.D.1 | 23 | 150 | 25 | 25 | 25 | 42 | 25,5 | 5 | | GP05... | D0603100 | SS50 | 6,5 | ⊗ |
| 183017500 | GPRC-150 015 25.25.E.1 | 15 | 150 | 25 | 25 | 25 | 34 | 26 | 6 | E | GP06... | D0603100 | SS50 | 5,5 | ⊗ |
| 183020500 | GPRC-150 023 25.25.E.1 | 23 | 150 | 25 | 25 | 25 | 42 | 26 | 6 | | GP06... | D0603100 | SS50 | 7,0 | ⊗ |

⊗ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

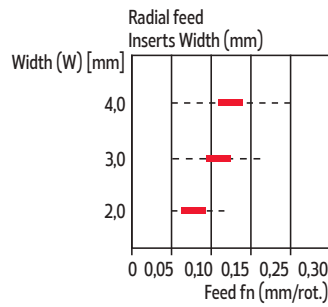
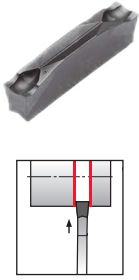
Note: For inserts with 2 cutting edges, the ar is defined by the insert



Feed recommendations and geometry descriptions

Grooving & Parting Off

GP...02-MC



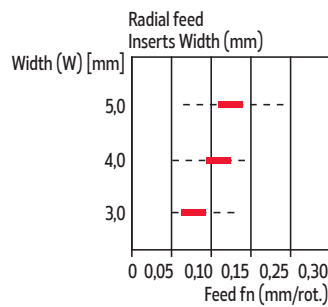
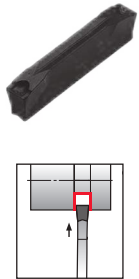
Medium Parting Off

Recommended for parting off, thin walled tubes and small diameter components in all materials.

The positive geometry eliminates the risk of built-up edge.

Low cutting forces resulting in reduced vibration.

GP...02-MG



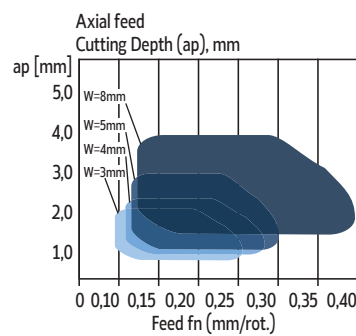
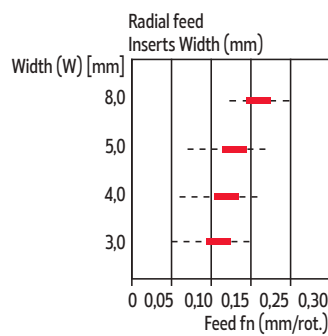
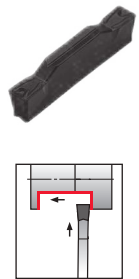
Medium Grooving

Outstanding chip control.

Reduces chip width giving good surfaces.

For all materials.

GP...02-MM



Medium Multi Function (Grooving & Turning)

For grooving and turning in all materials.

Good chip control.

D

GROOVING & PARTING OFF

Grooving Plus


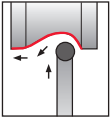
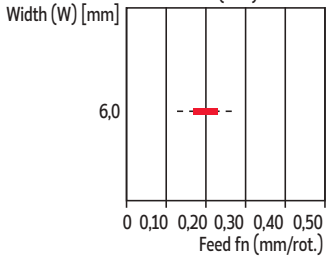
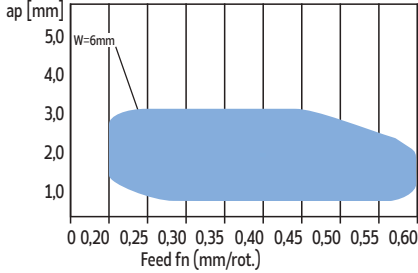

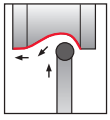
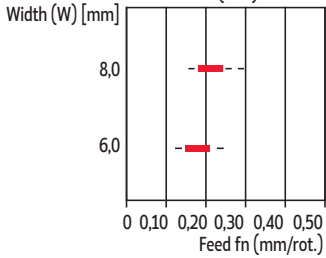
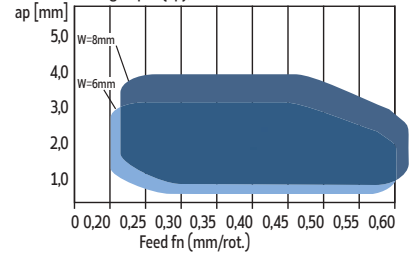
Grooving & Parting Off

SAL - Swiss Automatic Lathes

Light Grooving

Forming Grooving

Technical Data

| Feed recommendations and geometry descriptions | | Grooving & Parting Off | |
|---|---|---|--|
| <p>GP...02-MP</p>   | <p>Radial feed Inserts Width (mm)</p>  | <p>Axial feed Cutting Depth (ap), mm</p>  | <p>Medium Profiling</p> <p>For profiling all materials.</p> <p>Outstanding chip control even at low feeds and small depths of cut.</p> <p>Good surface finish.</p> |
| <p>GP...02-NP</p>   | <p>Radial feed Inserts Width (mm)</p>  | <p>Axial feed Cutting Depth (ap), mm</p>  | <p>Medium Aluminium profiling</p> <p>First choice for profiling in non-ferrous materials.</p> <p>Good chip flow provides a better surface finishing.</p> <p>Sharp cutting edge.</p> |

GCMX & SANCAR INSERTS CODE KEY

Chave de codificação para pastilhas | Llave de codificación para plaquitas

For GCMX Inserts

GCMX - **3** **R** **15**

1 **2** **3** **4**

For SANCAR Inserts

SANCAR - **3** **R** **5**

1 **2** **3** **4**

1 - Product Line



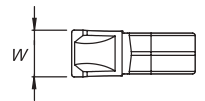
GCMX



SANCAR

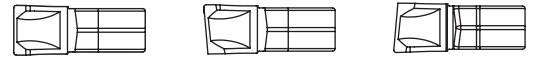
2 - Cutting Width

2mm | 2,4mm | 3mm | 4mm | 4,8mm | 5mm | 6mm



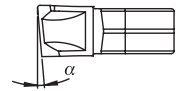
3 - Inserts Type

N - Neutral | R - Right | L - Left



4 - Relief Angle

4 - 4° | 5 - 5° | 8 - 8° | 15 - 15°



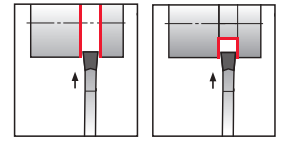
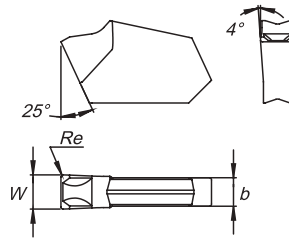
INSERTS OVERVIEW | Visão geral | Visión general

| Operation | | Parting Off | General Grooving | Turning | Profiling |
|---------------------------|--|-------------|------------------|---------|-----------|
| | | | | | |
| Insert Type + Chipbreaker | | GCMX-... | | | |
| | | SANCAR-... | | | |

First choice | Primeira opção | Primera opción

Alternative | Alternativa

GCMX-N



| (1) Geometry code | ISO Reference | ANSI Reference | P | | M | | K | | Dimensions (mm) | | | | Cutting Conditions | | |
|----------------------|---------------|----------------|----------------|--------|--------|--------|--------|----|-----------------|-----|----------|-----------|--------------------|------|------|
| | | | (2) Grade code | | CVD-MT | CVD-MT | CVD-MT | L7 | | | | | | | N2 |
| | | | PH5115 | PH5135 | PH5135 | PH5320 | PH5135 | W | b | Re | α | fn (mm/r) | Min | Max | |
| 1130165 | GCMX-2N | GTN-2N | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 2,2 | 1,8 | 0,16 | - | 0,08 | 0,05 | 0,16 |
| 1130228 | GCMX-2.4N | GTN-2.4N | ○ | ○ | ○ | ○ | ○ | ○ | 2,4 | 2,0 | 0,16 | - | 0,10 | 0,06 | 0,18 |
| 1130169 | GCMX-3N | GTN-3N | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 3,1 | 2,6 | 0,20 | - | 0,15 | 0,10 | 0,25 |
| 1130174 | GCMX-4N | GTN-4N | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 4,1 | 3,5 | 0,25 | - | 0,18 | 0,10 | 0,30 |
| 1130229 | GCMX-4.8N | GTN-4.8N | ○ | ○ | ○ | ○ | ○ | ○ | 4,8 | 4,2 | 0,28 | - | 0,20 | 0,12 | 0,35 |
| 1130175 | GCMX-5N | GTN-5N | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 5,1 | 4,5 | 0,28 | - | 0,20 | 0,12 | 0,35 |
| 1130176 | GCMX-6N | GTN-6N | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 6,4 | 5,5 | 0,35 | - | 0,25 | 0,15 | 0,40 |
| 1130449 | GCMX-8N | GTN-8N | ○ | ○ | ○ | ○ | ○ | ○ | 8,0 | 7,1 | 0,40 | - | 0,28 | 0,17 | 0,45 |

⊗ First choice | Primeira opção | 1ª opção

⊗ Stock item | Produto de stock | Itens de stock

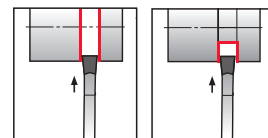
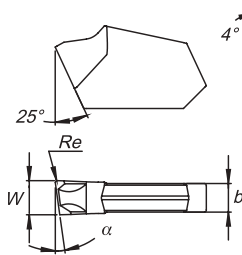
○ Available under request | Disponível sobre consulta
Disponibile bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code



INSERTS

GCMX-R



| | | | P | | M | | K | | Dimensions (mm) | | | | Cutting Conditions | | |
|---------|------------------------------|---------------|----------------|----|--------|----|--------|----|-----------------|-----|------|----------|--------------------|------|------|
| | ⁽²⁾ Grade code | | CVD-MT | | CVD-MT | | CVD-MT | | | | | | | | |
| | ⁽¹⁾ Geometry code | ISO Reference | ANSI Reference | L7 | N2 | N2 | L6 | N2 | W | b | Re | α | fn (mm/r) | Min | Max |
| 1130166 | GCMX-2R 4 | GTN-2R 4 | ○ | ○ | ○ | ○ | ○ | ○ | 2,2 | 1,8 | 0,16 | 4 | 0,07 | 0,04 | 0,13 |
| 1130167 | GCMX-2R 8 | GTN-2R 8 | ○ | ○ | ○ | ○ | ○ | ○ | 2,2 | 1,8 | 0,16 | 8 | 0,06 | 0,04 | 0,11 |
| 1130255 | GCMX-2R 15 | GTN-2R 15 | ○ | ○ | ○ | ○ | ○ | ○ | 2,2 | 1,8 | 0,16 | 15 | 0,06 | 0,04 | 0,09 |
| 1130257 | GCMX-2.4R 4 | GTN-2.4R 4 | ○ | ○ | ○ | ○ | ○ | ○ | 2,4 | 2,0 | 0,16 | 4 | 0,08 | 0,04 | 0,14 |
| 1130233 | GCMX-2.4R 8 | GTN-2.4R 8 | ○ | ○ | ○ | ○ | ○ | ○ | 2,4 | 2,0 | 0,16 | 8 | 0,07 | 0,04 | 0,12 |
| 1130258 | GCMX-2.4R 15 | GTN-2.4R 15 | ○ | ○ | ○ | ○ | ○ | ○ | 2,4 | 2,0 | 0,16 | 15 | 0,06 | 0,04 | 0,10 |
| 1130170 | GCMX-3R 4 | GTN-3R 4 | ○ | ○ | ○ | ○ | ○ | ○ | 3,1 | 2,6 | 0,20 | 4 | 0,08 | 0,05 | 0,15 |
| 1130171 | GCMX-3R 8 | GTN-3R 8 | ○ | ○ | ○ | ○ | ○ | ○ | 3,1 | 2,6 | 0,20 | 8 | 0,07 | 0,05 | 0,12 |
| 1130253 | GCMX-3R 15 | GTN-3R 15 | ○ | ○ | ○ | ○ | ○ | ○ | 3,1 | 2,6 | 0,20 | 15 | 0,06 | 0,05 | 0,10 |
| 1130261 | GCMX-4R 4 | GTN-4R 4 | ○ | ○ | ○ | ○ | ○ | ○ | 4,1 | 3,5 | 0,25 | 4 | 0,12 | 0,08 | 0,20 |
| 1130222 | GCMX-4R 8 | GTN-4R 8 | ○ | ○ | ○ | ○ | ○ | ○ | 4,1 | 3,5 | 0,25 | 8 | 0,10 | 0,08 | 0,12 |
| 1130262 | GCMX-4R 15 | GTN-4R 15 | ○ | ○ | ○ | ○ | ○ | ○ | 4,1 | 3,5 | 0,25 | 15 | 0,10 | 0,08 | 0,12 |
| 1130264 | GCMX-4.8R 4 | GTN-4.8R 4 | ○ | ○ | ○ | ○ | ○ | ○ | 4,8 | 4,2 | 0,28 | 4 | 0,18 | 0,10 | 0,25 |
| 1130230 | GCMX-4.8R 8 | GTN-4.8R 8 | ○ | ○ | ○ | ○ | ○ | ○ | 4,8 | 4,2 | 0,28 | 8 | 0,13 | 0,10 | 0,18 |
| 1130265 | GCMX-4.8R 15 | GTN-4.8R 15 | ○ | ○ | ○ | ○ | ○ | ○ | 4,8 | 4,2 | 0,28 | 15 | 0,12 | 0,09 | 0,15 |
| 1130268 | GCMX-5R 4 | GTN-5R 4 | ○ | ○ | ○ | ○ | ○ | ○ | 5,1 | 4,5 | 0,28 | 4 | 0,18 | 0,10 | 0,25 |
| 1130224 | GCMX-5R 8 | GTN-5R 8 | ○ | ○ | ○ | ○ | ○ | ○ | 5,1 | 4,5 | 0,28 | 8 | 0,13 | 0,10 | 0,18 |
| 1130269 | GCMX-5R 15 | GTN-5R 15 | ○ | ○ | ○ | ○ | ○ | ○ | 5,1 | 4,5 | 0,28 | 15 | 0,12 | 0,09 | 0,15 |
| 1130272 | GCMX-6R 4 | GTN-6R 4 | ○ | ○ | ○ | ○ | ○ | ○ | 6,4 | 5,5 | 0,35 | 4 | 0,20 | 0,10 | 0,30 |
| 1130227 | GCMX-6R 8 | GTN-6R 8 | ○ | ○ | ○ | ○ | ○ | ○ | 6,4 | 5,5 | 0,35 | 8 | 0,17 | 0,12 | 0,20 |
| 1130276 | GCMX-6R 15 | GTN-6R 15 | ○ | ○ | ○ | ○ | ○ | ○ | 6,4 | 5,5 | 0,35 | 15 | 0,14 | 0,10 | 0,18 |

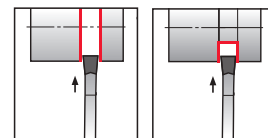
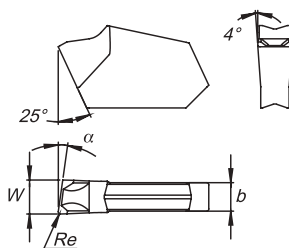
🟢 First choice | Primeira opção | 1ª opción

🟡 Stock item | Produto de stock | Itens de stock

⊖ Available under request | Disponível sobre consulta
Disponibile bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

GCMX=L



| (1) Geometry code | ISO Reference | ANSI Reference | P | | M | | K | | Dimensions (mm) | | | | Cutting Conditions | | |
|----------------------|---------------|----------------|----------------|--------|--------|--------|--------|----|-----------------|-----|----------|-----------|--------------------|------|------|
| | | | (2) Grade code | | CVD-MT | CVD-MT | CVD-MT | L7 | | | | | | | N2 |
| | | | PH5115 | PH5135 | PH5135 | PH5320 | PH5135 | W | b | Re | α | fn (mm/r) | Min | Max | |
| 1130164 | GCMX-2L 4 | GTN-2L 4 | ○ | ○ | ○ | ○ | ○ | ○ | 2,2 | 1,8 | 0,16 | 4 | 0,07 | 0,04 | 0,13 |
| 1130220 | GCMX-2L 8 | GTN-2L 8 | ○ | ○ | ○ | ○ | ○ | ○ | 2,2 | 1,8 | 0,16 | 8 | 0,06 | 0,04 | 0,11 |
| 1130256 | GCMX-2L 15 | GTN-2L 15 | ○ | ○ | ○ | ○ | ○ | ○ | 2,2 | 1,8 | 0,16 | 15 | 0,06 | 0,04 | 0,09 |
| 1130259 | GCMX-2.4L 4 | GTN-2.4L 4 | ○ | ○ | ○ | ○ | ○ | ○ | 2,4 | 2,0 | 0,16 | 4 | 0,08 | 0,04 | 0,14 |
| 1130232 | GCMX-2.4L 8 | GTN-2.4L 8 | ○ | ○ | ○ | ○ | ○ | ○ | 2,4 | 2,0 | 0,16 | 8 | 0,07 | 0,04 | 0,12 |
| 1130260 | GCMX-2.4L 15 | GTN-2.4L 15 | ○ | ○ | ○ | ○ | ○ | ○ | 2,4 | 2,0 | 0,16 | 15 | 0,06 | 0,04 | 0,10 |
| 1130221 | GCMX-3L 4 | GTN-3L 4 | ○ | ○ | ○ | ○ | ○ | ○ | 3,1 | 2,6 | 0,20 | 4 | 0,08 | 0,05 | 0,15 |
| 1130168 | GCMX-3L 8 | GTN-3L 8 | ○ | ○ | ○ | ○ | ○ | ○ | 3,1 | 2,6 | 0,20 | 8 | 0,07 | 0,05 | 0,12 |
| 1130254 | GCMX-3L 15 | GTN-3L 15 | ○ | ○ | ○ | ○ | ○ | ○ | 3,1 | 2,6 | 0,20 | 15 | 0,06 | 0,05 | 0,10 |
| 1130173 | GCMX-4L 4 | GTN-4L 4 | ○ | ○ | ○ | ○ | ○ | ○ | 4,1 | 3,5 | 0,25 | 4 | 0,12 | 0,08 | 0,20 |
| 1130223 | GCMX-4L 8 | GTN-4L 8 | ○ | ○ | ○ | ○ | ○ | ○ | 4,1 | 3,5 | 0,25 | 8 | 0,10 | 0,08 | 0,12 |
| 1130263 | GCMX-4L 15 | GTN-4L 15 | ○ | ○ | ○ | ○ | ○ | ○ | 4,1 | 3,5 | 0,25 | 15 | 0,10 | 0,08 | 0,12 |
| 1130266 | GCMX-4.8L 4 | GTN-4.8L 4 | ○ | ○ | ○ | ○ | ○ | ○ | 4,8 | 4,2 | 0,28 | 4 | 0,18 | 0,10 | 0,25 |
| 1130231 | GCMX-4.8L 8 | GTN-4.8L 8 | ○ | ○ | ○ | ○ | ○ | ○ | 4,8 | 4,2 | 0,28 | 8 | 0,13 | 0,10 | 0,18 |
| 1130267 | GCMX-4.8L 15 | GTN-4.8L 15 | ○ | ○ | ○ | ○ | ○ | ○ | 4,8 | 4,2 | 0,28 | 15 | 0,12 | 0,09 | 0,15 |
| 1130270 | GCMX-5L 4 | GTN-5L 4 | ○ | ○ | ○ | ○ | ○ | ○ | 5,1 | 4,5 | 0,28 | 4 | 0,18 | 0,10 | 0,25 |
| 1130225 | GCMX-5L 8 | GTN-5L 8 | ○ | ○ | ○ | ○ | ○ | ○ | 5,1 | 4,5 | 0,28 | 8 | 0,13 | 0,10 | 0,18 |
| 1130271 | GCMX-5L 15 | GTN-5L 15 | ○ | ○ | ○ | ○ | ○ | ○ | 5,1 | 4,5 | 0,28 | 15 | 0,12 | 0,09 | 0,15 |
| 1130274 | GCMX-6L 4 | GTN-6L 4 | ○ | ○ | ○ | ○ | ○ | ○ | 6,4 | 5,5 | 0,35 | 4 | 0,20 | 0,10 | 0,30 |
| 1130226 | GCMX-6L 8 | GTN-6L 8 | ○ | ○ | ○ | ○ | ○ | ○ | 6,4 | 5,5 | 0,35 | 8 | 0,17 | 0,12 | 0,20 |
| 1130275 | GCMX-6L 15 | GTN-6L 15 | ○ | ○ | ○ | ○ | ○ | ○ | 6,4 | 5,5 | 0,35 | 15 | 0,14 | 0,10 | 0,18 |

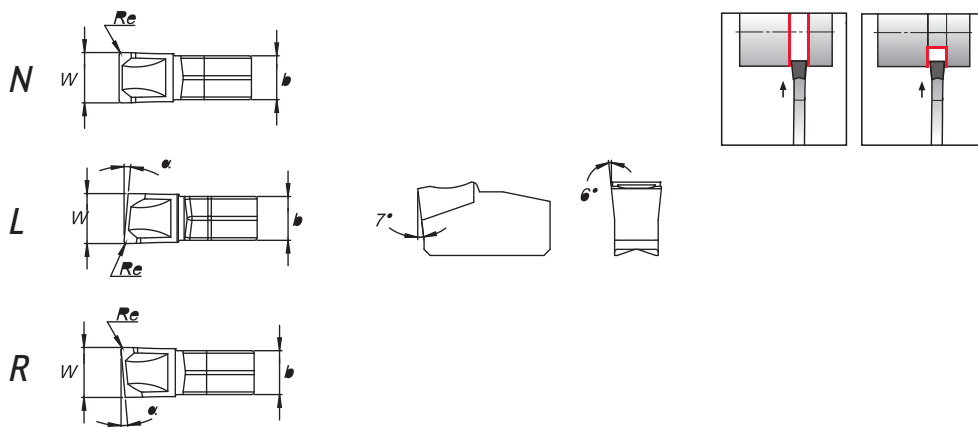
🏆 First choice | Primeira opção | 1ª opción

📦 Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

SANCAR



| | | | P | | M | K | | Dimensions (mm) | | | | Cutting Conditions | | |
|---------|-------------------|---------------|----------------|----|--------|--------|----|-----------------|-----|------|----|--------------------|-----------|------|
| | | | CVD-MT | | CVD-MT | CVD-MT | | | | | | | | |
| | (1) Geometry code | ISO Reference | ANSI Reference | L7 | N2 | N2 | L6 | N2 | W | b | Re | α | fn (mm/r) | Min |
| 1130186 | SANCAR-3N | SANCAR-3N | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 3,0 | 2,5 | 0,25 | - | 0,13 | 0,05 | 0,25 |
| 1130187 | SANCAR-4N | SANCAR-4N | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 4,0 | 3,3 | 0,25 | - | 0,18 | 0,10 | 0,30 |
| 1130189 | SANCAR-5N | SANCAR-5N | ⊗ | ⊗ | ⊗ | ⊗ | ⊗ | 5,0 | 4,3 | 0,25 | - | 0,22 | 0,10 | 0,35 |
| 1130185 | SANCAR-3L 5 | SANCAR-3L 5 | ○ | ○ | ○ | ○ | ○ | 3,0 | 2,5 | 0,25 | 5 | 0,10 | 0,05 | 0,15 |
| 1130390 | SANCAR-4L 5 | SANCAR-4L 5 | ○ | ○ | ○ | ○ | ○ | 4,0 | 3,3 | 0,25 | 5 | 0,12 | 0,08 | 0,20 |
| 1130389 | SANCAR-5L 5 | SANCAL-5L 5 | ○ | ○ | ○ | ○ | ○ | 5,0 | 4,3 | 0,25 | 5 | 0,15 | 0,08 | 0,25 |
| 1130288 | SANCAR-3R 5 | SANCAR-3R 5 | ○ | ○ | ○ | ○ | ○ | 3,0 | 2,5 | 0,25 | 5 | 0,10 | 0,05 | 0,15 |
| 1130188 | SANCAR-4R 5 | SANCAR-4R 5 | ○ | ○ | ○ | ○ | ○ | 4,0 | 3,3 | 0,25 | 5 | 0,12 | 0,08 | 0,20 |
| 1130388 | SANCAR-5R 5 | SANCAR-5R 5 | ○ | ○ | ○ | ○ | ○ | 5,0 | 4,3 | 0,25 | 5 | 0,15 | 0,08 | 0,25 |

⊗ First choice | Primeira opção | 1ª opción

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

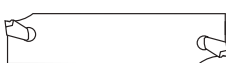
| | | | | |
|-----------|-----------|----------|---|-----------|
| BL | ST | 3 | - | 26 |
| 1 | 2 | 3 | | 4 |

1 - Product Line

BL - Blade

2 - Blade Type

ST - Standard Blade



S - SANCAR Blade



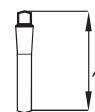
3 - Cutting Width

2mm | 3mm | 4mm | 5mm | 6mm



4 - Maximum Depth of Cut

19 - 19mm | 26 - 26mm | 32 - 32mm



D

GROOVING & PARTING OFF

Grooving Plus

Grooving & Parting Off

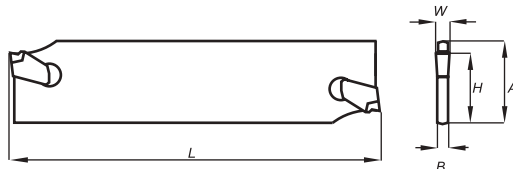
SAL - Swiss Automatic Lathes

Light Grooving

Forming Grooving

Technical Data

BLST (GCMX)



GCMX...

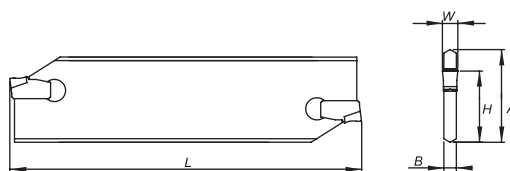


Hand Type
N, R, L

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | | Inserts | Toolholder | | Wrench | Stock |
|----------------------|---------------------------------------|---|---|------|-----|-----|-----------|------------|------------|--------|-------|
| | | A | W | H | B | L | | CPTS | DPTS | | |
| 213008000 | BLST 2-19 | 19 | 2 | 16 | 1,6 | 85 | GCMX-2... | CPTS 19... | DPTS 19... | LE05 | ☉ |
| 213008100 | BLST 2-26 | 26 | 2 | 21,4 | 1,6 | 110 | GCMX-2... | CPTS 26... | DPTS 26... | LE05 | ☉ |
| 213008200 | BLST 3-26 | 26 | 3 | 21,4 | 2,4 | 110 | GCMX-3... | CPTS 26... | DPTS 26... | LE05 | ☉ |
| 213008300 | BLST 4-26 | 26 | 4 | 21,4 | 3,2 | 110 | GCMX-4... | CPTS 26... | DPTS 26... | LE05 | ☉ |
| 213008400 | BLST 5-26 | 26 | 5 | 21,4 | 4 | 110 | GCMX-5... | CPTS 26... | DPTS 26... | LE05 | ☉ |
| 213008500 | BLST 6-26 | 26 | 6 | 21,4 | 5,2 | 110 | GCMX-6... | CPTS 26... | DPTS 26... | LE05 | ☉ |
| 213008600 | BLST 2-32 | 32 | 2 | 25 | 1,6 | 150 | GCMX-2... | CPTS 32... | DPTS 32... | LE05 | ☉ |
| 213008700 | BLST 3-32 | 32 | 3 | 25 | 2,4 | 150 | GCMX-3... | CPTS 32... | DPTS 32... | LE05 | ☉ |
| 213008800 | BLST 4-32 | 32 | 4 | 25 | 3,2 | 150 | GCMX-4... | CPTS 32... | DPTS 32... | LE05 | ☉ |
| 213008900 | BLST 5-32 | 32 | 5 | 25 | 4 | 150 | GCMX-5... | CPTS 32... | DPTS 32... | LE05 | ☉ |
| 213009000 | BLST 6-32 | 32 | 6 | 25 | 5,2 | 150 | GCMX-6... | CPTS 32... | DPTS 32... | LE05 | ☉ |

☉ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

BLS (SANCAR)



SANCAR...

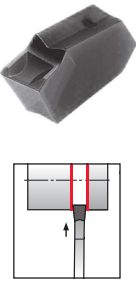
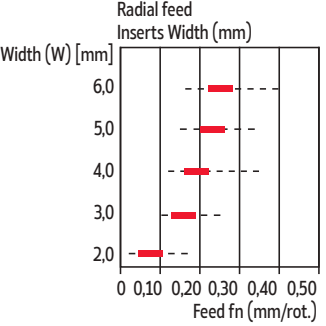
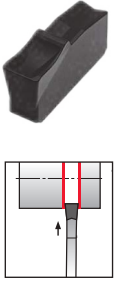
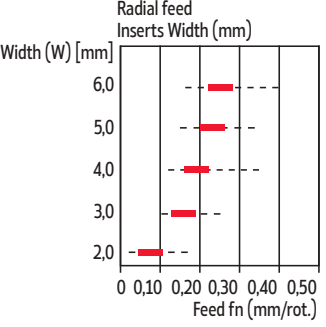


Hand Type
N, R, L

| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | | Inserts | Toolholder | | Wrench | Stock |
|----------------------|---------------------------------------|---|---|----|-----|-----|-------------|------------|------------|--------|-------|
| | | A | W | H | B | L | | CPTS | DPTS | | |
| 213004600 | BLS 3-32 | 32 | 3 | 25 | 2,4 | 150 | SANCAR 3... | CPTS 32... | DPTS 32... | LE05 | ☉ |
| 213004700 | BLS 4-32 | 32 | 4 | 25 | 3,2 | 150 | SANCAR 4... | CPTS 32... | DPTS 32... | LE05 | ☉ |
| 213005500 | BLS 5-32 | 32 | 5 | 25 | 4 | 150 | SANCAR 5... | CPTS 32... | DPTS 32... | LE05 | ☉ |

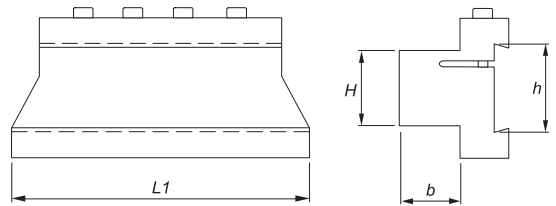
☉ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

CUTTING PARAMETERS || Parâmetros de corte | Parámetros de corte

| Feed recommendations and geometry descriptions | | Grooving & Parting Off | | | | | | | | | | | | |
|---|--|------------------------|-------------------|-----|------|-----|------|-----|-------------|-----|-------------|-----|-------------|--|
| <p>GCMX-...</p>  | <p>Radial feed Inserts Width (mm)</p>  <table border="1"> <caption>Radial feed recommendations for GCMX-...</caption> <thead> <tr> <th>Inserts Width (mm)</th> <th>Feed fn (mm/rot.)</th> </tr> </thead> <tbody> <tr> <td>2.0</td> <td>0.10</td> </tr> <tr> <td>3.0</td> <td>0.20</td> </tr> <tr> <td>4.0</td> <td>0.20 - 0.30</td> </tr> <tr> <td>5.0</td> <td>0.20 - 0.30</td> </tr> <tr> <td>6.0</td> <td>0.20 - 0.30</td> </tr> </tbody> </table> <p>Width (W) [mm]</p> <p>Feed fn (mm/rot.)</p> | Inserts Width (mm) | Feed fn (mm/rot.) | 2.0 | 0.10 | 3.0 | 0.20 | 4.0 | 0.20 - 0.30 | 5.0 | 0.20 - 0.30 | 6.0 | 0.20 - 0.30 | <p>Medium Parting Off</p> <p>Most efficient on stainless steel and most types of steel at moderate feed rates. Superior straightness of cut</p> |
| Inserts Width (mm) | Feed fn (mm/rot.) | | | | | | | | | | | | | |
| 2.0 | 0.10 | | | | | | | | | | | | | |
| 3.0 | 0.20 | | | | | | | | | | | | | |
| 4.0 | 0.20 - 0.30 | | | | | | | | | | | | | |
| 5.0 | 0.20 - 0.30 | | | | | | | | | | | | | |
| 6.0 | 0.20 - 0.30 | | | | | | | | | | | | | |
| <p>SANCAR-...</p>  | <p>Radial feed Inserts Width (mm)</p>  <table border="1"> <caption>Radial feed recommendations for SANCAR-...</caption> <thead> <tr> <th>Inserts Width (mm)</th> <th>Feed fn (mm/rot.)</th> </tr> </thead> <tbody> <tr> <td>2.0</td> <td>0.10</td> </tr> <tr> <td>3.0</td> <td>0.20</td> </tr> <tr> <td>4.0</td> <td>0.20 - 0.30</td> </tr> <tr> <td>5.0</td> <td>0.20 - 0.30</td> </tr> <tr> <td>6.0</td> <td>0.20 - 0.30</td> </tr> </tbody> </table> <p>Width (W) [mm]</p> <p>Feed fn (mm/rot.)</p> | Inserts Width (mm) | Feed fn (mm/rot.) | 2.0 | 0.10 | 3.0 | 0.20 | 4.0 | 0.20 - 0.30 | 5.0 | 0.20 - 0.30 | 6.0 | 0.20 - 0.30 | <p>Medium Parting Off</p> <p>Optimizer to minimize pips and burrs on components. Recommended for steel, stainless steel and cast iron.</p> |
| Inserts Width (mm) | Feed fn (mm/rot.) | | | | | | | | | | | | | |
| 2.0 | 0.10 | | | | | | | | | | | | | |
| 3.0 | 0.20 | | | | | | | | | | | | | |
| 4.0 | 0.20 - 0.30 | | | | | | | | | | | | | |
| 5.0 | 0.20 - 0.30 | | | | | | | | | | | | | |
| 6.0 | 0.20 - 0.30 | | | | | | | | | | | | | |

 Recommended starting value.
 For cutting speed recommendations, see page D-693

CPTS

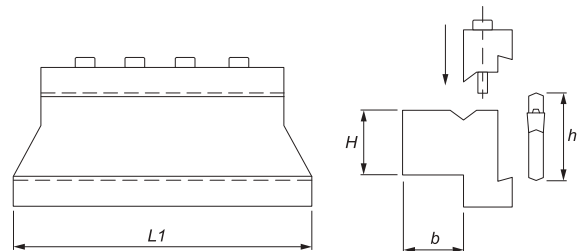


| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Screw | Wrench | Stock |
|----------------------|---------------------------------------|---|-----|----|----|-------|----------|--------|-------|
| | | h | L1 | H | b | | | | |
| 290009300 | CPTS 1916 | 19 | 76 | 16 | 16 | 0,300 | D0503000 | SS40 | ☉ |
| 290008200 | CPTS 2616 | 26 | 76 | 16 | 16 | 0,450 | D0603600 | SS50 | ☉ |
| 290006000 | CPTS 2620 | 26 | 87 | 20 | 20 | 0,500 | D0603600 | SS50 | ☉ |
| 290006100 | CPTS 2625 | 26 | 87 | 25 | 25 | 0,650 | D0603600 | SS50 | ☉ |
| 290006200 | CPTS 3220 | 32 | 100 | 20 | 20 | 0,700 | D0603600 | SS50 | ☉ |
| 290005000 | CPTS 3225 | 32 | 110 | 25 | 25 | 0,950 | D0603600 | SS50 | ☉ |
| 290006300 | CPTS 3232 | 32 | 120 | 32 | 32 | 1,400 | D0603600 | SS50 | ☉ |

☉ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

DPTS



| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Kg | Screw | Wrench | Stock |
|----------------------|---------------------------------------|---|-----|----|----|-------|----------|--------|-------|
| | | h | L1 | H | b | | | | |
| 290045400 | DPTS 1916 | 19 | 76 | 16 | 16 | 0,250 | D0503000 | SS40 | ☉ |
| 290045500 | DPTS 2620 | 26 | 87 | 20 | 20 | 0,550 | D0603600 | SS50 | ☉ |
| 290046600 | DPTS 2625 | 26 | 87 | 25 | 25 | 0,700 | D0603600 | SS50 | ☉ |
| 290073600 | DPTS 3220 | 32 | 100 | 20 | 20 | 0,750 | D0603600 | SS50 | ☉ |
| 290073700 | DPTS 3225 | 32 | 110 | 25 | 25 | 1,00 | D0603600 | SS50 | ☉ |
| 290073800 | DPTS 3232 | 32 | 120 | 32 | 32 | 1,450 | D0603600 | SS50 | ☉ |

☉ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

TRIGON INSERTS CODE KEY

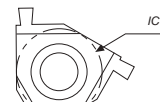
Chave de codificação para pastilhas | Llave de codificación para plaquitas

For Trigon 60° Inserts



1 - Inscribed Circle

16 - 9,525mm



2 - Insert Type

ER - External Right | IR - Internal Right

3 - Cutting Edge Type

W - Rectangular

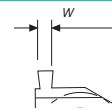


R - Rounded



4 - Cutting Edge Length

0,50 - 0,5mm | 2,25 - 2,25mm



D

GROOVING & PARTING OFF

Grooving Plus

Grooving & Parting Off

SAL - Swiss Automatic Lathes

Light Grooving

Forming Grooving

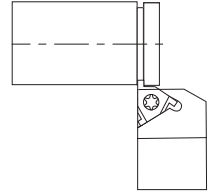
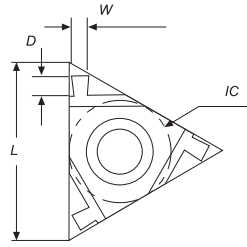
Technical Data

TRIGON INSERTS

FLAT GROOVING



External



Inserts ER = IL

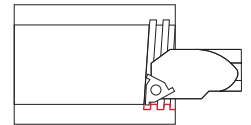
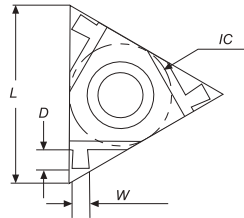
| Order code Código | Reference Referência Referencia | Anvil | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code (2) | |
|----------------------|---------------------------------------|-------|---|-------|------|------|------------------------|-------------|
| | | | IC | L | W | D | (68) PH6920 | (D0) PH8920 |
| 1883721 | 11 ER W 0.50 | - | 6,35 | 11,00 | 0,50 | 1,40 | ○ | ○ |
| 1883722 | 11 ER W 0.60 | - | 6,35 | 11,00 | 0,60 | 1,40 | ○ | ○ |
| 1883723 | 11 ER W 0.70 | - | 6,35 | 11,00 | 0,70 | 1,40 | ○ | ○ |
| 1883724 | 11 ER W 0.80 | - | 6,35 | 11,00 | 0,80 | 1,40 | ○ | ○ |
| 1883725 | 11 ER W 1.00 | - | 6,35 | 11,00 | 1,00 | 1,30 | ○ | ○ |
| 1883726 | 16 ER W 0.50 | EA 16 | 9,525 | 16,00 | 0,50 | 1,40 | ○ | ○ |
| 1881125 | 16 ER W 1.00 | EA 16 | 9,525 | 16,00 | 1,00 | 1,40 | ⊗ | ○ |
| 1883707 | 16 ER W 1.20 | EA 16 | 9,525 | 16,00 | 1,20 | 1,60 | ⊗ | ○ |
| 1883720 | 16 ER W 1.40 | EA 16 | 9,525 | 16,00 | 1,40 | 1,80 | ⊗ | ○ |
| 1881129 | 16 ER W 1.70 | EA 16 | 9,525 | 16,00 | 1,70 | 2,00 | ⊗ | ⊗ |
| 1883711 | 16 ER W 1.95 | EA 16 | 9,525 | 16,00 | 1,95 | 2,00 | ⊗ | ⊗ |
| 1883714 | 16 ER W 2.25 | EA 16 | 9,525 | 16,00 | 2,25 | 2,25 | ⊗ | ⊗ |

⊗ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Note: Select the toolholder "SXAN"



Internal



Inserts IR = EL

| Order code Código | Reference Referência Referencia | Anvil | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code (2) | |
|----------------------|---------------------------------------|-------|---|-------|------|------|------------------------|-------------|
| | | | IC | L | W | D | (68) PH6920 | (D0) PH8920 |
| 1881142 | 11 IR W 0.50 | - | 6,35 | 11,00 | 0,50 | 1,40 | ⊗ | ○ |
| 1883727 | 11 IR W 0.60 | - | 6,35 | 11,00 | 0,60 | 1,40 | ○ | ○ |
| 1883728 | 11 IR W 0.70 | - | 6,35 | 11,00 | 0,70 | 1,40 | ○ | ○ |
| 1883729 | 11 IR W 0.80 | - | 6,35 | 11,00 | 0,80 | 1,40 | ○ | ○ |
| 1881144 | 11 IR W 1.00 | - | 6,35 | 11,00 | 1,00 | 1,30 | ⊗ | ○ |
| 1883730 | 16 IR W 0.50 | EA 16 | 9,525 | 16,00 | 0,50 | 1,40 | ○ | ○ |
| 1881134 | 16 IR W 1.00 | EA 16 | 9,525 | 16,00 | 1,00 | 1,40 | ⊗ | ○ |
| 1883731 | 16 IR W 1.20 | EA 16 | 9,525 | 16,00 | 1,20 | 1,60 | ⊗ | ○ |
| 1883712 | 16 IR W 1.40 | EA 16 | 9,525 | 16,00 | 1,40 | 1,80 | ⊗ | ○ |
| 1881138 | 16 IR W 1.70 | EA 16 | 9,525 | 16,00 | 1,70 | 2,00 | ⊗ | ○ |
| 1883710 | 16 IR W 1.95 | EA 16 | 9,525 | 16,00 | 1,95 | 2,00 | ⊗ | ○ |
| 1883713 | 16 IR W 2.25 | EA 16 | 9,525 | 16,00 | 2,25 | 2,25 | ⊗ | ○ |

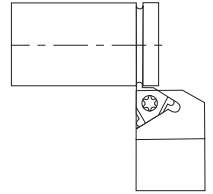
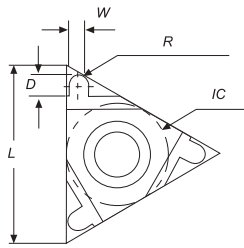
⊗ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Note: Select the toolholder "SXFN"

FULL RADIUS GROOVING



External



Inserts ER = IL

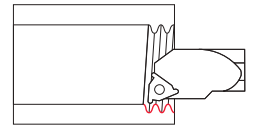
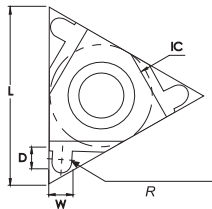
| Order code Código | Reference Referência Referencia | Anvil | Dimensions Dimensões Dimensiones (mm) | | | | | Stock - Grade Code (2) | |
|----------------------|---------------------------------------|-------|---|----|------|------|------|------------------------|-------------|
| | | | IC | L | W | R | D | (68) PH6920 | (D0) PH8920 |
| 1881149 | 16 ER R 0.50 | EA 16 | 9,525 | 16 | 1,00 | 0,50 | 1,40 | ☉ | ○ |
| 1883732 | 16 ER R 0.60 | EA 16 | 9,525 | 16 | 1,20 | 0,60 | 1,60 | ○ | ○ |
| 1883733 | 16 ER R 0.90 | EA 16 | 9,525 | 16 | 1,80 | 0,90 | 2,00 | ○ | ○ |
| 1881151 | 16 ER R 1.00 | EA 16 | 9,525 | 16 | 2,00 | 1,00 | 2,00 | ○ | ○ |
| 1883734 | 16 ER R 1.10 | EA 16 | 9,525 | 16 | 2,20 | 1,10 | 2,15 | ○ | ○ |
| 1883735 | 16 ER R 1.20 | EA 16 | 9,525 | 16 | 2,40 | 1,20 | 2,15 | ○ | ○ |

☉ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Note: Select the toolholder "SXAN"



Internal



Inserts IR = EL

| Order code Código | Reference Referência Referencia | Anvil | Dimensions Dimensões Dimensiones (mm) | | | | | Stock - Grade Code (2) | |
|----------------------|---------------------------------------|-------|---|----|------|------|------|------------------------|-------------|
| | | | IC | L | W | R | D | (68) PH6920 | (D0) PH8920 |
| 1881145 | 16 IR R 0.50 | EA 16 | 9,525 | 16 | 1,00 | 0,50 | 1,40 | ○ | ○ |
| 1883736 | 16 IR R 0.60 | EA 16 | 9,525 | 16 | 2,00 | 1,00 | 1,40 | ○ | ○ |
| 1883737 | 16 IR R 0.90 | EA 16 | 9,525 | 16 | 2,40 | 1,20 | 1,60 | ○ | ○ |
| 1881147 | 16 IR R 1.00 | EA 16 | 9,525 | 16 | 2,80 | 1,40 | 1,80 | ○ | ○ |
| 1883738 | 16 IR R 1.10 | EA 16 | 9,525 | 16 | 3,40 | 1,70 | 2,00 | ○ | ○ |
| 1883739 | 16 IR R 1.20 | EA 16 | 9,525 | 16 | 3,90 | 1,95 | 2,00 | ○ | ○ |

☉ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Note: Select the toolholder "SXFN"

EXTERNAL TOOLHOLDERS CODE KEY

Chave de codificação para suporte externos | Llave de codificación para herramienta exterior

| | | | |
|----------|----------|----------|----------|
| S | X | A | N |
| 1 | 2 | 3 | 4 |

| |
|----------|
| R |
| 5 |

| |
|-----------|
| 25 |
| 6 |

| |
|-----------|
| 25 |
| 7 |

| |
|----------|
| M |
| 8 |

| |
|-----------|
| 16 |
| 9 |

1 - Inserts Clamping System

| | | | | |
|----------|----------|----------|----------|----------|
| | | | | |
| C | D | M | P | S |

2 - Insert Shape

| | | | |
|----------|----------|----------|----------|
| | | | |
| C | D | E | K |
| | | | |
| R | S | T | V |
| | | | |
| X | W | | |

4 - Inserts Clearance Angle

| | | | |
|----------|----------|----------|----------|
| | | | |
| B | C | N | P |

5 - Tool Hand

| | | |
|----------|----------|----------|
| | | |
| R | L | N |

3 - Toolholder Leading Angle

| | | |
|----------|----------|----------|
| | | |
| A | B | C |
| | | |
| D | E | F |
| | | |
| G | H | J |
| | | |
| K | L | M |
| | | |
| N | Q | R |
| | | |
| S | T | V |
| | | |
| X | Z | |

6 - Height of Shank (mm)

| | |
|-----------|----------|
| | |
| H1 | H |

7 - Width of Shank (mm)

| |
|----------|
| |
| B |

8 - Length of Holder (mm)

| | | | | |
|--|----------|-----|----------|---------|
| | D | 60 | P | 170 |
| | E | 70 | R | 200 |
| | F | 80 | S | 250 |
| | H | 100 | T | 300 |
| | K | 125 | U | 350 |
| | L | 140 | V | 400 |
| | M | 150 | X | Special |

9 - Length of Inserts Cutting Edge (mm)

| | | | |
|----------------|----------|----------|----------|
| | | | |
| C,D,E,V | K | R | S |
| | | | |
| T | W | X | Z |

SXAN



External Left

| Order Code Código | Reference Referência Referencia | Insert Geometry | Dimensions Dimensões Dimensiones (mm) | | | | Anvil | Anvil Screw | Insert Screw | Torx Key | Stock |
|----------------------|---------------------------------------|--------------------|---|----|----|-----|-------|-------------|--------------|----------|-------|
| | | | H=h1 | b | S | L | | | | | |
| 212244300 | SXAN L 0808 H11 | 11 EL | 8 | 8 | 11 | 100 | - | - | P0260700 | XT08 | ○ |
| 212244400 | SXAN L 1010 H11 | 11 EL | 10 | 10 | 11 | 100 | - | - | P0260700 | XT08 | ⊗ |
| 212384500 | SXAN L 1212 K11 | 11 EL | 12 | 12 | 12 | 125 | - | - | P0260700 | XT08 | ○ |
| 212384600 | SXAN L 1212 F16 | 16 EL | 12 | 12 | 16 | 80 | IA16 | P5000790 | P5401390 | XT10 | ○ |
| 212123400 | SXAN L 1616 H16 | 16 EL | 16 | 16 | 16 | 100 | IA16 | P5000790 | P5401390 | XT10 | ○ |
| 212123500 | SXAN L 2020 K16 | 16 EL | 20 | 20 | 20 | 125 | IA16 | P5000790 | P5401390 | XT10 | ⊗ |
| 212123800 | SXAN L 2525 M16 | 16 EL | 25 | 25 | 25 | 150 | IA16 | P5000790 | P5401390 | XT10 | ⊗ |
| 212124400 | SXAN L 3232 P16 | 16 EL | 32 | 32 | 32 | 170 | IA16 | P5000790 | P5401390 | XT10 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

External Right

| Order Code Código | Reference Referência Referencia | Insert Geometry | Dimensions Dimensões Dimensiones (mm) | | | | Anvil | Anvil Screw | Insert Screw | Torx Key | Stock |
|----------------------|---------------------------------------|--------------------|---|----|----|-----|-------|-------------|--------------|----------|-------|
| | | | H=h1 | b | S | L | | | | | |
| 212244700 | SXAN R 0808 H11 | 11 ER | 8 | 8 | 10 | 100 | - | - | P0260700 | XT08 | ○ |
| 212244800 | SXAN R 1010 H11 | 11 ER | 10 | 10 | 10 | 100 | - | - | P0260700 | XT08 | ⊗ |
| 212384900 | SXAN R 1212 K11 | 11 ER | 12 | 12 | 12 | 125 | - | - | P0260700 | XT08 | ○ |
| 212383800 | SXAN R 1212 F16 | 16 ER | 12 | 12 | 16 | 80 | EA16 | P5000790 | P5401390 | XT10 | ⊗ |
| 212053800 | SXAN R 1616 H16 | 16 ER | 16 | 16 | 16 | 100 | EA16 | P5000790 | P5401390 | XT10 | ⊗ |
| 212053100 | SXAN R 2020 K16 | 16 ER | 20 | 20 | 20 | 125 | EA16 | P5000790 | P5401390 | XT10 | ⊗ |
| 212053200 | SXAN R 2525 M16 | 16 ER | 25 | 25 | 25 | 150 | EA16 | P5000790 | P5401390 | XT10 | ⊗ |
| 212124300 | SXAN R 3232 P16 | 16 ER | 32 | 32 | 32 | 170 | EA16 | P5000790 | P5401390 | XT10 | ⊗ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

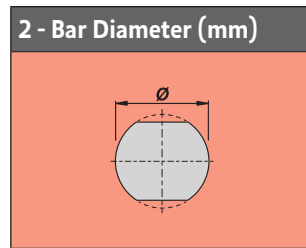
INTERNAL TOOLHOLDERS CODE KEY

Chave de codificação para suporte internos | Llave de codificación para herramienta interior

| | | | | | | | | |
|----------|-----------|----------|----------|----------|----------|----------|----------|-----------|
| S | 32 | S | S | X | F | N | R | 16 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

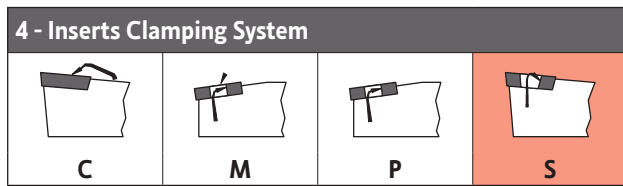
1 - Bar Type

| | |
|----------|-------------|
| S | Steel shank |
|----------|-------------|



3 - Bar Length (mm)

| | | | |
|----------|-----|----------|---------|
| H | 100 | T | 300 |
| J | 110 | U | 350 |
| K | 125 | V | 400 |
| L | 140 | W | 450 |
| M | 150 | Y | 500 |
| Q | 180 | X | Special |
| R | 200 | | |
| S | 250 | | |



5 - Insert Shape

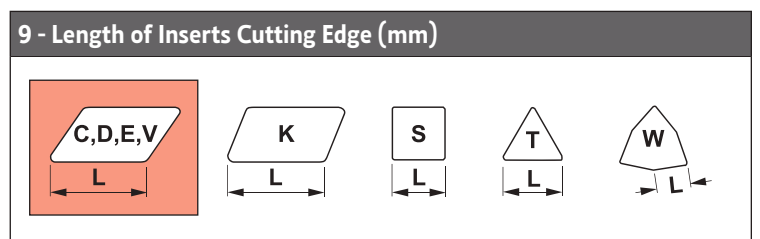
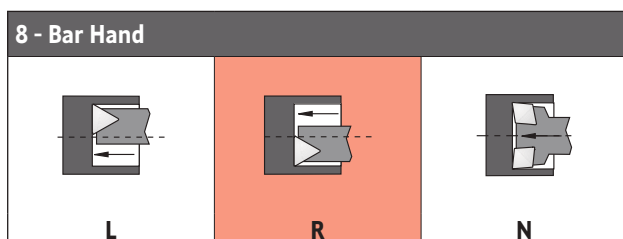
| | | | |
|-----------------|-----------------|-----------------|-----------------|
| 80° C | 55° D | 75° E | 55° K |
| 90° S | 60° T | 35° V | 80° W |
| 60° X | | | |

6 - Bar Leading Angle

| | | |
|---------------------|-----------------|--------------------|
| 90° F | 75° K | 95° L |
| 107°30' Q | 93° U | 93° U-BT |
| 90° G | | |

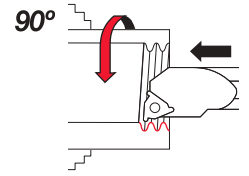
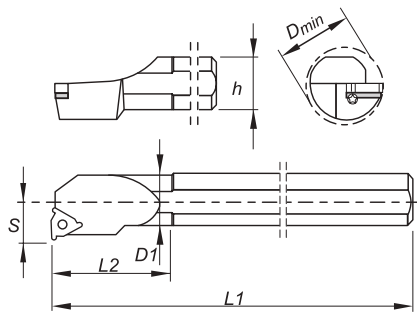
7 - Inserts Clearance Angle

| | | | |
|----------------|----------------|----------------|-----------------|
| 5° B | 7° C | 0° N | 11° P |
|----------------|----------------|----------------|-----------------|



D GROOVING & PARTING OFF Grooving Plus Grooving & Parting Off SAL - Swiss Automatic Lathes Light Grooving Forming Grooving Technical Data

SXFN



Internal Left

| Order Code Código | Reference Referência Referencia | Insert Type | Dimensions Dimensões Dimensiones (mm) | | | | | | Anvil | Anvil Screw | Insert Screw | Torx Key | Stock |
|----------------------|---------------------------------------|----------------|---|----|------|-----|----|------|-------|-------------|--------------|----------|-------|
| | | | h | D1 | Dmin | L1 | L2 | S | | | | | |
| 212137600 | S10H SXFN L 11 | 11 IL | 10 | 10 | 12 | 100 | - | 7,4 | - | - | P0260700 | XT08 | ☉ |
| 212137800 | S10K SXFN L 11 | 11 IL | 16 | 10 | 12 | 125 | 25 | 7,4 | - | - | P0260700 | XT08 | ○ |
| 212385300 | S13L SXFN L 11 | 11 IL | 16 | 13 | 15 | 140 | 32 | 8,9 | - | - | P0260700 | XT08 | ○ |
| 212138000 | S13M SXFN L 16 | 16 IL | 16 | 13 | 16 | 150 | 32 | 10,2 | - | - | P5401391 | XT10 | ○ |
| 212127400 | S16P SXFN L 16 | 16 IL | 20 | 16 | 19 | 170 | 40 | 11,7 | - | - | P5401391 | XT10 | ☉ |
| 212138200 | S20P SXFN L 16 | 16 IL | 20 | 20 | 24 | 170 | - | 13,7 | EA16 | P5000790 | P5401390 | XT10 | ☉ |
| 212125500 | S25R SXFN L 16 | 16 IL | 25 | 25 | 29 | 200 | - | 16,2 | EA16 | P5000790 | P5401390 | XT10 | ☉ |
| 212125700 | S32S SXFN L 16 | 16 IL | 32 | 32 | 36 | 250 | - | 19,7 | EA16 | P5000790 | P5401390 | XT10 | ○ |
| 212125900 | S40T SXFN L 16 | 16 IL | 40 | 40 | 44 | 300 | - | 23,7 | EA16 | P5000790 | P5401390 | XT10 | ○ |

☉ Stock item | Produto de stock
Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta

Note: All the toolholders SXFN are made with 1.5° helix angle. | Todos os ferros de torno são fornecidos com um ângulo de hélice de 1,5° | Todos los soportes se hacen con un ángulo de hélice de 1,5°.

Internal Right

| Order Code Código | Reference Referência Referencia | Insert Type | Dimensions Dimensões Dimensiones (mm) | | | | | | Anvil | Anvil Screw | Insert Screw | Torx Key | Stock |
|----------------------|---------------------------------------|----------------|---|----|------|-----|----|------|-------|-------------|--------------|----------|-------|
| | | | h | D1 | Dmin | L1 | L2 | S | | | | | |
| 212137700 | S10H SXFN R 11 | 11 IR | 10 | 10 | 12,5 | 100 | - | 7,3 | - | - | P0260700 | XT08 | ☉ |
| 212137900 | S10K SXFN R 11 | 11 IR | 16 | 10 | 12,5 | 125 | 25 | 7,3 | - | - | P0260700 | XT08 | ○ |
| 212385400 | S10L SXFN R 11 | 11 IR | 16 | 13 | 15 | 140 | 32 | 8,9 | - | - | P0260700 | XT08 | ○ |
| 212138100 | S13M SXFN R 16 | 16 IR | 16 | 13 | 16,5 | 150 | 32 | 10,4 | - | - | P5401391 | XT10 | ○ |
| 212127300 | S16P SXFN R 16 | 16 IR | 20 | 16 | 19,5 | 170 | 40 | 11,6 | - | - | P5401391 | XT10 | ☉ |
| 212138400 | S20P SXFN R 16 | 16 IR | 20 | 20 | 23,5 | 170 | - | 13,6 | IA16 | P5000790 | P5401390 | XT10 | ☉ |
| 212125400 | S25R SXFN R 16 | 16 IR | 25 | 25 | 28,5 | 200 | - | 16,3 | IA16 | P5000790 | P5401390 | XT10 | ☉ |
| 212125600 | S32S SXFN R 16 | 16 IR | 32 | 32 | 35,5 | 250 | - | 19,6 | IA16 | P5000790 | P5401390 | XT10 | ○ |
| 212125800 | S40T SXFN R 16 | 16 IR | 40 | 40 | 43,5 | 300 | - | 23,6 | IA16 | P5000790 | P5401390 | XT10 | ○ |

☉ Stock item | Produto de stock
Itens de stock

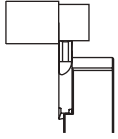
○ Available under request | Disponível sobre consulta
Disponível bajo consulta

Note: All the toolholders SXFN are made with 1.5° helix angle. | Todos os ferros de torno são fornecidos com um ângulo de hélice de 1,5° | Todos los soportes se hacen con un ángulo de hélice de 1,5°.

MAIN APPLICATIONS | Aplicações principais | Aplicaciones principales

D

GROOVING & PARTING OFF



Turning

INSERTS

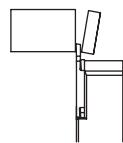
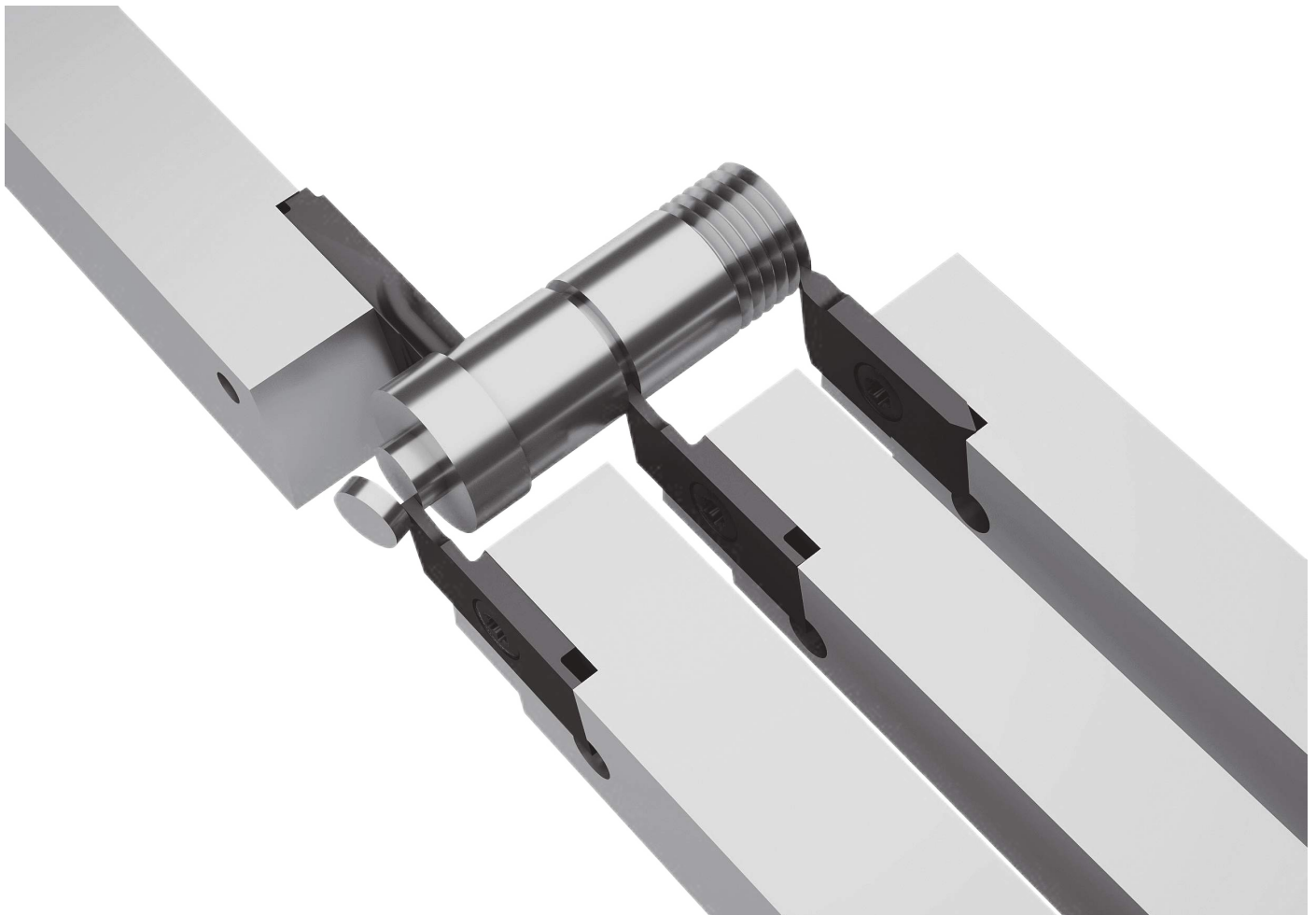
4 Different operations:

- Turning
- Parting off
- Grooving
- Threading

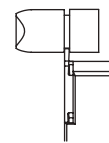
TOOLHOLDERS

Dimensions:

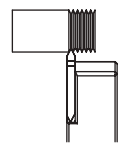
- 08x08mm
- 10x10mm
- 12x12mm
- 16x16mm



Parting off



Grooving



Threading

Grooving Plus

Grooving & Parting Off

SAL - Swiss Automatic Lathes

Light Grooving

Forming Grooving

Technical Data



Technical Data

Forming Grooving

Light Grooving

SAL - Swiss Automatic Lathes

Grooving & Parting Off

Grooving Plus

GROOVING & PARTING OFF



SAL - SWISS AUTOMATIC LATHES

INSERTS CODE KEY - Chave de codificação para pastilhas | Llave de codificación de plaquitas

Grooving Inserts

| | | | | | | | |
|-----|----|---|-----|---|---|--|----|
| SAL | 25 | G | 050 | R | | | GS |
| 1 | 2 | 5 | 6 | 8 | - | | 11 |

Parting Off Inserts

| | | | | | | | |
|-----|----|---|-----|---|---|---|-----|
| SAL | 11 | P | 100 | R | N | | P07 |
| 1 | 3 | 5 | 6 | 8 | 9 | - | 11 |

Threading Inserts

| | | | | | | | |
|-----|-----|---|-----|---|----|---|----|
| SAL | 100 | H | 010 | R | 60 | | PT |
| 1 | 4 | 5 | 7 | 8 | 10 | - | 11 |

Turning Inserts

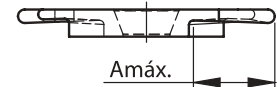
| | | | | | | | |
|-----|----|---|-----|---|---|--|----|
| SAL | 60 | T | 300 | R | | | TP |
| 1 | 2 | 5 | 6 | 8 | - | | 11 |

1 - Product line

SAL - Swiss Automatic Lathes Line

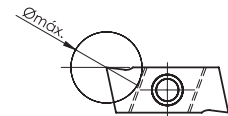
2 - Maximum depth of cut (Turning and Grooving inserts)

25 - 2,5mm | 60 - 6,0mm



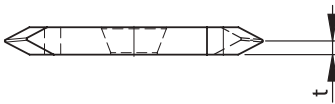
3 - Maximum Cutting Diameter (Parting Off Inserts)

11 - 11,0mm | 13 - 13,0mm



4 - Center distance (Threading Inserts)

050 - 0,5mm | 100 - 1,00mm



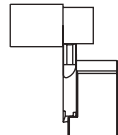
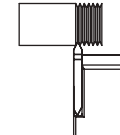
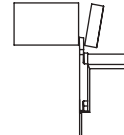
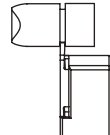
5 - Operations type

G - Grooving

P - Parting off

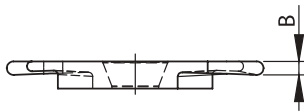
H - Threading

T - Turning



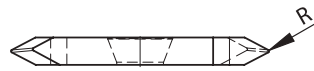
6 - Cut thickness (Grooving, Parting Off and Turning Inserts)

050 - 0,50mm | 070 - 0,70mm | 080 - 0,80mm
090 - 0,90mm | 100 - 1,00mm | 110 - 1,10mm
130 - 1,30mm | 150 - 1,50mm | 160 - 1,60mm
185 - 1,85mm | 200 - 2,00 mm | 300 - 3,00 mm



7 - Corner radius (Threading Inserts)

005 - 0,05mm | 010 - 0,10mm
012 - 0,12mm



8 - Insert / toolholder side

L - Left hand

R - Right hand

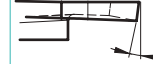
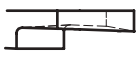


9 - Front angle (Parting off)

N - Neutral

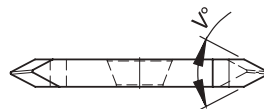
R - Right

L - Left



10 - Angle (Threading Inserts)

55 - 55° | 60 - 60°



11 - Chip Breaker (Turning, Grooving, Parting Off and Threading Inserts)

Turning

TP - Turning steel

Grooving

GS - Square Grooving
GR - Round Grooving

Parting Off

P00 - Front angle 0°
P07 - Front angle 7°

Threading

PT - Partial Profile



TOOLHOLDERS CODE KEY - Chave de codificação para suportes | Llave de codificación de herramienta

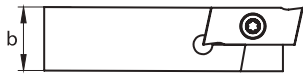
| | | | | | | | | | |
|-----|---|---|---|---|----|----|---|---|----|
| SAL | H | E | R | - | 08 | 08 | - | M | 07 |
| 1 | 2 | 3 | 4 | | 5 | 6 | | 7 | 8 |

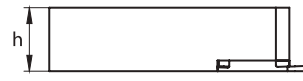
| |
|-----------------------------------|
| 1 - Product line |
| SAL - Swiss Automatic Lathes Line |

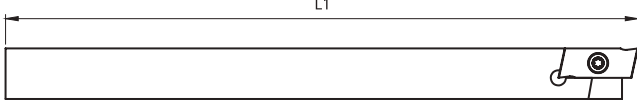
| |
|---------------|
| 2 - Tool type |
| H - Holder |

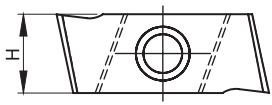
| |
|--------------------------|
| 3 - Internal or External |
| E - External |

| 4 - Insert / toolholder side | |
|---|--|
| L - Left hand | R - Right hand |
|  |  |

| 5 - Shank height |
|--|
| 08 - 8 mm |
| 10 - 10 mm |
| 12 - 12 mm |
| 16 - 16 mm |
|  |

| 6 - Shank width |
|---|
| 08 - 8 mm |
| 10 - 10 mm |
| 12 - 12 mm |
| 16 - 16 mm |
|  |

| 7 - Shank height |
|--|
| L - 140 mm |
| M - 150 mm |
|  |

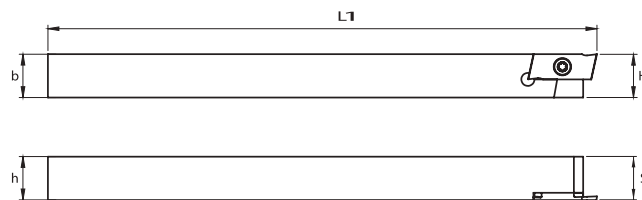
| 8 - Insert cutting edge length (mm) |
|---|
| 07 - 7,0 mm |
|  |

SAL - SWISS AUTOMATIC LATHES

EXTERNAL TOOLHOLDERS | Suportes exteriores | herramientas de tronzado exterior



Left hand style show



| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | | * Insert | Screw | Wrench | Stock |
|----------------------|---------------------------------------|---|-------|-------|--------|-------|----------|----------|--------|-------|
| | | h | b | H | L1 | s | | | | |
| 213023600 | SALHEL 0808 M07 | 8,00 | 8,00 | 8,00 | 150,00 | 8,00 | SAL...L | P0300900 | XT 08 | ☺ |
| 213023700 | SALHEL 1010 M07 | 10,00 | 10,00 | 10,00 | 150,00 | 10,00 | SAL...L | P0300900 | XT 08 | ☺ |
| 213023800 | SALHEL 1212 M07 | 12,00 | 12,00 | 12,00 | 150,00 | 12,00 | SAL...L | P0300900 | XT 08 | ☺ |
| 213023900 | SALHEL 1616 M07 | 16,00 | 16,00 | 16,00 | 150,00 | 16,00 | SAL...L | P0300900 | XT 08 | ☺ |
| 213029700 | SALHEL 2020 M07 | 20,00 | 20,00 | 20,00 | 150,00 | 20,00 | SAL...L | P0300900 | XT 08 | ☺ |
| 213029900 | SALHEL 2525 M07 | 25,00 | 25,00 | 25,00 | 150,00 | 25,00 | SAL...L | P0300900 | XT 08 | ☺ |

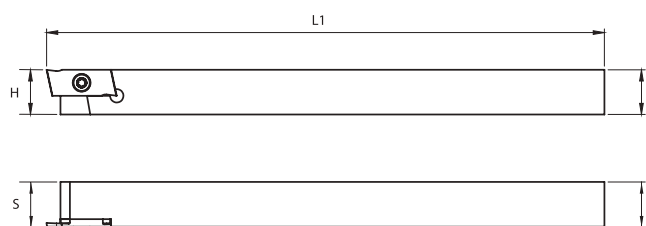
☺ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

* Left insert only fits on left toolholder



Right hand style show



| Order code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | | * Insert | Screw | Wrench | Stock |
|----------------------|---------------------------------------|---|-------|-------|--------|-------|----------|----------|--------|-------|
| | | h | b | H | L1 | s | | | | |
| 213023200 | SALHER 0808 M07 | 8,00 | 8,00 | 8,00 | 150,00 | 8,00 | SAL...R | P0300900 | XT 08 | ☺ |
| 213023300 | SALHER 1010 M07 | 10,00 | 10,00 | 10,00 | 150,00 | 10,00 | SAL...R | P0300900 | XT 08 | ☺ |
| 213023400 | SALHER 1212 M07 | 12,00 | 12,00 | 12,00 | 150,00 | 12,00 | SAL...R | P0300900 | XT 08 | ☺ |
| 213023500 | SALHER 1616 M07 | 16,00 | 16,00 | 16,00 | 150,00 | 16,00 | SAL...R | P0300900 | XT 08 | ☺ |
| 213025300 | SALHER 2020 M07 | 20,00 | 20,00 | 20,00 | 150,00 | 20,00 | SAL...R | P0300900 | XT 08 | ☺ |
| 213029800 | SALHER 2525 M07 | 25,00 | 25,00 | 25,00 | 150,00 | 25,00 | SAL...R | P0300900 | XT 08 | ☺ |

☺ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

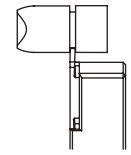
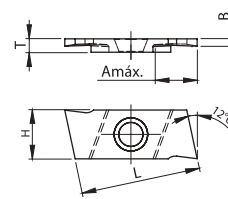
* Right insert only fits on right toolholder

GS SERIES | Inserts | Pastilhas | Plaquetas



Right hand style show

For square grooving
Para grooving quadrado
Para ranurado quadrado



Grooving

| (1) Geometry code | (2) Grade code | | PVD | | | | | | | | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | |
|----------------------|----------------|---------------|-----|----|----|----|----|----|----|----|---|-------|------|------|-------|----|--|-----------|------|------|
| | | | P | | M | | K | | S | | B | L | T | H | Amáx. | V° | Ømáx. | fn (mm/r) | Min. | Max. |
| | | | G1 | G4 | G4 | P8 | G4 | P8 | G4 | P8 | | | | | | | | | | |
| 1130441 | SAL25G050R-GS | SAL25G050R-GS | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 0,50 | 17,00 | 2,00 | 7,00 | 2,50 | - | - | 0,04 | 0,02 | 0,06 |
| 1130475 | SAL25G070R-GS | SAL25G070R-GS | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 0,70 | 17,00 | 2,00 | 7,00 | 2,50 | - | - | 0,05 | 0,02 | 0,08 |
| 1130477 | SAL25G080R-GS | SAL25G080R-GS | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 0,80 | 17,00 | 2,00 | 7,00 | 2,50 | - | - | 0,05 | 0,02 | 0,09 |
| 1130479 | SAL25G090R-GS | SAL25G090R-GS | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 0,90 | 17,00 | 2,00 | 7,00 | 2,50 | - | - | 0,06 | 0,02 | 0,10 |
| 1130488 | SAL60G110R-GS | SAL60G110R-GS | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 1,10 | 17,00 | 2,00 | 7,00 | 6,00 | - | - | 0,06 | 0,02 | 0,11 |
| 1130490 | SAL60G130R-GS | SAL60G130R-GS | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 1,30 | 17,00 | 2,00 | 7,00 | 6,00 | - | - | 0,07 | 0,02 | 0,12 |
| 1130442 | SAL60G160R-GS | SAL60G160R-GS | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 1,60 | 17,00 | 2,00 | 7,00 | 6,00 | - | - | 0,07 | 0,02 | 0,13 |
| 1130495 | SAL60G185R-GS | SAL60G185R-GS | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 1,85 | 17,00 | 2,00 | 7,00 | 6,00 | - | - | 0,08 | 0,02 | 0,14 |
| 1130473 | SAL25G050L-GS | SAL25G050L-GS | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 0,50 | 17,00 | 2,00 | 7,00 | 2,50 | - | - | 0,04 | 0,02 | 0,06 |
| 1130474 | SAL25G070L-GS | SAL25G070L-GS | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 0,70 | 17,00 | 2,00 | 7,00 | 2,50 | - | - | 0,05 | 0,02 | 0,08 |
| 1130476 | SAL25G080L-GS | SAL25G080L-GS | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 0,80 | 17,00 | 2,00 | 7,00 | 2,50 | - | - | 0,05 | 0,02 | 0,09 |
| 1130478 | SAL25G090L-GS | SAL25G090L-GS | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 0,90 | 17,00 | 2,00 | 7,00 | 2,50 | - | - | 0,06 | 0,02 | 0,10 |
| 1130487 | SAL60G110L-GS | SAL60G110L-GS | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 1,10 | 17,00 | 2,00 | 7,00 | 6,00 | - | - | 0,06 | 0,02 | 0,11 |
| 1130489 | SAL60G130L-GS | SAL60G130L-GS | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 1,30 | 17,00 | 2,00 | 7,00 | 6,00 | - | - | 0,07 | 0,02 | 0,12 |
| 1130493 | SAL60G160L-GS | SAL60G160L-GS | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 1,60 | 17,00 | 2,00 | 7,00 | 6,00 | - | - | 0,07 | 0,02 | 0,13 |
| 1130494 | SAL60G185L-GS | SAL60G185L-GS | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 1,85 | 17,00 | 2,00 | 7,00 | 6,00 | - | - | 0,08 | 0,02 | 0,14 |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request with delivery time 4 weeks
Disponível sobre consulta com prazo de entrega de 4 semanas
Disponible bajo consulta, con fecha de entrega en 4 semanas

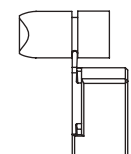
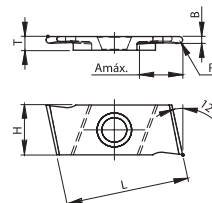
Order code = (1) Geometry code + (2) Grade code

GR SERIES | Inserts | Pastilhas | Plaquetas



Right hand style show

For round grooving
Para grooving redondo
Para ranurado redondo



Grooving

| (1) Geometry code | (2) Grade code | | PVD | | | | | | | | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | |
|----------------------|----------------|---------------|-----|----|----|----|----|----|----|----|---|-------|------|------|-------|----|--|-----------|------|------|
| | | | P | | M | | K | | S | | B | L | T | H | Amáx. | V° | Ømáx. | fn (mm/r) | Min. | Max. |
| | | | G1 | G4 | G4 | P8 | G4 | P8 | G4 | P8 | | | | | | | | | | |
| 1130443 | SAL60G100R-GR | SAL60G100R-GR | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 1,00 | 17,00 | 2,00 | 7,00 | 6,00 | - | - | 0,06 | 0,02 | 0,10 |
| 1130492 | SAL60G150R-GR | SAL60G150R-GR | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 1,50 | 17,00 | 2,00 | 7,00 | 6,00 | - | - | 0,08 | 0,02 | 0,12 |
| 1130497 | SAL60G200R-GR | SAL60G200R-GR | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 2,00 | 17,00 | 2,00 | 7,00 | 6,00 | - | - | 0,08 | 0,03 | 0,14 |
| 1130486 | SAL60G100L-GR | SAL60G100L-GR | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 1,00 | 17,00 | 2,00 | 7,00 | 6,00 | - | - | 0,06 | 0,02 | 0,10 |
| 1130491 | SAL60G150L-GR | SAL60G150L-GR | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 1,50 | 17,00 | 2,00 | 7,00 | 6,00 | - | - | 0,08 | 0,02 | 0,12 |
| 1130496 | SAL60G200L-GR | SAL60G200L-GR | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 2,00 | 17,00 | 2,00 | 7,00 | 6,00 | - | - | 0,08 | 0,03 | 0,14 |

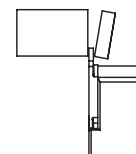
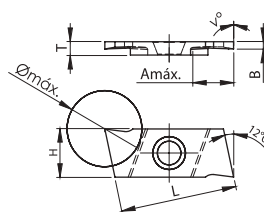
SAL - SWISS AUTOMATIC LATHES

P(P00) SERIES | Inserts | Pastilhas | Plaquetas



Right hand style show

Without front angle
Sem ângulo frontal
Sin ángulo frontal



Parting off

| (1) Geometry code | ISO Reference | ANSI Reference | PVD | | | | | | | | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | |
|----------------------|-----------------|-----------------|----------------|--------|--------|--------|--------|--------|--------|--------|---|-------|------|------|-------|--|-------|-----------|------|------|
| | | | (2) Grade code | | | | | | | | B | L | T | H | Amáx. | V° | Ømáx. | fn (mm/r) | Min. | Max. |
| | | | G1 | G4 | G4 | P8 | G4 | P8 | G4 | P8 | | | | | | | | | | |
| | | | PH7910 | PH7920 | PH7920 | PH7135 | PH7920 | PH7135 | PH7920 | PH7135 | | | | | | | | | | |
| 1130444 | SAL11P100RN-P00 | SAL11P100RN-P00 | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 1,00 | 17,00 | 2,00 | 7,00 | 6,00 | 0 | 11,00 | 0,06 | 0,02 | 0,10 |
| 1130462 | SAL11P150RN-P00 | SAL11P150RN-P00 | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 1,50 | 17,00 | 2,00 | 7,00 | 6,00 | 0 | 11,00 | 0,08 | 0,02 | 0,12 |
| 1130468 | SAL13P200RN-P00 | SAL13P200RN-P00 | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 2,00 | 17,00 | 2,00 | 7,00 | 6,00 | 0 | 7,00 | 0,08 | 0,03 | 0,14 |
| 1130456 | SAL11P100LN-P00 | SAL11P100LN-P00 | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 1,00 | 17,00 | 2,00 | 7,00 | 6,00 | 0 | 11,00 | 0,06 | 0,02 | 0,10 |
| 1130459 | SAL11P150LN-P00 | SAL11P150LN-P00 | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 1,50 | 17,00 | 2,00 | 7,00 | 6,00 | 0 | 11,00 | 0,08 | 0,02 | 0,12 |
| 1130465 | SAL13P200LN-P00 | SAL13P200LN-P00 | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 2,00 | 17,00 | 2,00 | 7,00 | 6,00 | 0 | 7,00 | 0,08 | 0,03 | 0,14 |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request with delivery time 4 weeks
Disponível sobre consulta com prazo de entrega de 4 semanas
Disponibile bajo consulta, con fecha de entrega en 4 semanas

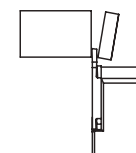
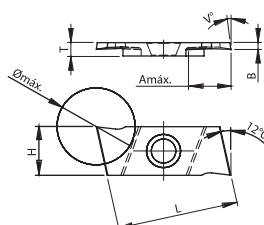
Order code = (1) Geometry code + (2) Grade code

P(P07) SERIES | Inserts | Pastilhas | Plaquetas



Right hand style show

Front angle 7°
Ângulo frontal de 7°
Angulo frontal de 7°



Parting off

| (1) Geometry code | ISO Reference | ANSI Reference | PVD | | | | | | | | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | | Cutting conditions Condições de corte Condiciones de corte | | | | |
|----------------------|-----------------|-----------------|----------------|--------|--------|--------|--------|--------|--------|--------|---|-------|------|------|-------|--|-------|-----------|------|------|
| | | | (2) Grade code | | | | | | | | B | L | T | H | Amáx. | V° | Ømáx. | fn (mm/r) | Min. | Max. |
| | | | G1 | G4 | G4 | P8 | G4 | P8 | G4 | P8 | | | | | | | | | | |
| | | | PH7910 | PH7920 | PH7920 | PH7135 | PH7920 | PH7135 | PH7920 | PH7135 | | | | | | | | | | |
| 1130445 | SAL11P100RR-P07 | SAL11P100RR-P07 | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 1,00 | 17,00 | 2,00 | 7,00 | 6,00 | 7 | 11,00 | 0,05 | 0,02 | 0,08 |
| 1130446 | SAL11P100RL-P07 | SAL11P100RL-P07 | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 1,00 | 17,00 | 2,00 | 7,00 | 6,00 | 7 | 11,00 | 0,05 | 0,02 | 0,08 |
| 1130463 | SAL11P150RR-P07 | SAL11P150RR-P07 | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 1,50 | 17,00 | 2,00 | 7,00 | 6,00 | 7 | 11,00 | 0,06 | 0,02 | 0,10 |
| 1130461 | SAL11P150RL-P07 | SAL11P150RL-P07 | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 1,50 | 17,00 | 2,00 | 7,00 | 6,00 | 7 | 11,00 | 0,06 | 0,02 | 0,10 |
| 1130469 | SAL13P200RR-P07 | SAL13P200RR-P07 | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 2,00 | 17,00 | 2,00 | 7,00 | 6,00 | 7 | 7,00 | 0,06 | 0,03 | 0,12 |
| 1130467 | SAL13P200RL-P07 | SAL13P200RL-P07 | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 2,00 | 17,00 | 2,00 | 7,00 | 6,00 | 7 | 7,00 | 0,06 | 0,03 | 0,12 |
| 1130457 | SAL11P100LR-P07 | SAL11P100LR-P07 | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 1,00 | 17,00 | 2,00 | 7,00 | 6,00 | 7 | 11,00 | 0,05 | 0,02 | 0,08 |
| 1130455 | SAL11P100LL-P07 | SAL11P100LL-P07 | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 1,00 | 17,00 | 2,00 | 7,00 | 6,00 | 7 | 11,00 | 0,05 | 0,02 | 0,08 |
| 1130460 | SAL11P150LR-P07 | SAL11P150LR-P07 | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 1,50 | 17,00 | 2,00 | 7,00 | 6,00 | 7 | 11,00 | 0,06 | 0,02 | 0,10 |
| 1130458 | SAL11P150LL-P07 | SAL11P150LL-P07 | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 1,50 | 17,00 | 2,00 | 7,00 | 6,00 | 7 | 11,00 | 0,06 | 0,02 | 0,10 |
| 1130466 | SAL13P200LR-P07 | SAL13P200LR-P07 | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 2,00 | 17,00 | 2,00 | 7,00 | 6,00 | 7 | 7,00 | 0,06 | 0,03 | 0,12 |
| 1130464 | SAL13P200LL-P07 | SAL13P200LL-P07 | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 2,00 | 17,00 | 2,00 | 7,00 | 6,00 | 7 | 7,00 | 0,06 | 0,03 | 0,12 |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request with delivery time 4 weeks
Disponível sobre consulta com prazo de entrega de 4 semanas
Disponibile bajo consulta, con fecha de entrega en 4 semanas

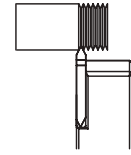
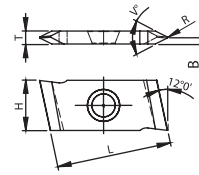
Order code = (1) Geometry code + (2) Grade code

PT SERIES | Inserts | Pastilhas | Plaquetas



Right hand style show

For partial profile threading
Para perfil parcial de roscagem
Para perfil parcial de roscado



Threading

| (1) Geometry code | ISO Reference | ANSI Reference | (2) Grade code | | | | | | | | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | |
|----------------------|------------------|------------------|----------------|----|----|----|----|----|----|----|---|------|------|------|-------|----|--|-----------|------|------|
| | | | PVD | | | | | | | | B | L | T | H | Amáx. | V° | Ømáx. | fn (mm/r) | Min. | Max. |
| | | | G1 | G4 | G4 | P8 | G4 | P8 | G4 | P8 | | | | | | | | | | |
| 1130472 | SAL100H012R55-PT | SAL100H012R55-PT | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 1,09 | 1700 | 2,00 | 7,00 | 0,12 | 55 | - | 0,80 | 0,20 | 2,00 |
| 1130447 | SAL100H012R60-PT | SAL100H012R60-PT | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 1,09 | 1700 | 2,00 | 7,00 | 0,12 | 60 | - | 0,80 | 0,20 | 2,00 |
| 1130470 | SAL100H012L55-PT | SAL100H012L55-PT | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 1,09 | 1700 | 2,00 | 7,00 | 0,12 | 55 | - | 0,80 | 0,20 | 2,00 |
| 1130471 | SAL100H012L60-PT | SAL100H012L60-PT | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | 1,09 | 1700 | 2,00 | 7,00 | 0,12 | 60 | - | 0,80 | 0,20 | 2,00 |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request with delivery time 4 weeks
Disponível sobre consulta com prazo de entrega de 4 semanas
Disponible bajo consulta, con fecha de entrega en 4 semanas

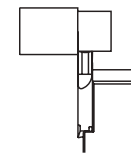
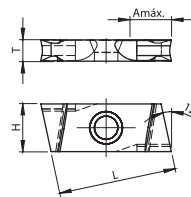
Order code = (1) Geometry code + (2) Grade code

TP SERIES | Inserts | Pastilhas | Plaquetas



Right hand style show

For turning
Para torneamento
Para torneado



Turning

| (1) Geometry code | ISO Reference | ANSI Reference | (2) Grade code | | | | | | | | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | | | Cutting conditions Condições de corte Condiciones de corte | | | |
|----------------------|---------------|----------------|----------------|----|----|----|----|----|----|----|---|------|------|------|-------|----|--|-----------|------|------|
| | | | PVD | | | | | | | | B | L | T | H | Amáx. | V° | Ømáx. | fn (mm/r) | Min. | Max. |
| | | | G1 | G4 | G4 | P8 | G4 | P8 | G4 | P8 | | | | | | | | | | |
| 1130501 | SAL60T300R-TP | SAL60T300R-TP | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | - | 1700 | 3,17 | 7,00 | 6,00 | - | - | 0,08 | 0,02 | 0,12 |
| 1130499 | SAL60T300L-TP | SAL60T300L-TP | ○ | ⊗ | ⊗ | ○ | ⊗ | ○ | ⊗ | ○ | - | 1700 | 3,17 | 7,00 | 6,00 | - | - | 0,08 | 0,02 | 0,12 |

⊗ Stock item | Produto de stock | Itens de stock

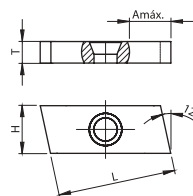
○ Available under request with delivery time 4 weeks
Disponível sobre consulta com prazo de entrega de 4 semanas
Disponible bajo consulta, con fecha de entrega en 4 semanas

Order code = (1) Geometry code + (2) Grade code

BLANKS FOR GRINDING | Blanks para personalizar | Blanks para personalizar



Right hand style show



Inserts blanks “do it yourself” grinding are available allowing modifications of the insert for any machining operation.

As pastilhas de blank “faça você mesmo” permitem a personalização da pastilha para qualquer operação de maquinação.

Las plaquetas de blank “haga usted mismo” permiten la personalización de la plaqueta para cualquiera operación de maquinación.

| (1) Geometry code | (2) Grade code | | Uncoated | | | Dimensions (mm) Dimensões (mm) Dimensiones (mm) | | | | | | |
|----------------------|----------------------|----------------------|----------|--------|--------|---|------|------|-----|-------|----|-------|
| | | | 10 | 12 | 14 | B | L | T | H | Amáx. | V° | Ømáx. |
| | | | PH0910 | PH0920 | PH0135 | | | | | | | |
| 1130440 | BLANK SALR 17x7x2 | BLANK SALR 17x7x2 | ⊗ | ⊗ | ⊗ | - | 1750 | 2,00 | 750 | - | - | - |
| 1130504 | BLANK SALR 17x7x3,17 | BLANK SALR 17x7x3,17 | ⊗ | ⊗ | ⊗ | - | 1750 | 3,17 | 750 | - | - | - |
| 1130453 | BLANK SALL 17x7x2 | BLANK SALL 17x7x2 | ⊗ | ⊗ | ⊗ | - | 1750 | 2,00 | 750 | - | - | - |
| 1130505 | BLANK SALL 17x7x3,17 | BLANK SALL 17x7x3,17 | ⊗ | ⊗ | ⊗ | - | 1750 | 3,17 | 750 | - | - | - |

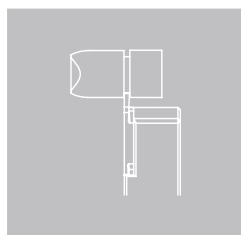
⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Order code = (1) Geometry code + (2) Grade code

SAL - SWISS AUTOMATIC LATHES

GROOVING | Canais | Ranurado



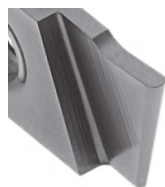
- High precision
- Close tolerances
- Wide variety of insert widths

GS



Square grooving

GR



Round grooving

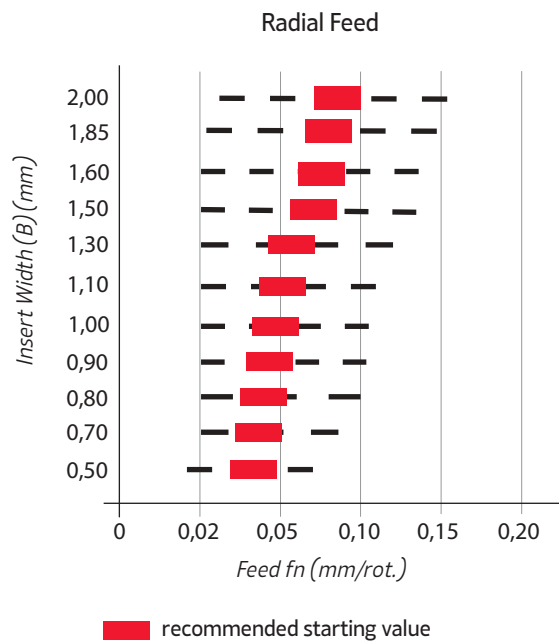
Recommended cutting conditions

| | | | |
|--------|--------|--------|-------|
| P | M | K | S |
| 60-200 | 60-180 | 60-150 | 20-50 |

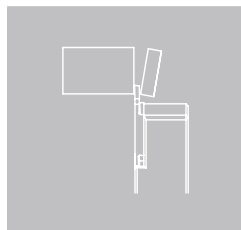
Recommended grade PH7920, (Vc) m/min.

Grade PH7910 and PH7135

Available under request (4 weeks delivery time)



PARTING OFF | Corte | Tronzado



- When parting off with a sub-spindle, it is more productive to use a straight cutting edge. This is a more stable parting method and will generate the best surface finish.
- When parting off without a sub-spindle, we recommend you use an insert with a maximum 7° front angle to minimize the risk of burr and pips on the component.
- When parting off with 7° front angled inserts, we recommend reducing the feed rate by approximately 30%.

P00



0° Relief angle

P07



7° Relief angle

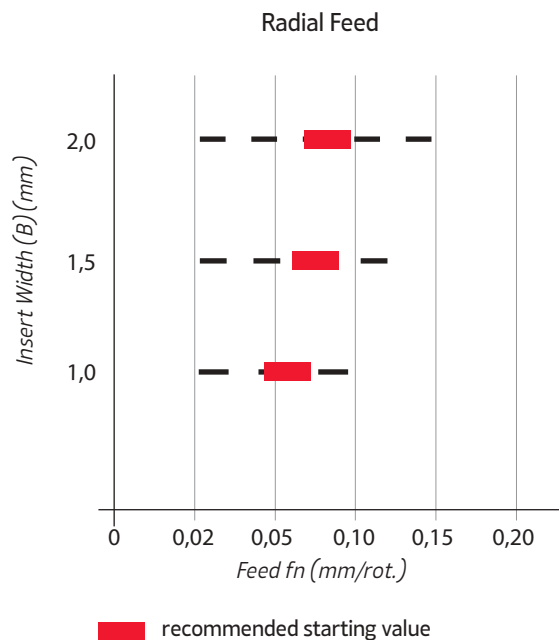
Recommended cutting conditions

| | | | |
|--------|--------|--------|-------|
| P | M | K | S |
| 60-200 | 60-180 | 60-150 | 20-50 |

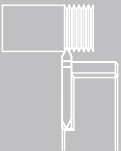
Recommended grade PH7920, (Vc) m/min.

Grade PH7910 and PH7135

Available under request (4 weeks delivery time)



THREADING || Roscagem | Roscado



Two types of threading:

- Partial profile 55°
- Partial profile 60°

Pitch from 12 - 94 TPI / 0,25 - 2,0 mm



Partial profile

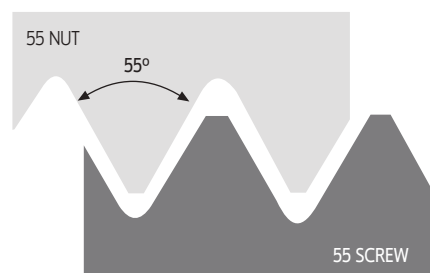
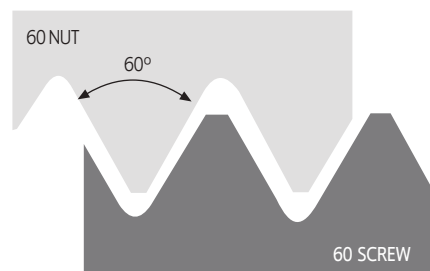
Recommended cutting conditions

| P | M | K | S |
|--------|--------|--------|-------|
| 60-200 | 60-180 | 60-150 | 20-50 |


Recommended grade PH7920, (Vc) m/min.

Grade PH7910 and PH7135

Available under request (4 weeks delivery time)



TURNING || Torneamento | Torneado



- Insert for turning
- Maximum deep of cut is 2,50 mm
- Too low cutting speed will result in inadequate tool life and it is advisable to follow cutting speed recommendations.



Turning steel

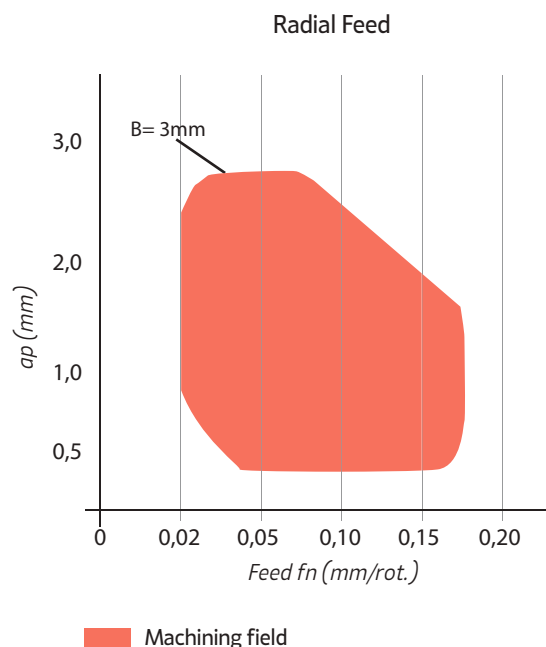
Recommended cutting conditions

| P | M | K | S |
|--------|--------|--------|-------|
| 60-200 | 60-180 | 60-150 | 20-50 |

Recommended grade PH7920, (Vc) m/min.

Grade PH7910 and PH7135

Available under request (4 weeks delivery time)



LIGHT GROOVING NEW



GROOVING & PARTING OFF

Grooving Plus

Grooving & Parting Off

SAL - Swiss Automatic Lathes

Light Grooving

Forming Grooving

Technical Data



INSERTS | Pastilhas | Plaquetas

| | | | | |
|-----------|-----------|-----------|----------|------------|
| LG | 06 | 02 | R | 110 |
| 1 | 2 | 3 | 4 | 5 |

| |
|---|
| 1 - Product Line Ligne de produits Produktlinie |
| LG - Light Grooving |
| 2 - Insert size |
| 06 - IC=6,35mm |
| 3 - Cutting edges |
| 02 - 2 cutting edges |
| 4 - Work side |
| R - Right L - Left |
| 5 - Edge width |
| 110=1,1mm |

TOOLHOLDERS | Suportes | Herramientas

| | | | | | | | |
|-----------|----------|-----------|-----------|----------|----------|------------|-----------|
| LG | H | 06 | 02 | I | R | 150 | 16 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

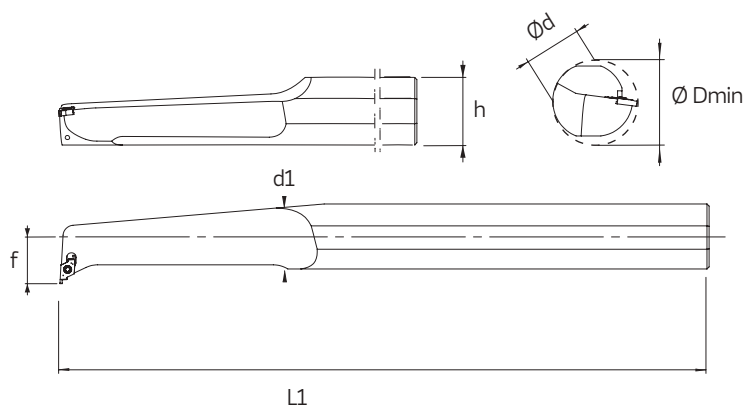
| |
|--|
| 1 - Product Line |
| LG - Light Grooving |
| 2 - Product type |
| H - Holder |
| 3 - Insert size |
| 06 - IC=6,35mm |
| 4 - Cutting edges |
| 02 - 2 Cutting edges |
| 5 - Internal / External |
| I - Internal E - External |
| 6 - Work side |
| R - Right L - Left |
| 7 - Tool length |
| 150 - 150mm |
| 8 - Shank dimension |
| Internal: 16 - Ø16mm External: 2020 - 20mm x 20mm |

LGH-ER/L



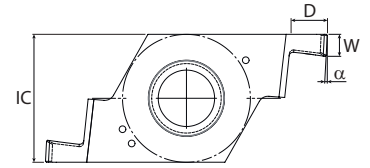
| R | L | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | | Insert |
|-----------|-----------|---------------------------------------|---|----|-----|----|----|---------|
| | | | h | b1 | L1 | L2 | f | |
| 113063500 | 113062700 | LGH 0602-ER/L 100 1616 | 16 | 16 | 100 | 21 | 20 | LG 0602 |
| 113063600 | 113062800 | LGH 0602-ER/L 125 2020 | 20 | 20 | 125 | 25 | 25 | LG 0602 |
| 113063700 | 113062900 | LGH 0602-ER/L 150 2525 | 25 | 25 | 150 | 32 | 32 | LG 0602 |

LGH-IR/L



| R | L | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | | Insert | ØDmin |
|-----------|-----------|---------------------------------------|---|----|------|-----|----|---------|-------|
| | | | Ød | h | d1 | L1 | f | | |
| 113063800 | 113063000 | LGH 0602-IR/L 150 12 | 12 | 11 | 11,5 | 150 | 9 | LG 0602 | 16 |
| 113063900 | 113063100 | LGH 0602-IR/L 150 16 | 16 | 15 | 15 | 150 | 11 | LG 0602 | 20 |
| 113064000 | 113063200 | LGH 0602-IR/L 170 20 | 20 | 18 | 19 | 170 | 13 | LG 0602 | 25 |
| 113064100 | 113063300 | LGH 0602-IR/L 200 25 | 25 | 23 | 24 | 200 | 17 | LG 0602 | 32 |
| 113064200 | 113063400 | LGH 0602-IR/L 300 32 | 32 | 30 | 31 | 300 | 22 | LG 0602 | 40 |

LG-R

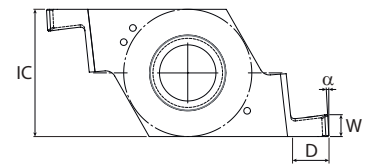


| Code | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | For circlip widht | Stock |
|-----------|---------------------------------------|---|----------|------|-----|-------------------|--------|
| | | IC | α | W | D | | PH7920 |
| 1130597G4 | LG 0602R110 | 6,35 | 3 | 1,10 | 0,8 | 1,0 | ☺ |
| 1130598G4 | LG 0602R130 | 6,35 | 3 | 1,30 | 1,4 | 1,2 | ☺ |
| 1130599G4 | LG 0602R160 | 6,35 | 3 | 1,60 | 1,7 | 1,5 | ☺ |
| 1130600G4 | LG 0602R185 | 6,35 | 3 | 1,85 | 2,0 | 1,75 | ☺ |
| 1130601G4 | LG 0602R215 | 6,35 | 3 | 2,15 | 2,4 | 2,0 | ☺ |
| 1130602G4 | LG 0602R265 | 6,35 | 3 | 2,65 | 2,7 | 2,5 | ☺ |
| 1130603G4 | LG 0602R300 | 6,35 | 3 | 3,00 | 3,0 | - | ☺ |
| 1130604G4 | LG 0602R315 | 6,35 | 3 | 3,15 | 3,0 | 3,0 | ☺ |

☺ Stock item | Article en stock | Lagerware

○ Available under request | Disponible sur demande | Verfügbar auf Anfrage

LG-L



| Code | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | For circlip widht | Stock |
|-----------|---------------------------------------|---|----------|------|-----|-------------------|--------|
| | | IC | α | W | D | | PH7920 |
| 1130589G4 | LG 0602L110 | 6,35 | 3 | 1,10 | 0,8 | 1,0 | ☺ |
| 1130590G4 | LG 0602L130 | 6,35 | 3 | 1,30 | 1,4 | 1,2 | ☺ |
| 1130591G4 | LG 0602L160 | 6,35 | 3 | 1,60 | 1,7 | 1,5 | ☺ |
| 1130592G4 | LG 0602L185 | 6,35 | 3 | 1,85 | 2 | 1,75 | ☺ |
| 1130593G4 | LG 0602L215 | 6,35 | 3 | 2,15 | 2,4 | 2,0 | ☺ |
| 1130594G4 | LG 0602L265 | 6,35 | 3 | 2,65 | 2,7 | 2,5 | ☺ |
| 1130595G4 | LG 0602L300 | 6,35 | 3 | 3,00 | 3 | - | ☺ |
| 1130596G4 | LG 0602L315 | 6,35 | 3 | 3,15 | 3 | 3,0 | ☺ |

☺ Stock item | Article en stock | Lagerware

○ Available under request | Disponible sur demande | Verfügbar auf Anfrage

BLANKS



1 - Product Line

FG - Forming Grooving

2 - Product type

I - Insert

3 - Edge width (W)

13 - 13mm

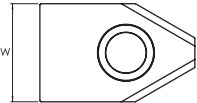



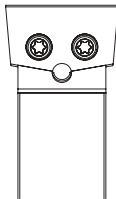
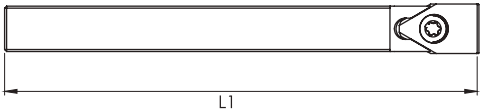
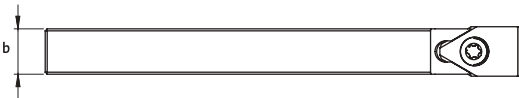


16 - 16mm

20 - 20mm

32 - 32mm



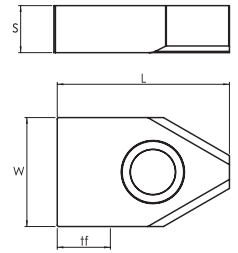


| | | | |
|---|--|--|--|
| 1 - Product Line | | 2 - Cutting Width | |
| FG - Forming Grooving | | H - Holder | |
| 3 - Edge Width (Forming) | | | |
|  | | 13 - 13 mm | |
| | | 16 - 16 mm | |
| | | 20 - 20 mm | |
| | | 32 - 32 mm (2 holes) | |
| 4 - Toolholder Type (Forming) | | | |
| Type A | Type B | Type C | Type C |
|  |  |  |  |
| 5 - Toolholder total length | | | |
|  | | 125 - 125 mm | |
| | | 150 - 150 mm | |
| 6 - Toolholder depth | | | |
|  | | 10 - 10 mm | |
| | | 12 - 12 mm | |
| | | 14 - 14 mm | |
| | | 16 - 16 mm | |
| | | 20 - 20 mm | |
| 7 - Insert height | | | |
|  | | 10 - 10 mm | |
| | | 12 - 12 mm | |
| | | 14 - 14 mm | |
| | | 16 - 16 mm | |
| | | 25 - 25 mm | |
| 8 - Insert relief angle | | | |
|  | | 0° | |
| | | 5° | |

FORMING GROOVING

BLANKS & TOOLHOLDERS

FGI



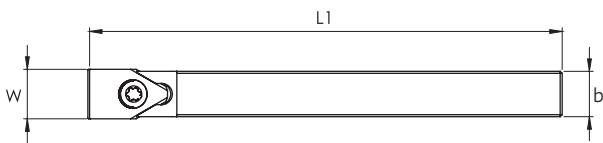
| (1) Geometry code | (2) Grade code | UNC PH0930 | Dimensions | | | |
|-------------------|----------------|---------------|------------|------|-------|-------|
| | | | W | S | L | tf |
| 1130550 | BLANK FGI 13 | ⊗ | 13 | 5,35 | 20,70 | 6,00 |
| 1130551 | BLANK FGI 16 | ⊗ | 16 | 5,35 | 25,00 | 10,00 |
| 1130552 | BLANK FGI 20 | ⊗ | 20 | 6,35 | 20,70 | 7,00 |
| 1130615 | BLANK FGI 20 L | ⊗ | 20 | 6,35 | 25 | 11,00 |

⊗ Stock item

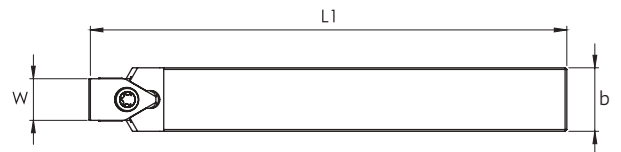
○ Available under request

Insert order code = (1) Geometry Code + (2) Grade Code

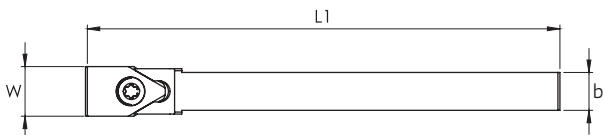
Type A



Type B



Type C

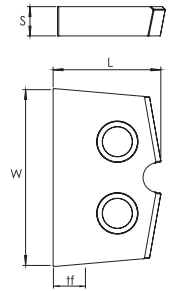


| Order code | | ISO Reference | Dimensions | | | | | Insert | Toolholder Type | Stock | |
|------------|-----------|----------------------------|------------|----|----|-----|----|----------|-----------------|-------|----|
| *a 0° | *a 5° | | h | h1 | b | L1 | W | | | 0° | 5° |
| 113056500 | 113055400 | FGH 13-A 125 12.12 - 0°/5° | 12 | 12 | 12 | 125 | 13 | FGI 13 | A | ⊗ | ⊗ |
| 113056600 | 113055500 | FGH 13-B 125 14.14 - 0°/5° | 14 | 14 | 14 | 125 | 13 | FGI 13 | B | ⊗ | ⊗ |
| 113058000 | 113058100 | FGH 13-B 125 16.16-0°/5° | 16 | 16 | 16 | 125 | 13 | FGI 13 | B | ○ | ⊗ |
| 113056700 | 113055600 | FGH 13-C 125 10.10 - 0°/5° | 10 | 10 | 10 | 125 | 13 | FGI 13 | C | ○ | ⊗ |
| 113056800 | 113055700 | FGH 16-A 125 16.16 - 0°/5° | 16 | 16 | 16 | 125 | 16 | FGI 16 | A | ⊗ | ⊗ |
| 113056900 | 113055800 | FGH 16-B 150 20.20 - 0°/5° | 20 | 20 | 20 | 150 | 16 | FGI 16 | B | ⊗ | ⊗ |
| 113057000 | 113055900 | FGH 16-C 125 14.14 - 0°/5° | 14 | 14 | 14 | 125 | 16 | FGI 16 | C | ⊗ | ⊗ |
| 113057100 | 113056000 | FGH 20-A 150 20.20 - 0°/5° | 20 | 20 | 20 | 150 | 20 | FGI 20 | A | ○ | ⊗ |
| 113057200 | 113056100 | FGH 20-C 125 16.16 - 0°/5° | 16 | 16 | 16 | 125 | 20 | FGI 20 | C | ○ | ⊗ |
| 113061600 | 113061700 | FGH 20L-A 150 20.20-0°/5° | 20 | 20 | 20 | 150 | 20 | FGI 20 L | A | ⊗ | ⊗ |
| 113061800 | 113061900 | FGH 20L-C 125 16.16-0°/5° | 16 | 16 | 16 | 125 | 20 | FGI 20 L | C | ⊗ | ⊗ |

⊗ Stock item

○ Available under request

FGI



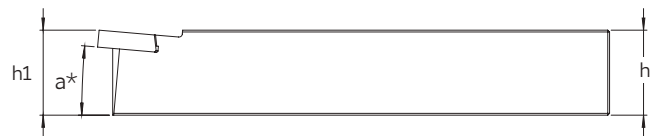
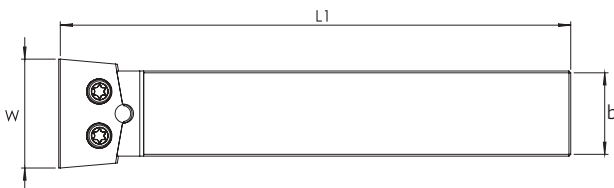
| (1) Geometry code | (2) Grade code | UNC | Dimensions (mm) | | | |
|----------------------|-------------------|--------|-----------------|------|-------|------|
| | | | W | S | L | tf |
| 1130553 | BLANK FGI 32 | PH0930 | 32 | 5,00 | 19,80 | 7,00 |

Stock item

Available under request

Insert order code = (1) Geometry Code + (2) Grade Code

Type C



| Order code | | ISO Reference | Dimensions (mm) | | | | | Insert | Toolholder Type | Stock | |
|------------|-----------|----------------------------|-----------------|----|----|-----|----|--------|-----------------|-------|----|
| *a 0° | *a 5° | | h | h1 | b | L1 | W | | | 0° | 5° |
| 113057300 | 113056200 | FGH 32-C 150 25.25 - 0°/5° | 25 | 25 | 25 | 150 | 32 | FGI 32 | C | | |

Stock item

Available under request

SCREWS & KEYS



Screws

| Order code Código | Reference Referência Referencia | Stock |
|----------------------|---------------------------------------|-------------------------------------|
| 290074100 | D0503000 | <input checked="" type="checkbox"/> |
| 290020700 | D0603600 | <input checked="" type="checkbox"/> |
| 290062900 | D0602200 | <input checked="" type="checkbox"/> |
| 290087400 | D0602600 | <input checked="" type="checkbox"/> |
| 290087500 | D0603100 | <input checked="" type="checkbox"/> |
| 290044800 | P0260700 | <input checked="" type="checkbox"/> |
| 290044600 | P5401390 | <input checked="" type="checkbox"/> |
| 290044900 | P5401391 | <input checked="" type="checkbox"/> |

Keys

| Order Code Código | Reference Referência Referencia | Stock |
|----------------------|---------------------------------------|-------------------------------------|
| 290011700 | XT08 | <input checked="" type="checkbox"/> |
| 290013100 | XT10 | <input checked="" type="checkbox"/> |

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta | Disponible bajo consulta

WRENCHES



| Order code Código | Reference Referência Referencia | Stock |
|----------------------|---------------------------------------|-------------------------------------|
| 290021200 | SS40 | <input checked="" type="checkbox"/> |
| 290021300 | SS50 | <input checked="" type="checkbox"/> |

| Order code Código | Reference Referência Referencia | Stock |
|----------------------|---------------------------------------|-------------------------------------|
| 290074400 | LE05 | <input checked="" type="checkbox"/> |

| Order code Código | Reference Referência Referencia | Stock |
|----------------------|---------------------------------------|-------------------------------------|
| 290079600 | LE25-30 | <input checked="" type="checkbox"/> |

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta | Disponible bajo consulta

GROOVING & PARTING OFF GRADES | Graus para Sangramento | Calidades para Tronzado

| | 1 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | | | |
|---|--------|---|--------|---------------------------|--------|----|---------------------------|----|---------------------------|---------------------------|---------|--|-----|-----|
| P STEEL | PH5115 | | | PH5125 | | | PH5135 | | | PHS135 <small>NEW</small> | | | CVD | |
| | PH7920 | | | PHP920 <small>NEW</small> | | | PHP930 <small>NEW</small> | | | | | | | PVD |
| | | | | PHS135 <small>NEW</small> | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| M STAINLESS SEEL | | | | PH7920 | | | PHS135 <small>NEW</small> | | | | | | PVD | |
| | | | | PHP920 <small>NEW</small> | | | PHP930 <small>NEW</small> | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| K CAST IRON | | | PH5705 | | PH5320 | | PH5135 | | PHS135 <small>NEW</small> | | | | CVD | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| N ALUMINIUM & NFM | PH0910 | | | | | | | | | | UNCOTED | | | |
| S HEAT RESISTENT / TITANIUM ALLOYS | | | | PH7920 | | | PHP920 <small>NEW</small> | | | PHP930 <small>NEW</small> | | | PVD | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

D

GROOVING & PARTING OFF

Grooving Plus

Grooving & Parting Off

SAL - Swiss Automatic Lathes

Light Grooving

Forming Grooving

Technical Data

GROOVING & PARTING OFF GRADES DESCRIPTION

Graus de Sangramento | Calidades para Tronzado

PVD GRADES

PH7920
 P10-P35
 M10-M25
 S10-S30

A hard carbide substrate coated with PVD coating. Suitable for machining under good conditions or lightly interrupted cuts.

PHP920 NEW
 P10-P35
 M10-M25
 S10-S30

A hard carbide insert coated with revolutionary PVD coating with great adhesion and smoothness. Recommended for machining under good conditions or lightly interrupted cuts at medium to high cutting speeds.

PHP930 NEW
 P20-P40
 M20-M40
 S15-S35

A tough carbide insert coated with revolutionary PVD coating with great adhesion and smoothness. Recommended for machining under lightly to highly interrupted cuts at low to medium cutting speeds.



CVD GRADES

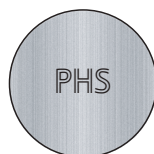
PH5

A thick CVD coating with a smooth surface. Works great at medium temperatures.



PHS

PHS135 NEW
 P20-P40
 M15-M35
 K15-K30



A tough substrate combined with a thin CVD coating with excellent thermal resistance and hardness at high temperature. Excellent solution for difficult operations at low velocities.

UNCOATED CARBIDE GRADE

PH0910
 N01-N20

Uncoated carbide with polished surface. 1st choice for machining aluminum alloys.

RECOMMENDED GRADES AND CUTTING SPEEDS (M/MIN)

Graus recomendados e velocidades de corte (m/min) | Calidades recomendadas y velocidades de corte (m/min)

| ISO | Material | Grade fn (mm/r) HB (brinell) | CVD Coating | | | | PVD Coating | | | |
|-----|------------------|---|---------------------|--------|--------|--------|-------------|--------|-------------|--|
| | | | ← Wear Resistance → | | | | | | Toughness → | |
| | | | PH5115 | PH5125 | PH5135 | PHS135 | PH7920 | PHP920 | PHP930 | |
| P | Unalloyed steel | 125-170 | 90-180 | 80-170 | 70-160 | 70-160 | 60-160 | 60-160 | 50-150 | |
| | Low-alloy steel | 180-350 | 70-160 | 60-150 | 60-140 | 60-150 | 60-140 | 60-150 | 50-140 | |
| | High-alloy steel | 200-325 | 50-150 | 40-140 | 40-130 | 40-140 | 50-130 | 50-140 | 40-130 | |

| ISO | Material | Grade fn (mm/r) HB (brinell) | CVD Coating | PVD Coating | | | | | | |
|-----|-----------------------------|---|---------------------|-------------|--------|--------|--|--|-------------|--|
| | | | ← Wear Resistance → | | | | | | Toughness → | |
| | | | PHS135 | PH7920 | PHP920 | PHP930 | | | | |
| M | SS - Ferritic / Martensitic | 200-330 | 70-150 | 60-140 | 60-140 | 50-130 | | | | |
| | SS - Austenitic / Duplex | 180-330 | 60-130 | 60-120 | 60-130 | 50-110 | | | | |
| | SS - Ferritic / Duplex | 230-260 | 40-120 | 40-110 | 40-120 | 40-110 | | | | |

| ISO | Material | Grade fn (mm/r) HB (brinell) | CVD Coating | | | | | | | |
|-----|-------------------|---|---------------------|--------|--------|--------|--|--|-------------|--|
| | | | ← Wear Resistance → | | | | | | Toughness → | |
| | | | PH5705 | PH5320 | PH5115 | PHS135 | | | | |
| K | Marble cast iron | 130-230 | 100-220 | 90-210 | 90-200 | 80-170 | | | | |
| | Grey cast iron | 180-220 | 100-200 | 90-190 | 80-180 | 70-150 | | | | |
| | Nodular cast iron | 160-380 | 80-170 | 80-160 | 70-150 | 50-140 | | | | |

| ISO | Material | Grade fn (mm/r) HB (brinell) | Uncoated |
|-----|------------------|---|-------------|
| | | | PH0910 |
| | | | 0.04 - 0.35 |
| N | Aluminium alloys | 60-130 | 190-1800 |

| ISO | Material | Grade fn (mm/r) HB (brinell) | PVD Coating | | | | | | | |
|-----|---|---|---------------------|--------|--------|--|--|--|-------------|--|
| | | | ← Wear Resistance → | | | | | | Toughness → | |
| | | | PH7920 | PHP920 | PHP930 | | | | | |
| S | Heat resistant super alloys (Iron base) | 200-280 | 35-90 | - | - | | | | | |
| | Heat resistant super alloys (Nickel base) | 250-320 | 22-60 | - | - | | | | | |
| | Heat resistant super alloys (Cobalt base) | 200-320 | 30-90 | 30-90 | 20-80 | | | | | |

D

GROOVING & PARTING OFF

Grooving Plus

Grooving & Parting Off

SAL - Swiss Automatic Lathes

Light Grooving

Forming Grooving

Technical Data



E - THREADING

E - 782 | THREAD MILLING

E - 782 | Inserts

E - 792 | Toolholders

E - 798 | Technical data





THREADING



E - 799 | THREAD TURNING

E - 802 | Inserts Overview

E - 804 | Partial Profile Inserts

E - 808 | Full Profile Inserts

E - 848 | Tangential Profile Inserts

E - 850 | External Toolholders

E - 854 | Internal Toolholders

E - 859 | Spare Parts

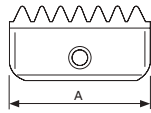
E - 860 | Technical Data

THREAD MILLING INSERTS CODE KEY

Codificação ISO para pastilhas de fresagem de roscar | Codificación ISO para plaquitas de fresado de roscar



1 - Insert Size



12

14

21

30

40

2 - Insert Hand Type

E

External

I

Internal

I/E

Internal + External

3 - Pitch

Example : 20 = 20.00

4 - Profile Type

| symbol | profile type | symbol | profile type | symbol | profile type |
|-------------|--------------|-------------|--------------|-------------|-------------------|
| ISO | ISO METRIC | NPT | NPT | ACME | AMERICAN ACME |
| UN | AMERICAN UN | NPTF | NPTF | PG | PG |
| W | WITHWORTH | NPS | NPS | UNJ | UNJ |
| BSPT | BSPT | NPSF | NPSF | ABUT | AMERICAN BUTTRESS |

5 - Grades

PH7920



E - 782 | Inserts code key

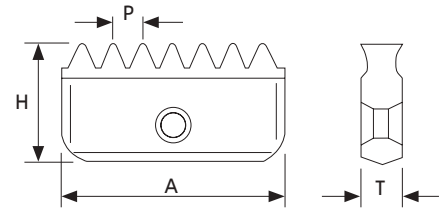
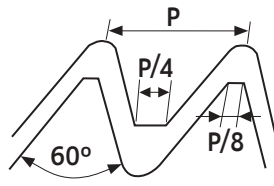
E - 784 | Inserts program

E - 792 | Toolholders code key

E - 793 | Toolholders program

E - 798 | Technical data

THREAD MILLING



| A | T | H |
|------|-----|-----|
| A 12 | 2,9 | 6,3 |
| A 14 | 3,1 | 7,5 |
| A 21 | 4,7 | 12 |
| A 30 | 5,5 | 16 |
| A 40 | 6,3 | 20 |

External

| P (Pitch) | Dimensions Dimensões Dimensiones (mm) | | | | | | | | Stock grade code ⁽²⁾ |
|--------------|---|---------------|------------------------------|---------------|------------------------------|---------------|------------------------------|---------------|------------------------------------|
| | A 14 | | A 21 | | A 30 | | A 40 | | |
| | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | (G4) PH7920 |
| 0.75 EXT | 2123972 | 14 E 0.75 ISO | | | | | | | ☉ |
| 0.80 EXT | 2124202 | 14 E 0.80 ISO | | | | | | | ☉ |
| 1.00 EXT | 2123973 | 14 E 1.00 ISO | 2123987 | 21 E 1.00 ISO | | | | | ☉ |
| 1.25 EXT | 2123974 | 14 E 1.25 ISO | | | | | | | ☉ |
| 1.50 EXT | 2123975 | 14 E 1.50 ISO | 2123988 | 21 E 1.50 ISO | 2123999 | 30 E 1.50 ISO | 2124012 | 40 E 1.50 ISO | ☉ |
| 1.75 EXT | 2123976 | 14 E 1.75 ISO | | | | | | | ☉ |
| 2.00 EXT | 2123977 | 14 E 2.00 ISO | 2123989 | 21 E 2.00 ISO | 2124000 | 30 E 2.00 ISO | 2124013 | 40 E 2.00 ISO | ☉ |
| 2.50 EXT | 2123978 | 14 E 2.50 ISO | 2123990 | 21 E 2.50 ISO | | | | | ☉ |
| 3.00 EXT | | | 2123991 | 21 E 3.00 ISO | 2124001 | 30 E 3.00 ISO | 2124014 | 40 E 3.00 ISO | ☉ |
| 3.50 EXT | | | | | 2124002 | 30 E 3.50 ISO | | | ☉ |
| 4.00 EXT | | | | | 2124003 | 30 E 4.00 ISO | 2124015 | 40 E 4.00 ISO | ☉ |
| 5.00 EXT | | | | | | | 2124016 | 40 E 5.00 ISO | ☉ |
| 6.00 EXT | | | | | | | 2124017 | 40 E 6.00 ISO | ☉ |

☉ Stock item | Produto de stock | Itens de stock

Insert order code = (1) Geometry Code + (2) Grade Code

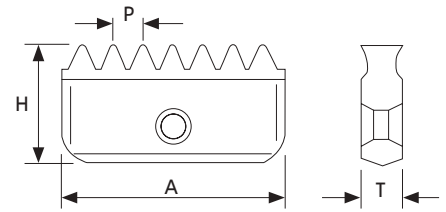
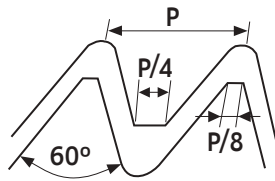
Internal

| P (Pitch) | Dimensions Dimensões Dimensiones (mm) | | | | | | | | | | Stock grade code ⁽²⁾ |
|--------------|---|---------------|------------------------------|---------------|------------------------------|---------------|------------------------------|---------------|------------------------------|---------------|------------------------------------|
| | A 12 | | A 14 | | A 21 | | A 30 | | A 40 | | |
| | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | (G4) PH7920 |
| 0.50 INT | 2123967 | 12 0.50 ISO | 2123979 | 14 0.50 ISO | | | | | | | ☉ |
| 0.75 INT | 2123968 | 12 0.75 ISO | 2123980 | 14 0.75 ISO | | | | | | | ☉ |
| 1.00 INT | 2123969 | 12 1.00 ISO | 2123981 | 14 1.00 ISO | 2123992 | 21 1.00 ISO | | | | | ☉ |
| 1.25 INT | 2123970 | 12 1.25 ISO | 2123982 | 14 1.25 ISO | | | | | | | ☉ |
| 1.50 INT | 2123971 | 12 1.50 ISO | 2123983 | 14 1.50 ISO | 2123993 | 21 1.50 ISO | 2124004 | 30 1.50 ISO | 2124018 | 40 1.50 ISO | ☉ |
| 1.75 INT | | | 2123984 | 14 1.75 ISO | 2123994 | 21 1.75 ISO | | | | | ☉ |
| 2.00 INT | | | 2123985 | 14 2.00 ISO | 2123995 | 21 2.00 ISO | 2124005 | 30 2.00 ISO | 2124019 | 40 2.00 ISO | ☉ |
| 2.50 INT | | | 2123986 | 14 2.50 ISO | 2123996 | 21 2.50 ISO | | | | | ☉ |
| 3.00 INT | | | | | 2123997 | 21 3.00 ISO | 2124006 | 30 3.00 ISO | 2124020 | 40 3.00 ISO | ☉ |
| 3.50 INT | | | | | 2123998 | 21 3.50 ISO | 2124007 | 30 3.50 ISO | 2124021 | 40 3.50 ISO | ☉ |
| 4.00 INT | | | | | | | 2124008 | 30 4.00 ISO | 2124022 | 40 4.00 ISO | ☉ |
| 4.50 INT | | | | | | | 2124009 | 30 4.50 ISO | 2124023 | 40 4.50 ISO | ☉ |
| 5.00 INT | | | | | | | 2124010 | 30 5.00 ISO | 2124024 | 40 5.00 ISO | ☉ |
| 5.50 INT | | | | | | | 2124011 | 30 5.50 ISO | 2124025 | 40 5.50 ISO | ☉ |
| 6.00 INT | | | | | | | | | 2124026 | 40 6.00 ISO | ☉ |

☉ Stock item | Produto de stock | Itens de stock

Insert order code = (1) Geometry Code + (2) Grade Code

UN UNC, UNF, UNEF, UNS Two cutting edges | Duas arestas de corte | Dos filos de corte



| A | T | H |
|------|-----|-----|
| A 12 | 2,9 | 6,3 |
| A 14 | 3,1 | 7,5 |
| A 21 | 4,7 | 12 |
| A 30 | 5,5 | 16 |
| A 40 | 6,3 | 20 |

External

| P (Pitch) | Dimensions Dimensões Dimensiones (mm) | | | | | | | | Stock grade code ⁽²⁾ |
|--------------|---|------------|------------------------------|------------|------------------------------|-------------|------------------------------|-------------|------------------------------------|
| | A 14 | | A 21 | | A 30 | | A 40 | | |
| | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | (G4) PH7920 |
| 32.00 EXT | 2124033 | 14 E 32 UN | | | | | | | ☉ |
| 28.00 EXT | 2124034 | 14 E 28 UN | | | | | | | ☉ |
| 24.00 EXT | 2124035 | 14 E 24 UN | 2124055 | 21 E 24 UN | | | | | ☉ |
| 20.00 EXT | 2124036 | 14 E 20 UN | 2124056 | 21 E 20 UN | 2124072 | 30 E 20 UN | | | ☉ |
| 18.00 EXT | 2124037 | 14 E 18 UN | 2124057 | 21 E 18 UN | 2124073 | 30 E 18 UN | | | ☉ |
| 16.00 EXT | 2124038 | 14 E 16 UN | 2124058 | 21 E 16 UN | 2124074 | 30 E 16 UN | 2124089 | 40 E 16 UN | ☉ |
| 14.00 EXT | 2124039 | 14 E 14 UN | 2124059 | 21 E 14 UN | 2124075 | 30 E 14 UN | 2124090 | 40 E 14 UN | ☉ |
| 13.00 EXT | 2124203 | 14 E 13 UN | | | | | | | ☉ |
| 12.00 EXT | 2124040 | 14 E 12 UN | 2124060 | 21 E 12 UN | 2124076 | 30 E 12 UN | 2124091 | 40 E 12 UN | ☉ |
| 11.00 EXT | 2124041 | 14 E 11 UN | | | | | | | ☉ |
| 10.00 EXT | 2124042 | 14 E 10 UN | 2124062 | 21 E 10 UN | 2124077 | 30 E 10 UN | 2124092 | 40 E 10 UN | ☉ |
| 8.00 EXT | | | | | 2124078 | 30 E 8.0 UN | 2124093 | 40 E 8.0 UN | ☉ |
| 6.00 EXT | | | | | 2124079 | 30 E 6.0 UN | 2124094 | 40 E 6.0 UN | ☉ |

☉ Stock item | Produto de stock | Itens de stock

Insert order code = (1) Geometry Code + (2) Grade Code

Internal

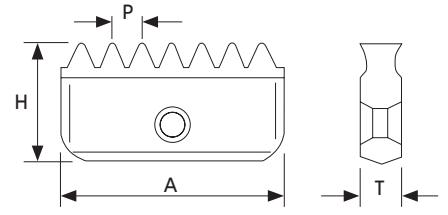
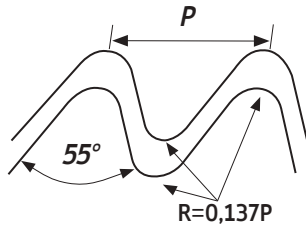
| P (Pitch) | Dimensions Dimensões Dimensiones (mm) | | | | | | | | | | Stock grade code ⁽²⁾ |
|--------------|---|------------|------------------------------|-------------|------------------------------|-------------|------------------------------|-------------|------------------------------|-------------|------------------------------------|
| | A 12 | | A 14 | | A 21 | | A 30 | | A 40 | | |
| | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | (G4) PH7920 |
| 32.00 INT | 2124027 | 12 32 UN | 2124043 | 14 32 UN | | | | | | | ☉ |
| 28.00 INT | 2124028 | 12 28 UN | 2124044 | 14 28 UN | | | | | | | ☉ |
| 27.00 INT | | | 2124045 | 14 27 UN | | | | | | | ☉ |
| 24.00 INT | 2124029 | 12 24 UN | 2124046 | 14 24 UN | 2124063 | 21 24 UN | | | | | ☉ |
| 20.00 INT | 2124030 | 12 20 UN | 2124047 | 14 20 UN | 2124064 | 21 20 UN | 2124080 | 30 20 UN | | | ☉ |
| 18.00 INT | 2124031 | 12 18 UN | 2124048 | 14 18 UN | 2124065 | 21 18 UN | 2124081 | 30 18 UN | | | ☉ |
| 16.00 INT | 2124032 | 12 16 UN | 2124049 | 14 16 UN | 2124066 | 21 16 UN | 2124082 | 30 16 UN | 2124095 | 40 16 UN | ☉ |
| 14.00 INT | | | 2124050 | 14 14 UN | 2124067 | 21 14 UN | 2124083 | 30 14 UN | 2124096 | 40 14 UN | ☉ |
| 12.00 INT | | | 2124051 | 14 12 UN | 2124068 | 21 12 UN | 2124084 | 30 12 UN | 2124097 | 40 12 UN | ☉ |
| 11.00 INT | | | 2124052 | 14 11 UN | | | | | | | ☉ |
| 10.00 INT | | | 2124053 | 14 10 UN | 2124069 | 21 10 UN | 2124085 | 30 10 UN | 2124098 | 40 10 UN | ☉ |
| 9.00 INT | | | 2124054 | 14 9.0 UN | | | | | | | ☉ |
| 8.00 INT | | | | | 2124070 | 21 8.0 UN | 2124086 | 30 8.0 UN | 2124099 | 40 8.0 UN | ☉ |
| 7.00 INT | | | | | 2124071 | 21 7.0 UN | | | | | ☉ |
| 6.00 INT | | | | | | | 2124087 | 30 6.0 UN | 2124100 | 40 6.0 UN | ☉ |
| 5.00 INT | | | | | | | 2124088 | 30 5.0 UN | | | ☉ |
| 4.50 INT | | | | | | | | | 2124101 | 40 4.5 UN | ☉ |
| 4.00 EXT | | | | | | | | | 2124102 | 40 4.0 UN | ☉ |

☉ Stock item | Produto de stock | Itens de stock

Insert order code = (1) Geometry Code + (2) Grade Code

mm
THREADING
Thread milling - Inserts
Thread milling - Toolholders
Thread turning - Overview
Thread turning - Inserts
Thread turning - Toolholders
Thread turning - Spare Parts
Technical Data

WHIT BSW, BSF, BSP Two cutting edges | Duas arestas de corte | Dos filos de corte



| A | T | H |
|------|-----|-----|
| A 12 | 2,9 | 6,3 |
| A 14 | 3,1 | 7,5 |
| A 21 | 4,7 | 12 |
| A 30 | 5,5 | 16 |
| A 40 | 6,3 | 20 |

Same insert for external and internal thread | Mesma pastilha para rosca externa e interna | Misma plaquita para roscado externo e interno

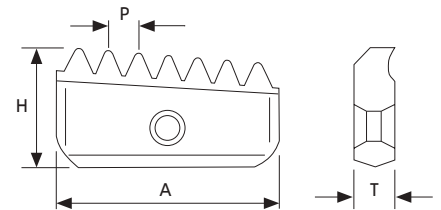
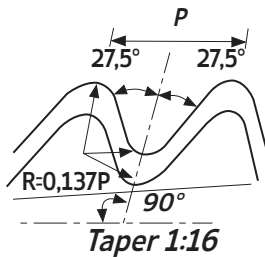
| P (Pitch) | Dimensions Dimensões Dimensiones (mm) | | | | | | | | | | Stock grade code ⁽²⁾ |
|--------------|---|--------------|---------------------------------|-------------|---------------------------------|-------------|---------------------------------|-------------|---------------------------------|-------------|------------------------------------|
| | A 12 | | A 14 | | A 21 | | A 30 | | A 40 | | |
| | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | |
| 24.00 | | | 2124104 | 14 I/E 24 W | | | | | | | ⊗ |
| 20.00 | | | 2124105 | 14 I/E 20 W | 2124110 | 21 I/E 20 W | | | | | ⊗ |
| 19.00 | 2124103 | 12 I/E 19 W* | 2124106 | 14 I/E 19 W | 2124111 | 21 I/E 19 W | | | | | ⊗ |
| 16.00 | | | 2124107 | 14 I/E 16 W | 2124112 | 21 I/E 16 W | 2124115 | 30 I/E 16 W | | | ⊗ |
| 14.00 | | | 2124108 | 14 I/E 14 W | 2124113 | 21 I/E 14 W | 2124116 | 30 I/E 14 W | | | ⊗ |
| 11.00 | | | 2124109 | 14 I/E 11 W | 2124114 | 21 I/E 11 W | 2124117 | 30 I/E 11 W | 2124118 | 40 I/E 11 W | ⊗ |
| 8.00 | | | | | | | | | 2124119 | 40 I/E 8 W | ⊗ |

*One cutting edge | Uma aresta de corte | Un filo de corte

⊗ Stock item | Produto de stock | Itens de stock

Insert order code = (1) Geometry Code + (2) Grade Code

BSPT One cutting edge | Uma aresta de corte | Un filo de corte



| A | T | H |
|------|-----|-----|
| A 12 | 2,9 | 6,3 |
| A 14 | 3,1 | 7,5 |
| A 21 | 4,7 | 12 |
| A 30 | 5,5 | 16 |
| A 40 | 6,3 | 20 |

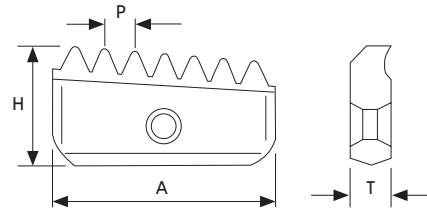
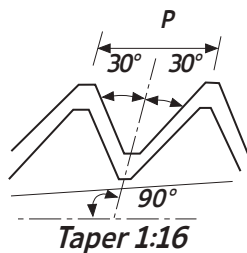
Conical pipe thread milling inserts are one sided and may be used for both external and internal threading | As pastilhas de rosca para tubos cônicos têm uma face e podem ser usadas para rosca externa e interna | Las plaquitas de roscado para tubos cônicos tienen una cara y pueden ser usadas para roscado externo e interno.

| P (Pitch) | Dimensions Dimensões Dimensiones (mm) | | | | | | | | | | Stock grade code ⁽²⁾ |
|--------------|---|----------------|---------------------------------|----------------|---------------------------------|----------------|---------------------------------|----------------|---------------------------------|----------------|------------------------------------|
| | A 12 | | A 14 | | A 21 | | A 30 | | A 40 | | |
| | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | |
| 19.00 | 2124120 | 12 I/E 19 BSPT | 2124121 | 14 I/E 19 BSPT | | | | | | | ⊗ |
| 14.00 | | | 2124122 | 14 I/E 14 BSPT | 2124123 | 21 I/E 14 BSPT | | | | | ⊗ |
| 11.00 | | | | | 2124124 | 21 I/E 11 BSPT | 2124125 | 30 I/E 11 BSPT | 2124126 | 40 I/E 11 BSPT | ⊗ |

⊗ Stock item | Produto de stock | Itens de stock

Insert order code = (1) Geometry Code + (2) Grade Code

NPT One cutting edge | Uma aresta de corte | Un filo de corte



| A | T | H |
|------|-----|-----|
| A 12 | 2,9 | 6,3 |
| A 14 | 3,1 | 7,5 |
| A 21 | 4,7 | 12 |
| A 30 | 5,5 | 16 |
| A 40 | 6,3 | 20 |

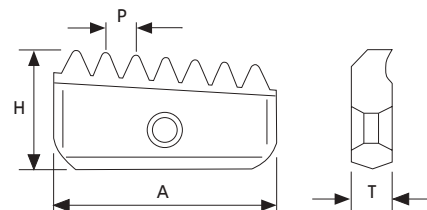
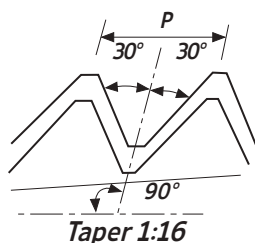
Conical pipe thread milling inserts are one sided and may be used for both external and internal threading | As pastilhas de roscagem para tubos cónicos têm uma face e podem ser usadas para roscagem externa e interna | Las plaquitas de roscado para tubos cónicos tienen una cara y pueden ser usadas para roscado externo e interno.

| P (Pitch) | Dimensions Dimensões Dimensiones (mm) | | | | | | | | | | Stock grade code ⁽²⁾ |
|--------------|---|---------------|---------------------------------|---------------|---------------------------------|-----------------|---------------------------------|-----------------|---------------------------------|-----------------|------------------------------------|
| | A 12 | | A 14 | | A 21 | | A 30 | | A 40 | | |
| | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | |
| 18.00 | 2124127 | 12 I/E 18 NPT | 2124128 | 14 I/E 18 NPT | | | | | | | ⊗ |
| 14.00 | | | 2124129 | 14 I/E 14 NPT | 2124130 | 21 I/E 14 NPT | | | | | ⊗ |
| 11.50 | | | | | 2124131 | 21 I/E 11.5 NPT | 2124132 | 30 I/E 11.5 NPT | 2124134 | 40 I/E 11.5 NPT | ⊗ |
| 8.00 | | | | | | | 2124133 | 30 I/E 8 NPT | 2124135 | 40 I/E 8 NPT | ⊗ |

⊗ Stock item | Produto de stock | Itens de stock

Insert order code = (1) Geometry Code + (2) Grade Code

NPTF One cutting edge | Uma aresta de corte | Un filo de corte



| A | T | H |
|------|-----|-----|
| A 12 | 2,9 | 6,3 |
| A 14 | 3,1 | 7,5 |
| A 21 | 4,7 | 12 |
| A 30 | 5,5 | 16 |
| A 40 | 6,3 | 20 |

Conical pipe thread milling inserts are one sided and may be used for both external and internal threading | As pastilhas de roscagem para tubos cónicos têm uma face e podem ser usadas para roscagem externa e interna | Las plaquitas de roscado para tubos cónicos tienen una cara y pueden ser usadas para roscado externo e interno.

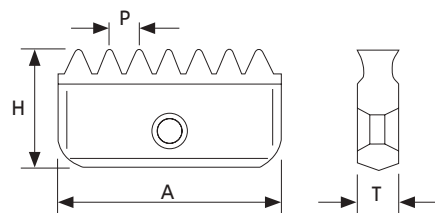
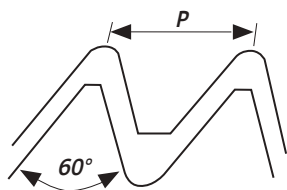
| P (Pitch) | Dimensions Dimensões Dimensiones (mm) | | | | | | | | | | Stock grade code ⁽²⁾ |
|--------------|---|----------------|---------------------------------|----------------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|------------------------------------|
| | A 12 | | A 14 | | A 21 | | A 30 | | A 40 | | |
| | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | |
| 18.00 | 2124136 | 12 I/E 18 NPTF | 2124137 | 14 I/E 18 NPTF | | | | | | | ⊗ |
| 14.00 | | | 2124138 | 14 I/E 14 NPTF | 2124139 | 21 I/E 14 NPTF | | | | | ⊗ |
| 11.50 | | | | | 2124140 | 21 I/E 11.5 NPTF | 2124141 | 30 I/E 11.5 NPTF | 2124143 | 40 I/E 11.5 NPTF | ⊗ |
| 8.00 | | | | | | | 2124142 | 30 I/E 8 NPTF | 2124144 | 40 I/E 8 NPTF | ⊗ |

⊗ Stock item | Produto de stock | Itens de stock

Insert order code = (1) Geometry Code + (2) Grade Code

THREADING
Thread milling - Inserts
Thread milling - Toolholders
Thread turning - Overview
Thread turning - Inserts
Thread turning - Toolholders
Thread turning - Spare Parts
Technical Data

NPS Two cutting edges | Duas arestas de corte | Dos filos de corte



| A | T | H |
|------|-----|-----|
| A 12 | 2,9 | 6,3 |
| A 14 | 3,1 | 7,5 |
| A 21 | 4,7 | 12 |
| A 30 | 5,5 | 16 |
| A 40 | 6,3 | 20 |

Same insert for external and internal thread | Mesma pastilha para rosca externa e interna | Misma plaquita para roscado externo e interno

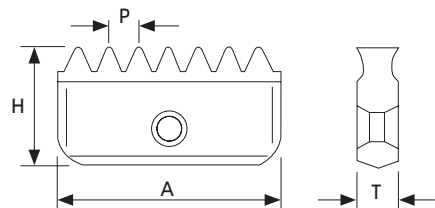
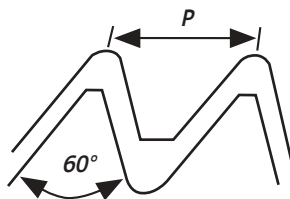
| P (Pitch) | Dimensions Dimensões Dimensiones (mm) | | | | | | | | | | Stock grade code ⁽²⁾ |
|--------------|---|----------------|---------------------------------|---------------|---------------------------------|-----------------|---------------------------------|-----------------|---------------------------------|-----------------|------------------------------------|
| | A 12 | | A 14 | | A 21 | | A 30 | | A 40 | | |
| | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | |
| 18.00 | 2124145 | 12 I/E 18 NPS* | 2124147 | 14 I/E 18 NPS | | | | | | | ⊗ |
| 14.00 | | | 2124148 | 14 I/E 14 NPS | 2124149 | 21 I/E 14 NPS | | | | | ⊗ |
| 11.50 | | | | | 2124150 | 21 I/E 11.5 NPS | 2124151 | 30 I/E 11.5 NPS | 2124153 | 40 I/E 11.5 NPS | ⊗ |
| 8.00 | | | | | | | 2124152 | 30 I/E 8 NPS | 2124154 | 40 I/E 8 NPS | ⊗ |

*One cutting edge | Uma aresta de corte | Un filo de corte

⊗ Stock item | Produto de stock | Itens de stock

Insert order code = (1) Geometry Code + (2) Grade Code

NPSF Two cutting edges | Duas arestas de corte | Dos filos de corte



| A | T | H |
|------|-----|-----|
| A 12 | 2,9 | 6,3 |
| A 14 | 3,1 | 7,5 |
| A 21 | 4,7 | 12 |
| A 30 | 5,5 | 16 |
| A 40 | 6,3 | 20 |

Same insert for external and internal thread | Mesma pastilha para rosca externa e interna | Misma plaquita para roscado externo e interno

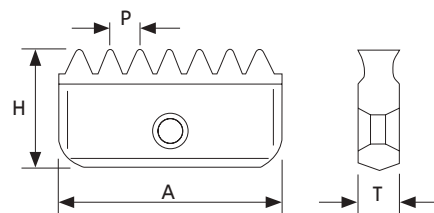
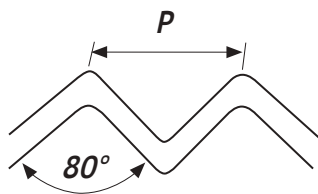
| P (Pitch) | Dimensions Dimensões Dimensiones (mm) | | | | | | | | | | Stock grade code ⁽²⁾ |
|--------------|---|-----------------|---------------------------------|----------------|---------------------------------|------------------|---------------------------------|------------------|---------------------------------|------------------|------------------------------------|
| | A 12 | | A 14 | | A 21 | | A 30 | | A 40 | | |
| | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | |
| 18.00 | 2124155 | 12 I/E 18 NPSF* | 2124156 | 14 I/E 18 NPSF | | | | | | | ⊗ |
| 14.00 | | | 2124157 | 14 I/E 14 NPSF | 2124158 | 21 I/E 14 NPSF | | | | | ⊗ |
| 11.50 | | | | | 2124159 | 21 I/E 11.5 NPSF | 2124160 | 30 I/E 11.5 NPSF | 2124162 | 40 I/E 11.5 NPSF | ⊗ |
| 8.00 | | | | | | | 2124161 | 30 I/E 8 NPSF | 2124163 | 40 I/E 8 NPSF | ⊗ |

*One cutting edge | Uma aresta de corte | Un filo de corte

⊗ Stock item | Produto de stock | Itens de stock

Insert order code = (1) Geometry Code + (2) Grade Code

PG DIN 40430 Two cutting edges | Duas arestas de corte | Dos filos de corte



| A | T | H |
|------|-----|-----|
| A 14 | 3,1 | 7,5 |
| A 21 | 4,7 | 12 |
| A 30 | 5,5 | 16 |

Same insert for external and internal thread | Mesma pastilha para rosca externa e interna | Misma plaquita para roscado externo e interno

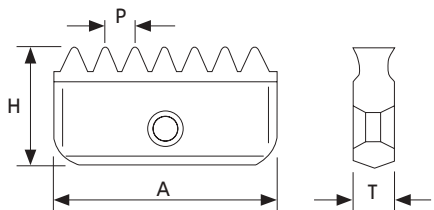
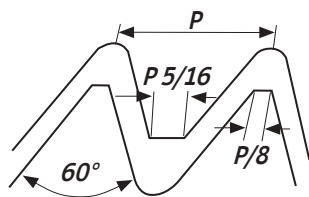
| P (Pitch) | Dimensions Dimensões Dimensiones (mm) | | | | | | Stock grade code ⁽²⁾ (G4) PH7920 |
|--------------|---|--------------|------------------------------|--------------|------------------------------|--------------|--|
| | A 14 | | A 21 | | A 30 | | |
| | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | |
| 18.00 | 2124164 | 14 I/E 18 PG | 2124165 | 21 I/E 18 PG | | | ⊗ |
| 16.00 | | | 2124166 | 21 I/E 16 PG | 2124167 | 30 I/E 16 PG | ⊗ |

*One cutting edge | Uma aresta de corte | Un filo de corte

⊗ Stock item | Produto de stock | Itens de stock

Insert order code = (1) Geometry Code + (2) Grade Code

UNJ Two cutting edges | Duas arestas de corte | Dos filos de corte



| A | T | H |
|------|-----|-----|
| A 14 | 3,1 | 7,5 |
| A 21 | 4,7 | 12 |

Same insert for external and internal thread | Mesma pastilha para rosca externa e interna | Misma plaquita para roscado externo e interno

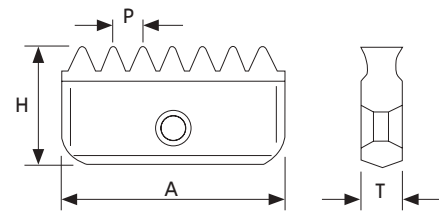
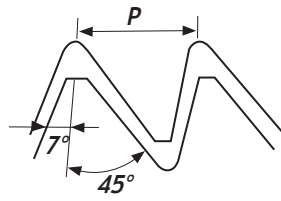
| P (Pitch) | Dimensions Dimensões Dimensiones (mm) | | | | | | Stock grade code ⁽²⁾ (G4) PH7920 |
|--------------|---|-------------|------------------------------|------|-------------|--|--|
| | A 14 | | A 21 | | | | |
| | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | | | |
| 24.00 | 2124168 | 14 E 24 UNJ | 2124174 | | 21 E 24 UNJ | | ⊗ |
| 20.00 | 2124169 | 14 E 20 UNJ | 2124175 | | 21 E 20 UNJ | | ⊗ |
| 18.00 | 2124170 | 14 E 18 UNJ | 2124176 | | 21 E 18 UNJ | | ⊗ |
| 16.00 | 2124171 | 14 E 16 UNJ | 2124177 | | 21 E 16 UNJ | | ⊗ |
| 14.00 | 2124172 | 14 E 14 UNJ | | | | | ⊗ |
| 12.00 | 2124173 | 14 E 12 UNJ | 2124179 | | 21 E 12 UNJ | | ⊗ |

⊗ Stock item | Produto de stock | Itens de stock

Insert order code = (1) Geometry Code + (2) Grade Code

Note: For internal UNJ threads it is common to use UN inserts as partial profile tool | Para rosca interna UNJ é comum utilizar pastilhas UN como ferramenta de perfil parcial | Para roscado interno UNJ é usual utilizar plaquitas UN como herramienta de perfilado parcial

AMERICAN BUTTRESS Two cutting edges | Duas arestas de corte | Dos filos de corte



| A | T | H |
|----|-----|----|
| 21 | 4,7 | 12 |
| 30 | 5,5 | 16 |

Same insert for external and internal thread | Mesma pastilha para roscagem externa e interna | Misma plaquita para roscado externo e interno

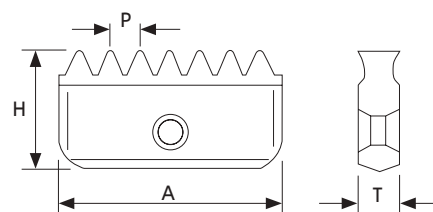
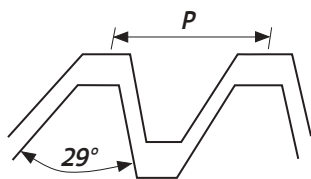
| P (Pitch) | Dimensions Dimensões Dimensiones (mm) | | | | Stock grade code ⁽²⁾ |
|--------------|---|----------------|------------------------------|----------------|------------------------------------|
| | A 21 | | A 30 | | |
| | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | (G4) PH7920 |
| 16.00 | 2124180 | 21 I/E 16 ABUT | 2124184 | 30 I/E 16 ABUT | ⊗ |
| 12.00 | 2124181 | 21 I/E 12 ABUT | 2124185 | 30 I/E 12 ABUT | ⊗ |
| 10.00 | 2124182 | 21 I/E 10 ABUT | 2124186 | 30 I/E 10 ABUT | ⊗ |
| 8.00 | 2124183 | 21 I/E 8 ABUT | 2124187 | 30 I/E 8 ABUT | ⊗ |
| 6.00 | | | 2124188 | 30 I/E 6 ABUT | ⊗ |
| 4.00 | | | 2124189 | 30 I/E 4 ABUT | ⊗ |

⊗ Stock item | Produto de stock | Itens de stock

Insert order code = (1) Geometry Code + (2) Grade Code

Note: ABUT thread milling inserts are one-sided and it can be used only on Multi-insert toolholders | As pastilhas de roscagem ABUT são de uma face e só podem ser utilizadas nos suportes de múltiplas pastilhas | Las plaquitas de roscado ABUT son de una cara y sólo se pueden utilizar en las herramientas de múltiples plaquitas

ACME Two cutting edges | Duas arestas de corte | Dos filos de corte



| A | T | H |
|----|-----|----|
| 21 | 4,7 | 12 |
| 30 | 5,5 | 16 |
| 40 | 6,3 | 20 |

Same insert for external and internal thread | Mesma pastilha para roscagem externa e interna | Misma plaqueta para roscado externo e interno

| P (Pitch) | Dimensions Dimensões Dimensiones (mm) | | | | | | Stock grade code ⁽²⁾ |
|--------------|---|---------------|------------------------------|----------------|------------------------------|-------------------|------------------------------------|
| | A 21 | | A 30 | | A 40 | | |
| | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | Geometry code ⁽¹⁾ | Ref. | (G4) PH7920 |
| 12.00 | 2124191 | 21 12 ACME | 2124194 | 30 12 ACME | | | ⊗ |
| 10.00 | 2124192 | 21 10 ACME | 2124195 | 30 10 ACME | | | ⊗ |
| 8.00 | 2124193 | 21 8.0 ACME | 2124196 | 30 8.0 ACME | | | ⊗ |
| 6.00 | | | 2124197 | 30 6.0 ACME | | | ⊗ |
| 4.00 | | | 2124198 | 30 4.0 ACME* | 2124199 | 40 4.0 ACME | ⊗ |
| 3.50 | | | | | 2124200 | 40 3.5 ACME | ⊗ |
| 3.00 | | | | | 2124201 | 40 3.0 ACME* ** | ⊗ |

*One cutting edge | Uma aresta de corte | Un filo de corte

⊗ Stock item | Produto de stock | Itens de stock

Insert order code = (1) Geometry Code + (2) Grade Code

** Inserts to be used only on Multi-insert toolholders | Pastilhas que só podem ser utilizadas nos suportes de múltiplas pastilhas | Plaquetas que sólo se pueden utilizar en las herramientas de múltiples plaquetas

mm

THREADING

Thread milling - Inserts

Thread milling - Toolholders

Thread turning - Overview

Thread turning - Inserts

Thread turning - Toolholders

Thread turning - Spare Parts

Technical Data

THREAD MILLING TOOLHOLDERS CODE KEY

Codificação ISO para suportes de fresagem de roscar | Codificación ISO para herramientas de fresado de roscar

| | | | | | | | | |
|----------|----------|----------|----------|------------|------------|------------|---|----------|
| A | S | S | N | 063 | 050 | A21 | - | 5 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | | 8 |

1 - Mounting type

| | |
|----------|-------------|
| A | Arbor |
| E | Cylindrical |
| W | Weldon |

2 - Toolholder material

| | |
|----------|---------|
| S | Steel |
| C | Carbide |

3 - Clamping

| | |
|----------|-------|
| S | Screw |
|----------|-------|

4 - Operation type

| | |
|----------|-------------------|
| N | Internal+External |
| E | External |

5 - Cutting diameter ($\varnothing D_c$ - mm)

Example : 063 = 63 mm

6 - Toolholder length (L - mm)

Example : 050 = 50 mm

7 - Insert Pocket Size

| | |
|------------|-------|
| A12 | 12 mm |
| A14 | 14 mm |
| A21 | 21 mm |
| A30 | 30 mm |
| A40 | 40 mm |

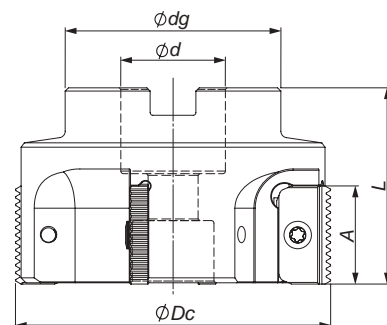
8 - Number of inserts

| | | | | |
|----------|----------|----------|----------|----------|
| 1 | 2 | 3 | 4 | 5 |
|----------|----------|----------|----------|----------|

MULTI INSERT TOOLHOLDERS

Suportes de múltiplas pastilhas | Herramientas de múltiples plaquitas

INTERNAL TOOLHOLDERS || Suportes internos | Herramientas internas

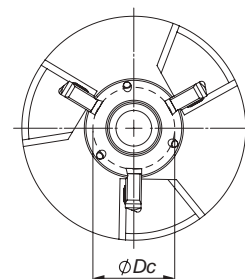
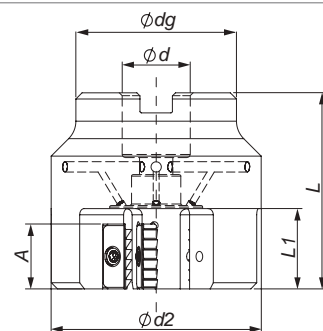


| Order Code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | | Number of inserts | Insert screw | Stock |
|----------------------|---------------------------------------|---|-----------|----------|-----------|----|----------------------|-----------------|-------|
| | | A | ϕDc | ϕd | ϕdg | L | | | |
| 212393200 | ASSN 063 050 A21-5 | 21 | 63 | 22 | 40 | 50 | 5 | P0401105 | ☉ |
| 212393300 | ASSN 063 050 A30-4 | 30 | 63 | 22 | 55 | 50 | 4 | P0501500 | ☉ |
| 212393400 | ASSN 080 055 A30-4 | 30 | 80 | 27 | 58 | 55 | 4 | P0501500 | ☉ |
| 212393600 | ASSN 100 060 A30-4 | 30 | 100 | 32 | 66 | 60 | 4 | P0501500 | ☉ |
| 212393500 | ASSN 080 065 A40-4 | 40 | 80 | 27 | 58 | 65 | 4 | P0502201 | ○ |
| 212393800 | ASSN 100 070 A40-4 | 40 | 100 | 32 | 66 | 70 | 4 | P0502201 | ○ |

☉ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

EXTERNAL TOOLHOLDERS || Suportes externos | Herramientas externas



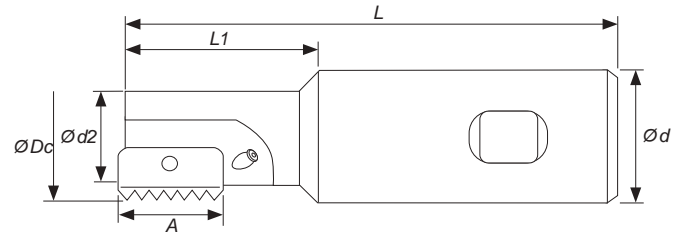
| Order Code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | | | | Number of inserts | Insert screw | Stock |
|----------------------|---------------------------------------|---|-----------|----------|-----------|-----------|----|----|----------------------|-----------------|-------|
| | | A | ϕDc | ϕd | $\phi d2$ | ϕdg | L | L1 | | | |
| 212396400 | ASSE 020 065 A21-3 | 21 | 20 | 22 | 58 | 57 | 65 | 25 | 3 | P0401105 | ○ |
| 212396500 | ASSE 030 065 A21-3 | 21 | 30 | 22 | 68 | 52 | 65 | 25 | 3 | P0401105 | ○ |
| 212396600 | ASSE 045 070 A21-4 | 21 | 45 | 27 | 83 | 58 | 70 | 25 | 4 | P0401105 | ○ |

☉ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

SINGLE INSERT TOOLHOLDERS

WSSN-1

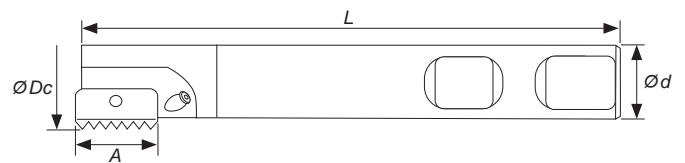


| Order Code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | | | Number of inserts | Insert screw | Stock |
|----------------------|---------------------------------------|---|------|----|------|-----|----|----------------------|-----------------|-------|
| | | A | ØDc | Ød | Ød2 | L | L1 | | | |
| 212394700 | WSSN 009 085 A12-1 | 12 | 9,5 | 20 | 7,5 | 85 | 14 | 1 | P0260601 | ☺ |
| 212394800 | WSSN 010 085 A12-1 | 12 | 9,9 | 20 | 7,6 | 85 | 16 | 1 | P0260601 | ☺ |
| 212394900 | WSSN 012 075 A14-1 | 14 | 12,0 | 20 | 8,9 | 75 | 20 | 1 | P0260701 | ☺ |
| 212395000 | WSSN 014 085 A14-1 | 14 | 14,5 | 20 | 11,2 | 85 | 25 | 1 | P0260701 | ☺ |
| 212395100 | WSSN 017 085 A14-1 | 14 | 17,0 | 20 | 13,4 | 85 | 30 | 1 | P0260701 | ☺ |
| 212395200 | WSSN 018 085 A21-1* | 21 | 18,0 | 20 | 14,4 | 85 | 30 | 1 | P0401105 | ☺ |
| 212395300 | WSSN 021 094 A21-1 | 21 | 21,0 | 20 | 16,5 | 94 | 40 | 1 | P0401105 | ☺ |
| 212395400 | WSSN 029 110 A30-1 | 30 | 29,0 | 25 | 22,4 | 110 | 50 | 1 | P0501500 | ☺ |
| 212395500 | WSSN 048 153 A40-1 | 40 | 48,0 | 40 | 35,0 | 153 | 78 | 1 | P0502201 | ○ |

☺ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

*Can not be used with the following inserts: | Não pode ser usado com as seguintes pastilhas: | No se puede utilizar con las siguientes plaquitas:
21 I 3.5 ISO; 21 I 8.0 UN; 21 I 7.0 UN; 21 I/E 11 BSPT; 21 I/E 11.5 NPT; 21 I/E 11.5 NPTF

WSSN-1 || Long shank

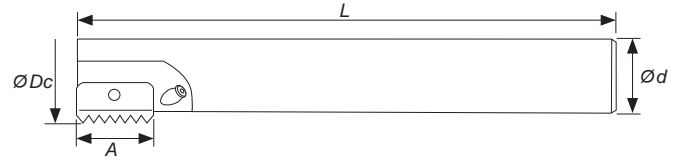


| Order Code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Number of inserts | Insert screw | Stock |
|----------------------|---------------------------------------|---|-----|----|-----|----------------------|-----------------|-------|
| | | A | ØDc | Ød | L | | | |
| 212396000 | WSSN 025 125 A21-1 | 21 | 25 | 20 | 125 | 1 | P0401105 | ☺ |
| 212396100 | WSSN 031 150 A30-1 | 30 | 31 | 25 | 150 | 1 | P0501500 | ☺ |
| 212396200 | WSSN 038 150 A30-1 | 30 | 38 | 32 | 150 | 1 | P0501500 | ☺ |
| 212396300 | WSSN 048 210 A40-1 | 40 | 48 | 40 | 210 | 1 | P0502201 | ○ |

☺ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Note: For holders with long overhang reduce the cutting speed by 20-40%, depending on workpiece, material, pitch and overhang | Para suportes com comprimento elevado reduza a velocidade de corte em 20-40%, dependendo da peça a maquinar, do material, do pitch e comprimento | Para herramientas con longitud elevada reduzca la velocidad de corte en 20-40%, dependiendo de la pieza a mecanizar, del material, del pitch y la longitud.

ECSN-1 || Long carbide shank



| Order Code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | Number of inserts | Insert screw | Stock |
|----------------------|---------------------------------------|---|------|----|-----|----------------------|-----------------|-------|
| | | A | ØDc | Ød | L | | | |
| 212394000 | ECSN 010 125 A12-1* | 12 | 9,9 | 8 | 125 | 1 | P0260601 | ⊗ |
| 212394100 | ECSN 013 110 A14-1 | 14 | 13,2 | 10 | 110 | 1 | P0260701 | ⊗ |
| 212394200 | ECSN 013 155 A14-1 | 14 | 13,2 | 10 | 155 | 1 | P0260701 | ⊗ |
| 212394300 | ECSN 015 175 A14-1 | 14 | 15,2 | 12 | 175 | 1 | P0260701 | ⊗ |
| 212394400 | ECSN 021 130 A21-1 | 21 | 21,0 | 16 | 130 | 1 | P0401105 | ⊗ |
| 212394500 | ECSN 021 200 A21-1 | 21 | 21,0 | 16 | 200 | 1 | P0401105 | ⊗ |
| 212394600 | ECSN 027 270 A30-1 | 30 | 27,0 | 20 | 270 | 1 | P0501500 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

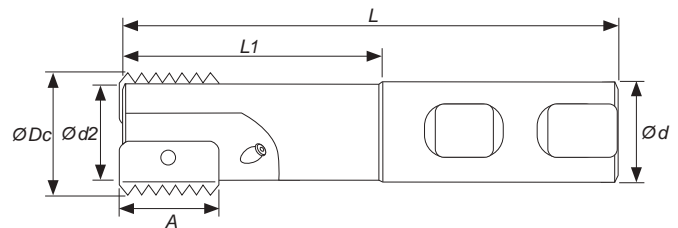
* Without coolant bore | Sem furo de refrigeração | Sin agujero de refrigeración

Note: For holders with long overhang reduce the cutting speed by 20-40%, depending on workpiece, material, pitch and overhang | Para suportes com comprimento elevado reduza a velocidade de corte em 20-40%, dependendo da peça a maquinar, do material, do pitch e comprimento | Para herramientas con longitud elevada reduzca la velocidad de corte en 20-40%, dependiendo de la pieza a mecanizar, del material, del pitch y la longitud.

DOUBLE INSERT TOOLHOLDERS

Suportes de duas pastilhas | Herramientas de dos plaquitas

WSSN-2



| Order Code Código | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | | | | Number of inserts | Insert screw | Stock |
|----------------------|---------------------------------------|---|-----|----|-----|-----|----|----------------------|-----------------|-------|
| | | A | ØDc | Ød | Ød2 | L | L1 | | | |
| 212395600 | WSSN 020 093 A14-2 | 14 | 20 | 20 | 16 | 93 | 41 | 2 | P0260701 | ⊗ |
| 212395700 | WSSN 030 108 A21-2 | 21 | 30 | 25 | 24 | 108 | 52 | 2 | P0401105 | ⊗ |
| 212395800 | WSSN 040 130 A30-2 | 30 | 40 | 32 | 30 | 130 | 70 | 2 | P0501500 | ⊗ |
| 212395900 | WSSN 050 153 A40-2 | 40 | 50 | 40 | 38 | 153 | 78 | 2 | P0502201 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

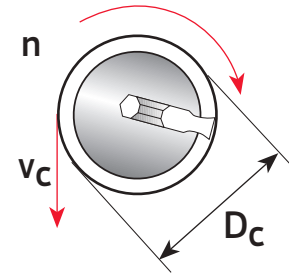
○ Available under request | Disponível sobre consulta | Disponible bajo consulta

THREAD MILLING TOOLHOLDERS TECHNICAL DATA

Conversion of selected cutting speed to rotational speed is calculated using the following formulas:

Spindle Speed (rev/min)

$$n = \frac{v_c \cdot 1000}{\pi \cdot D_c} \quad (\text{RPM})$$



Cutting Speed (m/min)

$$v_c = \frac{n \cdot \pi \cdot D_c}{1000} \quad (\text{m/min})$$

Nomenclature

- D_c - Cutter diameter (mm)
- n - Spindle Speed (rev/min)
- v_c - Cutting Speed (m/min)

Example for the following values:

$v_c = 120$ m/min
 $D_c = 30$ mm

$$n = \frac{v_c \times 1000}{\pi \times D} = \frac{120 \times 1000}{3.14 \times 30} = 1274 \text{ RPM}$$

SPEED AND FEED SELECTION

Seleção da velocidade e do avanço | Selección de la velocidad e de avance

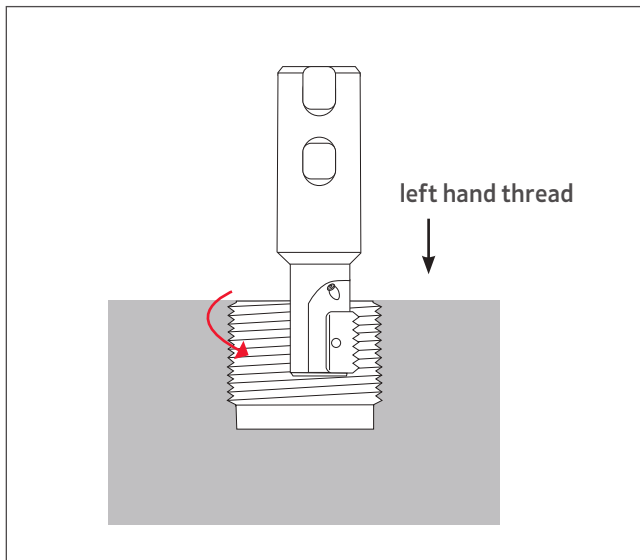
TiAlN – Sub-Micron Grade with Titanium Aluminium Nitride multi-layer coating (ISO K10-K20). This is a general purpose grade, which can be used with all materials, it should be run at medium to high cutting speeds.

Recommended Feed Rate: 0.05 - 0.15 mm

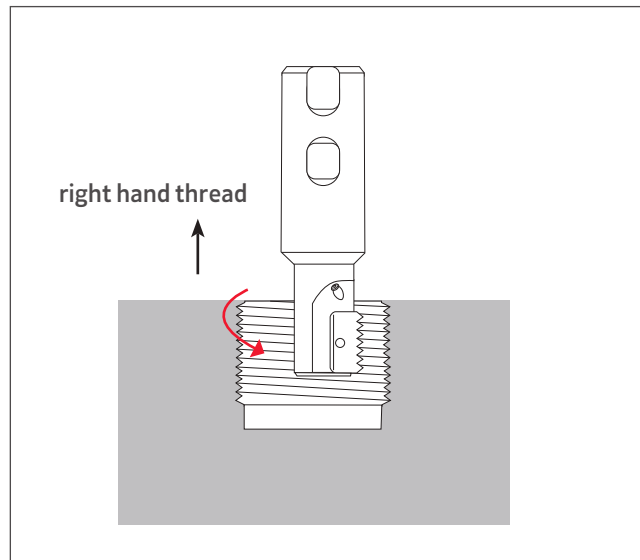
| ISO | Material | Cutting Speed v_c (m/min) TiAlN |
|-----|--|--------------------------------------|
| P | Low and Medium Carbon Steels | 115 - 280 |
| | High Carbon Steels | 130 - 200 |
| | Treated Steels | 105 - 180 |
| M | Stainless Steels, Cast Stainless Steels | 130 - 190 |
| | Cast Steels | 150 - 190 |
| K | Cast Iron | 80 - 170 |
| N | Non-Ferrous and Aluminium | 180 - 340 |
| | Synthetics, Duroplastics, Thermoplastics | 115 - 460 |
| S | Nickel Alloys, Titanium Alloys | 25 - 90 |

INTERNAL THREAD | Rosca interna | Roscado interno

Left hand thread | Rosca esquerda | Rosca izquierda

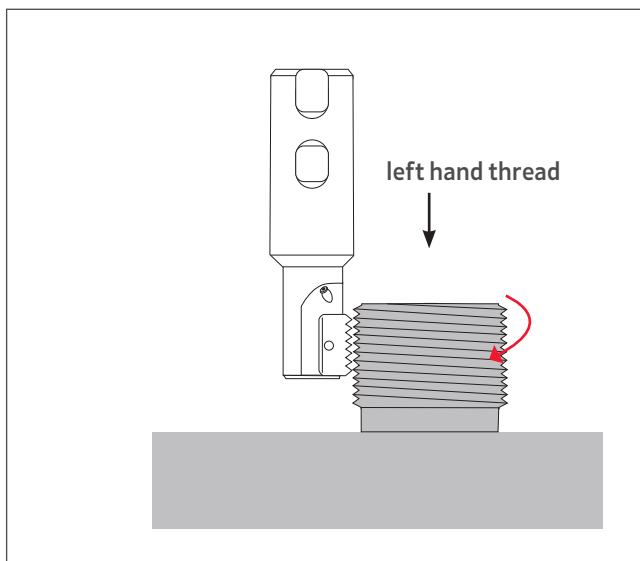


Right hand thread | Rosca direita | Rosca derecha

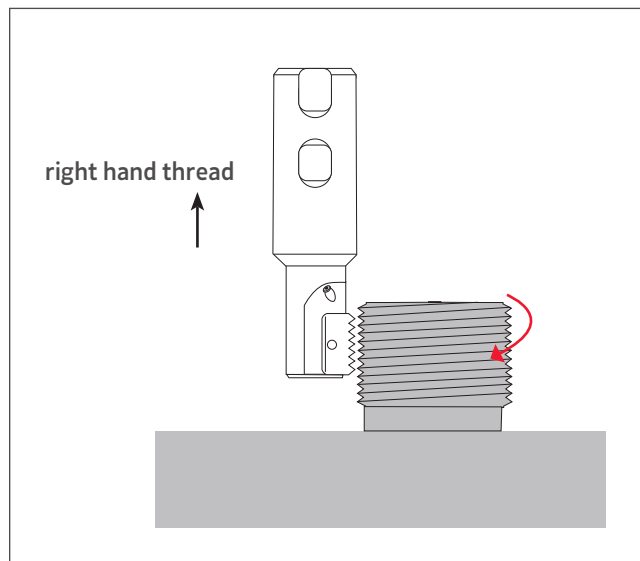


EXTERNAL THREAD | Rosca externa | Roscado externo

Left hand thread | Rosca esquerda | Rosca izquierda

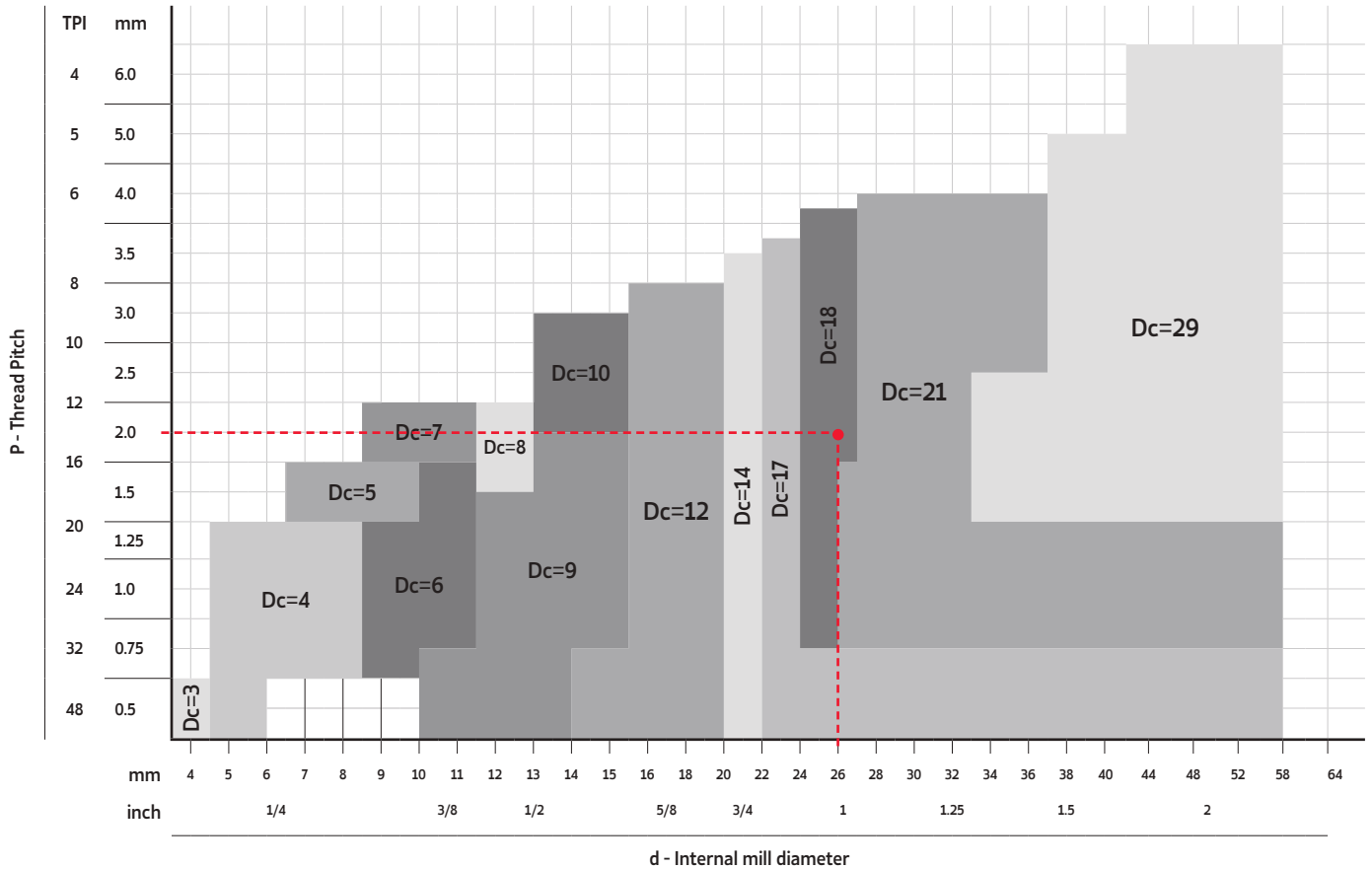


Right hand thread | Rosca direita | Rosca derecha



TOOL SELECTION | Selecção de ferramenta | Selección de herramienta

The chart below provide a accurate visual selection tool for internal threading.
(Suitable for the thread forms: ISO, UN, WHIT, NPT, NPTF, BSPT and PG)



Any tool with a small diameter can produce larger diameter threads.

Example:

Internal thread: M26 x 2.0

Find a milling tool to produce **d = 26 internal** right hand ISO thread with a tread pitch **P = 2.0mm**.

Internal mill diameter d = 26 mm

+

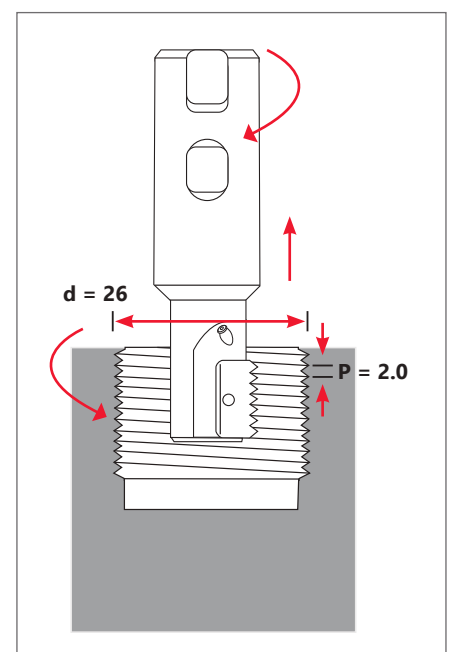
Thread pitch P = 2.0 mm

As you can see above, the two red lines intersect at a selected tool with a cutting diameter of **Dc = 18 mm**

Chosen toolholder - order code: 212395200 | Reference: WSSN 018 085 A21-1

Chosen insert - order code: 2123995G4 | Reference: 21 | 2.0 ISO PH7920

Right hand Thread
Rosca direita | Rosca derecha





- E - 802 | Inserts Overview
- E - 805 | Inserts program
- E - 850 | External Toolholders
- E - 854 | Internal Toolholders
- E - 859 | Spare Parts
- E - 860 | Technical Data

THREAD TURNING

THREAD TURNING - STEP BY STEP EXAMPLE



Application:

Thread: External Right Hand
ISO Metric M40x2,5

Material: 4140 (25HRc)

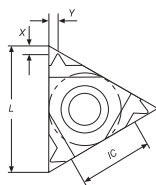
1 - Choose the Thread Working Method



Feed direction towards the chuck was chosen.

Therefore, an external right hand insert and an external right hand holder will be used.

2 - Choose the Insert Size



Chosen insert: **16ER 2.50ISO**

| Insert Size | Pitch | Reference | Angle | Toolholder |
|-------------|-------|--------------|-------|----------------|
| IC L mm | mm | | PH | |
| 9,525 16 | 2,50 | 16ER 2.50ISO | EA16 | STCNL 2525 M16 |

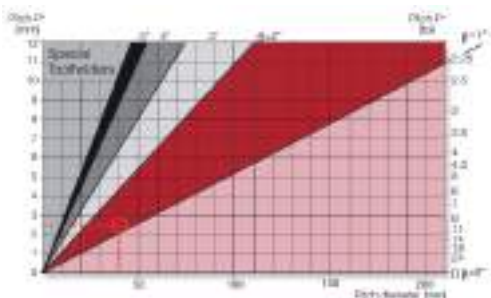
3 - Choose the Toolholder



Chosen toolholder: **SKANR 2525 M16**

| Insert Size | Reference | Dimensions mm | | |
|-------------|----------------|----------------------------------|----|-----|
| IC | | H ₁ (H ₂) | F | L |
| 9,525 | SKANR 2525 M16 | 25 | 25 | 150 |

4 - Find the Helix Angle



From the table, using a pitch of 2,5mm (10 tpi) and a workpiece diameter of 40mm (1,57"), we find the helix angle to be **1,5°**

5 - Choose the Correct Anvil

Anvil chosen: **EA16**

| Tool Anvil Helix Angle | | 3.5 | 2.5 | 1.5 | 0.5 |
|------------------------|--------|------|----------|----------|-------------|
| Insert Size | Holder | | | | |
| IC | L mm | | | | |
| 9.525 | 16 | ER/L | EA16+3.5 | EA16+2.5 | EA16 |
| | | | | | EA16+0.5 |

6 - Choose the Carbide Grade and Cutting Speed

Carbide grade chosen: **PH6920**
Cutting Speed: **140 m/min**

| Material | | Hardness Steel HB | PH6920 |
|----------|---------------------|-------------------------|---------------|
| P | Low alloy steel | Not hardened | 85-145 |
| | Alloy steels (AISI) | Hardened | 75-140 |
| | | Hardened | 70-135 |

7 - Determine the Number of Passes

Number of passes; 10

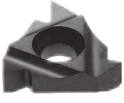
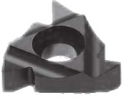










ISO External

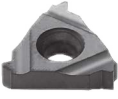
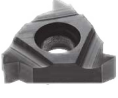










| Pitch | mm | 1.50 | 1.75 | 2.00 | 2.50 | 3.00 | 3.50 | 4.00 |
|---------------|-----|------|------|------|-------------|------|-------|-------|
| | qpl | 16 | 14 | 12 | 10 | 8 | 7 | 6 |
| No. of passes | | 0-10 | 7-12 | 7-12 | 8-14 | 9-16 | 10-18 | 11-18 |

Summary

| | | |
|---|-------------------|---------------------------------|
| | Thread Type | ISO M40x2,5 External Right Hand |
| 1 | Feed Direction: | Towards the chuck |
| 2 | Insert and Grade: | 16ER 2,5ISO PH6920 |
| 3 | Toolholder: | SXANR 2525 M16 |
| 4 | Helix Angle: | 1,5° |
| 5 | Anvil: | EA16 |
| 6 | Cutting Speed: | 140 m/min |
| 7 | Number of Passes; | 14 |

THREAD TURNING INSERTS OVERVIEW

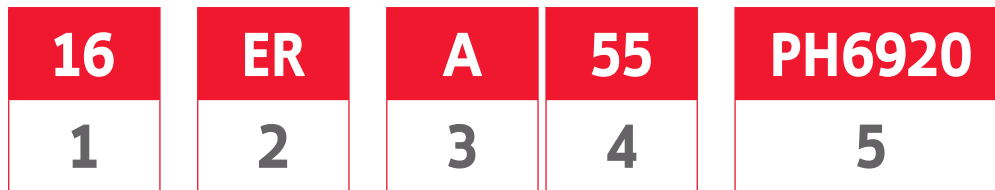
| | Insert Image | Description | Page |
|-----------------|---|--|------|
| Partial Profile |  | PARTIAL PROFILE 60° | 721 |
| |  | PARTIAL PROFILE 55° | 722 |
| Full Profile |  | AMERICAN BUTTRESS ANSI B1.9-1973 | 757 |
| |  | AMERICAN ACME ANSI/ASME: 1.5-1988 | 748 |
| |  | AMERICAN UN (UNC, UNF, UNEF) ANSI B1.1-1982 | 729 |
| |  | API API SPEC 7:2001 (0.040 0.038R 0.050) | 759 |
| |  | API BUTTRESS CASING API SPEC 5B:2008 OIL THREADS | 760 |
| |  | API ROUND CASING & TUBING API SPEC 5B:2008 | 761 |
| |  | BSPT B.S.21: 1985 | 739 |
| |  | EXTREME LINE CASING API SPEC 5B:2008 - OIL THREADS | 762 |
| |  | ISO METRIC ISO 965-1: 1999-11 DIN 13: 2005-08 | 725 |
| |  | METRIC BUTTRESS SAGENGEWINDE (DIN 513:1985) SAW THREAD | 758 |

| | Insert Image | Description | Page |
|--------------------|---|--|------|
| Full Profile |  | MJ ISO 5855-1:1989 | 756 |
| |  | NPT ANSI/ASME B 1.20.1-1983 | 740 |
| |  | NPTF ANSI B 1.20.3-1976 | 742 |
| |  | PG DIN 40430; 1971 | 763 |
| |  | ROUND (DIN 20400) DIN 20400:1990 | 745 |
| |  | ROUND (DIN 405) DIN 405:1997 | 744 |
| |  | STUB ACME ANSI/ASME: 1.8-1988 | 750 |
| |  | TRAPEZ DIN 103:1977 ISO 2901:1993 | 746 |
| |  | UNJ MIL-S-8879A | 752 |
| |  | WITHWORTH FOR BSW, BSF, BSP, B.S.84: 1956, DIN 259, ISO 228-1:1994 | 734 |
| Tangential Profile |  | TNMC | 765 |
| |  | TPMC | 765 |

PARTIAL PROFILE INSERTS CODE KEY

Chave do codificação de pastilhas | Llave de codificación de plaquitas

Partial Profile Example



1 - Insert Size

| L | 06 | 08 | 11 | 16 | 22 | 27 |
|------|------|------|------|-------|-------|--------|
| I.C. | 4.00 | 5.00 | 6.35 | 9.525 | 12.70 | 15.875 |

2 - Insert Hand Type

| | |
|----|-----------------------|
| ER | External Right Holder |
| EL | External Left Holder |
| IR | Internal Right Holder |
| IL | Internal Left Holder |

3 - Profile Type

| symbol | mm | tpi |
|--------|------------|---------|
| A | 0.5 - 1.5 | 48 - 16 |
| G | 1.75 - 3.0 | 14 - 8 |
| AG | 0.5 - 3.0 | 48 - 8 |
| N | 3.5 - 5.0 | 7 - 5 |
| Q | 5.5 - 6.0 | 4.5 - 4 |

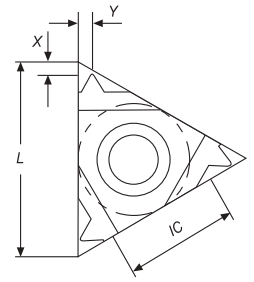
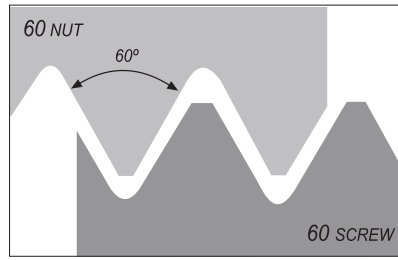
4 - Profile Angle

| | |
|----|-----|
| 55 | 55° |
| 60 | 60° |

5 - Grades

PH6920

PARTIAL PROFILE 60°



External

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ (68) PH6920 |
|------------------------------|---------------------------------------|----------|-------|---|----|-----|-----|--|
| | | MM | TPI | IC | L | X | Y | |
| 1880592 | 11 ER A60 | 0.5-1.5 | 48-16 | 6.35 | 11 | 0.8 | 0.9 | ☉ |
| 1880429 | 16 ER A60 | 0.5-1.5 | 48-16 | 9.525 | 16 | 0.8 | 0.9 | ☉ |
| 1880431 | 16 ER G60 | 1.75-3.0 | 14-8 | 9.525 | 16 | 1.2 | 1.7 | ☉ |
| 1880388 | 16 ER AG60 | 0.5-3.0 | 48-8 | 9.525 | 16 | 1.2 | 1.7 | ☉ |
| 1880046 | 22 ER N60 | 3.5-5.0 | 7-5 | 12.70 | 22 | 1.7 | 2.5 | ☉ |
| 1882486 | 27 ER Q60 | 5.5-6.0 | 4.5-4 | 15.875 | 27 | 2.1 | 3.1 | ☉ |
| 1881851 | 11 EL A60 | 0.5-1.5 | 48-16 | 6.35 | 11 | 0.8 | 0.9 | ☉ |
| 1880771 | 16 EL A60 | 0.5-1.5 | 48-16 | 9.525 | 16 | 0.8 | 0.9 | ☉ |
| 1880773 | 16 EL G60 | 1.75-3.0 | 14-8 | 9.525 | 16 | 1.2 | 1.7 | ☉ |
| 1880524 | 16 EL AG60 | 0.5-3.0 | 48-8 | 9.525 | 16 | 1.2 | 1.7 | ☉ |
| 1880853 | 22 EL N60 | 3.5-5.0 | 7-5 | 12.70 | 22 | 1.7 | 2.5 | ☉ |
| 1882155 | 27 EL Q60 | 5.5-6.0 | 4.5-4 | 15.875 | 27 | 2.1 | 3.1 | ☉ |

☉ Stock item | Produto de stock | Itens de stock

☉ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

Internal

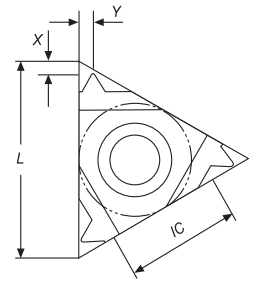
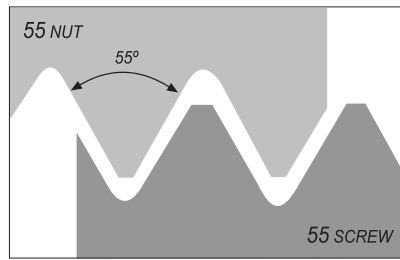
| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ (68) PH6920 |
|------------------------------|---------------------------------------|----------|-------|---|----|-----|-----|--|
| | | MM | TPI | IC | L | X | Y | |
| 1881730 | 06 IR A60 | 0.5-1.25 | 48-20 | 4.00 | 06 | 0.6 | 0.6 | ☉ |
| 1881773 | 08 IR A60 | 0.5-1.5 | 48-16 | 5.00 | 08 | 0.6 | 0.7 | ☉ |
| 1880595 | 11 IR A60 | 0.5-1.5 | 48-16 | 6.35 | 11 | 0.8 | 0.9 | ☉ |
| 1880045 | 16 IR A60 | 0.5-1.5 | 48-16 | 9.525 | 16 | 0.8 | 0.9 | ☉ |
| 1880435 | 16 IR G60 | 1.75-3.0 | 14-8 | 9.525 | 16 | 1.2 | 1.7 | ☉ |
| 1880437 | 16 IR AG60 | 0.5-3.0 | 48-8 | 9.525 | 16 | 1.2 | 1.7 | ☉ |
| 1880769 | 22 IR N60 | 3.5-5.0 | 7-5 | 12.70 | 22 | 1.7 | 2.5 | ☉ |
| 1882487 | 27 IR Q60 | 5.5-6.0 | 4.5-4 | 15.875 | 27 | 2.1 | 3.1 | ☉ |
| 1881716 | 06 IL A60 | 0.5-1.25 | 48-20 | 4.00 | 06 | 0.6 | 0.6 | ☉ |
| 1882199 | 08 IL A60 | 0.5-1.5 | 48-16 | 5.00 | 08 | 0.6 | 0.7 | ☉ |
| 1880855 | 11 IL A60 | 0.5-1.5 | 48-16 | 6.35 | 11 | 0.8 | 0.9 | ☉ |
| 1880772 | 16 IL A60 | 0.5-1.5 | 48-16 | 9.525 | 16 | 0.8 | 0.9 | ☉ |
| 1880774 | 16 IL G60 | 1.75-3.0 | 14-8 | 9.525 | 16 | 1.2 | 1.7 | ☉ |
| 1880775 | 16 IL AG60 | 0.5-3.0 | 48-8 | 9.525 | 16 | 1.2 | 1.7 | ☉ |
| 1880854 | 22 IL N60 | 3.5-5.0 | 7-5 | 12.70 | 22 | 1.7 | 2.5 | ☉ |
| 1882179 | 27 IL Q60 | 5.5-6.0 | 4.5-4 | 15.875 | 27 | 2.1 | 3.1 | ☉ |

☉ Stock item | Produto de stock | Itens de stock

☉ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

PARTIAL PROFILE 55°



External

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------------|----------|-------|---|----|-----|-----|-----------------------------------|
| | | MM | TPI | IC | L | X | Y | (68) PH6920 |
| 1880598 | 11 ER A55 | 0.5-1.5 | 48-16 | 6.35 | 11 | 0.8 | 0.9 | ⊗ |
| 1880430 | 16 ER A55 | 0.5-1.5 | 48-16 | 9.525 | 16 | 0.8 | 0.9 | ⊗ |
| 1880432 | 16 ER G55 | 1.75-3.0 | 14-8 | 9.525 | 16 | 1.2 | 1.7 | ⊗ |
| 1880433 | 16 ER AG55 | 0.5-3.0 | 48-8 | 9.525 | 16 | 1.2 | 1.7 | ⊗ |
| 1880770 | 22 ER N55 | 3.5-5.0 | 7-5 | 12.70 | 22 | 1.7 | 2.5 | ⊗ |
| 1882167 | 27 ER Q55 | 5.5-6.0 | 4.5-4 | 15.875 | 27 | 2.0 | 2.9 | ○ |
| 1881850 | 11 EL A55 | 0.5-1.5 | 48-16 | 6.35 | 11 | 0.8 | 0.9 | ○ |
| 1880776 | 16 EL A55 | 0.5-1.5 | 48-16 | 9.525 | 16 | 0.8 | 0.9 | ○ |
| 1880778 | 16 EL G55 | 1.75-3.0 | 14-8 | 9.525 | 16 | 1.2 | 1.7 | ○ |
| 1880780 | 16 EL AG55 | 0.5-3.0 | 48-8 | 9.525 | 16 | 1.2 | 1.7 | ○ |
| 1880858 | 22 EL N55 | 3.5-5.0 | 7-5 | 12.70 | 22 | 1.7 | 2.5 | ○ |
| 1882154 | 27 EL Q55 | 5.5-6.0 | 4.5-4 | 15.875 | 27 | 2.0 | 2.9 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

mm

THREADING

Thread milling - Inserts

Thread milling - Toolholders

Thread turning - Overview

Thread turning - Inserts

Thread turning - Toolholders

Thread turning - Spare Parts

Technical Data

Internal

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------------|----------|-------|---|----|-----|-----|-----------------------------------|
| | | MM | TPI | IC | L | X | Y | (68) PH6920 |
| 1881729 | 06 IR A55 | 0.5-1.25 | 48-20 | 4.00 | 06 | 0.5 | 0.6 | ○ |
| 1881772 | 08 IR A55 | 0.5-1.5 | 48-16 | 5.00 | 08 | 0.6 | 0.7 | ○ |
| 1880006 | 11 IR A55 | 0.5-1.5 | 48-16 | 6.35 | 11 | 0.8 | 0.9 | ⊗ |
| 1880434 | 16 IR A55 | 0.5-1.5 | 48-16 | 9.525 | 16 | 0.8 | 0.9 | ⊗ |
| 1880436 | 16 IR G55 | 1.75-3.0 | 14-8 | 9.525 | 16 | 1.2 | 1.7 | ⊗ |
| 1880438 | 16 IR AG55 | 0.5-3.0 | 48-8 | 9.525 | 16 | 1.2 | 1.7 | ⊗ |
| 1880047 | 22 IR N55 | 3.5-5.0 | 7-5 | 12.70 | 22 | 1.7 | 2.5 | ⊗ |
| 1882189 | 27 IR Q55 | 5.5-6.0 | 4.5-4 | 15.875 | 27 | 2.0 | 2.9 | ○ |
| 1881715 | 06 IL A55 | 0.5-1.25 | 48-20 | 4.00 | 06 | 0.5 | 0.6 | ○ |
| 1881751 | 08 IL A55 | 0.5-1.5 | 48-16 | 5.00 | 08 | 0.6 | 0.7 | ○ |
| 1880856 | 11 IL A55 | 0.5-1.5 | 48-16 | 6.35 | 11 | 0.8 | 0.9 | ○ |
| 1880777 | 16 IL A55 | 0.5-1.5 | 48-16 | 9.525 | 16 | 0.8 | 0.9 | ○ |
| 1880779 | 16 IL G55 | 1.75-3.0 | 14-8 | 9.525 | 16 | 1.2 | 1.7 | ○ |
| 1880781 | 16 IL AG55 | 0.5-3.0 | 48-8 | 9.525 | 16 | 1.2 | 1.7 | ⊗ |
| 1880857 | 22 IL N55 | 3.5-5.0 | 7-5 | 12.70 | 22 | 1.7 | 2.5 | ○ |
| 1882178 | 27 IL Q55 | 5.5-6.0 | 4.5-4 | 15.875 | 27 | 2.0 | 2.9 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

FULL PROFILE INSERTS CODE KEY

Chave do codificação de pastilhas | Llave de codificación de plaquitas

Full Profile Example



1 - Insert Size

| L | 06 | 08 | 11 | 16 | 22 | 27 |
|------|------|------|------|-------|-------|--------|
| I.C. | 4.00 | 5.00 | 6.35 | 9.525 | 12.70 | 15.875 |

2 - Insert Hand Type

| | |
|-----------|-----------------------|
| ER | External Right Holder |
| EL | External Left Holder |
| IR | Internal Right Holder |
| IL | Internal Left Holder |

3 - Pitch

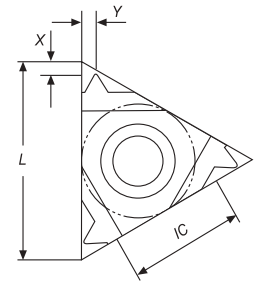
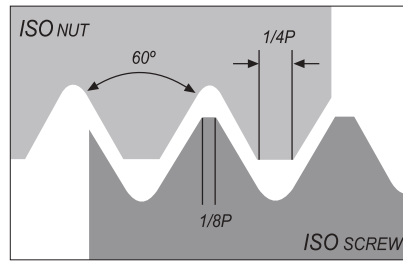
| mm | tpi |
|------------|--------|
| 0.35 - 7.0 | 72 - 3 |

4 - Profile Type

| symbol | profile type | symbol | profile type | symbol | profile type | symbol | profile type |
|-------------|--------------|----------------|-------------------|---------------|-------------------------|---------------|-------------------------|
| ISO | ISO METRIC | NPTF | NPTF | STACME | STUB ACME | API | API |
| UN | AMERICAN UN | RD | ROUND (DIN 405) | UNJ | UNJ | BUT | API BUTTRESS CASING |
| W | WITHWORTH | RD20400 | ROUND (DIN 20400) | MJ | MJ | API RD | API ROUND CAS. & TUBING |
| BSPT | BSPT | TR | TRAPEZ | ABUT | AMERICAN BUTTRESS | EL | EXTREME LINE CASING |
| NPT | NPT | ACME | AMERICAN ACME | SAGE | METRIC BUT. SAGENGWINDE | PG | PG |

5 - Grades

PH6920



External

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch MM | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ (68) PH6920 |
|------------------------------|---------------------------------------|-------------|---|----|-----|-----|--|
| | | | IC | L | X | Y | |
| 1881852 | 11 ER 0.35 ISO | 0.35 | 6.35 | 11 | 0.8 | 0.4 | ○ |
| 1881853 | 11 ER 0.40 ISO | 0.40 | 6.35 | 11 | 0.7 | 0.4 | ○ |
| 1881854 | 11 ER 0.45 ISO | 0.45 | 6.35 | 11 | 0.7 | 0.4 | ○ |
| 1881855 | 11 ER 0.50 ISO | 0.50 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881856 | 11 ER 0.60 ISO | 0.60 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881857 | 11 ER 0.70 ISO | 0.70 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881858 | 11 ER 0.75 ISO | 0.75 | 6.35 | 11 | 0.6 | 0.6 | ⊗ |
| 1881859 | 11 ER 0.80 ISO | 0.80 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1880602 | 11 ER 1.00 ISO | 1.00 | 6.35 | 11 | 0.7 | 0.7 | ⊗ |
| 1881861 | 11 ER 1.25 ISO | 1.25 | 6.35 | 11 | 0.8 | 0.9 | ⊗ |
| 1880603 | 11 ER 1.50 ISO | 1.50 | 6.35 | 11 | 0.8 | 1.0 | ⊗ |
| 1881864 | 11 ER 1.75 ISO | 1.75 | 6.35 | 11 | 0.8 | 1.1 | ○ |
| 1881881 | 11 ER 2.00 ISO | 2.00 | 6.35 | 11 | 0.8 | 1.1 | ○ |
| 1882030 | 16 ER 0.35 ISO | 0.35 | 9.525 | 16 | 0.8 | 0.4 | ○ |
| 1882031 | 16 ER 0.40 ISO | 0.40 | 9.525 | 16 | 0.7 | 0.4 | ○ |
| 1882032 | 16 ER 0.45 ISO | 0.45 | 9.525 | 16 | 0.7 | 0.4 | ○ |
| 1880819 | 16 ER 0.50 ISO | 0.50 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1882033 | 16 ER 0.60 ISO | 0.60 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1882034 | 16 ER 0.70 ISO | 0.70 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1880447 | 16 ER 0.75 ISO | 0.75 | 9.525 | 16 | 0.6 | 0.6 | ⊗ |
| 1880804 | 16 ER 0.80 ISO | 0.80 | 9.525 | 16 | 0.6 | 0.6 | ⊗ |
| 1880479 | 16 ER 1.00 ISO | 1.00 | 9.525 | 16 | 0.7 | 0.7 | ⊗ |
| 1880007 | 16 ER 1.25 ISO | 1.25 | 9.525 | 16 | 0.8 | 0.9 | ⊗ |
| 1880262 | 16 ER 1.50 ISO | 1.50 | 9.525 | 16 | 0.8 | 1.0 | ⊗ |
| 1880732 | 16 ER 1.75 ISO | 1.75 | 9.525 | 16 | 0.9 | 1.2 | ⊗ |
| 1880018 | 16 ER 2.00 ISO | 2.00 | 9.525 | 16 | 1.0 | 1.3 | ⊗ |
| 1880020 | 16 ER 2.50 ISO | 2.50 | 9.525 | 16 | 1.1 | 1.5 | ⊗ |
| 1880022 | 16 ER 3.00 ISO | 3.00 | 9.525 | 16 | 1.2 | 1.6 | ⊗ |
| 1883740 | 16 ER 3.50 ISO | 3.50 | 9.525 | 16 | 1.2 | 1.7 | ○ |
| 1880823 | 22 ER 3.50 ISO | 3.50 | 12.70 | 22 | 1.6 | 2.3 | ⊗ |
| 1880811 | 22 ER 4.00 ISO | 4.00 | 12.70 | 22 | 1.6 | 2.3 | ⊗ |
| 1880824 | 22 ER 4.50 ISO | 4.50 | 12.70 | 22 | 1.7 | 2.4 | ⊗ |
| 1880649 | 22 ER 5.00 ISO | 5.00 | 12.70 | 22 | 1.7 | 2.5 | ⊗ |
| 1883741 | 22 ER 5.50 ISO | 5.50 | 12.70 | 22 | 1.7 | 2.6 | ○ |
| 1883742 | 22 ER 6.00 ISO | 6.00 | 12.70 | 22 | 1.9 | 2.7 | ○ |
| 1882163 | 27 ER 5.50 ISO | 5.50 | 15.875 | 27 | 1.6 | 2.3 | ○ |
| 1882164 | 27 ER 6.00 ISO | 6.00 | 15.875 | 27 | 1.8 | 2.5 | ○ |

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

mm
THREADING
Thread milling - Inserts
Thread milling - Toolholders
Thread turning - Overview
Thread turning - Inserts
Thread turning - Toolholders
Thread turning - Spare Parts
Technical Data

External

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------------|-------|---|----|-----|-----|-----------------------------------|
| | | MM | IC | L | X | Y | (68) PH6920 |
| 1881794 | 11 EL 0.35 ISO | 0.35 | 6.35 | 11 | 0.8 | 0.4 | ○ |
| 1881795 | 11 EL 0.40 ISO | 0.40 | 6.35 | 11 | 0.7 | 0.4 | ○ |
| 1881796 | 11 EL 0.45 ISO | 0.45 | 6.35 | 11 | 0.7 | 0.4 | ○ |
| 1881797 | 11 EL 0.50 ISO | 0.50 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881798 | 11 EL 0.60 ISO | 0.60 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881799 | 11 EL 0.70 ISO | 0.70 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881800 | 11 EL 0.75 ISO | 0.75 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881801 | 11 EL 0.80 ISO | 0.80 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881802 | 11 EL 1.00 ISO | 1.00 | 6.35 | 11 | 0.7 | 0.7 | ○ |
| 1881803 | 11 EL 1.25 ISO | 1.25 | 6.35 | 11 | 0.8 | 0.9 | ○ |
| 1881804 | 11 EL 1.50 ISO | 1.50 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1881806 | 11 EL 1.75 ISO | 1.75 | 6.35 | 11 | 0.8 | 1.1 | ○ |
| 1880654 | 11 EL 2.00 ISO | 2.00 | 6.35 | 11 | 0.8 | 1.1 | ○ |
| 1881977 | 16 EL 0.35 ISO | 0.35 | 9.525 | 16 | 0.8 | 0.4 | ○ |
| 1881978 | 16 EL 0.40 ISO | 0.40 | 9.525 | 16 | 0.7 | 0.4 | ○ |
| 1881979 | 16 EL 0.45 ISO | 0.45 | 9.525 | 16 | 0.7 | 0.4 | ○ |
| 1881980 | 16 EL 0.50 ISO | 0.50 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1881981 | 16 EL 0.60 ISO | 0.60 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1881982 | 16 EL 0.70 ISO | 0.70 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1881983 | 16 EL 0.75 ISO | 0.75 | 9.525 | 16 | 0.6 | 0.6 | ⊗ |
| 1881984 | 16 EL 0.80 ISO | 0.80 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1880782 | 16 EL 1.00 ISO | 1.00 | 9.525 | 16 | 0.7 | 0.7 | ⊗ |
| 1880651 | 16 EL 1.25 ISO | 1.25 | 9.525 | 16 | 0.8 | 0.9 | ⊗ |
| 1880652 | 16 EL 1.50 ISO | 1.50 | 9.525 | 16 | 0.8 | 1.0 | ○ |
| 1880653 | 16 EL 1.75 ISO | 1.75 | 9.525 | 16 | 0.9 | 1.2 | ⊗ |
| 1882519 | 16 EL 2.00 ISO | 2.00 | 9.525 | 16 | 1.0 | 1.3 | ⊗ |
| 1880788 | 16 EL 2.50 ISO | 2.50 | 9.525 | 16 | 1.1 | 1.5 | ⊗ |
| 1880488 | 16 EL 3.00 ISO | 3.00 | 9.525 | 16 | 1.2 | 1.6 | ○ |
| 1883743 | 16 EL 3.50 ISO | 3.50 | 9.525 | 16 | 1.2 | 1.7 | ○ |
| 1880844 | 22 EL 3.50 ISO | 3.50 | 12.70 | 22 | 1.6 | 2.3 | ○ |
| 1880845 | 22 EL 4.00 ISO | 4.00 | 12.70 | 22 | 1.6 | 2.3 | ○ |
| 1880846 | 22 EL 4.50 ISO | 4.50 | 12.70 | 22 | 1.7 | 2.4 | ○ |
| 1880847 | 22 EL 5.00 ISO | 5.00 | 12.70 | 22 | 1.7 | 2.5 | ○ |
| 1883744 | 22 EL 5.50 ISO | 5.50 | 12.70 | 22 | 1.7 | 2.6 | ○ |
| 1883745 | 22 EL 6.00 ISO | 6.00 | 12.70 | 22 | 1.9 | 2.7 | ○ |
| 1882150 | 27 EL 5.50 ISO | 5.50 | 15.875 | 27 | 1.6 | 2.3 | ○ |
| 1882151 | 27 EL 6.00 ISO | 6.00 | 15.875 | 27 | 1.8 | 2.5 | ○ |

 Stock item | Produto de stock | Itens de stock
  Available under request | Disponível sobre consulta | Disponible bajo consulta
 Insert order code = (1) Geometry Code + (2) Grade Code

mm
 THREADING
 Thread milling - Inserts
 Thread milling - Toolholders
 Thread turning - Overview
 Thread turning - Inserts
 Thread turning - Toolholders
 Thread turning - Spare Parts
 Technical Data

Internal

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------------|-------|---|----|-----|-----|-----------------------------------|
| | | MM | IC | L | X | Y | (68) PH6920 |
| 1881717 | 06 IR 0.50 ISO | 0.50 | 4.00 | 06 | 0.9 | 0.5 | ○ |
| 1881718 | 06 IR 0.75 ISO | 0.75 | 4.00 | 06 | 0.8 | 0.5 | ○ |
| 1881719 | 06 IR 1.00 ISO | 1.00 | 4.00 | 06 | 0.7 | 0.6 | ○ |
| 1881720 | 06 IR 1.25 ISO | 1.25 | 4.00 | 06 | 0.6 | 0.6 | ○ |
| 1881752 | 08 IR 0.35 ISO | 0.35 | 5.00 | 08 | 0.7 | 0.4 | ○ |
| 1881753 | 08 IR 0.50 ISO | 0.50 | 5.00 | 08 | 0.6 | 0.5 | ○ |
| 1881754 | 08 IR 0.75 ISO | 0.75 | 5.00 | 08 | 0.6 | 0.5 | ○ |
| 1881755 | 08 IR 1.00 ISO | 1.00 | 5.00 | 08 | 0.6 | 0.6 | ○ |
| 1881756 | 08 IR 1.25 ISO | 1.25 | 5.00 | 08 | 0.6 | 0.7 | ○ |
| 1881757 | 08 IR 1.50 ISO | 1.50 | 5.00 | 08 | 0.6 | 0.7 | ○ |
| 1881758 | 08 IR 1.75 ISO | 1.75 | 5.00 | 08 | 0.6 | 0.8 | ○ |
| 1881937 | 11 IR 0.35 ISO | 0.35 | 6.35 | 11 | 0.8 | 0.3 | ○ |
| 1881938 | 11 IR 0.40 ISO | 0.40 | 6.35 | 11 | 0.8 | 0.4 | ○ |
| 1881939 | 11 IR 0.45 ISO | 0.45 | 6.35 | 11 | 0.8 | 0.4 | ○ |
| 1880825 | 11 IR 0.50 ISO | 0.50 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881940 | 11 IR 0.60 ISO | 0.60 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881941 | 11 IR 0.70 ISO | 0.70 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1880762 | 11 IR 0.75 ISO | 0.75 | 6.35 | 11 | 0.6 | 0.6 | ⊗ |
| 1881942 | 11 IR 0.80 ISO | 0.80 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1880604 | 11 IR 1.00 ISO | 1.00 | 6.35 | 11 | 0.8 | 0.7 | ⊗ |
| 1880827 | 11 IR 1.25 ISO | 1.25 | 6.35 | 11 | 0.8 | 0.8 | ⊗ |
| 1880605 | 11 IR 1.50 ISO | 1.50 | 6.35 | 11 | 0.8 | 1.0 | ⊗ |
| 1880828 | 11 IR 1.75 ISO | 1.75 | 6.35 | 11 | 0.8 | 1.1 | ⊗ |
| 1880829 | 11 IR 2.00 ISO | 2.00 | 6.35 | 11 | 0.8 | 0.9 | ⊗ |
| 1883746 | 11 IR 2.50 ISO | 2.50 | 6.35 | 11 | 0.8 | 1.2 | ○ |
| 1882108 | 16 IR 0.35 ISO | 0.35 | 9.525 | 16 | 0.8 | 0.3 | ○ |
| 1882109 | 16 IR 0.40 ISO | 0.40 | 9.525 | 16 | 0.8 | 0.4 | ○ |
| 1882110 | 16 IR 0.45 ISO | 0.45 | 9.525 | 16 | 0.8 | 0.4 | ○ |
| 1880830 | 16 IR 0.50 ISO | 0.50 | 9.525 | 16 | 0.6 | 0.6 | ⊗ |
| 1882112 | 16 IR 0.60 ISO | 0.60 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1882113 | 16 IR 0.70 ISO | 0.70 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1880831 | 16 IR 0.75 ISO | 0.75 | 9.525 | 16 | 0.6 | 0.6 | ⊗ |
| 1880832 | 16 IR 0.80 ISO | 0.80 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1880025 | 16 IR 1.00 ISO | 1.00 | 9.525 | 16 | 0.6 | 0.7 | ⊗ |
| 1880026 | 16 IR 1.25 ISO | 1.25 | 9.525 | 16 | 0.8 | 0.9 | ⊗ |
| 1880619 | 16 IR 1.50 ISO | 1.50 | 9.525 | 16 | 0.8 | 1.0 | ⊗ |
| 1880733 | 16 IR 1.75 ISO | 1.75 | 9.525 | 16 | 0.9 | 1.2 | ⊗ |
| 1880039 | 16 IR 2.00 ISO | 2.00 | 9.525 | 16 | 1.0 | 1.3 | ⊗ |
| 1880041 | 16 IR 2.50 ISO | 2.50 | 9.525 | 16 | 1.1 | 1.5 | ⊗ |
| 1880042 | 16 IR 3.00 ISO | 3.00 | 9.525 | 16 | 1.1 | 1.5 | ⊗ |
| 1883747 | 16 IR 3.50 ISO | 3.50 | 9.525 | 16 | 1.2 | 1.7 | ⊗ |
| 1880834 | 22 IR 3.50 ISO | 3.50 | 12.70 | 22 | 1.6 | 2.3 | ⊗ |
| 1880818 | 22 IR 4.00 ISO | 4.00 | 12.70 | 22 | 1.6 | 2.3 | ⊗ |
| 1880835 | 22 IR 4.50 ISO | 4.50 | 12.70 | 22 | 1.6 | 2.4 | ○ |
| 1880650 | 22 IR 5.00 ISO | 5.00 | 12.70 | 22 | 1.6 | 2.3 | ⊗ |
| 1883748 | 22 IR 5.50 ISO | 5.50 | 12.70 | 22 | 1.6 | 2.3 | ○ |
| 1883749 | 22 IR 6.00 ISO | 6.00 | 12.70 | 22 | 1.6 | 2.4 | ○ |
| 1882185 | 27 IR 5.50 ISO | 5.50 | 15.875 | 27 | 1.6 | 2.3 | ⊗ |
| 1882186 | 27 IR 6.00 ISO | 6.00 | 15.875 | 27 | 1.8 | 2.5 | ○ |

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

mm
THREADING
Thread milling - Inserts
Thread milling - Toolholders
Thread turning - Overview
Thread turning - Inserts
Thread turning - Toolholders
Thread turning - Spare Parts
Technical Data

ISO METRIC ISO 965-1: 1999-11 | DIN 13: 2005-08

Internal

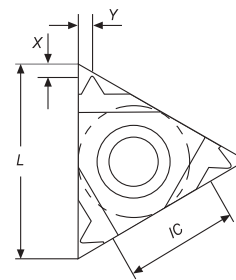
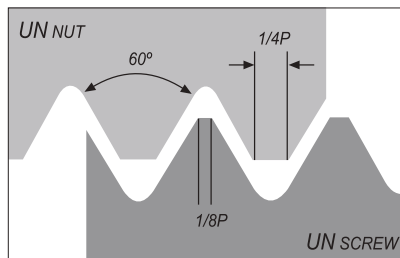
| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch MM | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ (68) PH6920 |
|------------------------------|---------------------------------------|-------------|---|----|-----|-----|--|
| | | | IC | L | X | Y | |
| 1881703 | 06 IL 0.50 ISO | 0.50 | 4.00 | 06 | 0.9 | 0.5 | ○ |
| 1881704 | 06 IL 0.75 ISO | 0.75 | 4.00 | 06 | 0.8 | 0.5 | ○ |
| 1881705 | 06 IL 1.00 ISO | 1.00 | 4.00 | 06 | 0.7 | 0.6 | ○ |
| 1881706 | 06 IL 1.25 ISO | 1.25 | 4.00 | 06 | 0.6 | 0.6 | ○ |
| 1881732 | 08 IL 0.50 ISO | 0.50 | 5.00 | 08 | 0.6 | 0.5 | ○ |
| 1881733 | 08 IL 0.75 ISO | 0.75 | 5.00 | 08 | 0.6 | 0.5 | ○ |
| 1881734 | 08 IL 1.00 ISO | 1.00 | 5.00 | 08 | 0.6 | 0.6 | ○ |
| 1881735 | 08 IL 1.25 ISO | 1.25 | 5.00 | 08 | 0.6 | 0.7 | ○ |
| 1881736 | 08 IL 1.50 ISO | 1.50 | 5.00 | 08 | 0.6 | 0.7 | ○ |
| 1881737 | 08 IL 1.75 ISO | 1.75 | 5.00 | 08 | 0.6 | 0.8 | ○ |
| 1881911 | 11 IL 0.35 ISO | 0.35 | 6.35 | 11 | 0.8 | 0.3 | ○ |
| 1881912 | 11 IL 0.40 ISO | 0.40 | 6.35 | 11 | 0.8 | 0.4 | ○ |
| 1881913 | 11 IL 0.45 ISO | 0.45 | 6.35 | 11 | 0.8 | 0.4 | ○ |
| 1880837 | 11 IL 0.50 ISO | 0.50 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881914 | 11 IL 0.60 ISO | 0.60 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881915 | 11 IL 0.70 ISO | 0.70 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1880838 | 11 IL 0.75 ISO | 0.75 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881916 | 11 IL 0.80 ISO | 0.80 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1880839 | 11 IL 1.00 ISO | 1.00 | 6.35 | 11 | 0.8 | 0.7 | ○ |
| 1880840 | 11 IL 1.25 ISO | 1.25 | 6.35 | 11 | 0.8 | 0.8 | ○ |
| 1880841 | 11 IL 1.50 ISO | 1.50 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1880842 | 11 IL 1.75 ISO | 1.75 | 6.35 | 11 | 0.8 | 1.1 | ○ |
| 1880843 | 11 IL 2.00 ISO | 2.00 | 6.35 | 11 | 0.8 | 0.9 | ⊗ |
| 1883750 | 11 IL 2.50 ISO | 2.50 | 6.35 | 11 | 0.8 | 1.2 | ○ |
| 1882058 | 16 IL 0.35 ISO | 0.35 | 9.525 | 16 | 0.8 | 0.3 | ○ |
| 1882059 | 16 IL 0.40 ISO | 0.40 | 9.525 | 16 | 0.8 | 0.4 | ○ |
| 1882060 | 16 IL 0.45 ISO | 0.45 | 9.525 | 16 | 0.8 | 0.4 | ○ |
| 1882061 | 16 IL 0.50 ISO | 0.50 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1882062 | 16 IL 0.60 ISO | 0.60 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1882063 | 16 IL 0.70 ISO | 0.70 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1882064 | 16 IL 0.75 ISO | 0.75 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1882065 | 16 IL 0.80 ISO | 0.80 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1880783 | 16 IL 1.00 ISO | 1.00 | 9.525 | 16 | 0.6 | 0.7 | ⊗ |
| 1880784 | 16 IL 1.25 ISO | 1.25 | 9.525 | 16 | 0.8 | 0.9 | ⊗ |
| 1880785 | 16 IL 1.50 ISO | 1.50 | 9.525 | 16 | 0.8 | 1.0 | ⊗ |
| 1880786 | 16 IL 1.75 ISO | 1.75 | 9.525 | 16 | 0.9 | 1.2 | ⊗ |
| 1880787 | 16 IL 2.00 ISO | 2.00 | 9.525 | 16 | 1.0 | 1.3 | ⊗ |
| 1880789 | 16 IL 2.50 ISO | 2.50 | 9.525 | 16 | 1.1 | 1.5 | ⊗ |
| 1880790 | 16 IL 3.00 ISO | 3.00 | 9.525 | 16 | 1.1 | 1.5 | ⊗ |
| 1883751 | 16 IL 3.50 ISO | 3.50 | 9.525 | 16 | 1.2 | 1.7 | ○ |
| 1880848 | 22 IL 3.50 ISO | 3.50 | 12.70 | 22 | 1.6 | 2.3 | ○ |
| 1880849 | 22 IL 4.00 ISO | 4.00 | 12.70 | 22 | 1.6 | 2.3 | ○ |
| 1880850 | 22 IL 4.50 ISO | 4.50 | 12.70 | 22 | 1.6 | 2.4 | ○ |
| 1880851 | 22 IL 5.00 ISO | 5.00 | 12.70 | 22 | 1.6 | 2.3 | ○ |
| 1883752 | 22 IL 5.50 ISO | 5.50 | 12.70 | 22 | 1.6 | 2.3 | ○ |
| 1883753 | 22 IL 6.00 ISO | 6.00 | 12.70 | 22 | 1.6 | 2.4 | ○ |
| 1882174 | 27 IL 5.50 ISO | 5.50 | 15.875 | 27 | 1.6 | 2.3 | ○ |
| 1882175 | 27 IL 6.00 ISO | 6.00 | 15.875 | 27 | 1.8 | 2.5 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

AMERICAN UN (UNC, UNF, UNEF) | ANSI B1.1-1982



External

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch TPI | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ (68) PH6920 |
|------------------------------|---------------------------------------|--------------|---|----|-----|-----|--|
| | | | IC | L | X | Y | |
| 1881907 | 11 ER 72 UN | 72 | 6.35 | 11 | 0.8 | 0.4 | ○ |
| 1881906 | 11 ER 64 UN | 64 | 6.35 | 11 | 0.8 | 0.4 | ○ |
| 1881903 | 11 ER 56 UN | 56 | 6.35 | 11 | 0.7 | 0.4 | ○ |
| 1881901 | 11 ER 48 UN | 48 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881900 | 11 ER 44 UN | 44 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881898 | 11 ER 40 UN | 40 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881896 | 11 ER 36 UN | 36 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881894 | 11 ER 32 UN | 32 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881892 | 11 ER 28 UN | 28 | 6.35 | 11 | 0.6 | 0.7 | ○ |
| 1881890 | 11 ER 27 UN | 27 | 6.35 | 11 | 0.7 | 0.8 | ○ |
| 1881885 | 11 ER 24 UN | 24 | 6.35 | 11 | 0.7 | 0.8 | ○ |
| 1881882 | 11 ER 20 UN | 20 | 6.35 | 11 | 0.8 | 0.9 | ○ |
| 1881877 | 11 ER 18 UN | 18 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1881873 | 11 ER 16 UN | 16 | 6.35 | 11 | 0.9 | 1.1 | ○ |
| 1881869 | 11 ER 14 UN | 14 | 6.35 | 11 | 0.9 | 1.1 | ○ |
| 1882055 | 16 ER 72 UN | 72 | 9.525 | 16 | 0.8 | 0.3 | ○ |
| 1882054 | 16 ER 64 UN | 64 | 9.525 | 16 | 0.8 | 0.4 | ○ |
| 1882051 | 16 ER 56 UN | 56 | 9.525 | 16 | 0.7 | 0.4 | ○ |
| 1882049 | 16 ER 48 UN | 48 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1882048 | 16 ER 44 UN | 44 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1882046 | 16 ER 40 UN | 40 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1882044 | 16 ER 36 UN | 36 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1880870 | 16 ER 32 UN | 32 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1880869 | 16 ER 28 UN | 28 | 9.525 | 16 | 0.6 | 0.7 | ○ |
| 1882041 | 16 ER 27 UN | 27 | 9.525 | 16 | 0.7 | 0.8 | ○ |
| 1880868 | 16 ER 24 UN | 24 | 9.525 | 16 | 0.7 | 0.8 | ⊗ |
| 1880021 | 16 ER 20 UN | 20 | 9.525 | 16 | 0.8 | 0.9 | ○ |
| 1880867 | 16 ER 18 UN | 18 | 9.525 | 16 | 0.8 | 1.0 | ○ |
| 1880616 | 16 ER 16 UN | 16 | 9.525 | 16 | 0.9 | 1.1 | ⊗ |
| 1880014 | 16 ER 14 UN | 14 | 9.525 | 16 | 1.0 | 1.2 | ⊗ |
| 1880866 | 16 ER 13 UN | 13 | 9.525 | 16 | 1.0 | 1.3 | ⊗ |
| 1880865 | 16 ER 12 UN | 12 | 9.525 | 16 | 1.1 | 1.4 | ○ |
| 1883754 | 16 ER 11.5 UN | 11.5 | 9.525 | 16 | 1.1 | 1.5 | ○ |
| 1880864 | 16 ER 11 UN | 11 | 9.525 | 16 | 1.1 | 1.5 | ○ |
| 1880863 | 16 ER 10 UN | 10 | 9.525 | 16 | 1.1 | 1.5 | ⊗ |
| 1880862 | 16 ER 9 UN | 9 | 9.525 | 16 | 1.2 | 1.7 | ⊗ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

AMERICAN UN (UNC, UNF, UNEF) | ANSI B1.1-1982

External

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch TPI | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ (68) PH6920 |
|------------------------------|---------------------------------------|--------------|---|----|-----|-----|--|
| | | | IC | L | X | Y | |
| 1880024 | 16 ER 8 UN | 8 | 9.525 | 16 | 1.2 | 1.6 | ○ |
| 1880861 | 22 ER 7 UN | 7 | 12.70 | 22 | 1.6 | 2.3 | ○ |
| 1880860 | 22 ER 6 UN | 6 | 12.70 | 22 | 1.6 | 2.3 | ⊗ |
| 1880859 | 22 ER 5 UN | 5 | 12.70 | 22 | 1.7 | 2.5 | ○ |
| 1882157 | 27 ER 4.5 UN | 4.5 | 15.875 | 27 | 1.9 | 2.7 | ○ |
| 1882161 | 27 ER 4 UN | 4 | 15.875 | 27 | 2.1 | 3.0 | ○ |
| 1881848 | 11 EL 72 UN | 72 | 6.35 | 11 | 0.8 | 0.4 | ○ |
| 1881847 | 11 EL 64 UN | 64 | 6.35 | 11 | 0.8 | 0.4 | ○ |
| 1882200 | 11 EL 56 UN | 56 | 6.35 | 11 | 0.7 | 0.4 | ○ |
| 1881843 | 11 EL 48 UN | 48 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881842 | 11 EL 44 UN | 44 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881840 | 11 EL 40 UN | 40 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881838 | 11 EL 36 UN | 36 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881836 | 11 EL 32 UN | 32 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881834 | 11 EL 28 UN | 28 | 6.35 | 11 | 0.6 | 0.7 | ○ |
| 1881832 | 11 EL 27 UN | 27 | 6.35 | 11 | 0.7 | 0.8 | ○ |
| 1881827 | 11 EL 24 UN | 24 | 6.35 | 11 | 0.7 | 0.8 | ○ |
| 1881824 | 11 EL 20 UN | 20 | 6.35 | 11 | 0.8 | 0.9 | ○ |
| 1881819 | 11 EL 18 UN | 18 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1881815 | 11 EL 16 UN | 16 | 6.35 | 11 | 0.9 | 1.1 | ○ |
| 1881811 | 11 EL 14 UN | 14 | 6.35 | 11 | 0.9 | 1.1 | ○ |
| 1882022 | 16 EL 72 UN | 72 | 9.525 | 16 | 0.8 | 0.3 | ○ |
| 1882020 | 16 EL 64 UN | 64 | 9.525 | 16 | 0.8 | 0.4 | ○ |
| 1882017 | 16 EL 56 UN | 56 | 9.525 | 16 | 0.7 | 0.4 | ○ |
| 1882015 | 16 EL 48 UN | 48 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1882014 | 16 EL 44 UN | 44 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1882012 | 16 EL 40 UN | 40 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1882010 | 16 EL 36 UN | 36 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1880886 | 16 EL 32 UN | 32 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1880885 | 16 EL 28 UN | 28 | 9.525 | 16 | 0.6 | 0.7 | ○ |
| 1882007 | 16 EL 27 UN | 27 | 9.525 | 16 | 0.7 | 0.8 | ○ |
| 1880884 | 16 EL 24 UN | 24 | 9.525 | 16 | 0.7 | 0.8 | ○ |
| 1880883 | 16 EL 20 UN | 20 | 9.525 | 16 | 0.8 | 0.9 | ○ |
| 1880882 | 16 EL 18 UN | 18 | 9.525 | 16 | 0.8 | 1.0 | ○ |
| 1880881 | 16 EL 16 UN | 16 | 9.525 | 16 | 0.9 | 1.1 | ○ |
| 1880880 | 16 EL 14 UN | 14 | 9.525 | 16 | 1.0 | 1.2 | ○ |
| 1880879 | 16 EL 13 UN | 13 | 9.525 | 16 | 1.0 | 1.3 | ○ |
| 1880878 | 16 EL 12 UN | 12 | 9.525 | 16 | 1.1 | 1.4 | ○ |
| 1883755 | 16 EL 11.5 UN | 11.5 | 9.525 | 16 | 1.1 | 1.5 | ○ |
| 1880877 | 16 EL 11 UN | 11 | 9.525 | 16 | 1.1 | 1.5 | ○ |
| 1880876 | 16 EL 10 UN | 10 | 9.525 | 16 | 1.1 | 1.5 | ○ |
| 1880875 | 16 EL 9 UN | 9 | 9.525 | 16 | 1.2 | 1.7 | ○ |
| 1880874 | 16 EL 8 UN | 8 | 9.525 | 16 | 1.2 | 1.6 | ○ |
| 1880873 | 22 EL 7U N | 7 | 12.70 | 22 | 1.6 | 2.3 | ○ |
| 1880872 | 22 EL 6 UN | 6 | 12.70 | 22 | 1.6 | 2.3 | ○ |
| 1880871 | 22 EL 5 UN | 5 | 12.70 | 22 | 1.7 | 2.5 | ○ |
| 1882144 | 27 EL 4.5 UN | 4.5 | 15.875 | 27 | 1.9 | 2.7 | ○ |
| 1882148 | 27 EL 4 UN | 4 | 15.875 | 27 | 2.1 | 3.0 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

Internal

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------------|-------|---|----|-----|-----|-----------------------------------|
| | | TPI | IC | L | X | Y | (68) PH6920 |
| 1881726 | 06 IR 32 UN | 32 | 4.00 | 06 | 0.8 | 0.5 | ○ |
| 1881725 | 06 IR 28 UN | 28 | 4.00 | 06 | 0.8 | 0.6 | ○ |
| 1881722 | 06 IR 24 UN | 24 | 4.00 | 06 | 0.7 | 0.6 | ○ |
| 1883756 | 06 IR 20 UN | 20 | 4.00 | 06 | 0.6 | 0.6 | ○ |
| 1881721 | 06 IR 18 UN | 18 | 4.00 | 06 | 0.6 | 0.7 | ○ |
| 1881769 | 08 IR 32 UN | 32 | 5.00 | 08 | 0.6 | 0.5 | ○ |
| 1881768 | 08 IR 28 UN | 28 | 5.00 | 08 | 0.6 | 0.6 | ○ |
| 1881765 | 08 IR 24 UN | 24 | 5.00 | 08 | 0.6 | 0.6 | ○ |
| 1881764 | 08 IR 20 UN | 20 | 5.00 | 08 | 0.6 | 0.7 | ⊗ |
| 1881762 | 08 IR 18 UN | 18 | 5.00 | 08 | 0.6 | 0.7 | ○ |
| 1881760 | 08 IR 16 UN | 16 | 5.00 | 08 | 0.6 | 0.7 | ○ |
| 1881759 | 08 IR 14 UN | 14 | 5.00 | 08 | 0.6 | 0.8 | ○ |
| 1881956 | 11 IR 72 UN | 72 | 6.35 | 11 | 0.8 | 0.3 | ○ |
| 1881955 | 11 IR 64 UN | 64 | 6.35 | 11 | 0.8 | 0.4 | ○ |
| 1881954 | 11 IR 56 UN | 56 | 6.35 | 11 | 0.7 | 0.4 | ○ |
| 1881953 | 11 IR 48 UN | 48 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881952 | 11 IR 44 UN | 44 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881951 | 11 IR 40 UN | 40 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881950 | 11 IR 36 UN | 36 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1880910 | 11 IR 32 UN | 32 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1880909 | 11 IR 28 UN | 28 | 6.35 | 11 | 0.6 | 0.7 | ○ |
| 1881948 | 11 IR 27 UN | 27 | 6.35 | 11 | 0.7 | 0.8 | ○ |
| 1880908 | 11 IR 24 UN | 24 | 6.35 | 11 | 0.7 | 0.8 | ○ |
| 1880907 | 11 IR 20 UN | 20 | 6.35 | 11 | 0.8 | 0.9 | ○ |
| 1880906 | 11 IR 18 UN | 18 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1880905 | 11 IR 16 UN | 16 | 6.35 | 11 | 0.9 | 1.1 | ⊗ |
| 1880904 | 11 IR 14 UN | 14 | 6.35 | 11 | 0.9 | 1.1 | ⊗ |
| 1880903 | 11 IR 13 UN | 13 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1880902 | 11 IR 12 UN | 12 | 6.35 | 11 | 0.9 | 1.1 | ⊗ |
| 1880901 | 11 IR 11 UN | 11 | 6.35 | 11 | 0.8 | 1.1 | ○ |
| 1882126 | 16 IR 72 UN | 72 | 9.525 | 16 | 0.8 | 0.3 | ○ |
| 1882124 | 16 IR 64 UN | 64 | 9.525 | 16 | 0.8 | 0.4 | ○ |
| 1882123 | 16 IR 56 UN | 56 | 9.525 | 16 | 0.7 | 0.4 | ○ |
| 1882122 | 16 IR 48 UN | 48 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1882121 | 16 IR 44 UN | 44 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1882120 | 16 IR 40 UN | 40 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1882118 | 16 IR 36 UN | 36 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1880900 | 16 IR 32 UN | 32 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1880899 | 16 IR 28 UN | 28 | 9.525 | 16 | 0.6 | 0.7 | ○ |
| 1882117 | 16 IR 27 UN | 27 | 9.525 | 16 | 0.7 | 0.8 | ○ |
| 1880898 | 16 IR 24 UN | 24 | 9.525 | 16 | 0.7 | 0.8 | ○ |
| 1880618 | 16 IR 20 UN | 20 | 9.525 | 16 | 0.8 | 0.9 | ⊗ |
| 1880897 | 16 IR 18 UN | 18 | 9.525 | 16 | 0.8 | 1.0 | ⊗ |
| 1880037 | 16 IR 16 UN | 16 | 9.525 | 16 | 0.9 | 1.1 | ○ |
| 1880034 | 16 IR 14 UN | 14 | 9.525 | 16 | 1.0 | 1.2 | ○ |
| 1882116 | 16 IR 13 UN | 13 | 9.525 | 16 | 1.0 | 1.3 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

AMERICAN UN (UNC, UNF, UNEF) | ANSI B1.1-1982

Internal

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch TPI | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ (68) PH6920 |
|------------------------------|---------------------------------------|--------------|---|----|-----|-----|--|
| | | | IC | L | X | Y | |
| 1880894 | 16 IR 12 UN | 12 | 9.525 | 16 | 1.1 | 1.4 | ⊗ |
| 1883757 | 16 IR 11.5 UN | 11.5 | 9.525 | 16 | 1.1 | 1.5 | ○ |
| 1880893 | 16 IR 11 UN | 11 | 9.525 | 16 | 1.1 | 1.5 | ○ |
| 1880892 | 16 IR 10 UN | 10 | 9.525 | 16 | 1.1 | 1.5 | ○ |
| 1880891 | 16 IR 9 UN | 9 | 9.525 | 16 | 1.2 | 1.7 | ○ |
| 1880044 | 16 IR 8 UN | 8 | 9.525 | 16 | 1.2 | 1.6 | ○ |
| 1880889 | 22 IR 7 UN | 7 | 12.70 | 22 | 1.6 | 2.3 | ○ |
| 1880888 | 22 IR 6 UN | 6 | 12.70 | 22 | 1.6 | 2.3 | ○ |
| 1880887 | 22 IR 5 UN | 5 | 12.70 | 22 | 1.6 | 2.3 | ○ |
| 1882181 | 27 IR 4.5 UN | 4.5 | 15.875 | 27 | 1.7 | 2.4 | ○ |
| 1882184 | 27 IR 4 UN | 4 | 15.875 | 27 | 1.8 | 2.7 | ○ |
| 1881712 | 06 IL 32 UN | 32 | 4.00 | 06 | 0.8 | 0.5 | ○ |
| 1881711 | 06 IL 28 UN | 28 | 4.00 | 06 | 0.8 | 0.6 | ○ |
| 1881708 | 06 IL 24 UN | 24 | 4.00 | 06 | 0.7 | 0.6 | ○ |
| 1883758 | 06 IL 20 UN | 20 | 4.00 | 06 | 0.6 | 0.6 | ○ |
| 1881707 | 06 IL 18 UN | 18 | 4.00 | 06 | 0.6 | 0.7 | ○ |
| 1881748 | 08 IL 32 UN | 32 | 5.00 | 08 | 0.6 | 0.5 | ○ |
| 1881747 | 08 IL 28 UN | 28 | 5.00 | 08 | 0.6 | 0.6 | ○ |
| 1881744 | 08 IL 24 UN | 24 | 5.00 | 08 | 0.6 | 0.6 | ○ |
| 1881743 | 08 IL 20 UN | 20 | 5.00 | 08 | 0.6 | 0.7 | ○ |
| 1881741 | 08 IL 18 UN | 18 | 5.00 | 08 | 0.6 | 0.7 | ○ |
| 1881739 | 08 IL 16 UN | 16 | 5.00 | 08 | 0.6 | 0.7 | ○ |
| 1881738 | 08 IL 14 UN | 14 | 5.00 | 08 | 0.6 | 0.8 | ○ |
| 1881936 | 11 IL 72 UN | 72 | 6.35 | 11 | 0.8 | 0.3 | ○ |
| 1881935 | 11 IL 64 UN | 64 | 6.35 | 11 | 0.8 | 0.4 | ○ |
| 1881934 | 11 IL 56 UN | 56 | 6.35 | 11 | 0.7 | 0.4 | ○ |
| 1881933 | 11 IL 48 UN | 48 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881932 | 11 IL 44 UN | 44 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881931 | 11 IL 40 UN | 40 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881930 | 11 IL 36 UN | 36 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1880935 | 11 IL 32 UN | 32 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1880934 | 11 IL 28 UN | 28 | 6.35 | 11 | 0.6 | 0.7 | ○ |
| 1881928 | 11 IL 27 UN | 27 | 6.35 | 11 | 0.7 | 0.8 | ○ |
| 1880933 | 11 IL 24 UN | 24 | 6.35 | 11 | 0.7 | 0.8 | ○ |
| 1880932 | 11 IL 20 UN | 20 | 6.35 | 11 | 0.8 | 0.9 | ○ |
| 1880931 | 11 IL 18 UN | 18 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1880930 | 11 IL 16 UN | 16 | 6.35 | 11 | 0.9 | 1.1 | ○ |
| 1880929 | 11 IL 14 UN | 14 | 6.35 | 11 | 0.9 | 1.1 | ○ |
| 1880928 | 11 IL 13 UN | 13 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1880927 | 11 IL 12 UN | 12 | 6.35 | 11 | 0.9 | 1.1 | ○ |
| 1880926 | 11 IL 11 UN | 11 | 6.35 | 11 | 0.8 | 1.1 | ○ |
| 1882101 | 16 IL 72 UN | 72 | 9.525 | 16 | 0.8 | 0.3 | ○ |
| 1882098 | 16 IL 64 UN | 64 | 9.525 | 16 | 0.8 | 0.4 | ○ |
| 1882097 | 16 IL 56 UN | 56 | 9.525 | 16 | 0.7 | 0.4 | ○ |
| 1882096 | 16 IL 48 UN | 48 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1882095 | 16 IL 44 UN | 44 | 9.525 | 16 | 0.6 | 0.6 | ○ |


⊗ Stock item | Produto de stock | Itens de stock


○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

Internal

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------------|-------|---|----|-----|-----|-----------------------------------|
| | | TPI | IC | L | X | Y | (68) PH6920 |
| 1882094 | 16 IL 40 UN | 40 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1882092 | 16 IL 36 UN | 36 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1880925 | 16 IL 32 UN | 32 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1880924 | 16 IL 28 UN | 28 | 9.525 | 16 | 0.6 | 0.7 | ○ |
| 1882089 | 16 IL 27 UN | 27 | 9.525 | 16 | 0.7 | 0.8 | ○ |
| 1880923 | 16 IL 24 UN | 24 | 9.525 | 16 | 0.7 | 0.8 | ○ |
| 1880922 | 16 IL 20 UN | 20 | 9.525 | 16 | 0.8 | 0.9 | ○ |
| 1880921 | 16 IL 18 UN | 18 | 9.525 | 16 | 0.8 | 1.0 | ○ |
| 1880920 | 16 IL 16 UN | 16 | 9.525 | 16 | 0.9 | 1.1 | ○ |
| 1880919 | 16 IL 14 UN | 14 | 9.525 | 16 | 1.0 | 1.2 | ○ |
| 1882074 | 16 IL 13 UN | 13 | 9.525 | 16 | 1.0 | 1.3 | ○ |
| 1880918 | 16 IL 12 UN | 12 | 9.525 | 16 | 1.1 | 1.4 | ○ |
| 1883759 | 16 IL 11.5 UN | 11.5 | 9.525 | 16 | 1.1 | 1.5 | ○ |
| 1880917 | 16 IL 11 UN | 11 | 9.525 | 16 | 1.1 | 1.5 | ○ |
| 1880916 | 16 IL 10 UN | 10 | 9.525 | 16 | 1.1 | 1.5 | ○ |
| 1880915 | 16 IL 9 UN | 9 | 9.525 | 16 | 1.2 | 1.7 | ○ |
| 1880914 | 16 IL 8 UN | 8 | 9.525 | 16 | 1.2 | 1.6 | ○ |
| 1880913 | 22 IL 7 UN | 7 | 12.70 | 22 | 1.6 | 2.3 | ○ |
| 1880912 | 22 IL 6 UN | 6 | 12.70 | 22 | 1.6 | 2.3 | ○ |
| 1880911 | 22 IL 5 UN | 5 | 12.70 | 22 | 1.6 | 2.3 | ○ |
| 1882170 | 27 IL 4.5 UN | 4.5 | 15.875 | 27 | 1.7 | 2.4 | ○ |
| 1882173 | 27 IL 4 UN | 4 | 15.875 | 27 | 1.8 | 2.7 | ○ |

 Stock item | Produto de stock | Itens de stock

 Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

mm

THREADING

Thread milling - Inserts

Thread milling - Toolholders

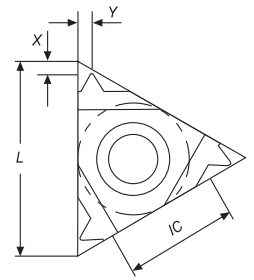
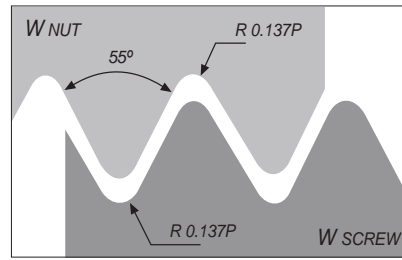
Thread turning - Overview

Thread turning - Inserts

Thread turning - Toolholders

Thread turning - Spare Parts

Technical Data



External

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch TPI | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ (68) PH6920 |
|------------------------------|---------------------------------------|--------------|---|----|-----|-----|--|
| | | | IC | L | X | Y | |
| 1881908 | 11 ER 72 W | 72 | 6.35 | 11 | 0.7 | 0.4 | ○ |
| 1881905 | 11 ER 60 W | 60 | 6.35 | 11 | 0.7 | 0.4 | ○ |
| 1881904 | 11 ER 56 W | 56 | 6.35 | 11 | 0.7 | 0.4 | ○ |
| 1881902 | 11 ER 48 W | 48 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881899 | 11 ER 40 W | 40 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881897 | 11 ER 36 W | 36 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881895 | 11 ER 32 W | 32 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881893 | 11ER 28 W | 28 | 6.35 | 11 | 0.6 | 0.7 | ○ |
| 1881887 | 11 ER 26 W | 26 | 6.35 | 11 | 0.7 | 0.7 | ○ |
| 1881886 | 11 ER 24 W | 24 | 6.35 | 11 | 0.7 | 0.8 | ○ |
| 1881884 | 11 ER 22 W | 22 | 6.35 | 11 | 0.8 | 0.9 | ○ |
| 1881883 | 11 ER 20 W | 20 | 6.35 | 11 | 0.8 | 0.9 | ○ |
| 1881880 | 11 ER 19 W | 19 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1881878 | 11 ER 18 W | 18 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1881874 | 11 ER 16 W | 16 | 6.35 | 11 | 0.9 | 1.1 | ○ |
| 1881870 | 11 ER 14 W | 14 | 6.35 | 11 | 0.9 | 1.1 | ○ |
| 1882056 | 16 ER 72 W | 72 | 9.525 | 16 | 0.7 | 0.4 | ○ |
| 1882053 | 16 ER 60 W | 60 | 9.525 | 16 | 0.7 | 0.4 | ○ |
| 1882052 | 16 ER 56 W | 56 | 9.525 | 16 | 0.7 | 0.4 | ○ |
| 1882050 | 16 ER 48 W | 48 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1882047 | 16 ER 40 W | 40 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1882045 | 16 ER 36 W | 36 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1882043 | 16 ER 32 W | 32 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1880940 | 16 ER 28 W | 28 | 9.525 | 16 | 0.6 | 0.7 | ○ |
| 1882040 | 16 ER 26 W | 26 | 9.525 | 16 | 0.7 | 0.7 | ○ |
| 1880939 | 16 ER 24 W | 24 | 9.525 | 16 | 0.7 | 0.8 | ○ |
| 1882039 | 16 ER 22 W | 22 | 9.525 | 16 | 0.8 | 0.9 | ○ |
| 1880938 | 16 ER 20 W | 20 | 9.525 | 16 | 0.8 | 0.9 | ⊗ |
| 1880017 | 16 ER 19 W | 19 | 9.525 | 16 | 0.8 | 1.0 | ⊗ |
| 1880937 | 16 ER 18 W | 18 | 9.525 | 16 | 0.8 | 1.0 | ○ |
| 1880609 | 16 ER 16 W | 16 | 9.525 | 16 | 0.9 | 1.1 | ⊗ |
| 1880015 | 16 ER 14 W | 14 | 9.525 | 16 | 1.0 | 1.2 | ⊗ |
| 1880611 | 16 ER 12 W | 12 | 9.525 | 16 | 1.1 | 1.4 | ⊗ |
| 1880613 | 16 ER 11 W | 11 | 9.525 | 16 | 1.1 | 1.5 | ⊗ |
| 1880614 | 16 ER 10 W | 10 | 9.525 | 16 | 1.1 | 1.5 | ⊗ |
| 1880936 | 16 ER 9 W | 9 | 9.525 | 16 | 1.2 | 1.7 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

External

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------------|-------|---|----|-----|-----|-----------------------------------|
| | | TPI | IC | L | X | Y | (68) PH6920 |
| 1880646 | 16 ER 8 W | 8 | 9.525 | 16 | 1.2 | 1.5 | ⊗ |
| 1880941 | 22 ER 7 W | 7 | 12.70 | 22 | 1.6 | 2.3 | ⊗ |
| 1880942 | 22 ER 6 W | 6 | 12.70 | 22 | 1.6 | 2.3 | ○ |
| 1880943 | 22 ER 5 W | 5 | 12.70 | 22 | 1.7 | 2.4 | ○ |
| 1882158 | 27 ER 4.5 W | 4.5 | 15.875 | 27 | 1.8 | 2.6 | ○ |
| 1882162 | 27 ER 4 W | 4 | 15.875 | 27 | 2.0 | 2.9 | ○ |
| 1881849 | 11 EL 72 W | 72 | 6.35 | 11 | 0.7 | 0.4 | ○ |
| 1881846 | 11 EL 60 W | 60 | 6.35 | 11 | 0.7 | 0.4 | ○ |
| 1881845 | 11 EL 56 W | 56 | 6.35 | 11 | 0.7 | 0.4 | ○ |
| 1881844 | 11 EL 48 W | 48 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881841 | 11 EL 40 W | 40 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881839 | 11 EL 36 W | 36 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881837 | 11 EL 32 W | 32 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881835 | 11 EL 28 W | 28 | 6.35 | 11 | 0.6 | 0.7 | ○ |
| 1881829 | 11 EL 26 W | 26 | 6.35 | 11 | 0.7 | 0.7 | ○ |
| 1881828 | 11 EL 24 W | 24 | 6.35 | 11 | 0.7 | 0.8 | ○ |
| 1881826 | 11 EL 22 W | 22 | 6.35 | 11 | 0.8 | 0.9 | ○ |
| 1881825 | 11 EL 20 W | 20 | 6.35 | 11 | 0.8 | 0.9 | ○ |
| 1881822 | 11 EL 19 W | 19 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1881820 | 11 EL 18 W | 18 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1881816 | 11 EL 16 W | 16 | 6.35 | 11 | 0.9 | 1.1 | ○ |
| 1881812 | 11 EL 14 W | 14 | 6.35 | 11 | 0.9 | 1.1 | ○ |
| 1882023 | 16 EL 72 W | 72 | 9.525 | 16 | 0.7 | 0.4 | ○ |
| 1882019 | 16 EL 60 W | 60 | 9.525 | 16 | 0.7 | 0.4 | ○ |
| 1882018 | 16 EL 56 W | 56 | 9.525 | 16 | 0.7 | 0.4 | ○ |
| 1882016 | 16 EL 48 W | 48 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1882013 | 16 EL 40 W | 40 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1882011 | 16 EL 36 W | 36 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1882009 | 16 EL 32 W | 32 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1880955 | 16 EL 28 W | 28 | 9.525 | 16 | 0.6 | 0.7 | ○ |
| 1882004 | 16 EL 26 W | 26 | 9.525 | 16 | 0.6 | 0.7 | ○ |
| 1880954 | 16 EL 24 W | 24 | 9.525 | 16 | 0.7 | 0.8 | ○ |
| 1882003 | 16 EL 22 W | 22 | 9.525 | 16 | 0.8 | 0.9 | ○ |
| 1880953 | 16 EL 20 W | 20 | 9.525 | 16 | 0.8 | 0.9 | ○ |
| 1880952 | 16 EL 19 W | 19 | 9.525 | 16 | 0.8 | 1.0 | ○ |
| 1880951 | 16 EL 18 W | 18 | 9.525 | 16 | 0.8 | 1.0 | ○ |
| 1880950 | 16 EL 16 W | 16 | 9.525 | 16 | 0.9 | 1.1 | ○ |
| 1880949 | 16 EL 14 W | 14 | 9.525 | 16 | 1.0 | 1.2 | ⊗ |
| 1880948 | 16 EL 12 W | 12 | 9.525 | 16 | 1.1 | 1.4 | ○ |
| 1880947 | 16 EL 11 W | 11 | 9.525 | 16 | 1.1 | 1.5 | ○ |
| 1880946 | 16 EL 10 W | 10 | 9.525 | 16 | 1.1 | 1.5 | ○ |
| 1880945 | 16 EL 9 W | 9 | 9.525 | 16 | 1.2 | 1.7 | ○ |
| 1880944 | 16 EL 8 W | 8 | 9.525 | 16 | 1.2 | 1.5 | ○ |
| 1880956 | 22 EL 7 W | 7 | 12.70 | 22 | 1.6 | 2.3 | ○ |
| 1880957 | 22 EL 6 W | 6 | 12.70 | 22 | 1.6 | 2.3 | ○ |
| 1880958 | 22 EL 5 W | 5 | 12.70 | 22 | 1.7 | 2.4 | ○ |
| 1882145 | 27 EL 4.5 W | 4.5 | 15.875 | 27 | 1.8 | 2.6 | ○ |
| 1882149 | 27 EL 4 W | 4 | 15.875 | 27 | 2.0 | 2.9 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

WITHWORTH FOR BSW, BSF, BSP, B.S.84: 1956, DIN 259, ISO 228-1:1994

Internal

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------------|-------|---|----|-----|-----|-----------------------------------|
| | | TPI | IC | L | X | Y | (68) PH6920 |
| 1882203 | 06 IR 26 W | 26 | 4.00 | 06 | 0.7 | 0.6 | ○ |
| 1882207 | 06 IR 22 W | 22 | 4.00 | 06 | 0.6 | 0.6 | ○ |
| 1883760 | 06 IR 20 W | 20 | 4.00 | 06 | 0.6 | 0.7 | ○ |
| 1882211 | 06 IR 18 W | 18 | 4.00 | 06 | 0.6 | 0.7 | ○ |
| 1882213 | 08 IR 28 W | 28 | 5.00 | 08 | 0.6 | 0.6 | ○ |
| 1882217 | 08 IR 24 W | 24 | 5.00 | 08 | 0.6 | 0.6 | ○ |
| 1882219 | 08 IR 20 W | 20 | 5.00 | 08 | 0.6 | 0.7 | ○ |
| 1882221 | 08 IR 19 W | 19 | 5.00 | 08 | 0.6 | 0.7 | ○ |
| 1882223 | 08 IR 18 W | 18 | 5.00 | 08 | 0.6 | 0.7 | ○ |
| 1882225 | 08 IR 16 W | 16 | 5.00 | 08 | 0.6 | 0.7 | ○ |
| 1882227 | 11 IR 72 W | 72 | 6.35 | 11 | 0.7 | 0.4 | ○ |
| 1882229 | 11 IR 60 W | 60 | 6.35 | 11 | 0.7 | 0.4 | ○ |
| 1882231 | 11 IR 56 W | 56 | 6.35 | 11 | 0.7 | 0.4 | ○ |
| 1882233 | 11 IR 48 W | 48 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1882235 | 11 IR 40 W | 40 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1883761 | 11 IR 36 W | 36 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1882237 | 11 IR 32 W | 32 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1880972 | 11 IR 28 W | 28 | 6.35 | 11 | 0.6 | 0.7 | ○ |
| 1882239 | 11 IR 26 W | 26 | 6.35 | 11 | 0.7 | 0.7 | ○ |
| 1880971 | 11 IR 24 W | 24 | 6.35 | 11 | 0.7 | 0.8 | ○ |
| 1883762 | 11 IR 22 W | 22 | 6.35 | 11 | 0.8 | 0.9 | ○ |
| 1880970 | 11 IR 20 W | 20 | 6.35 | 11 | 0.8 | 0.9 | ○ |
| 1880005 | 11 IR 19 W | 19 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1880968 | 11 IR 18 W | 18 | 6.35 | 11 | 0.8 | 1.0 | ⊗ |
| 1880967 | 11 IR 16 W | 16 | 6.35 | 11 | 0.9 | 1.1 | ○ |
| 1880004 | 11 IR 14 W | 14 | 6.35 | 11 | 0.9 | 1.1 | ⊗ |
| 1883763 | 11 IR 12 W | 12 | 6.35 | 11 | 1.0 | 1.1 | ○ |
| 1883764 | 11 IR 11 W | 11 | 6.35 | 11 | 0.9 | 1.2 | ○ |
| 1882241 | 16 IR 72 W | 72 | 9.525 | 16 | 0.7 | 0.4 | ○ |
| 1882498 | 16 IR 60 W | 60 | 9.525 | 16 | 0.7 | 0.4 | ○ |
| 1882244 | 16 IR 56 W | 56 | 9.525 | 16 | 0.7 | 0.4 | ○ |
| 1882246 | 16 IR 48 W | 48 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1882248 | 16 IR 40 W | 40 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1882250 | 16 IR 36 W | 36 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1882252 | 16 IR 32 W | 32 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1880965 | 16 IR 28 W | 28 | 9.525 | 16 | 0.6 | 0.7 | ○ |
| 1882254 | 16 IR 26 W | 26 | 9.525 | 16 | 0.6 | 0.7 | ○ |
| 1880964 | 16 IR 24 W | 24 | 9.525 | 16 | 0.7 | 0.8 | ○ |
| 1882256 | 16 IR 22 W | 22 | 9.525 | 16 | 0.8 | 0.9 | ○ |
| 1880963 | 16 IR 20 W | 20 | 9.525 | 16 | 0.8 | 0.9 | ⊗ |
| 1880608 | 16 IR 19 W | 19 | 9.525 | 16 | 0.8 | 1.0 | ⊗ |
| 1880962 | 16 IR 18 W | 18 | 9.525 | 16 | 0.8 | 1.0 | ○ |
| 1880610 | 16 IR 16 W | 16 | 9.525 | 16 | 0.9 | 1.1 | ○ |
| 1880035 | 16 IR 14 W | 14 | 9.525 | 16 | 1.0 | 1.2 | ⊗ |
| 1880612 | 16 IR 12 W | 12 | 9.525 | 16 | 1.1 | 1.4 | ⊗ |
| 1880031 | 16 IR 11 W | 11 | 9.525 | 16 | 1.1 | 1.5 | ⊗ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

Internal

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------------|-------|---|----|-----|-----|-----------------------------------|
| | | TPI | IC | L | X | Y | (68) PH6920 |
| 1880615 | 16 IR 10 W | 10 | 9.525 | 16 | 1.1 | 1.5 | ○ |
| 1882258 | 16 IR 9 W | 9 | 9.525 | 16 | 1.2 | 1.7 | ○ |
| 1880672 | 16 IR 8 W | 8 | 9.525 | 16 | 1.2 | 1.5 | ⊗ |
| 1880959 | 22 IR 7 W | 7 | 12.70 | 22 | 1.6 | 2.3 | ○ |
| 1880960 | 22 IR 6 W | 6 | 12.70 | 22 | 1.6 | 2.3 | ○ |
| 1880961 | 22 IR 5 W | 5 | 12.70 | 22 | 1.7 | 2.4 | ○ |
| 1882259 | 27 IR 4.5 W | 4.5 | 15.875 | 27 | 1.8 | 2.6 | ○ |
| 1882261 | 27 IR 4 W | 4 | 15.875 | 27 | 2.0 | 2.9 | ○ |
| 1882204 | 06 IL 26 W | 26 | 4.00 | 06 | 0.7 | 0.6 | ○ |
| 1882208 | 06 IL 22 W | 22 | 4.00 | 06 | 0.6 | 0.6 | ○ |
| 1883765 | 06 IL 20 W | 20 | 4.00 | 06 | 0.6 | 0.7 | ○ |
| 1882212 | 06 IL 18 W | 18 | 4.00 | 06 | 0.6 | 0.7 | ○ |
| 1882214 | 08 IL 28 W | 28 | 5.00 | 08 | 0.7 | 0.7 | ○ |
| 1882218 | 08 IL 24 W | 24 | 5.00 | 08 | 0.7 | 0.7 | ○ |
| 1882220 | 08 IL 20 W | 20 | 5.00 | 08 | 0.7 | 0.7 | ○ |
| 1882222 | 08 IL 19 W | 19 | 5.00 | 08 | 0.7 | 0.7 | ○ |
| 1882224 | 08 IL 18 W | 18 | 5.00 | 08 | 0.7 | 0.7 | ○ |
| 1882226 | 08 IL 16 W | 16 | 5.00 | 08 | 0.7 | 0.7 | ○ |
| 1882228 | 11 IL 72 W | 72 | 6.35 | 11 | 0.7 | 0.4 | ○ |
| 1882230 | 11 IL 60 W | 60 | 6.35 | 11 | 0.7 | 0.4 | ○ |
| 1882232 | 11 IL 56 W | 56 | 6.35 | 11 | 0.7 | 0.4 | ○ |
| 1882234 | 11 IL 48 W | 48 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1882236 | 11 IL 40 W | 40 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1883766 | 11 IL 36 W | 36 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1882238 | 11 IL 32 W | 32 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1880994 | 11 IL 28 W | 28 | 6.35 | 11 | 0.6 | 0.7 | ○ |
| 1882240 | 11 IL 26 W | 26 | 6.35 | 11 | 0.7 | 0.7 | ○ |
| 1880993 | 11 IL 24 W | 24 | 6.35 | 11 | 0.7 | 0.8 | ○ |
| 1883767 | 11 IL 22 W | 22 | 6.35 | 11 | 0.8 | 0.9 | ○ |
| 1880992 | 11 IL 20 W | 20 | 6.35 | 11 | 0.8 | 0.9 | ○ |
| 1880991 | 11 IL 19 W | 19 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1880990 | 11 IL 18 W | 18 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1880989 | 11 IL 16 W | 16 | 6.35 | 11 | 0.9 | 1.1 | ○ |
| 1880988 | 11 IL 14 W | 14 | 6.35 | 11 | 0.9 | 1.1 | ○ |
| 1883768 | 11 IL 12 W | 12 | 6.35 | 11 | 1.0 | 1.1 | ○ |
| 1883769 | 11 IL 11 W | 11 | 6.35 | 11 | 0.9 | 1.2 | ○ |
| 1882242 | 16 IL 72 W | 72 | 9.525 | 16 | 0.7 | 0.4 | ○ |
| 1882243 | 16 IL 60 W | 60 | 9.525 | 16 | 0.7 | 0.4 | ○ |
| 1882245 | 16 IL 56 W | 56 | 9.525 | 16 | 0.7 | 0.4 | ○ |
| 1882247 | 16 IL 48 W | 48 | 9.525 | 16 | 0.6 | 0.6 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

WITHWORTH FOR BSW, BSF, BSP, B.S.84: 1956, DIN 259, ISO 228-1:1994

Internal

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------------|-------|---|----|-----|-----|-----------------------------------|
| | | TPI | IC | L | X | Y | (68) PH6920 |
| 1882249 | 16 IL 40 W | 40 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1882251 | 16 IL 36 W | 36 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1882253 | 16 IL 32 W | 32 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1880987 | 16 IL 28 W | 28 | 9.525 | 16 | 0.6 | 0.7 | ○ |
| 1882255 | 16 IL 26 W | 26 | 9.525 | 16 | 0.6 | 0.7 | ○ |
| 1880986 | 16 IL 24 W | 24 | 9.525 | 16 | 0.7 | 0.8 | ○ |
| 1882257 | 16 IL 22 W | 22 | 9.525 | 16 | 0.8 | 0.9 | ○ |
| 1880985 | 16 IL 20 W | 20 | 9.525 | 16 | 0.8 | 0.9 | ○ |
| 1880984 | 16 IL 19 W | 19 | 9.525 | 16 | 0.8 | 1.0 | ○ |
| 1880983 | 16 IL 18 W | 18 | 9.525 | 16 | 0.8 | 1.0 | ○ |
| 1880982 | 16 IL 16 W | 16 | 9.525 | 16 | 0.9 | 1.1 | ○ |
| 1880981 | 16 IL 14 W | 14 | 9.525 | 16 | 1.0 | 1.2 | ○ |
| 1880980 | 16 IL 12 W | 12 | 9.525 | 16 | 1.1 | 1.4 | ○ |
| 1880979 | 16 IL 11 W | 11 | 9.525 | 16 | 1.1 | 1.5 | ⊗ |
| 1880978 | 16 IL 10 W | 10 | 9.525 | 16 | 1.1 | 1.5 | ○ |
| 1880977 | 16 IL 9 W | 9 | 9.525 | 16 | 1.2 | 1.7 | ○ |
| 1880976 | 16 IL 8 W | 8 | 9.525 | 16 | 1.2 | 1.5 | ○ |
| 1880975 | 22 IL 7 W | 7 | 12.70 | 22 | 1.6 | 2.3 | ○ |
| 1880974 | 22 IL 6 W | 6 | 12.70 | 22 | 1.6 | 2.3 | ○ |
| 1880973 | 22 IL 5 W | 5 | 12.70 | 22 | 1.7 | 2.4 | ○ |
| 1882260 | 27 IL 4.5 W | 4.5 | 15.875 | 27 | 1.8 | 2.6 | ○ |
| 1882262 | 27 IL 4 W | 4 | 15.875 | 27 | 2.0 | 2.9 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

mm

THREADING

Thread milling - Inserts

Thread milling - Toolholders

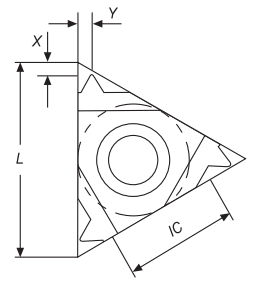
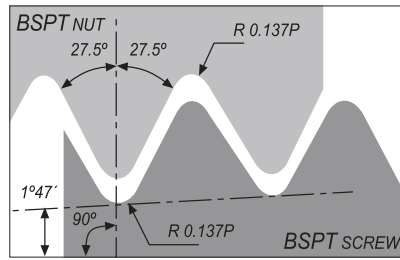
Thread turning - Overview

Thread turning - Inserts

Thread turning - Toolholders

Thread turning - Spare Parts

Technical Data



External

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch TPI | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ (68) PH6920 |
|------------------------------|---------------------------------------|--------------|---|----|-----|-----|--|
| | | | IC | L | X | Y | |
| 1880998 | 16 ER 28 BSPT | 28 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1880997 | 16 ER 19 BSPT | 19 | 9.525 | 16 | 0.8 | 0.9 | ○ |
| 1880996 | 16 ER 14 BSPT | 14 | 9.525 | 16 | 1.0 | 1.2 | ○ |
| 1880995 | 16 ER 11 BSPT | 11 | 9.525 | 16 | 1.1 | 1.5 | ⊗ |
| 1882008 | 16 EL 28 BSPT | 28 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1882001 | 16 EL 19 BSPT | 19 | 9.525 | 16 | 0.8 | 0.9 | ○ |
| 1881993 | 16 EL 14 BSPT | 14 | 9.525 | 16 | 1.0 | 1.2 | ○ |
| 1881989 | 16 EL 11 BSPT | 11 | 9.525 | 16 | 1.1 | 1.5 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

Internal

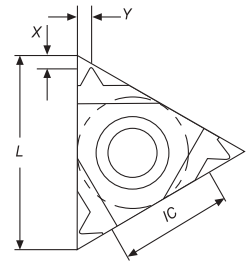
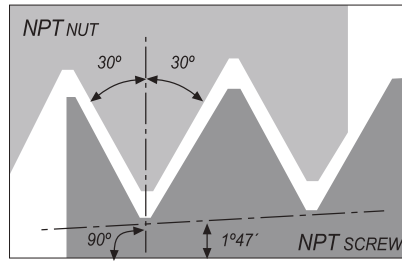
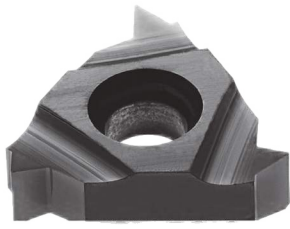
| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch TPI | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ (68) PH6920 |
|------------------------------|---------------------------------------|--------------|---|----|-----|-----|--|
| | | | IC | L | X | Y | |
| 1881724 | 06 IR 28 BSPT | 28 | 4.00 | 06 | 0.7 | 0.6 | ○ |
| 1881767 | 08 IR 28 BSPT | 28 | 5.00 | 08 | 0.6 | 0.6 | ○ |
| 1881763 | 08 IR 19 BSPT | 19 | 5.00 | 08 | 0.6 | 0.6 | ○ |
| 1881949 | 11 IR 28 BSPT | 28 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881004 | 11 IR 19 BSPT | 19 | 6.35 | 11 | 0.8 | 0.9 | ○ |
| 1881003 | 11 IR 14 BSPT | 14 | 6.35 | 11 | 0.9 | 1.0 | ○ |
| 1883770 | 11 IR 11 BSPT | 11 | 6.35 | 11 | 0.9 | 1.2 | ○ |
| 1881002 | 16 IR 28 BSPT | 28 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1881001 | 16 IR 19 BSPT | 19 | 9.525 | 16 | 0.8 | 0.9 | ○ |
| 1881000 | 16 IR 14 BSPT | 14 | 9.525 | 16 | 1.0 | 1.2 | ○ |
| 1880999 | 16 IR 11 BSPT | 11 | 9.525 | 16 | 1.1 | 1.5 | ○ |
| 1881710 | 06 IL 28 BSPT | 28 | 4.00 | 06 | 0.7 | 0.6 | ○ |
| 1881746 | 08 IL 28 BSPT | 28 | 5.00 | 08 | 0.6 | 0.6 | ○ |
| 1881742 | 08 IL 19 BSPT | 19 | 5.00 | 08 | 0.6 | 0.6 | ○ |
| 1881929 | 11 IL 28 BSPT | 28 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881925 | 11 IL 19 BSPT | 19 | 6.35 | 11 | 0.8 | 0.9 | ○ |
| 1881918 | 11 IL 14 BSPT | 14 | 6.35 | 11 | 0.9 | 1.0 | ○ |
| 1883771 | 11 IL 11 BSPT | 11 | 6.35 | 11 | 0.9 | 1.2 | ○ |
| 1882090 | 16 IL 28 BSPT | 28 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1882084 | 16 IL 19 BSPT | 19 | 9.525 | 16 | 0.8 | 0.9 | ○ |
| 1882076 | 16 IL 14 BSPT | 14 | 9.525 | 16 | 1.0 | 1.2 | ○ |
| 1882071 | 16 IL 11 BSPT | 11 | 9.525 | 16 | 1.1 | 1.5 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

NPT | ANSI/ASME B 1.20.1-1983



External

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch TPI | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ (68) PH6920 |
|------------------------------|---------------------------------------|--------------|---|----|-----|-----|--|
| | | | IC | L | X | Y | |
| 1881888 | 11 ER 27 NPT | 27 | 6.35 | 11 | 0.7 | 0.8 | ○ |
| 1881875 | 11 ER 18 NPT | 18 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1881867 | 11 ER 14 NPT | 14 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1881017 | 16 ER 27 NPT | 27 | 9.525 | 16 | 0.7 | 0.8 | ⊗ |
| 1881016 | 16 ER 18 NPT | 18 | 9.525 | 16 | 0.8 | 1.0 | ⊗ |
| 1880013 | 16 ER 14 NPT | 14 | 9.525 | 16 | 0.9 | 1.2 | ⊗ |
| 1880009 | 16 ER 11.5 NPT | 11.5 | 9.525 | 16 | 1.1 | 1.5 | ⊗ |
| 1880023 | 16 ER 8 NPT | 8 | 9.525 | 16 | 1.3 | 1.8 | ○ |
| 1881830 | 11 EL 27 NPT | 27 | 6.35 | 11 | 0.7 | 0.8 | ○ |
| 1881817 | 11 EL 18 NPT | 18 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1881809 | 11 EL 14 NPT | 14 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1882005 | 16 EL 27 NPT | 27 | 9.525 | 16 | 0.7 | 0.8 | ○ |
| 1881999 | 16 EL 18 NPT | 18 | 9.525 | 16 | 0.8 | 1.0 | ○ |
| 1881994 | 16 EL 14 NPT | 14 | 9.525 | 16 | 0.9 | 1.2 | ○ |
| 1881987 | 16 EL 11.5 NPT | 11.5 | 9.525 | 16 | 1.1 | 1.5 | ○ |
| 1882025 | 16 EL 8 NPT | 8 | 9.525 | 16 | 1.3 | 1.8 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

Internal

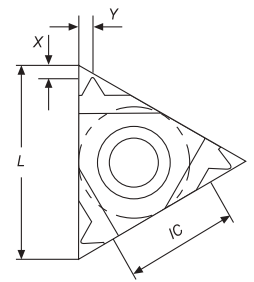
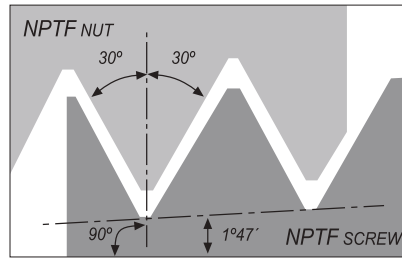
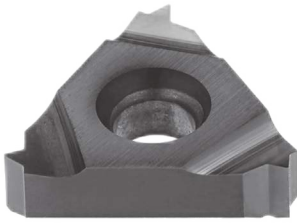
| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------------|-------|---|----|-----|-----|-----------------------------------|
| | | TPI | IC | L | X | Y | (68) PH6920 |
| 1881723 | 06 IR 27 NPT | 27 | 4.00 | 06 | 0.6 | 0.6 | ○ |
| 1881766 | 08 IR 27 NPT | 27 | 5.00 | 08 | 0.6 | 0.6 | ○ |
| 1881761 | 08 IR 18 NPT | 18 | 5.00 | 08 | 0.6 | 0.6 | ○ |
| 1881946 | 11 IR 27 NPT | 27 | 6.35 | 11 | 0.7 | 0.8 | ○ |
| 1881020 | 11 IR 18 NPT | 18 | 6.35 | 11 | 0.8 | 1.0 | ⊗ |
| 1880003 | 11 IR 14 NPT | 14 | 6.35 | 11 | 0.8 | 1.0 | ⊗ |
| 1881019 | 16 IR 27 NPT | 27 | 9.525 | 16 | 0.7 | 0.8 | ○ |
| 1881018 | 16 IR 18 NPT | 18 | 9.525 | 16 | 0.8 | 1.0 | ⊗ |
| 1880033 | 16 IR 14 NPT | 14 | 9.525 | 16 | 0.9 | 1.2 | ⊗ |
| 1880029 | 16 IR 11.5 NPT | 11.5 | 9.525 | 16 | 1.1 | 1.5 | ○ |
| 1880043 | 16 IR 8 NPT | 8 | 9.525 | 16 | 1.3 | 1.8 | ○ |
| 1881709 | 06 IL 27 NPT | 27 | 4.00 | 06 | 0.6 | 0.6 | ○ |
| 1881745 | 08 IL 27 NPT | 27 | 5.00 | 08 | 0.6 | 0.6 | ○ |
| 1881740 | 08 IL 18 NPT | 18 | 5.00 | 08 | 0.6 | 0.6 | ○ |
| 1881926 | 11 IL 27 NPT | 27 | 6.35 | 11 | 0.7 | 0.8 | ○ |
| 1881923 | 11 IL 18 NPT | 18 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1881919 | 11 IL 14 NPT | 14 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1882087 | 16 IL 27 NPT | 27 | 9.525 | 16 | 0.7 | 0.8 | ○ |
| 1882082 | 16 IL 18 NPT | 18 | 9.525 | 16 | 0.8 | 1.0 | ○ |
| 1882077 | 16 IL 14 NPT | 14 | 9.525 | 16 | 0.9 | 1.2 | ○ |
| 1882069 | 16 IL 11.5 NPT | 11.5 | 9.525 | 16 | 1.1 | 1.5 | ○ |
| 1882103 | 16 IL 8 NPT | 8 | 9.525 | 16 | 1.3 | 1.8 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

NPTF | ANSI B 1.20.3-1976



External

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch TPI | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ (68) PH6920 |
|------------------------------|---------------------------------------|--------------|---|----|-----|-----|--|
| | | | IC | L | X | Y | |
| 1881889 | 11 ER 27 NPTF | 27 | 6.35 | 11 | 0.7 | 0.7 | ○ |
| 1881876 | 11 ER 18 NPTF | 18 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1881868 | 11 ER 14 NPTF | 14 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1881030 | 16 ER 27 NPTF | 27 | 9.525 | 16 | 0.7 | 0.7 | ⊗ |
| 1881029 | 16 ER 18 NPTF | 18 | 9.525 | 16 | 0.8 | 1.0 | ⊗ |
| 1881028 | 16 ER 14 NPTF | 14 | 9.525 | 16 | 0.9 | 1.2 | ○ |
| 1881027 | 16 ER 11.5 NPTF | 11.5 | 9.525 | 16 | 1.1 | 1.5 | ○ |
| 1882057 | 16 ER 8 NPTF | 8 | 9.525 | 16 | 1.3 | 1.8 | ○ |
| 1881831 | 11 EL 27 NPTF | 27 | 6.35 | 11 | 0.7 | 0.7 | ○ |
| 1881818 | 11 EL 18 NPTF | 18 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1881810 | 11 EL 14 NPTF | 14 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1882006 | 16 EL 27 NPTF | 27 | 9.525 | 16 | 0.7 | 0.8 | ○ |
| 1882000 | 16 EL 18 NPTF | 18 | 9.525 | 16 | 0.8 | 1.0 | ○ |
| 1881995 | 16 EL 14 NPTF | 14 | 9.525 | 16 | 0.9 | 1.2 | ○ |
| 1881988 | 16 EL 11.5 NPTF | 11.5 | 9.525 | 16 | 1.1 | 1.5 | ○ |
| 1882026 | 16 EL 8 NPTF | 8 | 9.525 | 16 | 1.3 | 1.8 | ○ |


⊗ Stock item | Produto de stock | Itens de stock


○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

Internal

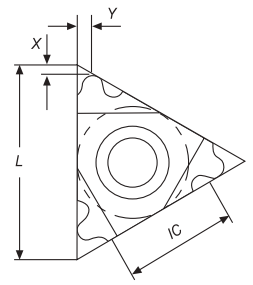
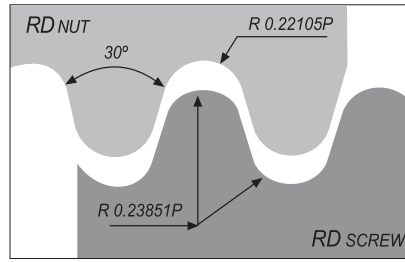
| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------------|-------|---|----|-----|-----|-----------------------------------|
| | | TPI | IC | L | X | Y | (68) PH6920 |
| 1883772 | 06 IR 27 NPTF | 27 | 4.00 | 06 | 0.7 | 0.6 | ○ |
| 1883773 | 08 IR 18 NPTF | 18 | 5.00 | 08 | 0.6 | 0.6 | ○ |
| 1883774 | 08 IR 14 NPTF | 14 | 5.00 | 08 | 0.6 | 0.6 | ○ |
| 1881947 | 11 IR 27 NPTF | 27 | 6.35 | 11 | 0.7 | 0.7 | ○ |
| 1881026 | 11 IR 18 NPTF | 18 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1881025 | 11 IR 14 NPTF | 14 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1881024 | 16 IR 27 NPTF | 27 | 9.525 | 16 | 0.7 | 0.7 | ○ |
| 1881023 | 16 IR 18 NPTF | 18 | 9.525 | 16 | 0.8 | 1.0 | ○ |
| 1881022 | 16 IR 14 NPTF | 14 | 9.525 | 16 | 0.9 | 1.2 | ○ |
| 1881021 | 16 IR 11.5 NPTF | 11.5 | 9.525 | 16 | 1.1 | 1.5 | ○ |
| 1882127 | 16 IR 8 NPTF | 8 | 9.525 | 16 | 1.3 | 1.8 | ○ |
| 1883775 | 06 IL 27 NPTF | 27 | 4.00 | 06 | 0.7 | 0.6 | ○ |
| 1883776 | 08 IL 18 NPTF | 18 | 5.00 | 08 | 0.6 | 0.6 | ○ |
| 1883777 | 08 IL 14 NPTF | 14 | 5.00 | 08 | 0.6 | 0.6 | ○ |
| 1881927 | 11 IL 27 NPTF | 27 | 6.35 | 11 | 0.7 | 0.7 | ○ |
| 1881924 | 11 IL 18 NPTF | 18 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1881920 | 11 IL 14 NPTF | 14 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1882088 | 16 IL 27 NPTF | 27 | 9.525 | 16 | 0.7 | 0.7 | ○ |
| 1882083 | 16 IL 18 NPTF | 18 | 9.525 | 16 | 0.8 | 1.0 | ○ |
| 1882078 | 16 IL 14 NPTF | 14 | 9.525 | 16 | 0.9 | 1.2 | ○ |
| 1882070 | 16 IL 11.5 NPTF | 11.5 | 9.525 | 16 | 1.1 | 1.5 | ○ |
| 1882104 | 16 IL 8 NPTF | 8 | 9.525 | 16 | 1.3 | 1.8 | ○ |

 Stock item | Produto de stock | Itens de stock

 Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

ROUND (DIN 405) | DIN 405:1997



External

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch TPI | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ (68) PH6920 |
|------------------------------|---------------------------------------|--------------|---|----|-----|-----|--|
| | | | IC | L | X | Y | |
| 1881031 | 16 ER 10 RD | 10 | 9.525 | 16 | 1.1 | 1.2 | ○ |
| 1881032 | 16 ER 8 RD | 8 | 9.525 | 16 | 1.4 | 1.4 | ○ |
| 1881033 | 16 ER 6 RD | 6 | 9.525 | 16 | 1.4 | 1.5 | ○ |
| 1881034 | 22 ER 6 RD | 6 | 12.70 | 22 | 1.5 | 1.7 | ○ |
| 1881035 | 22 ER 4 RD | 4 | 12.70 | 22 | 2.2 | 2.3 | ○ |
| 1882332 | 27 ER 4 RD | 4 | 15.875 | 27 | 2.2 | 2.3 | ○ |
| 1882333 | 16 EL 10 RD | 10 | 9.525 | 16 | 1.1 | 1.2 | ○ |
| 1882334 | 16 EL 8 RD | 8 | 9.525 | 16 | 1.4 | 1.4 | ○ |
| 1882335 | 16 EL 6 RD | 6 | 9.525 | 16 | 1.4 | 1.5 | ○ |
| 1882336 | 22 EL 6 RD | 6 | 12.70 | 22 | 1.5 | 1.7 | ○ |
| 1882337 | 22 EL 4 RD | 4 | 12.70 | 22 | 2.2 | 2.3 | ○ |
| 1882338 | 27 EL 4 RD | 4 | 15.875 | 27 | 2.2 | 2.3 | ○ |

☒ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

Internal

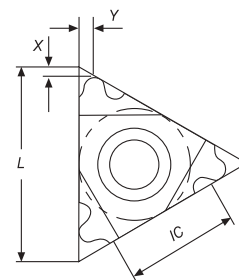
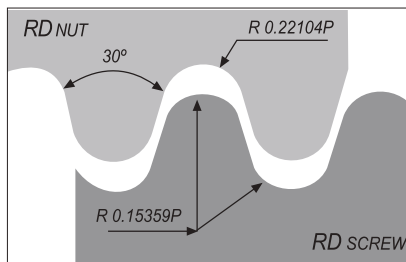
| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch TPI | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ (68) PH6920 |
|------------------------------|---------------------------------------|--------------|---|----|-----|-----|--|
| | | | IC | L | X | Y | |
| 1881039 | 16 IR 10 RD | 10 | 9.525 | 16 | 1.1 | 1.2 | ☒ |
| 1881040 | 16 IR 8 RD | 8 | 9.525 | 16 | 1.4 | 1.4 | ☒ |
| 1881041 | 16 IR 6 RD | 6 | 9.525 | 16 | 1.4 | 1.5 | ○ |
| 1881042 | 22 IR 6 RD | 6 | 12.70 | 22 | 1.5 | 1.7 | ○ |
| 1881043 | 22 IR 4 RD | 4 | 12.70 | 22 | 2.2 | 2.3 | ○ |
| 1882339 | 27 IR 4 RD | 4 | 15.875 | 27 | 2.2 | 2.3 | ○ |
| 1882340 | 16 IL 10 RD | 10 | 9.525 | 16 | 1.1 | 1.2 | ○ |
| 1882341 | 16 IL 8 RD | 8 | 9.525 | 16 | 1.4 | 1.4 | ○ |
| 1882342 | 16 IL 6 RD | 6 | 9.525 | 16 | 1.4 | 1.5 | ○ |
| 1882343 | 22 IL 6 RD | 6 | 12.70 | 22 | 1.5 | 1.7 | ○ |
| 1882344 | 22 IL 4 RD | 4 | 12.70 | 22 | 2.2 | 2.3 | ○ |
| 1882345 | 27 IL 4 RD | 4 | 15.875 | 27 | 2.2 | 2.3 | ○ |

☒ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

ROUND (DIN 20400) | DIN 20400:1990



External

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------------|-------|---|----|-----|-----|-----------------------------------|
| | | MM | IC | L | X | Y | (68) PH6920 |
| 1882347 | 22 ER 4.0 RD20400 | 4.0 | 12.70 | 22 | 1.4 | 1.4 | ⊗ |
| 1882348 | 22 ER 5.0 RD20400 | 5.0 | 12.70 | 22 | 1.7 | 1.8 | ○ |
| 1882349 | 22 ER 6.0 RD20400 | 6.0 | 12.70 | 22 | 1.7 | 2.0 | ○ |
| 1882351 | 22 EL 4.0 RD20400 | 4.0 | 12.70 | 22 | 1.4 | 1.4 | ○ |
| 1882352 | 22 EL 5.0 RD20400 | 5.0 | 12.70 | 22 | 1.7 | 1.8 | ○ |
| 1882353 | 22 EL 6.0 RD20400 | 6.0 | 12.70 | 22 | 1.7 | 2.0 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

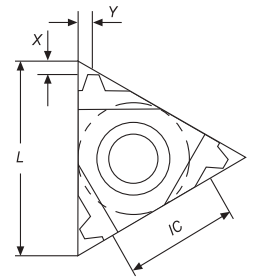
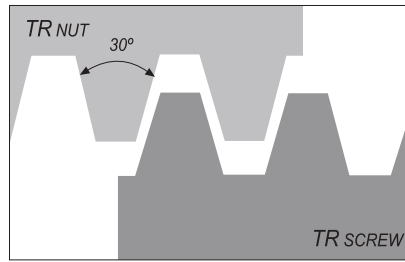
Internal

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------------|-------|---|----|-----|-----|-----------------------------------|
| | | MM | IC | L | X | Y | (68) PH6920 |
| 1882355 | 22 IR 4.0 RD20400 | 4.0 | 12.70 | 22 | 1.4 | 1.4 | ○ |
| 1882356 | 22 IR 5.0 RD20400 | 5.0 | 12.70 | 22 | 1.7 | 1.8 | ○ |
| 1882357 | 22 IR 6.0 RD20400 | 6.0 | 12.70 | 22 | 1.7 | 2.0 | ○ |
| 1882359 | 22 IL 4.0 RD20400 | 4.0 | 12.70 | 22 | 1.4 | 1.4 | ○ |
| 1882360 | 22 IL 5.0 RD20400 | 5.0 | 12.70 | 22 | 1.7 | 1.8 | ○ |
| 1882361 | 22 IL 6.0 RD20400 | 6.0 | 12.70 | 22 | 1.7 | 2.0 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code



External

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch MM | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ (68) PH6920 |
|------------------------------|---------------------------------------|-------------|---|----|-----|-----|--|
| | | | IC | L | X | Y | |
| 1881044 | 16 ER 1.5 TR | 1.5 | 9.525 | 16 | 1.0 | 1.1 | ○ |
| 1881045 | 16 ER 2.0 TR | 2.0 | 9.525 | 16 | 1.0 | 1.3 | ⊗ |
| 1881046 | 16 ER 3.0 TR | 3.0 | 9.525 | 16 | 1.3 | 1.5 | ⊗ |
| 1883778 | 16 ER 4.0 TR | 4.0 | 9.525 | 16 | 1.3 | 1.5 | ○ |
| 1881047 | 22 ER 4.0 TR | 4.0 | 12.70 | 22 | 1.8 | 1.9 | ⊗ |
| 1881049 | 22 ER 5.0 TR | 5.0 | 12.70 | 22 | 2.0 | 2.4 | ⊗ |
| 1883779 | 22 ER 6.0 TR | 6.0 | 12.70 | 22 | 2.0 | 2.4 | ○ |
| 1882165 | 27 ER 6.0 TR | 6.0 | 15.875 | 27 | 2.3 | 2.7 | ○ |
| 1882166 | 27 ER 7.0 TR | 7.0 | 15.875 | 27 | 2.2 | 2.6 | ○ |
| 1881050 | 16 EL 1.5 TR | 1.5 | 9.525 | 16 | 1.0 | 1.1 | ○ |
| 1881051 | 16 EL 2.0 TR | 2.0 | 9.525 | 16 | 1.1 | 1.3 | ○ |
| 1881052 | 16 EL 3.0 TR | 3.0 | 9.525 | 16 | 1.3 | 1.5 | ○ |
| 1883780 | 16 EL 4.0 TR | 4.0 | 9.525 | 16 | 1.3 | 1.5 | ○ |
| 1881053 | 22 EL 4.0 TR | 4.0 | 12.70 | 22 | 1.8 | 1.9 | ○ |
| 1882130 | 22 EL 5.0 TR | 5.0 | 12.70 | 22 | 2.0 | 2.4 | ○ |
| 1883781 | 22 EL 6.0 TR | 6.0 | 12.70 | 22 | 2.0 | 2.4 | ○ |
| 1882152 | 27 EL 6.0 TR | 6.0 | 15.875 | 27 | 2.3 | 2.7 | ○ |
| 1882153 | 27 EL 7.0 TR | 7.0 | 15.875 | 27 | 2.2 | 2.6 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

Internal

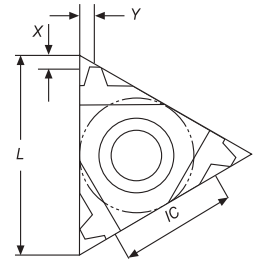
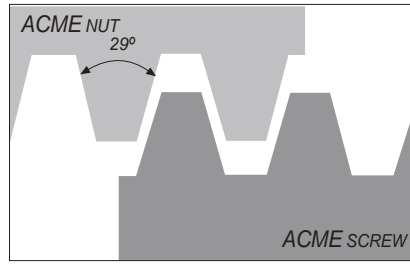
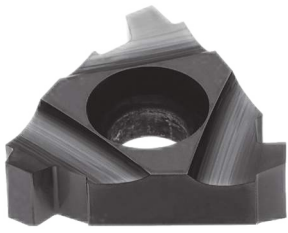
| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------------|-------|---|----|-----|-----|-----------------------------------|
| | | MM | IC | L | X | Y | (68) PH6920 |
| 1883782 | 08 IR 1.5 TR | 1.5 | 5.00 | 08 | 0.6 | 0.6 | ○ |
| 1881055 | 16 IR 1.5 TR | 1.5 | 9.525 | 16 | 1.0 | 1.1 | ○ |
| 1881056 | 16 IR 2.0 TR | 2.0 | 9.525 | 16 | 1.0 | 1.3 | ○ |
| 1881057 | 16 IR 3.0 TR | 3.0 | 9.525 | 16 | 1.3 | 1.5 | ⊗ |
| 1882119 | 16 IR 4.0 TR | 4.0 | 9.525 | 16 | 1.3 | 1.5 | ⊗ |
| 1881058 | 22 IR 4.0 TR | 4.0 | 12.70 | 22 | 1.8 | 1.9 | ○ |
| 1881059 | 22 IR 5.0 TR | 5.0 | 12.70 | 22 | 2.0 | 2.4 | ⊗ |
| 1881060 | 22 IR 6.0 TR | 6.0 | 12.70 | 22 | 2.0 | 2.4 | ⊗ |
| 1882187 | 27 IR 6.0 TR | 6.0 | 15.875 | 27 | 2.3 | 2.7 | ○ |
| 1882188 | 27 IR 7.0 TR | 7.0 | 15.875 | 27 | 2.2 | 2.6 | ○ |
| 1883783 | 08 IL 1.5 TR | 1.5 | 5.00 | 08 | 0.6 | 0.6 | ○ |
| 1881062 | 16 IL 2.0 TR | 2.0 | 9.525 | 16 | 1.0 | 1.3 | ○ |
| 1881063 | 16 IL 3.0 TR | 3.0 | 9.525 | 16 | 1.3 | 1.5 | ○ |
| 1882093 | 16 IL 4.0 TR | 4.0 | 9.525 | 16 | 1.3 | 1.5 | ○ |
| 1881064 | 22 IL 4.0 TR | 4.0 | 12.70 | 22 | 1.8 | 1.9 | ○ |
| 1881065 | 22 IL 5.0 TR | 5.0 | 12.70 | 22 | 2.0 | 2.4 | ○ |
| 1881066 | 22 IL 6.0 TR | 6.0 | 12.70 | 22 | 2.0 | 2.4 | ○ |
| 1882176 | 27 IL 6.0 TR | 6.0 | 15.875 | 27 | 2.3 | 2.7 | ○ |
| 1882177 | 27 IL 7.0 TR | 7.0 | 15.875 | 27 | 2.2 | 2.6 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

AMERICAN ACME | ANSI/ASME: 1.5-1988



External

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch TPI | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ (68) PH6920 |
|------------------------------|---------------------------------------|--------------|---|----|-----|-----|--|
| | | | IC | L | X | Y | |
| 1881871 | 11 ER 16 ACME | 16 | 6.35 | 11 | 0.9 | 1.0 | ○ |
| 1881078 | 16 ER 16 ACME | 16 | 9.525 | 16 | 0.9 | 1.0 | ⊗ |
| 1881077 | 16 ER 14 ACME | 14 | 9.525 | 16 | 1.0 | 1.2 | ○ |
| 1881076 | 16 ER 12 ACME | 12 | 9.525 | 16 | 1.1 | 1.2 | ○ |
| 1881075 | 16 ER 10 ACME | 10 | 9.525 | 16 | 1.3 | 1.3 | ⊗ |
| 1881079 | 16 ER 8 ACME | 8 | 9.525 | 16 | 1.5 | 1.5 | ⊗ |
| 1883784 | 16 ER 6 ACME | 6 | 9.525 | 16 | 1.7 | 1.8 | ○ |
| 1881080 | 22 ER 6 ACME | 6 | 12.70 | 22 | 1.8 | 2.1 | ⊗ |
| 1881081 | 22 ER 5 ACME | 5 | 12.70 | 22 | 2.0 | 2.3 | ○ |
| 1883826 | 22 ER 4 ACME | 4 | 12.70 | 22 | 2.1 | 2.2 | ○ |
| 1882159 | 27 ER 4 ACME | 4 | 15.875 | 27 | 2.3 | 2.7 | ○ |
| 1881813 | 11 EL 16 ACME | 16 | 6.35 | 11 | 0.9 | 1.0 | ○ |
| 1881997 | 16 EL 16 ACME | 16 | 9.525 | 16 | 0.9 | 1.0 | ○ |
| 1881992 | 16 EL 14 ACME | 14 | 9.525 | 16 | 1.0 | 1.2 | ○ |
| 1881990 | 16 EL 12 ACME | 12 | 9.525 | 16 | 1.1 | 1.2 | ○ |
| 1881985 | 16 EL 10 ACME | 10 | 9.525 | 16 | 1.3 | 1.3 | ○ |
| 1882024 | 16 EL 8 ACME | 8 | 9.525 | 16 | 1.5 | 1.5 | ○ |
| 1883827 | 16 EL 6 ACME | 6 | 9.525 | 16 | 1.7 | 1.8 | ○ |
| 1882133 | 22 EL 6 ACME | 6 | 12.70 | 22 | 1.8 | 2.1 | ○ |
| 1882131 | 22 EL 5 ACME | 5 | 12.70 | 22 | 2.0 | 2.3 | ○ |
| 1883785 | 22 EL 4 ACME | 4 | 12.70 | 22 | 2.1 | 2.2 | ○ |
| 1882146 | 27 EL 4 ACME | 4 | 15.875 | 27 | 2.3 | 2.7 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

mm

THREADING

Thread milling - Inserts

Thread milling - Toolholders

Thread turning - Overview

Thread turning - Inserts

Thread turning - Toolholders

Thread turning - Spare Parts

Technical Data

Internal

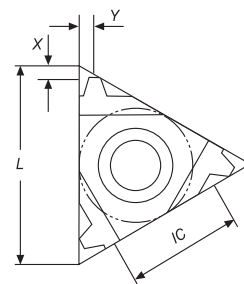
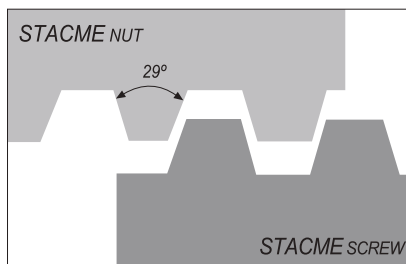
| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------------|-------|---|-----|-----|-----|-----------------------------------|
| | | TPI | IC | L | X | Y | (68) PH6920 |
| 1883786 | 08 IR 16 ACME | 16 | 5.00 | 08 | 0.6 | 0.6 | ○ |
| 1881944 | 11 IR 16 ACME | 16 | 6.35 | 11 | 0.9 | 1.0 | ○ |
| 1881107 | 16 IR 16 ACME | 16 | 9.525 | 0.9 | 1.0 | 1.1 | ⊗ |
| 1881106 | 16 IR 14 ACME | 14 | 9.525 | 1.0 | 1.2 | 1.2 | ○ |
| 1881105 | 16 IR 12 ACME | 12 | 9.525 | 1.1 | 1.2 | 1.2 | ○ |
| 1881104 | 16 IR 10 ACME | 10 | 9.525 | 1.3 | 1.3 | 1.4 | ○ |
| 1881103 | 16 IR 8 ACME | 8 | 9.525 | 1.5 | 1.5 | 1.5 | ○ |
| 1881885 | 16 IR 6 ACME | 6 | 9.525 | 1.7 | 1.8 | 1.5 | ○ |
| 1881083 | 22 IR 6 ACME | 6 | 12.70 | 22 | 1.8 | 2.1 | ⊗ |
| 1881082 | 22 IR 5 ACME | 5 | 12.70 | 22 | 2.0 | 2.3 | ○ |
| 1881102 | 22 IR 4 ACME | 4 | 12.70 | 22 | 2.1 | 2.2 | ⊗ |
| 1882182 | 27 IR 4 ACME | 4 | 15.875 | 27 | 2.3 | 2.7 | ○ |
| 1883787 | 08 IL 16 ACME | 16 | 5.00 | 08 | 0.6 | 0.6 | ○ |
| 1881921 | 11 IL 16 ACME | 16 | 6.35 | 11 | 0.9 | 1.0 | ○ |
| 1882080 | 16 IL 16 ACME | 16 | 9.525 | 0.9 | 1.0 | 1.1 | ○ |
| 1882075 | 16 IL 14 ACME | 14 | 9.525 | 1.0 | 1.2 | 1.2 | ○ |
| 1882072 | 16 IL 12 ACME | 12 | 9.525 | 1.1 | 1.2 | 1.2 | ○ |
| 1882067 | 16 IL 10 ACME | 10 | 9.525 | 1.3 | 1.3 | 1.4 | ○ |
| 1882102 | 16 IL 8 ACME | 8 | 9.525 | 1.5 | 1.5 | 1.5 | ○ |
| 1882099 | 16 IL 6 ACME | 6 | 9.525 | 1.7 | 1.8 | 1.5 | ○ |
| 1882140 | 22 IL 6 ACME | 6 | 12.70 | 22 | 1.8 | 2.1 | ○ |
| 1882138 | 22 IL 5 ACME | 5 | 12.70 | 22 | 2.0 | 2.3 | ○ |
| 1882136 | 22 IL 4 ACME | 4 | 12.70 | 22 | 2.1 | 2.2 | ○ |
| 1882171 | 27 IL 4 ACME | 4 | 15.875 | 27 | 2.3 | 2.7 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

STUB ACME | ANSI/ASME: 1.8-1988



External

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch TPI | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ (68) PH6920 |
|------------------------------|---------------------------------------|--------------|---|----|-----|-----|--|
| | | | IC | L | X | Y | |
| 1881872 | 11 ER 16 STACME | 16 | 6.35 | 11 | 1.0 | 1.0 | ○ |
| 1881116 | 16 ER 16 STACME | 16 | 9.525 | 16 | 1.0 | 1.0 | ○ |
| 1881117 | 16 ER 14 STACME | 14 | 9.525 | 16 | 1.1 | 1.1 | ○ |
| 1881118 | 16 ER 12 STACME | 12 | 9.525 | 16 | 1.2 | 1.2 | ○ |
| 1881119 | 16 ER 10 STACME | 10 | 9.525 | 16 | 1.3 | 1.3 | ○ |
| 1881120 | 16 ER 8 STACME | 8 | 9.525 | 16 | 1.5 | 1.5 | ○ |
| 1881121 | 16 ER 6 STACME | 6 | 9.525 | 16 | 1.8 | 1.8 | ⊗ |
| 1882135 | 22 ER 6 STACME | 6 | 12.70 | 22 | 1.8 | 2.1 | ○ |
| 1881122 | 22 ER 5 STACME | 5 | 12.70 | 22 | 2.0 | 2.3 | ○ |
| 1881123 | 22 ER 4 STACME | 4 | 12.70 | 22 | 2.3 | 2.4 | ○ |
| 1882160 | 27 ER 4 STACME | 4 | 15.875 | 27 | 2.3 | 2.4 | ⊗ |
| 1882156 | 27 ER 3 STACME | 3 | 15.875 | 27 | 2.8 | 2.9 | ○ |
| 1881814 | 11 EL 16 STACME | 16 | 6.35 | 11 | 1.0 | 1.0 | ○ |
| 1881998 | 16 EL 16 STACME | 16 | 9.525 | 16 | 1.0 | 1.0 | ○ |
| 1881996 | 16 EL 14 STACME | 14 | 9.525 | 16 | 1.1 | 1.1 | ○ |
| 1881991 | 16 EL 12 STACME | 12 | 9.525 | 16 | 1.2 | 1.2 | ○ |
| 1881986 | 16 EL 10 STACME | 10 | 9.525 | 16 | 1.3 | 1.3 | ○ |
| 1882027 | 16 EL 8 STACME | 8 | 9.525 | 16 | 1.5 | 1.5 | ○ |
| 1882021 | 16 EL 6 STACME | 6 | 9.525 | 16 | 1.8 | 1.8 | ○ |
| 1882134 | 22 EL 6 STACME | 6 | 12.70 | 22 | 1.8 | 2.1 | ○ |
| 1882132 | 22 EL 5 STACME | 5 | 12.70 | 22 | 2.0 | 2.3 | ○ |
| 1881889 | 22 EL 4 STACME | 4 | 12.70 | 22 | 2.3 | 2.4 | ○ |
| 1882147 | 27 EL 4 STACME | 4 | 15.875 | 27 | 2.3 | 2.4 | ○ |
| 1882143 | 27 EL 3 STACME | 3 | 15.875 | 27 | 2.8 | 2.9 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

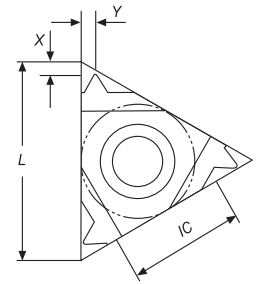
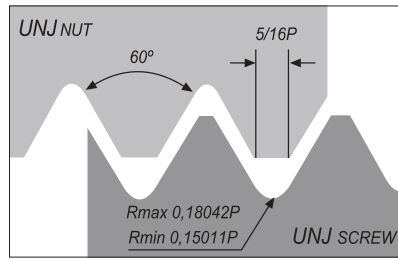
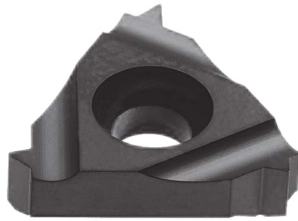
Internal

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------------|-------|---|----|-----|-----|-----------------------------------|
| | | TPI | IC | L | X | Y | (68) PH6920 |
| 1883788 | 08 IR 16 STACME | 16 | 5.00 | 08 | 0.6 | 0.6 | ○ |
| 1881108 | 16 IR 16 STACME | 16 | 9.525 | 16 | 1.0 | 1.0 | ○ |
| 1881109 | 16 IR 14 STACME | 14 | 9.525 | 16 | 1.1 | 1.1 | ○ |
| 1881110 | 16 IR 12 STACME | 12 | 9.525 | 16 | 1.2 | 1.2 | ○ |
| 1881111 | 16 IR 10 STACME | 10 | 9.525 | 16 | 1.3 | 1.3 | ○ |
| 1881112 | 16 IR 8 STACME | 8 | 9.525 | 16 | 1.5 | 1.5 | ○ |
| 1881113 | 16 IR 6 STACME | 6 | 9.525 | 16 | 1.8 | 1.8 | ○ |
| 1882142 | 22 IR 6 STACME | 6 | 12.70 | 22 | 1.8 | 2.1 | ○ |
| 1881114 | 22 IR 5 STACME | 5 | 12.70 | 22 | 2.0 | 2.3 | ○ |
| 1881115 | 22 IR 4 STACME | 4 | 12.70 | 22 | 2.3 | 2.4 | ○ |
| 1882183 | 27 IR 4 STACME | 4 | 15.875 | 27 | 2.3 | 2.4 | ⊗ |
| 1882180 | 27 IR 3 STACME | 3 | 15.875 | 27 | 2.8 | 2.9 | ○ |
| 1883789 | 08 IL 16 STACME | 16 | 5.00 | 08 | 0.6 | 0.6 | ○ |
| 1882081 | 16 IL 16 STACME | 16 | 9.525 | 16 | 1.0 | 1.0 | ○ |
| 1882079 | 16 IL 14 STACME | 14 | 9.525 | 16 | 1.1 | 1.1 | ○ |
| 1882073 | 16 IL 12 STACME | 12 | 9.525 | 16 | 1.2 | 1.2 | ○ |
| 1882068 | 16 IL 10 STACME | 10 | 9.525 | 16 | 1.3 | 1.3 | ○ |
| 1882105 | 16 IL 8 STACME | 8 | 9.525 | 16 | 1.5 | 1.5 | ○ |
| 1882100 | 16 IL 6 STACME | 6 | 9.525 | 16 | 1.8 | 1.8 | ○ |
| 1882141 | 22 IL 6 STACME | 6 | 12.70 | 22 | 1.8 | 2.1 | ○ |
| 1882139 | 22 IL 5 STACME | 5 | 12.70 | 22 | 2.0 | 2.3 | ○ |
| 1882137 | 22 IL 4 STACME | 4 | 12.70 | 22 | 2.3 | 2.4 | ○ |
| 1882172 | 27 IL 4 STACME | 4 | 15.875 | 27 | 2.3 | 2.4 | ○ |
| 1882169 | 27 IL 3 STACME | 3 | 15.875 | 27 | 2.8 | 2.9 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code



External

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch TPI | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ (68) PH6920 |
|------------------------------|---------------------------------------|--------------|---|----|-----|-----|--|
| | | | IC | L | X | Y | |
| 1883790 | 11 ER 48 UNJ | 48 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1883791 | 11 ER 44 UNJ | 44 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1883792 | 11 ER 40 UNJ | 40 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1883793 | 11 ER 36 UNJ | 36 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1882318 | 11 ER 32 UNJ | 32 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1882319 | 11 ER 28 UNJ | 28 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1882320 | 11 ER 24 UNJ | 24 | 6.35 | 11 | 0.7 | 0.8 | ○ |
| 1882321 | 11 ER 20 UNJ | 20 | 6.35 | 11 | 0.8 | 0.9 | ○ |
| 1882322 | 11 ER 18 UNJ | 18 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1882323 | 11 ER 16 UNJ | 16 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1882324 | 11 ER 14 UNJ | 14 | 6.35 | 11 | 0.9 | 1.0 | ○ |
| 1883794 | 16 ER 48 UNJ | 48 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1883795 | 16 ER 44 UNJ | 44 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1883796 | 16 ER 40 UNJ | 40 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1883797 | 16 ER 36 UNJ | 36 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1881165 | 16 ER 32 UNJ | 32 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1881164 | 16 ER 28 UNJ | 28 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1881163 | 16 ER 24 UNJ | 24 | 9.525 | 16 | 0.7 | 0.8 | ○ |
| 1881162 | 16 ER 20 UNJ | 20 | 9.525 | 16 | 0.8 | 0.9 | ○ |
| 1881161 | 16 ER 18 UNJ | 18 | 9.525 | 16 | 0.8 | 1.0 | ○ |
| 1881160 | 16 ER 16 UNJ | 16 | 9.525 | 16 | 0.8 | 1.0 | ○ |
| 1881159 | 16 ER 14 UNJ | 14 | 9.525 | 16 | 1.0 | 1.2 | ○ |
| 1881158 | 16 ER 13 UNJ | 13 | 9.525 | 16 | 1.0 | 1.3 | ○ |
| 1881157 | 16 ER 12 UNJ | 12 | 9.525 | 16 | 1.1 | 1.4 | ○ |
| 1881156 | 16 ER 11 UNJ | 11 | 9.525 | 16 | 1.1 | 1.5 | ○ |
| 1881155 | 16 ER 10 UNJ | 10 | 9.525 | 16 | 1.1 | 1.5 | ○ |
| 1881154 | 16 ER 9 UNJ | 9 | 9.525 | 16 | 1.2 | 1.6 | ○ |
| 1881153 | 16 ER 8 UNJ | 8 | 9.525 | 16 | 1.2 | 1.6 | ○ |
| 1883798 | 11 EL 48 UNJ | 48 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1883799 | 11 EL 44 UNJ | 44 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1883800 | 11 EL 40 UNJ | 40 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1883801 | 11 EL 36 UNJ | 36 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1882325 | 11 EL 32 UNJ | 32 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1882326 | 11 EL 28 UNJ | 28 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1882327 | 11 EL 24 UNJ | 24 | 6.35 | 11 | 0.7 | 0.8 | ○ |
| 1882328 | 11 EL 20 UNJ | 20 | 6.35 | 11 | 0.8 | 0.9 | ○ |

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

External

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------------|-------|---|----|-----|-----|-----------------------------------|
| | | TPI | IC | L | X | Y | (68) PH6920 |
| 1882329 | 11 EL 18 UNJ | 18 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1882330 | 11 EL 16 UNJ | 16 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1882331 | 11 EL 14 UNJ | 14 | 6.35 | 11 | 0.9 | 1.0 | ○ |
| 1883802 | 16 ER 48 UNJ | 48 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1883803 | 16 ER 44 UNJ | 44 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1883804 | 16 ER 40 UNJ | 40 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1883805 | 16 ER 36 UNJ | 36 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1881179 | 16 EL 32 UNJ | 32 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1881178 | 16 EL 28 UNJ | 28 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1881177 | 16 EL 24 UNJ | 24 | 9.525 | 16 | 0.7 | 0.8 | ○ |
| 1881176 | 16 EL 20 UNJ | 20 | 9.525 | 16 | 0.8 | 0.9 | ○ |
| 1881175 | 16 EL 18 UNJ | 18 | 9.525 | 16 | 0.8 | 1.0 | ○ |
| 1881174 | 16 EL 16 UNJ | 16 | 9.525 | 16 | 0.8 | 1.0 | ○ |
| 1881173 | 16 EL 14 UNJ | 14 | 9.525 | 16 | 1.0 | 1.2 | ○ |
| 1881172 | 16 EL 13 UNJ | 13 | 9.525 | 16 | 1.0 | 1.3 | ○ |
| 1881170 | 16 EL 12 UNJ | 12 | 9.525 | 16 | 1.1 | 1.4 | ○ |
| 1881169 | 16 EL 11 UNJ | 11 | 9.525 | 16 | 1.1 | 1.5 | ○ |
| 1881168 | 16 EL 10 UNJ | 10 | 9.525 | 16 | 1.1 | 1.5 | ○ |
| 1881167 | 16 EL 9 UNJ | 9 | 9.525 | 16 | 1.2 | 1.6 | ○ |
| 1881166 | 16 EL 8 UNJ | 8 | 9.525 | 16 | 1.2 | 1.6 | ○ |

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

Internal

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------------|-------|---|----|-----|-----|-----------------------------------|
| | | TPI | IC | L | X | Y | (68) PH6920 |
| 1883806 | 11 IR 48 UNJ | 48 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1883807 | 11 IR 44 UNJ | 44 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1883808 | 11 IR 40 UNJ | 40 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1883809 | 11 IR 36 UNJ | 36 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881198 | 11 IR 32 UNJ | 32 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881197 | 11 IR 28 UNJ | 28 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881196 | 11 IR 24 UNJ | 24 | 6.35 | 11 | 0.7 | 0.8 | ○ |
| 1881195 | 11 IR 20 UNJ | 20 | 6.35 | 11 | 0.8 | 0.9 | ○ |
| 1881194 | 11 IR 18 UNJ | 18 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1881193 | 11 IR 16 UNJ | 16 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1881192 | 11 IR 14 UNJ | 14 | 6.35 | 11 | 0.9 | 1.0 | ○ |
| 1883810 | 16 IR 48 UNJ | 48 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1883811 | 16 IR 44 UNJ | 44 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1883812 | 16 IR 40 UNJ | 40 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1883813 | 16 IR 36 UNJ | 36 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1881191 | 16 IR 32 UNJ | 32 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1881190 | 16 IR 28 UNJ | 28 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1881189 | 16 IR 24 UNJ | 24 | 9.525 | 16 | 0.7 | 0.8 | ○ |
| 1881188 | 16 IR 20 UNJ | 20 | 9.525 | 16 | 0.8 | 0.9 | ○ |
| 1881187 | 16 IR 18 UNJ | 18 | 9.525 | 16 | 0.8 | 1.0 | ○ |
| 1881186 | 16 IR 16 UNJ | 16 | 9.525 | 16 | 0.8 | 1.0 | ○ |
| 1881185 | 16 IR 14 UNJ | 14 | 9.525 | 16 | 1.0 | 1.2 | ○ |
| 1883814 | 16 IR 13 UNJ | 13 | 9.525 | 16 | 1.0 | 1.3 | ○ |
| 1881184 | 16 IR 12 UNJ | 12 | 9.525 | 16 | 1.1 | 1.4 | ⊗ |
| 1881183 | 16 IR 11 UNJ | 11 | 9.525 | 16 | 1.1 | 1.5 | ○ |
| 1881182 | 16 IR 10 UNJ | 10 | 9.525 | 16 | 1.1 | 1.5 | ⊗ |
| 1881181 | 16 IR 9 UNJ | 9 | 9.525 | 16 | 1.2 | 1.6 | ○ |
| 1881180 | 16 IR 8 UNJ | 8 | 9.525 | 16 | 1.2 | 1.6 | ○ |
| 1883815 | 11 IL 48 UNJ | 48 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1883816 | 11 IL 44 UNJ | 44 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1883817 | 11 IL 40 UNJ | 40 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1883818 | 11 IL 36 UNJ | 36 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881217 | 11 IL 32 UNJ | 32 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881216 | 11 IL 28 UNJ | 28 | 6.35 | 11 | 0.6 | 0.6 | ○ |
| 1881215 | 11 IL 24 UNJ | 24 | 6.35 | 11 | 0.7 | 0.8 | ○ |
| 1881214 | 11 IL 20 UNJ | 20 | 6.35 | 11 | 0.8 | 0.9 | ○ |
| 1881213 | 11 IL 18 UNJ | 18 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1881188 | 11 IL 16 UNJ | 16 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1881211 | 11 IL 14 UNJ | 14 | 6.35 | 11 | 0.9 | 1.0 | ○ |
| 1883819 | 16 IL 48 UNJ | 48 | 9.525 | 16 | 0.6 | 0.6 | ⊗ |
| 1883820 | 16 IL 44 UNJ | 44 | 9.525 | 16 | 0.6 | 0.6 | ⊗ |
| 1883821 | 16 IL 40 UNJ | 40 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1883822 | 16 IL 36 UNJ | 36 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1881210 | 16 IL 32 UNJ | 32 | 9.525 | 16 | 0.6 | 0.6 | ⊗ |
| 1881209 | 16 IL 28 UNJ | 28 | 9.525 | 16 | 0.6 | 0.6 | ○ |
| 1881208 | 16 IL 24 UNJ | 24 | 9.525 | 16 | 0.7 | 0.8 | ⊗ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

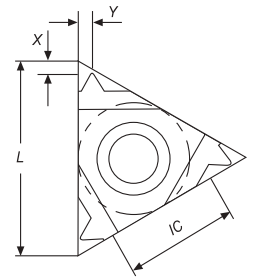
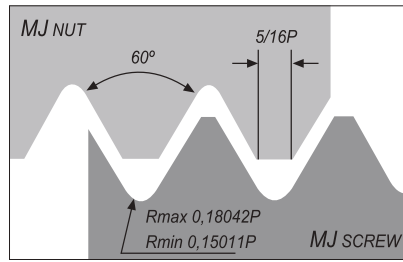
Internal

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------------|-------|---|----|-----|-----|-----------------------------------|
| | | TPI | IC | L | X | Y | (68) PH6920 |
| 1881207 | 16 IL 20 UNJ | 20 | 9.525 | 16 | 0.8 | 0.9 | ○ |
| 1881206 | 16 IL 18 UNJ | 18 | 9.525 | 16 | 0.8 | 1.0 | ○ |
| 1881205 | 16 IL 16 UNJ | 16 | 9.525 | 16 | 0.8 | 1.0 | ○ |
| 1881204 | 16 IL 14 UNJ | 14 | 9.525 | 16 | 1.0 | 1.2 | ○ |
| 1883823 | 16 IR 13 UNJ | 13 | 9.525 | 16 | 1.0 | 1.3 | ○ |
| 1881203 | 16 IL 12 UNJ | 12 | 9.525 | 16 | 1.1 | 1.4 | ○ |
| 1881202 | 16 IL 11 UNJ | 11 | 9.525 | 16 | 1.1 | 1.5 | ○ |
| 1881201 | 16 IL 10 UNJ | 10 | 9.525 | 16 | 1.1 | 1.5 | ○ |
| 1881200 | 16 IL 9 UNJ | 9 | 9.525 | 16 | 1.2 | 1.6 | ○ |
| 1881199 | 16 IL 8 UNJ | 8 | 9.525 | 16 | 1.2 | 1.6 | ○ |

 Stock item | Produto de stock | Itens de stock

 Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code



External

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------------|-------|---|----|-----|-----|-----------------------------------|
| | | MM | IC | L | X | Y | (68) PH6920 |
| 1881067 | 16 ER 1.0 MJ | 1.0 | 9.525 | 16 | 0.7 | 0.8 | ○ |
| 1881068 | 16 ER 1.25 MJ | 1.25 | 9.525 | 16 | 0.8 | 0.9 | ○ |
| 1881069 | 16 ER 1.5 MJ | 1.5 | 9.525 | 16 | 0.8 | 1.0 | ○ |
| 1881070 | 16 ER 2.0 MJ | 2.0 | 9.525 | 16 | 1.0 | 1.3 | ⊗ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

Internal

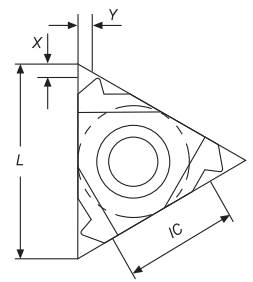
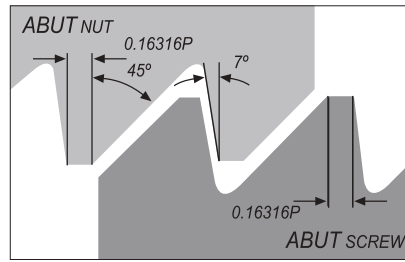
| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------------|-------|---|----|-----|-----|-----------------------------------|
| | | MM | IC | L | X | Y | (68) PH6920 |
| 1882370 | 11 IR 1.0 MJ | 1.0 | 6.35 | 11 | 0.7 | 0.8 | ○ |
| 1882371 | 11 IR 1.25 MJ | 1.25 | 6.35 | 11 | 0.8 | 0.9 | ○ |
| 1882372 | 11 IR 1.5 MJ | 1.5 | 6.35 | 11 | 0.8 | 1.0 | ○ |
| 1883824 | 11 IR 2.0 MJ | 2.0 | 6.35 | 11 | 0.9 | 1.0 | ○ |
| 1881071 | 16 IR 1.0 MJ | 1.0 | 9.525 | 16 | 0.7 | 0.8 | ○ |
| 1881072 | 16 IR 1.25 MJ | 1.25 | 9.525 | 16 | 0.8 | 0.9 | ○ |
| 1881073 | 16 IR 1.5 MJ | 1.5 | 9.525 | 16 | 0.8 | 1.0 | ○ |
| 1881074 | 16 IR 2.0 MJ | 2.0 | 9.525 | 16 | 1.0 | 1.3 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

AMERICAN BUTTRESS | ANSI B1.9-1973



External

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------------|-------|---|----|-----|-----|-----------------------------------|
| | | TPI | IC | L | X | Y | (68) PH6920 |
| 1882298 | 11 ER 20 ABUT | 20 | 6.35 | 11 | 1.0 | 1.3 | ○ |
| 1882299 | 11 ER 16 ABUT | 16 | 6.35 | 11 | 1.0 | 1.5 | ○ |
| 1881007 | 16 ER 20 ABUT | 20 | 9.525 | 16 | 1.0 | 1.3 | ○ |
| 1880754 | 16 ER 16 ABUT | 16 | 9.525 | 16 | 1.0 | 1.5 | ○ |
| 1881006 | 16 ER 12 ABUT | 12 | 9.525 | 16 | 1.4 | 2.0 | ○ |
| 1881005 | 16 ER 10 ABUT | 10 | 9.525 | 16 | 1.5 | 2.3 | ○ |
| 1881008 | 22 ER 8 ABUT | 8 | 12.70 | 22 | 2.1 | 3.3 | ○ |
| 1881009 | 22 ER 6 ABUT | 6 | 12.70 | 22 | 2.1 | 3.4 | ○ |
| 1882300 | 11 EL 20 ABUT | 20 | 6.35 | 11 | 1.0 | 1.4 | ○ |
| 1882301 | 11 EL 16 ABUT | 16 | 6.35 | 11 | 1.1 | 1.6 | ○ |
| 1882302 | 16 EL 20 ABUT | 20 | 9.525 | 16 | 1.0 | 1.3 | ○ |
| 1882303 | 16 EL 16 ABUT | 16 | 9.525 | 16 | 1.0 | 1.5 | ○ |
| 1882304 | 16 EL 12 ABUT | 12 | 9.525 | 16 | 1.4 | 2.0 | ○ |
| 1882305 | 16 EL 10 ABUT | 10 | 9.525 | 16 | 1.5 | 2.3 | ○ |
| 1882306 | 22 EL 8 ABUT | 8 | 12.70 | 22 | 2.1 | 3.3 | ○ |
| 1882307 | 22 EL 6 ABUT | 6 | 12.70 | 22 | 2.1 | 3.4 | ○ |

☒ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

Internal

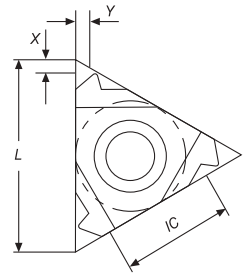
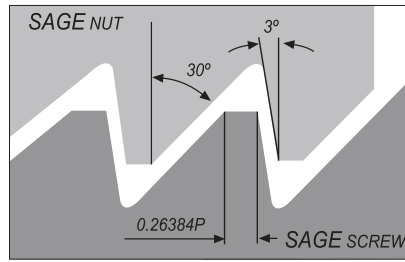
| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------------|-------|---|----|-----|-----|-----------------------------------|
| | | TPI | IC | L | X | Y | (68) PH6920 |
| 1882308 | 11 IR 20 ABUT | 20 | 6.35 | 11 | 1.0 | 1.4 | ○ |
| 1882309 | 11 IR 16 ABUT | 16 | 6.35 | 11 | 1.1 | 1.6 | ○ |
| 1881015 | 16 IR 20 ABUT | 20 | 9.525 | 16 | 1.0 | 1.3 | ○ |
| 1881014 | 16 IR 16 ABUT | 16 | 9.525 | 16 | 1.0 | 1.5 | ☒ |
| 1881013 | 16 IR 12 ABUT | 12 | 9.525 | 16 | 1.4 | 2.0 | ○ |
| 1881012 | 16 IR 10 ABUT | 10 | 9.525 | 16 | 1.5 | 2.3 | ○ |
| 1881011 | 22 IR 8 ABUT | 8 | 12.70 | 22 | 2.1 | 3.3 | ○ |
| 1881010 | 22 IR 6 ABUT | 6 | 12.70 | 22 | 2.1 | 3.4 | ○ |
| 1882310 | 11 IL 20 ABUT | 20 | 6.35 | 11 | 1.0 | 1.4 | ○ |
| 1882311 | 11 IL 16 ABUT | 16 | 6.35 | 11 | 1.1 | 1.6 | ○ |
| 1882312 | 16 IL 20 ABUT | 20 | 9.525 | 16 | 1.0 | 1.3 | ○ |
| 1882313 | 16 IL 16 ABUT | 16 | 9.525 | 16 | 1.0 | 1.5 | ○ |
| 1882314 | 16 IL 12 ABUT | 12 | 9.525 | 16 | 1.4 | 2.0 | ○ |
| 1882315 | 16 IL 10 ABUT | 10 | 9.525 | 16 | 1.5 | 2.3 | ○ |
| 1882316 | 22 IL 8 ABUT | 8 | 12.70 | 22 | 2.1 | 3.3 | ○ |
| 1882317 | 22 IL 6 ABUT | 6 | 12.70 | 22 | 2.1 | 3.4 | ○ |

☒ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

METRIC BUTTRESS SAGENGWINDE (DIN 513:1985) SAW THREAD



External

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch MM | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ (68) PH6920 |
|------------------------------|---------------------------------------|-------------|---|----|-----|-----|--|
| | | | IC | L | X | Y | |
| 1882384 | 16 ER 2.0 SAGE | 2.0 | 9.525 | 16 | 1.1 | 1.6 | ○ |
| 1882385 | 22 ER 3.0 SAGE | 3.0 | 12.70 | 22 | 1.5 | 2.4 | ○ |
| 1882386 | 22 ER 4.0 SAGE | 4.0 | 12.70 | 22 | 1.9 | 3.1 | ⊗ |
| 1882387 | 16 EL 2.0 SAGE | 2.0 | 9.525 | 16 | 1.1 | 1.6 | ○ |
| 1882388 | 22 EL 3.0 SAGE | 3.0 | 12.70 | 22 | 1.5 | 2.4 | ○ |
| 1882389 | 22 EL 4.0 SAGE | 4.0 | 12.70 | 22 | 1.9 | 3.1 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

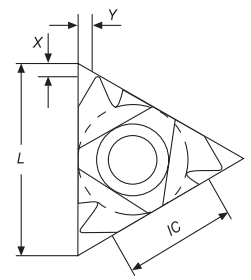
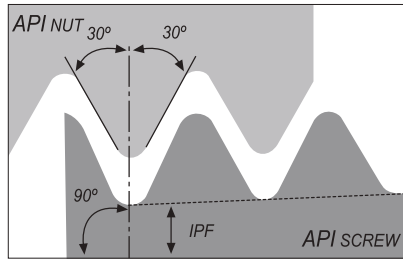
Internal

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch MM | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ (68) PH6920 |
|------------------------------|---------------------------------------|-------------|---|----|-----|-----|--|
| | | | IC | L | X | Y | |
| 1882390 | 16 IR 2.0 SAGE | 2.0 | 9.525 | 16 | 1.2 | 1.7 | ○ |
| 1882391 | 22 IR 3.0 SAGE | 3.0 | 12.70 | 22 | 1.9 | 2.9 | ○ |
| 1882392 | 22 IR 4.0 SAGE | 4.0 | 12.70 | 22 | 2.3 | 3.5 | ○ |
| 1882393 | 16 IL 2.0 SAGE | 2.0 | 9.525 | 16 | 1.2 | 1.7 | ○ |
| 1882394 | 22 IL 3.0 SAGE | 3.0 | 12.70 | 22 | 1.9 | 2.9 | ○ |
| 1882395 | 22 IL 4.0 SAGE | 4.0 | 12.70 | 22 | 2.3 | 3.5 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code



External

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | Thread | Taper | Size | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------|-------|----------|-------|----------------------------|---|----|-----|-----|-----------------------------------|
| | | TPI | | IPF | | IC | L | X | Y | |
| 1881326 | 22 ER 5.00 API 403 | 5 | V-0.040 | 3 | 2 3/8" - 4 1/2" REG | 12.70 | 22 | 1.8 | 2.5 | ⊗ (68) PH6920 |
| 1881322 | 22 ER 4.00 API 382 | 4 | V-0.038R | 2 | NC23-NC50 | 12.70 | 22 | 2.0 | 2.6 | ○ |
| 1881323 | 22 ER 4.00 API 383 | 4 | V-0.038R | 3 | NC56-NC77 | 12.70 | 22 | 2.0 | 2.6 | ⊗ |
| 1881324 | 22 ER 4.00 API 502 | 4 | V-0.050 | 2 | 6 5/8" REG | 12.70 | 22 | 1.9 | 2.8 | ○ |
| 1882396 | 27 ER 5.00 API 403 | 5 | V-0.040 | 3 | 2 3/8" - 4 1/2" REG | 15.875 | 27 | 1.9 | 2.7 | ○ |
| 1882397 | 27 ER 4.00 API 382 | 4 | V-0.038R | 2 | NC23-NC50 | 15.875 | 27 | 2.1 | 2.8 | ○ |
| 1882398 | 27 ER 4.00 API 383 | 4 | V-0.038R | 3 | NC56-NC77 | 15.875 | 27 | 2.1 | 2.8 | ○ |
| 1882399 | 27 ER 4.00 API 502 | 4 | V-0.050 | 2 | 6 5/8" REG | 15.875 | 27 | 2.0 | 3.0 | ⊗ |
| 1882400 | 27 ER 4.00 API 503 | 4 | V-0.050 | 3 | 5 1/2", 7 5/8", 8 5/8" REG | 15.875 | 27 | 2.0 | 3.0 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

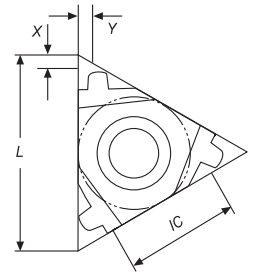
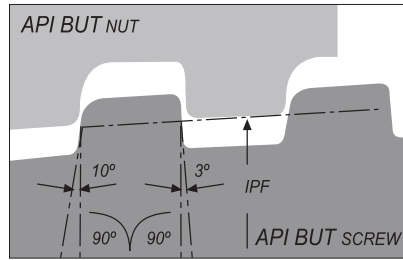
Internal

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | Thread | Taper | Size | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------|-------|----------|-------|----------------------------|---|----|-----|-----|-----------------------------------|
| | | TPI | | IPF | | IC | L | X | Y | |
| 1881335 | 22 IR 5.00 API 403 | 5 | V-0.040 | 3 | 2 3/8" - 4 1/2" REG | 12.70 | 22 | 1.8 | 2.5 | ⊗ (68) PH6920 |
| 1881331 | 22 IR 4.00 API 382 | 4 | V-0.038R | 2 | NC23-NC50 | 12.70 | 22 | 2.0 | 2.6 | ○ |
| 1881333 | 22 IR 4.00 API 502 | 4 | V-0.050 | 2 | 6 5/8" REG | 12.70 | 22 | 1.9 | 2.8 | ○ |
| 1882401 | 27 IR 5.00 API 403 | 5 | V-0.040 | 3 | 2 3/8" - 4 1/2" REG | 15.875 | 27 | 1.9 | 2.7 | ○ |
| 1882402 | 27 IR 4.00 API 382 | 4 | V-0.038R | 2 | NC23-NC50 | 15.875 | 27 | 2.1 | 2.8 | ○ |
| 1882403 | 27 IR 4.00 API 383 | 4 | V-0.038R | 3 | NC56-NC77 | 15.875 | 27 | 2.1 | 2.8 | ○ |
| 1882404 | 27 IR 4.00 API 502 | 4 | V-0.050 | 2 | 6 5/8" REG | 15.875 | 27 | 2.0 | 3.0 | ○ |
| 1882405 | 27 IR 4.00 API 503 | 4 | V-0.050 | 3 | 5 1/2", 7 5/8", 8 5/8" REG | 15.875 | 27 | 2.0 | 3.0 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code



External

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | Taper | Size | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------|-------|-------|------------------|---|----|-----|-----|-----------------------------------|
| | | TPI | IPF | | IC | L | X | Y | (68) PH6920 |
| 1881327 | 22 ER 5 BUT 0.75 | 5 | 0.75 | 4 1/2" - 13 3/8" | 12.70 | 22 | 2.2 | 2.4 | ⊗ |
| 1881328 | 22 ER 5 BUT 1.00 | 5 | 1.00 | 16" - 20" | 12.70 | 22 | 2.3 | 2.4 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

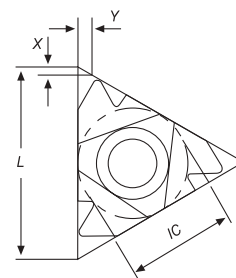
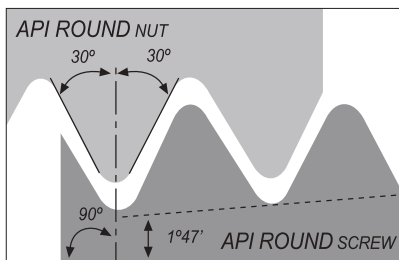
Internal

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | Taper | Size | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------|-------|-------|------------------|---|----|-----|-----|-----------------------------------|
| | | TPI | IPF | | IC | L | X | Y | (68) PH6920 |
| 1881336 | 22 IR 5 BUT 0.75 | 5 | 0.75 | 4 1/2" - 13 3/8" | 12.70 | 22 | 2.2 | 2.4 | ⊗ |
| 1881337 | 22 IR 5 BUT 1.00 | 5 | 1.00 | 16" - 20" | 12.70 | 22 | 2.3 | 2.4 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code



External

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | Taper | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------|-------|-------|---|----|-----|-----|-----------------------------------|
| | | TPI | IPF | IC | L | X | Y | (68) PH6920 |
| 1881318 | 16 ER 10 API RD | 10 | 0.75 | 9.525 | 16 | 1.5 | 1.4 | ○ |
| 1881320 | 16 ER 8 API RD | 8 | 0.75 | 9.525 | 16 | 1.3 | 1.6 | ⊗ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

Internal

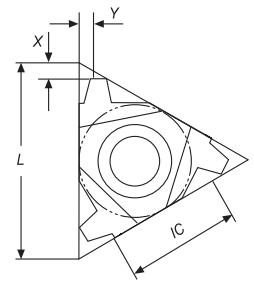
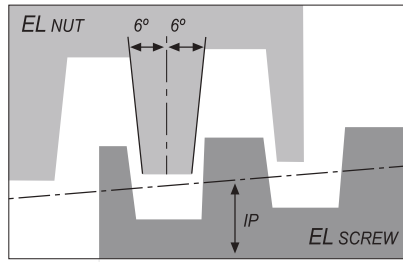
| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | Taper | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------|-------|-------|---|----|-----|-----|-----------------------------------|
| | | TPI | IPF | IC | L | X | Y | (68) PH6920 |
| 1881319 | 16 IR 10 API RD | 10 | 0.75 | 9.525 | 16 | 1.5 | 1.4 | ○ |
| 1881321 | 16 IR 8 API RD | 8 | 0.75 | 9.525 | 16 | 1.3 | 1.6 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

EXTREME LINE CASING | API SPEC 5B:2008 - OIL THREADS



External

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | Taper | Size | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------|-------|-------|------------------|---|----|-----|-----|-----------------------------------|
| | | TPI | IPF | | IC | L | X | Y | (68) PH6920 |
| 1881329 | 22 ER 6 EL 1.5 | 6 | 1.5 | 5" - 7 5/8" | 12.70 | 22 | 1.9 | 1.9 | ○ |
| 1881330 | 22 ER 5 EL 1.25 | 5 | 1.25 | 8 5/8" - 10 3/4" | 12.70 | 22 | 2.4 | 2.3 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

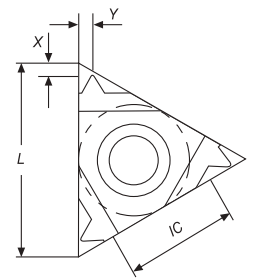
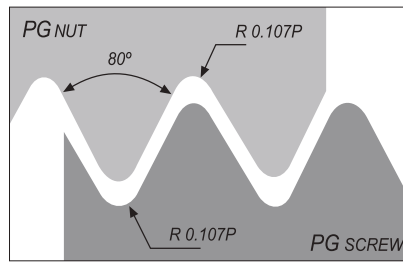
Internal

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch | Taper | Size | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------|-------|-------|------------------|---|----|-----|-----|-----------------------------------|
| | | TPI | IPF | | IC | L | X | Y | (68) PH6920 |
| 1881339 | 22 IR 6 EL 1.5 | 6 | 1.5 | 5" - 7 5/8" | 12.70 | 22 | 1.9 | 1.9 | ○ |
| 1881338 | 22 IR 5 EL 1.25 | 5 | 1.25 | 8 5/8" - 10 3/4" | 12.70 | 22 | 2.4 | 2.3 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code



External

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch TPI | Size | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ (68) PH6920 |
|------------------------------|---------------------------------|--------------|------------------------------|---|----|-----|-----|--|
| | | | | IC | L | X | Y | |
| 1882290 | 16 ER 20 PG | 20 | PG7 | 9.525 | 16 | 0.7 | 0.8 | ○ |
| 1882291 | 16 ER 18 PG | 18 | PG9, PG11, PG13.5, PG16 | 9.525 | 16 | 0.8 | 0.9 | ⊗ |
| 1882292 | 16 ER 16 PG | 16 | PG21, PG29, PG36, PG42, PG48 | 9.525 | 16 | 0.8 | 1.0 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

Internal

| Geometry code ⁽¹⁾ | Reference Referência Referencia | Pitch TPI | Size | Dimensions Dimensões Dimensiones (mm) | | | | Stock - Grade Code ⁽²⁾ (68) PH6920 |
|------------------------------|---------------------------------|--------------|------------------------------|---|----|-----|-----|--|
| | | | | IC | L | X | Y | |
| 1883825 | 08 IR 20 PG | 20 | PG7 | 5.0 | 8 | 0.6 | 0.7 | ○ |
| 1882294 | 11 IR 18 PG | 18 | PG9, PG11, PG13.5, PG16 | 6.35 | 11 | 0.8 | 0.9 | ○ |
| 1882296 | 16 IR 18 PG | 18 | PG9, PG11, PG13.5, PG16 | 9.525 | 16 | 0.8 | 0.9 | ○ |
| 1882297 | 16 IR 16 PG | 16 | PG21, PG29, PG36, PG42, PG48 | 9.525 | 16 | 0.8 | 1.0 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

TANGENTIAL PROFILE INSERTS CODE KEY

Chave do codificação de pastilhas | Llave de codificación de plaquitas

Tangential Profile Example



1 - Insert Type

TNMC

TPMC

2 - Insert Size (L - mm)

16

16.50

22

22.00

3 - Insert Size (S - mm)

03

3.18

04

4.76

4 - Profile Angle

55

55°

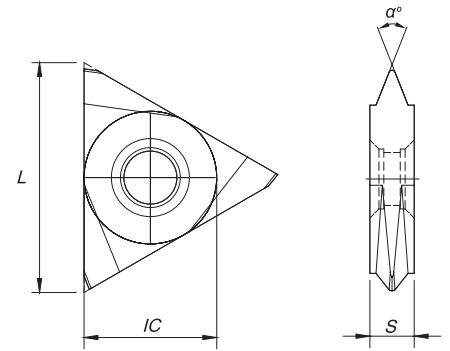
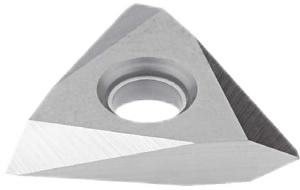
60

60°

5 - Grades

PH6920

TNMC (TANGENTIAL INSERTS)



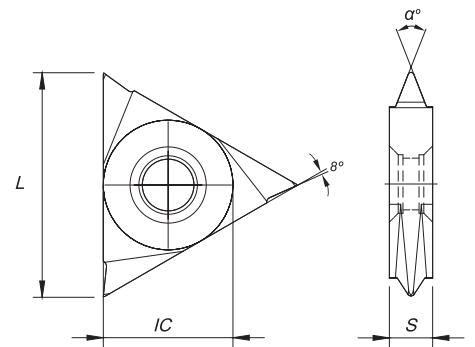
| Geometry code ⁽¹⁾ | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | α° | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------------|---|-------|------|----------------|-----------------------------------|
| | | IC | L | S | | (68) PH6920 |
| 1110401 | TNMC 1603 55 | 9.525 | 16.50 | 3.18 | 55 | ○ |
| 1110402 | TNMC 1603 60 | 9.525 | 16.50 | 3.18 | 60 | ○ |
| 1110530 | TNMC 2204 55 | 12.70 | 22.00 | 4.76 | 55 | ○ |
| 1110404 | TNMC 2204 60 | 12.70 | 22.00 | 4.76 | 60 | ○ |

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

TPMC (TANGENTIAL INSERTS)



| Geometry code ⁽¹⁾ | Reference Referência Referencia | Dimensions Dimensões Dimensiones (mm) | | | α° | Stock - Grade Code ⁽²⁾ |
|------------------------------|---------------------------------------|---|-------|------|----------------|-----------------------------------|
| | | IC | L | S | | (68) PH6920 |
| 1110481 | TPMC 1603 55 | 9.525 | 16.50 | 3.18 | 55 | ○ |
| 1110480 | TPMC 1603 60 | 9.525 | 16.50 | 3.18 | 60 | ○ |
| 1110541 | TPMC 2204 55 | 12.70 | 22.00 | 4.76 | 55 | ○ |
| 1110542 | TPMC 2204 60 | 12.70 | 22.00 | 4.76 | 60 | ○ |

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta | Disponible bajo consulta

Insert order code = (1) Geometry Code + (2) Grade Code

EXTERNAL TOOLHOLDERS CODE KEY

Chave de codificação para suporte externos | Llave de codificación para roscado exterior

| | | | | | | | | |
|----------|----------|----------|----------|----------|-----------|-----------|----------|-----------|
| S | T | C | N | R | 25 | 25 | M | 16 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

1 - Inserts Clamping System

C D M P S

2 - Insert Shape

| | | | |
|----------|----------|----------|----------|
| 80° C | 55° D | 75° E | 55° K |
| R | 90° S | 60° T | 35° V |
| 80° W | | | |

4 - Inserts Clearance Angle

| | | | |
|---------|---------|---------|----------|
| 5° B | 7° C | 0° N | 11° P |
|---------|---------|---------|----------|

5 - Tool Hand

R L N

3 - Toolholder Leading Angle

| | | |
|-----------|---------------|--------------|
| 90° A | 75° B | 90° C |
| 45° D | 60° E | 90° F |
| 90° G | 107° 30' H | 93° J |
| 75° K | 95° L | 50° M |
| 63° N | 117° 30' Q | 75° R |
| 45° S | 60° T | 72° 30' V |
| 113° X | 100° Z | |

6 - Height of Shank (mm)

H1 H

7 - Width of Shank (mm)

B

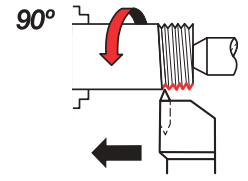
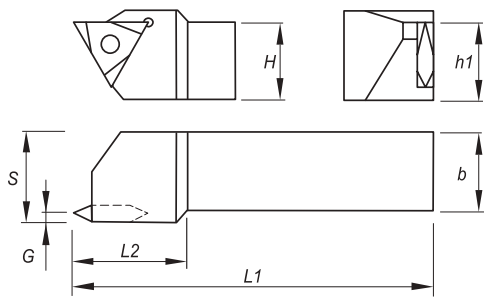
8 - Length of Holder (mm)

| | | | | |
|--|---|-----|---|---------|
| | D | 60 | P | 170 |
| | E | 70 | R | 200 |
| | F | 80 | S | 250 |
| | H | 100 | T | 300 |
| | K | 125 | U | 350 |
| | L | 140 | V | 400 |
| | M | 150 | X | Special |

9 - Length of Inserts Cutting Edge (mm)

C,D,E,V K R S T W X Z

STCN 90°



External Left

| Order Code Código | Reference Referência Referencia | Insert Geometry | Dimensions Dimensões Dimensiones (mm) | | | | | | Screw | Hex Key | Stock |
|----------------------|---------------------------------------|--------------------|---|----|----|-----|----|------|----------|---------|-------|
| | | | H=h1 | b | S | L1 | L2 | G | | | |
| 212129800 | STCNL 1212 F16 | TNMC/TPMC 16.. | 12 | 12 | 16 | 80 | 23 | 1.59 | P0351375 | SS20 | ☉ |
| 212129900 | STCNL 1616 H16 | TNMC/TPMC 16.. | 16 | 16 | 19 | 100 | 23 | 1.59 | P0351375 | SS20 | ☉ |
| 212029900 | STCNL 2020 K16 | TNMC/TPMC 16.. | 20 | 20 | 22 | 125 | 23 | 1.59 | P0351375 | SS20 | ☉ |
| 212130400 | STCNL 2020 K22 | TNMC/TPMC 22.. | 20 | 20 | 22 | 125 | 32 | 2.38 | P0501975 | SS25 | ☉ |
| 212030100 | STCNL 2525 M16 | TNMC/TPMC 16.. | 25 | 25 | 32 | 150 | 23 | 1.59 | P0351375 | SS20 | ☉ |
| 212030300 | STCNL 2525 M22 | TNMC/TPMC 22.. | 25 | 25 | 32 | 150 | 32 | 2.38 | P0501975 | SS25 | ☉ |
| 212130600 | STCNL 3225 P22 | TNMC/TPMC 22.. | 32 | 25 | 32 | 170 | 32 | 2.38 | P0501975 | SS25 | ☉ |
| 212130200 | STCNL 3232 P16 | TNMC/TPMC 16.. | 32 | 32 | 38 | 170 | 23 | 1.59 | P0351375 | SS20 | ☉ |
| 212130800 | STCNL 3232 P22 | TNMC/TPMC 22.. | 32 | 32 | 38 | 170 | 32 | 2.38 | P0501975 | SS25 | ☉ |

☉ Stock item | Produto de stock
Itens de stock

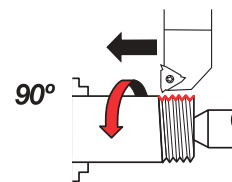
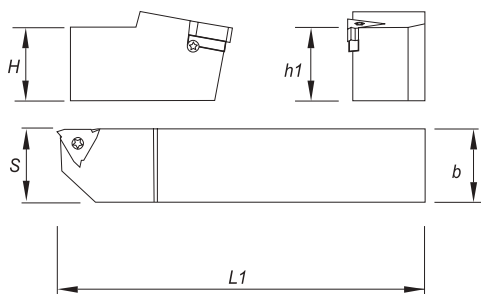
○ Available under request | Disponível sobre consulta
Disponível bajo consulta

External Right

| Order Code Código | Reference Referência Referencia | Insert Geometry | Dimensions Dimensões Dimensiones (mm) | | | | | | Screw | Hex Key | Stock |
|----------------------|---------------------------------------|--------------------|---|----|----|-----|----|------|----------|---------|-------|
| | | | H=h1 | b | S | L1 | L2 | G | | | |
| 212103600 | STCNR 1212 F16 | TNMC/TPMC 16.. | 12 | 12 | 16 | 80 | 23 | 1.59 | P0351375 | SS20 | ☉ |
| 212103700 | STCNR 1616 H16 | TNMC/TPMC 16.. | 16 | 16 | 19 | 100 | 23 | 1.59 | P0351375 | SS20 | ☉ |
| 212029800 | STCNR 2020 K16 | TNMC/TPMC 16.. | 20 | 20 | 22 | 125 | 23 | 1.59 | P0351375 | SS20 | ☉ |
| 212130300 | STCNR 2020 K22 | TNMC/TPMC 22.. | 20 | 20 | 22 | 125 | 32 | 2.38 | P0501975 | SS25 | ☉ |
| 212030000 | STCNR 2525 M16 | TNMC/TPMC 16.. | 25 | 25 | 32 | 150 | 23 | 1.59 | P0351375 | SS20 | ☉ |
| 212030200 | STCNR 2525 M22 | TNMC/TPMC 22.. | 25 | 25 | 32 | 150 | 32 | 2.38 | P0501975 | SS25 | ☉ |
| 212130500 | STCNR 3225 P22 | TNMC/TPMC 22.. | 32 | 25 | 32 | 170 | 32 | 2.38 | P0501975 | SS25 | ☉ |
| 212130100 | STCNR 3232 P16 | TNMC/TPMC 16.. | 32 | 32 | 38 | 170 | 23 | 1.59 | P0351375 | SS20 | ☉ |
| 212130700 | STCNR 3232 P22 | TNMC/TPMC 22.. | 32 | 32 | 38 | 170 | 32 | 2.38 | P0501975 | SS25 | ☉ |

☉ Stock item | Produto de stock
Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta

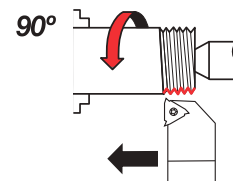
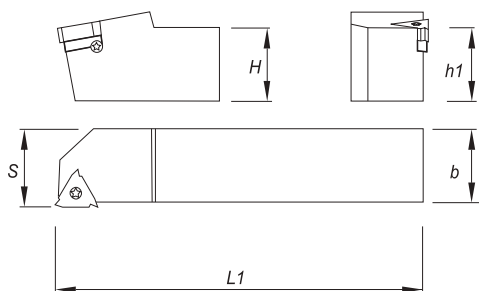


External Left

| Order Code Código | Reference Referência Referencia | Insert Geometry | Dimensions Dimensões Dimensiones (mm) | | | | Anvil | Anvil Screw | Insert Screw | Torx Key | Stock |
|----------------------|---------------------------------------|--------------------|---|----|----|-----|-------|-------------|--------------|----------|-------|
| | | | H=h1 | b | S | L | | | | | |
| 212244300 | SXAN L 0808 H11 | 11 EL | 8 | 8 | 11 | 100 | - | - | P0260700 | XT08 | ○ |
| 212244400 | SXAN L 1010 H11 | 11 EL | 10 | 10 | 11 | 100 | - | - | P0260700 | XT08 | ⊗ |
| 212384500 | SXAN L 1212 K11 | 11 EL | 12 | 12 | 12 | 125 | - | - | P0260700 | XT08 | ○ |
| 212384600 | SXAN L 1212 F16 | 16 EL | 12 | 12 | 16 | 80 | IA16 | P5000790 | P5401390 | XT10 | ○ |
| 212123400 | SXAN L 1616 H16 | 16 EL | 16 | 16 | 16 | 100 | IA16 | P5000790 | P5401390 | XT10 | ○ |
| 212123500 | SXAN L 2020 K16 | 16 EL | 20 | 20 | 20 | 125 | IA16 | P5000790 | P5401390 | XT10 | ⊗ |
| 212123800 | SXAN L 2525 M16 | 16 EL | 25 | 25 | 25 | 150 | IA16 | P5000790 | P5401390 | XT10 | ⊗ |
| 212124400 | SXAN L 3232 P16 | 16 EL | 32 | 32 | 32 | 170 | IA16 | P5000790 | P5401390 | XT10 | ○ |
| 212123900 | SXAN L 2525 M22 | 22 EL | 25 | 25 | 25 | 150 | IA22 | P8000990 | P8001590 | XT20 | ⊗ |
| 212124200 | SXAN L 3232 P22 | 22 EL | 32 | 32 | 32 | 170 | IA22 | P8000990 | P8001590 | XT20 | ⊗ |
| 212384700 | SXAN L 4040 R22 | 22 EL | 40 | 40 | 40 | 200 | IA22 | P8000990 | P8001590 | XT20 | ○ |
| 212244500 | SXAN L 2525 M27 | 27 EL | 25 | 25 | 32 | 150 | IA27 | P0500990 | P0502200 | XT25 | ○ |
| 212244600 | SXAN L 3232 P27 | 27 EL | 32 | 32 | 32 | 170 | IA27 | P0500990 | P0502200 | XT25 | ○ |
| 212384800 | SXAN L 4040 R27 | 27 EL | 40 | 40 | 40 | 200 | IA27 | P0500990 | P0502200 | XT25 | ○ |

⊗ Stock item | Produto de stock
Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta



External Right

| Order Code Código | Reference Referência Referencia | Insert Geometry | Dimensions Dimensões Dimensiones (mm) | | | | Anvil | Anvil Screw | Insert Screw | Torx Key | Stock |
|----------------------|---------------------------------------|--------------------|---|----|----|-----|-------|-------------|--------------|----------|-------|
| | | | H=h1 | b | S | L | | | | | |
| 212244700 | SXAN R 0808 H11 | 11 ER | 8 | 8 | 10 | 100 | - | - | P0260700 | XT08 | ○ |
| 212244800 | SXAN R 1010 H11 | 11 ER | 10 | 10 | 10 | 100 | - | - | P0260700 | XT08 | ⊗ |
| 212384900 | SXAN R 1212 K11 | 11 ER | 12 | 12 | 12 | 125 | - | - | P0260700 | XT08 | ○ |
| 212383800 | SXAN R 1212 F16 | 16 ER | 12 | 12 | 16 | 80 | EA16 | P5000790 | P5401390 | XT10 | ⊗ |
| 212053800 | SXAN R 1616 H16 | 16 ER | 16 | 16 | 16 | 100 | EA16 | P5000790 | P5401390 | XT10 | ⊗ |
| 212053100 | SXAN R 2020 K16 | 16 ER | 20 | 20 | 20 | 125 | EA16 | P5000790 | P5401390 | XT10 | ⊗ |
| 212053200 | SXAN R 2525 M16 | 16 ER | 25 | 25 | 25 | 150 | EA16 | P5000790 | P5401390 | XT10 | ⊗ |
| 212124300 | SXAN R 3232 P16 | 16 ER | 32 | 32 | 32 | 170 | EA16 | P5000790 | P5401390 | XT10 | ⊗ |
| 212053000 | SXAN R 2525 M22 | 22 ER | 25 | 25 | 25 | 150 | EA22 | P8000990 | P8001590 | XT20 | ⊗ |
| 212124100 | SXAN R 3232 P22 | 22 ER | 32 | 32 | 32 | 170 | EA22 | P8000990 | P8001590 | XT20 | ⊗ |
| 212385100 | SXAN R 4040 R22 | 22 ER | 40 | 40 | 40 | 200 | EA22 | P8000990 | P8001590 | XT20 | ○ |
| 212244900 | SXAN R 2525 M27 | 27 ER | 25 | 25 | 32 | 150 | EA27 | P0500990 | P0502200 | XT25 | ○ |
| 212245000 | SXAN R 3232 P27 | 27 ER | 32 | 32 | 32 | 170 | EA27 | P0500990 | P0502200 | XT25 | ○ |
| 212385200 | SXAN R 4040 R27 | 27 ER | 40 | 40 | 40 | 200 | EA27 | P0500990 | P0502200 | XT25 | ○ |

⊗ Stock item | Produto de stock
Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta

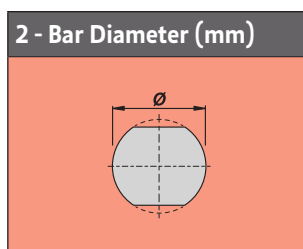
INTERNAL TOOLHOLDERS CODE KEY

Chave de codificação para suporte internos | Llave de codificación para herramienta interior

| | | | | | | | | |
|----------|-----------|----------|----------|----------|----------|----------|----------|-----------|
| S | 32 | U | S | T | G | N | R | 16 |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

1 - Bar Type

| | |
|----------|-------------|
| S | Steel shank |
|----------|-------------|



3 - Bar Length (mm)

| | | | |
|----------|-----|----------|---------|
| H | 100 | T | 300 |
| J | 110 | U | 350 |
| K | 125 | V | 400 |
| L | 140 | W | 450 |
| M | 150 | Y | 500 |
| Q | 180 | X | Special |
| R | 200 | | |
| S | 250 | | |

4 - Inserts Clamping System

| | | | |
|----------|----------|----------|----------|
| | | | |
| C | M | P | S |

5 - Insert Shape

| | | | |
|----------|----------|----------|----------|
| | | | |
| C | D | E | K |
| | | | |
| S | T | V | W |
| | | | |
| X | | | |

6 - Bar Leading Angle

| | | |
|----------|----------|-------------|
| | | |
| F | K | L |
| | | |
| Q | U | U-BT |
| | | |
| G | | |

7 - Inserts Clearance Angle

| | | | |
|----------|----------|----------|----------|
| | | | |
| B | C | N | P |

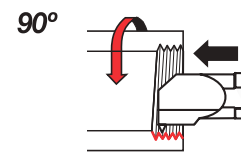
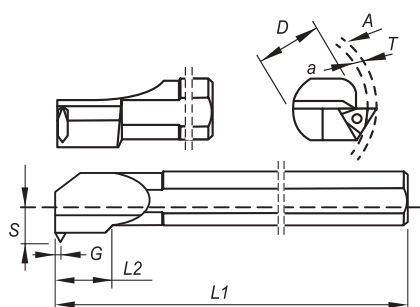
8 - Bar Hand

| | | |
|----------|----------|----------|
| | | |
| L | R | N |

9 - Length of Inserts Cutting Edge (mm)

| | | | | |
|----------------|----------|----------|----------|----------|
| | | | | |
| C,D,E,V | K | S | T | W |

STGN 90°



Internal Left

| Order Code Código | Reference Referência Referencia | Insert | Dimensions Dimensões Dimensiones (mm) | | | | | | | | Insert Screw | Hex Key | Stock |
|----------------------|---------------------------------------|-------------|---|-----|----|------|------|----|-----|------|--------------|---------|-------|
| | | | D | L1 | L2 | S | A | a | T | G | | | |
| 212121900 | S32U STGN L 16 | TNMC 1603.. | 32 | 350 | 19 | 21,0 | 50,4 | 45 | 2,7 | 1,59 | P0351375 | SS20 | ☉ |
| 212122200 | S40V STGN L 16 | TNMC 1603.. | 40 | 400 | 19 | 25,0 | 60,4 | 55 | 2,7 | 1,59 | P0351375 | SS20 | ☉ |
| 212122300 | S32U STGN L 22 | TNMC 2204.. | 32 | 350 | 28 | 21,0 | 50,4 | 45 | 4,1 | 2,38 | P0501975 | SS25 | ☉ |
| 212122600 | S40V STGN L 22 | TNMC 2204.. | 40 | 400 | 28 | 25,0 | 60,4 | 55 | 4,1 | 2,38 | P0501975 | SS25 | ☉ |
| 212122800 | S50W STGN L 22 | TNMC 2204.. | 50 | 450 | 28 | 36,5 | 78,2 | 70 | 4,1 | 2,38 | P0501975 | SS25 | ☉ |

☉ Stock item | Produto de stock
Itens de stock

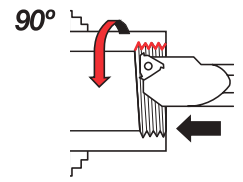
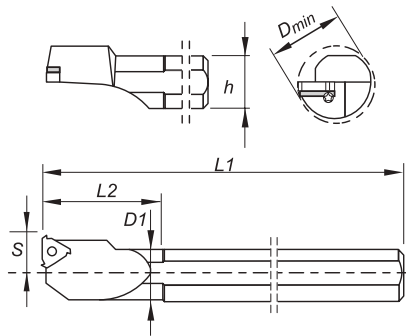
○ Available under request | Disponível sobre consulta
Disponível bajo consulta

Internal Right

| Order Code Código | Reference Referência Referencia | Insert | Dimensions Dimensões Dimensiones (mm) | | | | | | | | Insert Screw | Hex Key | Stock |
|----------------------|---------------------------------------|-------------|---|-----|----|------|------|----|-----|------|--------------|---------|-------|
| | | | D | L1 | L2 | S | A | a | T | G | | | |
| 212053700 | S32U STGN R 16 | TNMC 1603.. | 32 | 350 | 19 | 21,0 | 50,4 | 45 | 2,7 | 1,59 | P0351375 | SS20 | ☉ |
| 212122100 | S40V STGN R 16 | TNMC 1603.. | 40 | 400 | 19 | 25,0 | 60,4 | 55 | 2,7 | 1,59 | P0351375 | SS20 | ☉ |
| 212122400 | S32U STGN R 22 | TNMC 2204.. | 32 | 350 | 28 | 21,0 | 50,4 | 45 | 4,1 | 2,38 | P0501975 | SS25 | ☉ |
| 212122500 | S40V STGN R 22 | TNMC 2204.. | 40 | 400 | 28 | 25,0 | 60,4 | 55 | 4,1 | 2,38 | P0501975 | SS25 | ☉ |
| 212122700 | S50W STGN R 22 | TNMC 2204.. | 50 | 450 | 28 | 36,5 | 78,2 | 70 | 4,1 | 2,38 | P0501975 | SS25 | ☉ |

☉ Stock item | Produto de stock
Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta



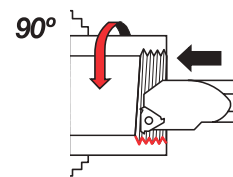
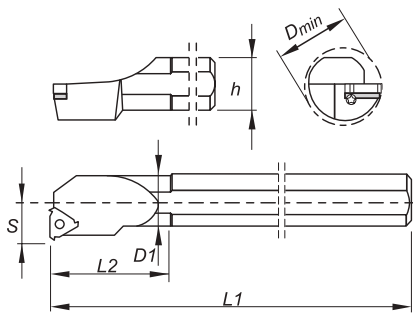
Internal Left

| Order Code Código | Reference Referência Referencia | Insert Type | Dimensions Dimensões Dimensiones (mm) | | | | | | Anvil | Anvil Screw | Insert Screw | Torx Key | Stock |
|----------------------|---------------------------------------|----------------|---|-----|------|-----|----|------|-------|-------------|--------------|----------|-------|
| | | | h | D1 | Dmin | L1 | L2 | S | | | | | |
| 212243500 | S12H SXFN L 06 | 06 IL | 12 | 5,1 | 6 | 100 | 12 | 4,3 | - | - | P0200400 | XT06 | ☉ |
| 212243600 | S16K SXFN L 08 | 08 IL | 16 | 6,6 | 7,8 | 125 | 18 | 5,3 | - | - | P0200600 | XT06 | ☉ |
| 212137600 | S10H SXFN L 11 | 11 IL | 10 | 10 | 12 | 100 | - | 7,4 | - | - | P0260700 | XT08 | ☉ |
| 212137800 | S10K SXFN L 11 | 11 IL | 16 | 10 | 12 | 125 | 25 | 7,4 | - | - | P0260700 | XT08 | ○ |
| 212385300 | S13L SXFN L 11 | 11 IL | 16 | 13 | 15 | 140 | 32 | 8,9 | - | - | P0260700 | XT08 | ○ |
| 212138000 | S13M SXFN L 16 | 16 IL | 16 | 13 | 16 | 150 | 32 | 10,2 | - | - | P5401391 | XT10 | ○ |
| 212127400 | S16P SXFN L 16 | 16 IL | 20 | 16 | 19 | 170 | 40 | 11,7 | - | - | P5401391 | XT10 | ☉ |
| 212138200 | S20P SXFN L 16 | 16 IL | 20 | 20 | 24 | 170 | - | 13,7 | EA16 | P5000790 | P5401390 | XT10 | ☉ |
| 212125500 | S25R SXFN L 16 | 16 IL | 25 | 25 | 29 | 200 | - | 16,2 | EA16 | P5000790 | P5401390 | XT10 | ☉ |
| 212125700 | S32S SXFN L 16 | 16 IL | 32 | 32 | 36 | 250 | - | 19,7 | EA16 | P5000790 | P5401390 | XT10 | ○ |
| 212125900 | S40T SXFN L 16 | 16 IL | 40 | 40 | 44 | 300 | - | 23,7 | EA16 | P5000790 | P5401390 | XT10 | ○ |
| 212138300 | S20P SXFN L 22 | 22 IL | 20 | 20 | 24 | 170 | - | 15,6 | - | - | P8001591 | XT20 | ☉ |
| 212126300 | S25R SXFN L 22 | 22 IL | 25 | 25 | 29 | 200 | - | 18,1 | EA22 | P8000990 | P8001590 | XT20 | ☉ |
| 212126500 | S32S SXFN L 22 | 22 IL | 32 | 32 | 38 | 250 | - | 21,6 | EA22 | P8000990 | P8001590 | XT20 | ☉ |
| 212126700 | S40T SXFN L 22 | 22 IL | 40 | 40 | 46 | 300 | - | 25,6 | EA22 | P8000990 | P8001590 | XT20 | ○ |
| 212243700 | S32S SXFN L 27 | 27 IL | 32 | 32 | 40 | 250 | - | 22,6 | EA27 | P0500990 | P0502200 | XT25 | ☉ |
| 212243800 | S40T SXFN L 27 | 27 IL | 40 | 40 | 48 | 300 | - | 26,6 | EA27 | P0500990 | P0502200 | XT25 | ○ |

☉ Stock item | Produto de stock
Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta

Note: All the toolholders SXFN are made with 1,5° helix angle. | Todos os ferros de torno são fornecidos com um ângulo de hélice de 1,5° | Todos los soportes se hacen con un ángulo de hélice de 1,5°.



Internal Right

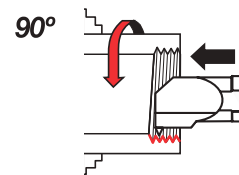
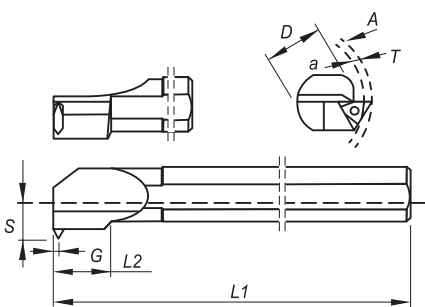
| Order Code Código | Reference Referência Referencia | Insert Type | Dimensions Dimensões Dimensiones (mm) | | | | | | Anvil | Anvil Screw | Insert Screw | Torx Key | Stock |
|----------------------|---------------------------------------|----------------|---|-----|------|-----|----|------|-------|-------------|--------------|----------|-------|
| | | | h | D1 | Dmin | L1 | L2 | S | | | | | |
| 212243900 | S12H SXFN R 06 | 06 IR | 12 | 5 | 6,1 | 100 | 12 | 4,4 | - | - | P0200400 | XT06 | ☉ |
| 212244000 | S16K SXFN R 08 | 08 IR | 16 | 6,5 | 8 | 125 | 17 | 5,4 | - | - | P0200600 | XT06 | ☉ |
| 212137700 | S10H SXFN R 11 | 11 IR | 10 | 10 | 12,5 | 100 | - | 7,3 | - | - | P0260700 | XT08 | ☉ |
| 212137900 | S10K SXFN R 11 | 11 IR | 16 | 10 | 12,5 | 125 | 25 | 7,3 | - | - | P0260700 | XT08 | ○ |
| 212385400 | S10L SXFN R 11 | 11 IR | 16 | 13 | 15 | 140 | 32 | 8,9 | - | - | P0260700 | XT08 | ○ |
| 212138100 | S13M SXFN R 16 | 16 IR | 16 | 13 | 16,5 | 150 | 32 | 10,4 | - | - | P5401391 | XT10 | ○ |
| 212127300 | S16P SXFN R 16 | 16 IR | 20 | 16 | 19,5 | 170 | 40 | 11,6 | - | - | P5401391 | XT10 | ☉ |
| 212138400 | S20P SXFN R 16 | 16 IR | 20 | 20 | 23,5 | 170 | - | 13,6 | IA16 | P5000790 | P5401390 | XT10 | ☉ |
| 212125400 | S25R SXFN R 16 | 16 IR | 25 | 25 | 28,5 | 200 | - | 16,3 | IA16 | P5000790 | P5401390 | XT10 | ☉ |
| 212125600 | S32S SXFN R 16 | 16 IR | 32 | 32 | 35,5 | 250 | - | 19,6 | IA16 | P5000790 | P5401390 | XT10 | ○ |
| 212125800 | S40T SXFN R 16 | 16 IR | 40 | 40 | 43,5 | 300 | - | 23,6 | IA16 | P5000790 | P5401390 | XT10 | ○ |
| 212138500 | S20P SXFN R 22 | 22 IR | 20 | 20 | 25 | 170 | - | 15,5 | - | - | P8001591 | XT20 | ☉ |
| 212126200 | S25R SXFN R 22 | 22 IR | 25 | 25 | 30 | 200 | - | 18,3 | IA22 | P8000990 | P8001590 | XT20 | ☉ |
| 212126400 | S32S SXFN R 22 | 22 IR | 32 | 32 | 37 | 250 | - | 21,7 | IA22 | P8000990 | P8001590 | XT20 | ☉ |
| 212126600 | S40T SXFN R 22 | 22 IR | 40 | 40 | 45 | 300 | - | 25,7 | IA22 | P8000990 | P8001590 | XT20 | ○ |
| 212244100 | S32S SXFN R 27 | 27 IR | 32 | 32 | 39 | 250 | - | 22,8 | IA27 | P0500990 | P0502200 | XT25 | ☉ |
| 212244200 | S40T SXFN R 27 | 27 IR | 40 | 40 | 47 | 300 | - | 26,8 | IA27 | P0500990 | P0502200 | XT25 | ○ |

☉ Stock item | Produto de stock
Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta

Note: All the toolholders SXFN are made with 1,5° helix angle. | Todos os ferros de torno são fornecidos com um ângulo de hélice de 1,5° | Todos los soportes se hacen con un ángulo de hélice de 1,5°.

STGP 90°



Internal Left

| Order Code Código | Reference Referência Referencia | Insert | Dimensions Dimensões Dimensiones (mm) | | | | | | | | Insert Screw | Hex Key | Stock |
|----------------------|---------------------------------------|-------------|---|-----|----|------|------|----|-----|------|--------------|---------|-------|
| | | | D | L1 | L2 | S | A | a | T | G | | | |
| 212030500 | S25T STGP L 16 | TPMC 1603.. | 25 | 300 | 19 | 17,5 | 50,4 | 45 | 2,7 | 1,59 | P0351375 | SS20 | ☺ |
| 212030700 | S32U STGP L 16 | TPMC 1603.. | 32 | 350 | 19 | 20,5 | 50,4 | 45 | 2,7 | 1,59 | P0351375 | SS20 | ☺ |
| 212030900 | S40V STGP L 22 | TPMC 2204.. | 40 | 400 | 28 | 25,0 | 78,2 | 70 | 4,1 | 2,38 | P0501975 | SS25 | ☺ |
| 212123000 | S50W STGP L 22 | TPMC 2204.. | 50 | 450 | 28 | 36,5 | 78,2 | 70 | 4,1 | 2,38 | P0501975 | SS25 | ☺ |

☺ Stock item | Produto de stock
Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta

Internal Right

| Order Code Código | Reference Referência Referencia | Insert | Dimensions Dimensões Dimensiones (mm) | | | | | | | | Insert Screw | Hex Key | Stock |
|----------------------|---------------------------------------|-------------|---|-----|----|------|------|----|-----|------|--------------|---------|-------|
| | | | D | L1 | L2 | S | A | a | T | G | | | |
| 212030400 | S25T STGP R 16 | TPMC 1603.. | 25 | 300 | 19 | 17,5 | 50,4 | 45 | 2,7 | 1,59 | P0351375 | SS20 | ☺ |
| 212030600 | S32U STGP R 16 | TPMC 1603.. | 32 | 350 | 19 | 20,5 | 50,4 | 45 | 2,7 | 1,59 | P0351375 | SS20 | ☺ |
| 212030800 | S40V STGP R 22 | TPMC 2204.. | 40 | 400 | 28 | 25,0 | 78,2 | 70 | 4,1 | 2,38 | P0501975 | SS25 | ☺ |
| 212122900 | S50W STGP R 22 | TPMC 2204.. | 50 | 450 | 28 | 36,5 | 78,2 | 70 | 4,1 | 2,38 | P0501975 | SS25 | ☺ |

☺ Stock item | Produto de stock
Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta



Screws

| Order Code Código | Reference Referência Referencia | Stock |
|----------------------|---------------------------------------|-------|
| 290025900 | P0200600 | ○ |
| 290044800 | P0260700 | ⊗ |
| 290027200 | P0351375 | ⊗ |
| 290027500 | P0500990 | ○ |
| 290027800 | P0501975 | ⊗ |
| 290055000 | P0502200 | ○ |
| 290045100 | P5000790 | ⊗ |
| 290044600 | P5401390 | ⊗ |
| 290044900 | P5401391 | ⊗ |
| 290045200 | P8000990 | ⊗ |
| 290044700 | P8001590 | ⊗ |
| 290045000 | P8001591 | ⊗ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta



Keys

| Order Code Código | Reference Referência Referencia | Stock |
|----------------------|---------------------------------------|-------|
| 290011400 | XT06 | ⊗ |
| 290011700 | XT08 | ⊗ |
| 290013100 | XT10 | ⊗ |
| 290013200 | XT20 | ⊗ |
| 290017400 | XT25 | ⊗ |
| 290020300 | SS20 | ○ |
| 290019800 | SS25 | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta



Shims

| Order Code Código | Reference Referência Referencia | Stock |
|----------------------|---------------------------------------|-------|
| 212134400 | EA16 | ○ |
| 212134500 | EA16 1,5N | ○ |
| 212134600 | EA16 1N | ○ |
| 212134700 | EA16 1P | ○ |
| 212134800 | EA16 2N | ○ |
| 212134900 | EA16 2P | ○ |
| 212135000 | EA16 3N | ○ |
| 212135100 | EA16 3P | ○ |
| 212135200 | EA22 | ○ |
| 212135300 | EA22 1,5N | ○ |
| 212135400 | EA22 1N | ○ |
| 212135500 | EA22 1P | ○ |
| 212135600 | EA22 2N | ○ |
| 212135700 | EA22 2P | ○ |
| 212135800 | EA22 3N | ○ |
| 212135900 | EA22 3P | ○ |
| 212136000 | IA16 | ○ |
| 212136100 | IA16 1,5N | ○ |
| 212136200 | IA16 1N | ○ |
| 212136300 | IA16 1P | ○ |
| 212136400 | IA16 2N | ○ |
| 212136500 | IA16 2P | ○ |
| 212136600 | IA16 3N | ○ |
| 212136700 | IA16 3P | ○ |
| 212136800 | IA22 | ○ |
| 212136900 | IA22 1,5N | ○ |
| 212137000 | IA22 1N | ○ |
| 212137100 | IA22 1P | ○ |
| 212137200 | IA22 2N | ○ |
| 212137300 | IA22 2P | ○ |
| 212137400 | IA22 3N | ○ |
| 212137500 | IA22 3P | ○ |

⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

THREADING TECHNICAL DATA

THREADING GRADES | Graus de roscagem | Calidades para roscado

| | 1 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | | |
|---|---|---|------------|------------|----|----|----|----|----|----|----|-----|-----|
| P STEEL | | | | PH7(6) 920 | | | | | | | | | PVD |
| M STAINLESS STEEL | | | | PH7(6) 920 | | | | | | | | | PVD |
| K CAST IRON | | | | PH7(6) 920 | | | | | | | | | PVD |
| N ALUMINIUM & NON FERROUS | | | PH7(6) 920 | | | | | | | | | PVD | |
| S HEAT RESISTENT / TITANIUM ALLOYS | | | | PH7(6) 920 | | | | | | | | | PVD |

m

THREADING

Thread milling - Inserts

Thread milling - Toolholders

Thread turning - Overview

Thread turning - Inserts

Thread turning - Toolholders

Thread turning - Spare Parts

Technical Data

GRADES DESCRIPTION | Descrição de graus | Descripción de calidades

PH7920

PH6920

P10-P35

M10-M25

K10-K30

N05-N15

S10-S30

Multi purpose PVD coated grade with good balance between wear resistance and toughness.

RECOMMENDED GRADES AND CUTTING SPEEDS (M/MIN)

Graus recomendados e velocidades de corte (m/min) | Calidades recomendadas y velocidades de corte (m/min)

| ISO | Material | Hardness HB | Coated |
|----------|--|-------------|-----------|
| | | | PH7(6)920 |
| P | UNALLOYED STEEL | 130 | 120-200 |
| | LOW-ALLOYED STEEL | 200 | 110-180 |
| | HIGH-ALLOY STEEL | 240 | 100-170 |
| | STEEL CASTINGS | 270 | 70-120 |
| | HEAT TREATED STEEL | 400 | 50-90 |
| M | 300 STAINLESS STEEL: (303,304,316) | 200 | 70-140 |
| | 400 STAINLESS STEEL: (420,440) | 240 | 80-120 |
| | 17-4 PH, 15-5 PH, 13-8MO PH | 400 | 50-110 |
| K | GREY CAST IRON | 190 | 70-150 |
| | NODULAR CAST IRON | 180 | 100-140 |
| | MALLEABLE CAST IRON | 240 | 90-150 |
| N | WROUGHT ALUMINIUM: (2024, 6061, 7075...) | 80 | 100-400 |
| | CAST ALUMINIUM: | 90 | 150-400 |
| | COPPER & COPPER: BRASS, BRONZE, COPPER SILICON | 100 | 80-180 |
| | NON METALIC: Rubber, Polypropylene, Thermoplastics (PVC), Thermoplastics Plastics (FIBERGLASS), Polyamides | | 200-500 |
| S | TITANIUM: | | |
| | PURE TITANIUM: 99,0Ti | | 100-150 |
| | ALPHA ALLOYS: Ti5Al2.5Sn | | 40-60 |
| | BETA ALLOYS: Ti 13V11Cr3Al | | 30-50 |
| | ALPHA - BETA ALLOYS: Ti 6Al4V | | 30-50 |
| | COBALT BASE ALLOYS: STELLITE | | 20-40 |
| | NIKEL BASE ALLOYS: INCONEL, HASTELLOY, WASPALLOY, KOVAR | | 20-40 |
| | HIGH TEMPERATURE ALLOYS: IRON BASED: INCOLOY | | 30-60 |
| H | HARDENED STEEL | 56 HRc | - |
| | HARDENED CAST IRON | 50 HRc | - |

THREADING TECHNICAL DATA

THREAD TERMINOLOGY | Terminologia da roscagem | Terminología del roscado

External Thread
A thread on the external surface of a cylinder screw or cone.

Depth of Thread
The distance between crest and root measured normal to the axis.

Pitch
The distance between corresponding points on adjacent thread forms measured parallel to the axis. This distance can be defined in millimeters or by the *tpi* (threads per inch), which is the reciprocal of the pitch

Nominal Diameter
The diameter from which the diameter limits are derived by the application of deviation allowances and tolerances.

EXTERNAL THREAD

Major Ø
Pitch Ø
Minor Ø

Pitch
Thread Angle
Helix Angle
Root
Crest

Internal Thread
A thread on the internal surface of a cylinder or cone.

Major Diameter
The largest diameter of a screw thread.

Pitch Diameter
On a straight thread, the diameter of an imaginary cylinder, the surface of which cuts the thread forms where the width of the thread and groove are equal.

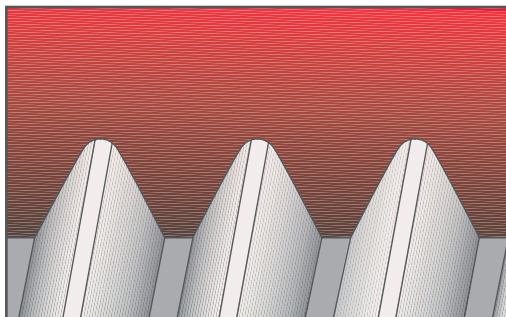
Minor Diameter
The smallest diameter of a screw thread.

Helix Angle
For a straight thread, where the lead of the thread and the pitch diameter circle circumference form a right angled triangle, the helix angle is the angle opposite the lead.

Straight Thread
A thread formed on a cylinder.

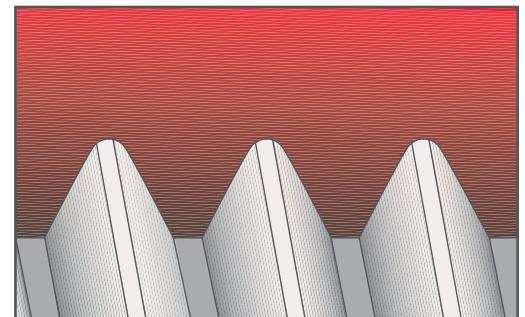
Taper Thread
A thread formed on a cone.

LEFT-HAND THREAD



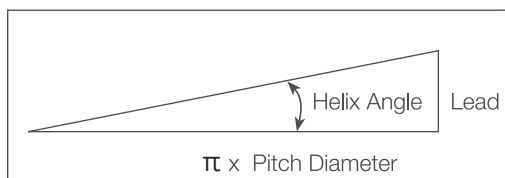
A thread which, when viewed axially, winds in a counter-clockwise and receding direction. All left-hand threads are designated LH.

RIGHT-HAND THREAD



A thread which, when viewed axially, winds in a clockwise and receding direction. Threads are always right hand unless otherwise specified.

THE HELIX ANGLE

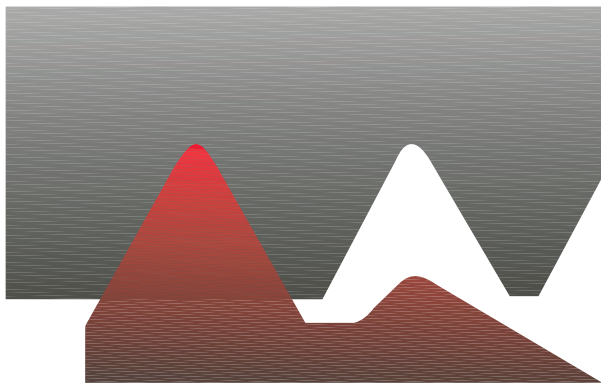


Lead

The distance a threaded part moves axially, with respect to a fixed mating part, in one complete revolution. The lead is equal to the pitch multiplied by the number of thread starts.

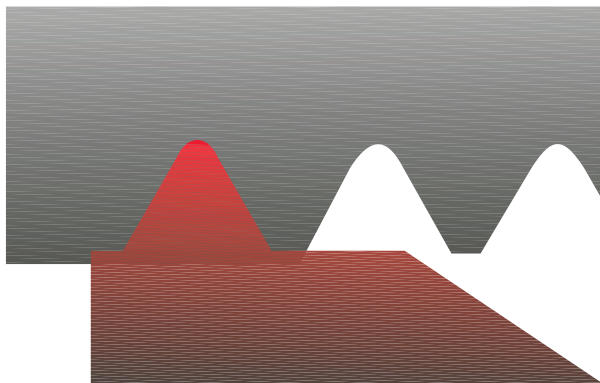
INSERT PROFILE STYLES | Estilos de perfis das pastilhas | Estilos de perfiles de las plaquitas

PARTIAL PROFILE



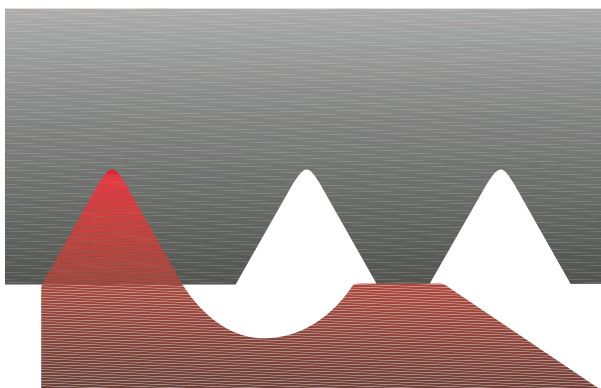
The V partial profile insert cuts without topping the outer diameter of the thread. The same insert can be used for a range of different thread pitches which have a common thread angle.

FULL PROFILE



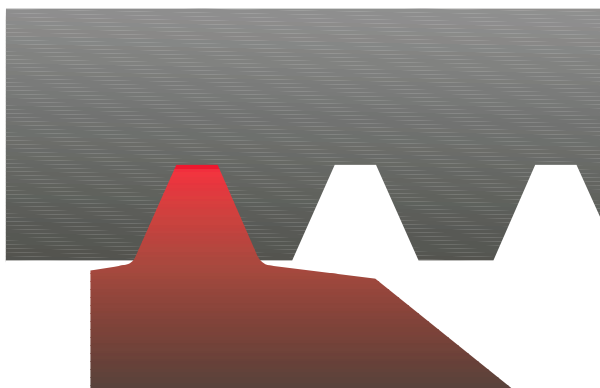
The full profile insert will form a complete thread profile including the crest. For every thread pitch and standard, a separate insert is required.

FULL PROFILE FOR FINE PITCHES



The full profile for Fine Pitches will form a complete thread. The topping of the outer diameter is generated by second tooth.

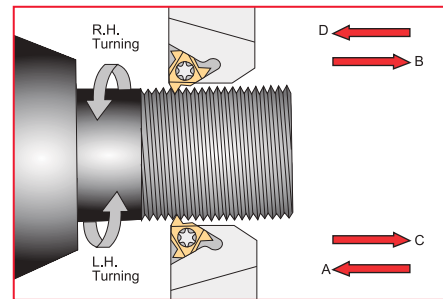
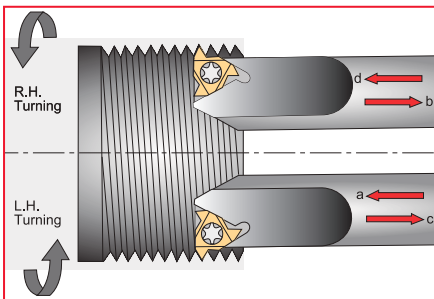
SEMI FULL



The Semi profile insert will form a complete thread including crest radius but without topping the outer diameter. Mainly used for trapezoidal profiles.

THREADING TECHNICAL DATA

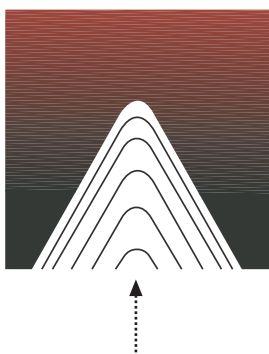
THREAD WORK METHODS | Métodos de trabalho de roscagem | Métodos de trabajo de roscado



| Thread | Inserts & Toolholders | Rotation | Feed Direction | Helix Method | Method |
|---------------------|-----------------------|---------------|----------------|--------------|--------|
| Right Hand external | EX RH | Anticlockwise | Towards chuck | Regular | A |
| | EX LH | Clockwise | From chuck | Reversed | B |
| Right Hand Internal | IN RH | Anticlockwise | Towards chuck | Regular | a |
| | IN LH | Clockwise | From chuck | Reversed | b |
| Left Hand External | EX LH | Clockwise | Towards chuck | Regular | D |
| | EX RH | Anticlockwise | From chuck | Reversed | C |
| Left Hand Internal | IN LH | Clockwise | Towards chuck | Regular | d |
| | IN RH | Anticlockwise | From chuck | Reversed | c |

THREAD INFEEED METHODS | Métodos de roscagem infeed | Métodos de roscado infeed

RADIAL INFEEED



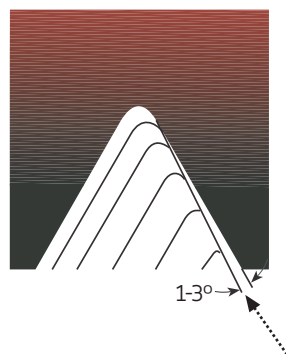
Radial infeed is the simplest and quickest method.

The feed is perpendicular to the turning axis, and both flanks of the insert perform the cutting operation.

Radial infeed is recommended in 3 cases:

- when the pitch is smaller than 16 tpi
- for material with short chips
- for work with hardened material

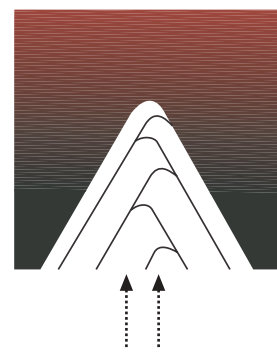
FLANK INFEEED (modified)



Flank infeed is recommended in the following cases:

- when the thread pitch is greater than 16 tpi., using the radial method, the effective cutting edge length is too large, resulting in chatter.
- for TRAPEZ and ACME. The radial method result in three cutting edges, making chip flow very difficult.

ALTERNATE FLANK INFEEED



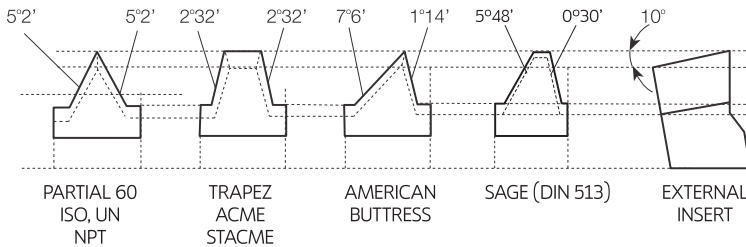
Use of the alternate flank method is recommended especially in large pitches and for materials with long chips.

This method divides the load equally on both flanks, resulting in equal wear along the cutting edges. Alternate flank infeed requires more complicated programming, and is not available on all lathes.

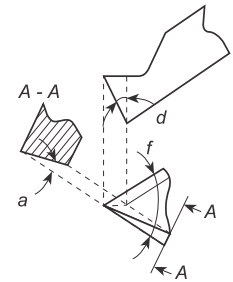
CALCULATE THE HELIX ANGLE AND CHOOSE THE RIGHT ANVIL

Calcular o ângulo de hélice e escolher o colchão adequado | Calcular el ángulo de hélice y elegir el colchón adecuado

FLANK CLEARANCE ANGLE (a)



Palbit toolholders are designed to tilt the insert when seated in the toolholder (10° for external, 15° for internal tooling). This results in the differing flank clearance angles, based on the geometry of insert. To ensure that the side of the insert cutting edge will not rub on the workpiece, it is most important that the insert helix angle be correct - especially in profiles with small enclosed flank angles. This correction is provided by Palbit anvils.

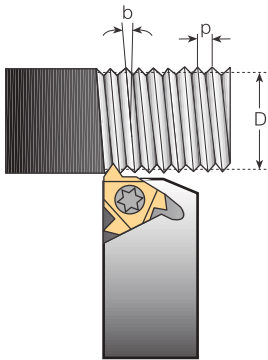


$$a = \arctan(\tan \phi / 2 \times \tan d)$$

Where: a - flank clearance angle
d - Tilt angle
φ - Enclosed flank angle

CALCULATING THE HELIX ANGLE (b)

FORMULA



The helix angle is calculated by the following formula:

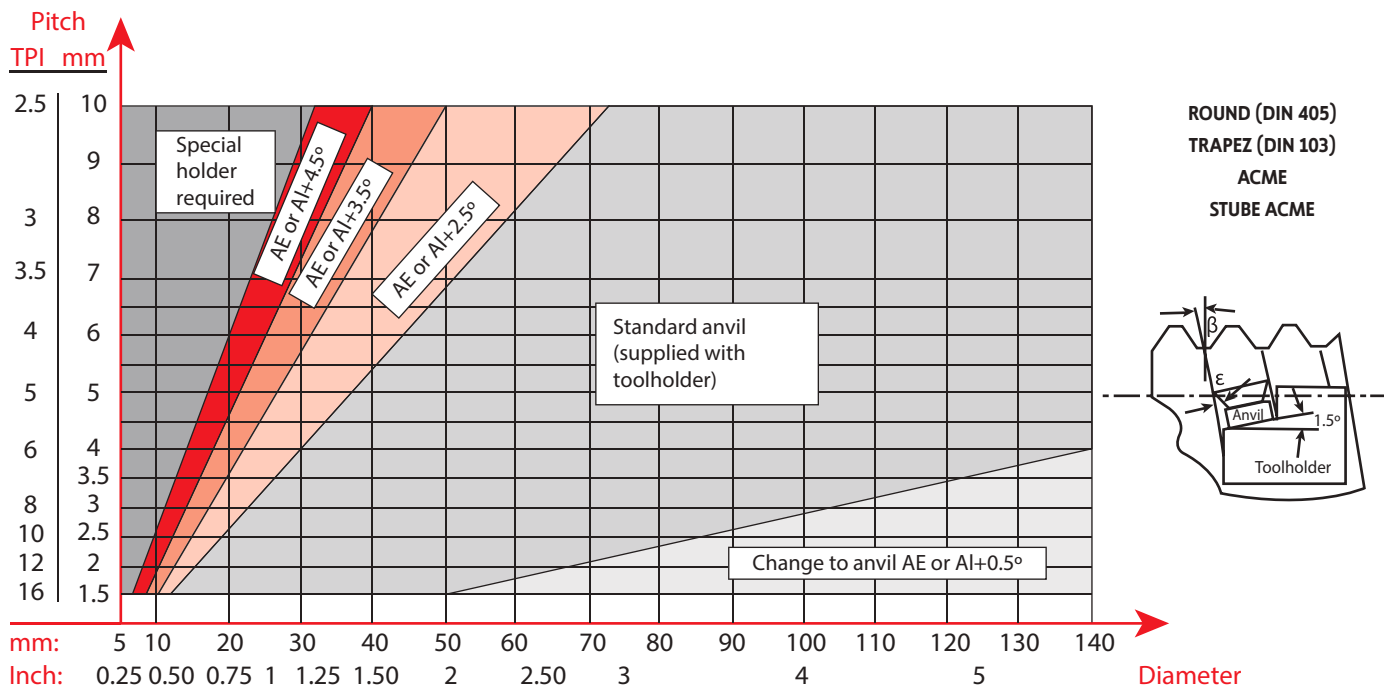
$$b = \arctan \frac{P \times N}{\pi \times D}$$

b - Helix angle (°)
P - Pitch (1/TPI)
N - No. of starts
D - Pitch diameter (mm)
Lead = P × N
TPI = Threads per inches

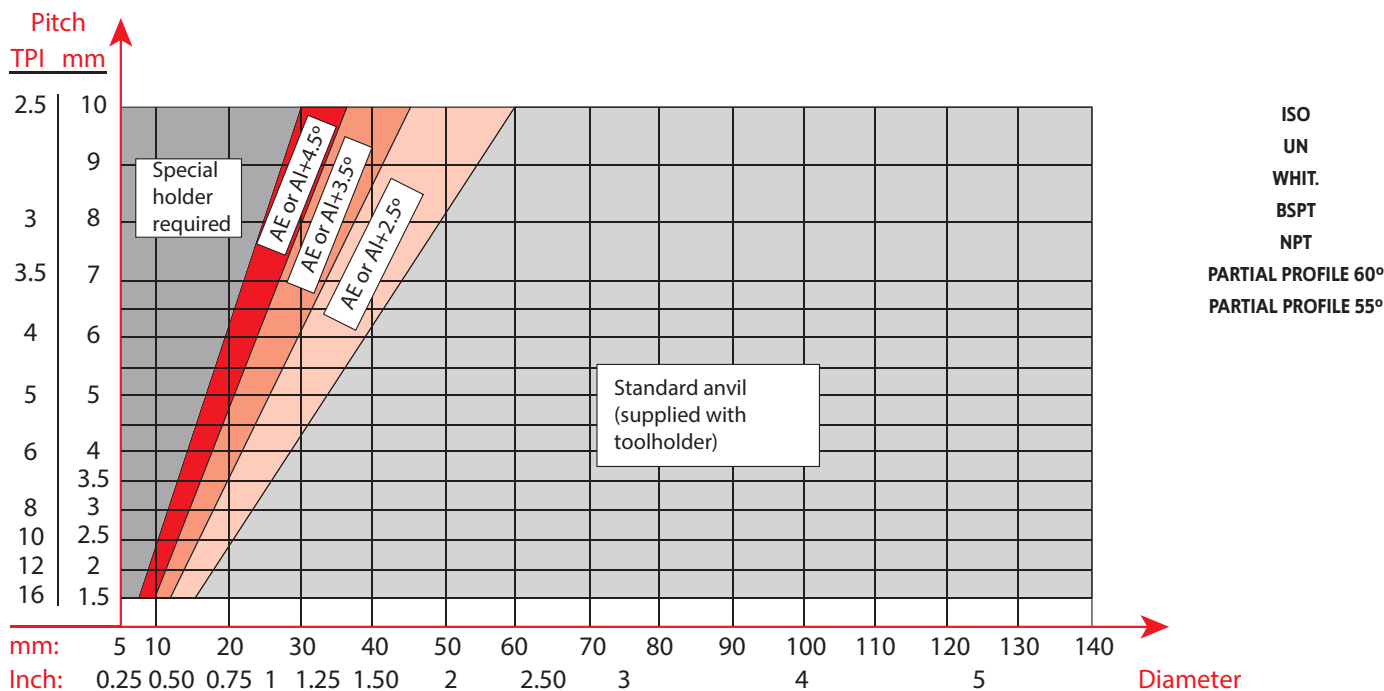
The helix angle can also be found using the diagram below

THREADING TECHNICAL DATA

The chart below represents the relation between diameter, pitch and anvil choice. When change of anvil is required, use EA anvils for ER and IL toolholders and IA anvils for IR and EL toolholders.

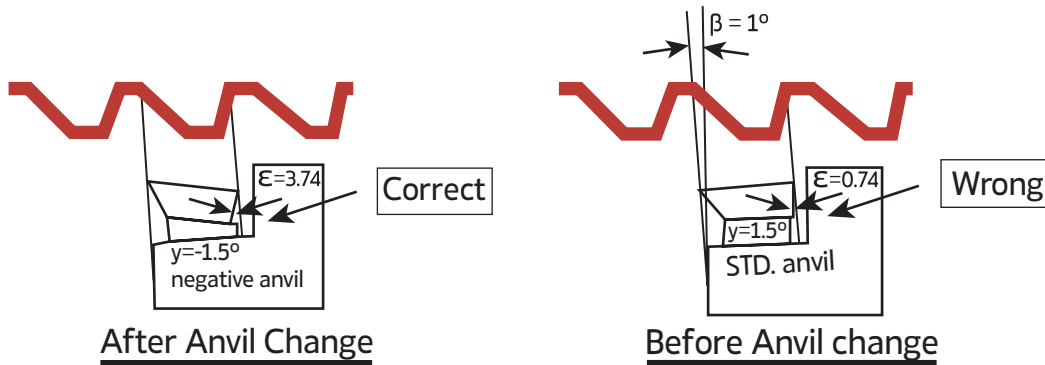
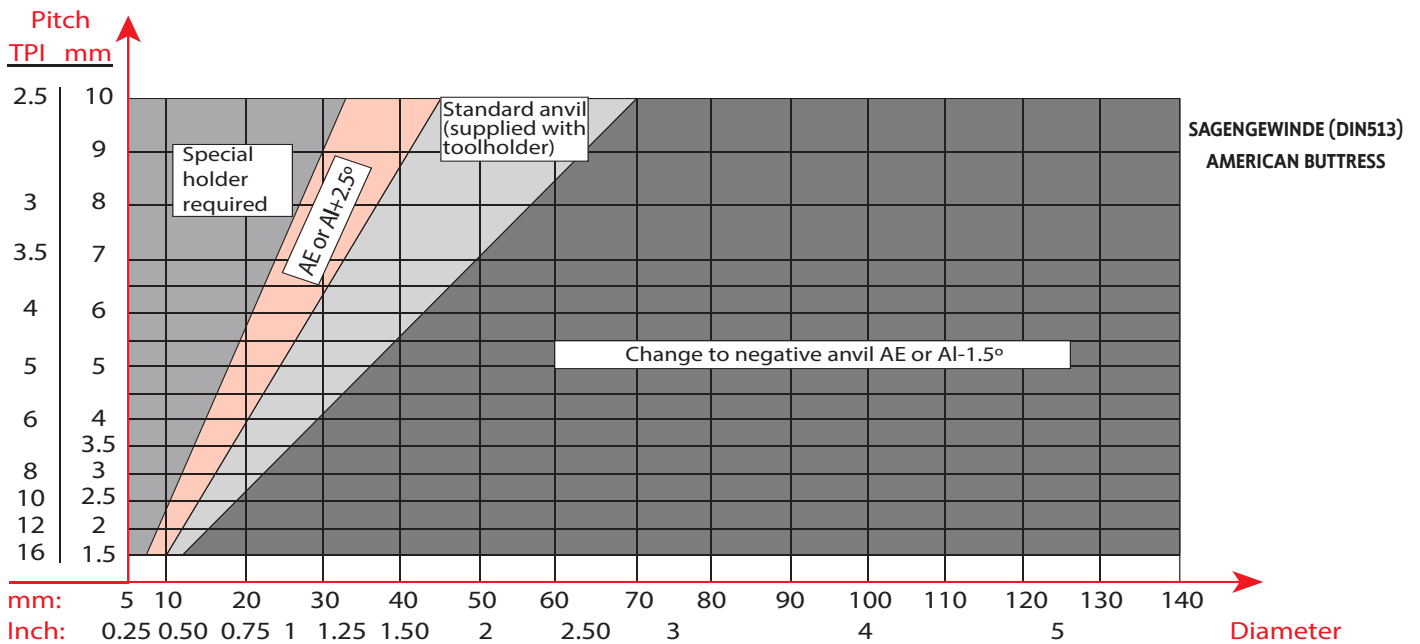


The majority of applications do not require an anvil change as it can be seen in the chart below. When change is required, use EA anvils for ER and IL toolholders and IA anvils for IR and EL toolholders.



Note: ER=External Right | IR=Internal Right | EL=External Left | IL=Internal Left

The chart below shows that most applications require an anvil change. In most cases a negative anvil is required. Use EA anvils for ER and IL toolholders and IA anvils for IR and EL toolholders.



Change from a standard anvil to a negative angle anvil will eliminate the side rubbing.

Note: ER=External Right | IR=Internal Right | EL=External Left | IL=Internal Left

THREADING TECHNICAL DATA

CUTTING CONDITIONS DEPENDS ON | | Condições de corte dependem de | Las condiciones de corte dependen de

| | | |
|---------------------------|---|--|
| Workpiece | Material Type | |
| | Material Dimension: Diameter and Length | |
| | Chipflow Character | |
| | Material Hardness | |
| Thread Application | External or Internal | |
| | Profile Shape | |
| | Surface Finish | |
| Machine | Machine Stability | |
| | Max. RPM | |
| | Clamping System Stability | |
| Coolant | Coolant Type | |
| Holders | Holder Cross Section Area | |
| | Holder Overhang | |
| | Through Coolant Option | |
| | Shank Type: Carbide, Alloy, Carbide Implant | |
| Partial Profile | Grade | |
| | Profile Shape: Pitch and Depth | |
| | Nose Radius | |
| | Chipbreaker Style | |

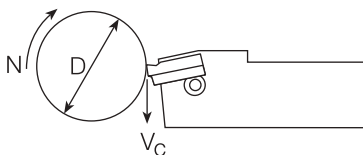
NUMBER OF CUTTING PASSES || Número de passos de corte | Número de pasos de corte

| Pitch | MM | 0.50 | 0.75 | 1.00 | 1.25 | 1.50 | 1.75 | 2.00 | 2.50 | 3.00 | 3.50 | 4.00 | 4.50 | 5.00 | 5.50 | 6.00 | 8.00 |
|---------------|-----|-------|-------|-------|-------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|
| | TPI | 48 | 32 | 24 | 20 | 16 | 14 | 12 | 10 | 8 | 7 | 6 | 5.5 | 5 | 4.5 | 4 | 3 |
| No. of Passes | | 4 - 6 | 4 - 7 | 4 - 8 | 5 - 9 | 6 - 10 | 7 - 12 | 7 - 12 | 8 - 14 | 9 - 16 | 10 - 18 | 11 - 18 | 11 - 19 | 12 - 20 | 12 - 20 | 12 - 20 | 15 - 24 |

CALCULATE THE N (RPM) || Calcular o N (rpm) | Calcular el N (rpm)

$$N = \frac{1000 \times V_c}{\pi \times D}$$

$$V_c = \frac{N \times \pi \times D}{1000}$$



N - Revolution Per Minute [RPM]
 V_c - Cutting Speed [m/min]
 D - Workpiece Diameter [mm]

ANVILS || Colchões | Colchones

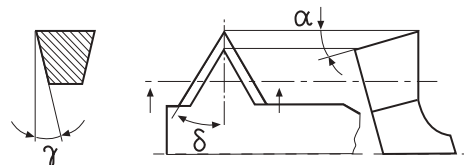
| Insert Size | | Holder Type | Resultant Helix Angle | | | | | | | |
|-------------|--------|-------------|-----------------------|---------|---------|--------------|---------|-----------|---------|---------|
| IC | L (mm) | | 4.5 | 3.5 | 2.5 | 1.5 standard | 0.5 | 0 | -0.5 | -1.5 |
| 3/8" | 16 | ER/IL | EA16 3P | EA16 2P | EA16 1P | EA16 | EA16 1N | EA16 1,5N | EA16 2N | EA16 3N |
| | | EL/IR | IA16 3P | IA16 2P | IA16 1P | IA16 | IA16 1N | IA16 1,5N | IA16 2N | IA16 3N |
| 1/2" | 22 | ER/IL | EA22 3P | EA22 2P | EA22 1P | EA22 | EA22 1N | EA22 1,5N | EA22 2N | EA22 3N |
| | | EL/IR | IA22 3P | IA22 2P | IA22 1P | IA22 | IA22 1N | IA22 1,5N | IA22 2N | IA22 3N |
| 5/8" | 27 | ER/IL | EA27 3P | EA27 2P | EA27 1P | EA27 | EA27 1N | EA27 1,5N | EA27 2N | EA27 3N |
| | | EL/IR | IA27 3P | IA27 2P | IA27 1P | IA27 | IA27 1N | IA27 1,5N | IA27 2N | IA27 3N |

FLANK CLEARANCE ANGLE - γ

$$\gamma = \text{tg}^{-1}[\text{tg}\alpha \times \text{tg}\delta]$$

$\alpha = 10^\circ$ for external

$\alpha = 15^\circ$ for internal



THREADING TECHNICAL DATA - RECOMMENDED N° OF PASSES

ISO METRIC EXTERNAL THREAD

| No. of Passes | Pitch (MM) | | | | | | | | | | | | | | | |
|---------------|------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | 6 | 5.5 | 5 | 4.5 | 4 | 3.5 | 3 | 2.5 | 2 | 1.75 | 1.5 | 1.25 | 1 | 0.75 | 0.5 | 0.35 |
| 1 | 0.45 | 0.43 | 0.42 | 0.39 | 0.34 | 0.34 | 0.27 | 0.26 | 0.24 | 0.23 | 0.23 | 0.20 | 0.19 | 0.17 | 0.11 | 0.10 |
| 2 | 0.37 | 0.36 | 0.37 | 0.33 | 0.30 | 0.31 | 0.23 | 0.22 | 0.23 | 0.21 | 0.21 | 0.18 | 0.16 | 0.15 | 0.09 | 0.08 |
| 3 | 0.33 | 0.31 | 0.31 | 0.29 | 0.25 | 0.24 | 0.20 | 0.20 | 0.19 | 0.16 | 0.18 | 0.14 | 0.13 | 0.11 | 0.08 | 0.06 |
| 4 | 0.28 | 0.27 | 0.28 | 0.25 | 0.21 | 0.20 | 0.18 | 0.17 | 0.17 | 0.14 | 0.16 | 0.12 | 0.10 | 0.06 | | |
| 5 | 0.26 | 0.25 | 0.25 | 0.23 | 0.19 | 0.19 | 0.17 | 0.16 | 0.15 | 0.12 | 0.11 | 0.10 | 0.06 | | | |
| 6 | 0.24 | 0.23 | 0.23 | 0.20 | 0.18 | 0.17 | 0.16 | 0.14 | 0.12 | 0.10 | 0.06 | 0.06 | | | | |
| 7 | 0.23 | 0.22 | 0.21 | 0.19 | 0.16 | 0.16 | 0.15 | 0.13 | 0.10 | 0.08 | | | | | | |
| 8 | 0.22 | 0.20 | 0.20 | 0.18 | 0.15 | 0.15 | 0.13 | 0.12 | 0.06 | 0.06 | | | | | | |
| 9 | 0.20 | 0.19 | 0.19 | 0.16 | 0.15 | 0.14 | 0.12 | 0.10 | | | | | | | | |
| 10 | 0.19 | 0.18 | 0.18 | 0.15 | 0.14 | 0.12 | 0.11 | 0.06 | | | | | | | | |
| 11 | 0.18 | 0.17 | 0.16 | 0.14 | 0.13 | 0.10 | 0.09 | | | | | | | | | |
| 12 | 0.17 | 0.16 | 0.14 | 0.12 | 0.12 | 0.06 | 0.06 | | | | | | | | | |
| 13 | 0.16 | 0.15 | 0.10 | 0.10 | 0.10 | | | | | | | | | | | |
| 14 | 0.14 | 0.12 | 0.06 | 0.06 | 0.06 | | | | | | | | | | | |
| 15 | 0.13 | 0.10 | | | | | | | | | | | | | | |
| 16 | 0.10 | 0.06 | | | | | | | | | | | | | | |
| 17 | 0.06 | | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | | |
| Total | 3.71 | 3.40 | 3.10 | 2.79 | 2.48 | 2.18 | 1.87 | 1.56 | 1.26 | 1.10 | 0.95 | 0.80 | 0.64 | 0.49 | 0.34 | 0.24 |

ISO METRIC INTERNAL THREAD

| No. of Passes | Pitch (MM) | | | | | | | | | | | | | | | |
|---------------|------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | 6 | 5.5 | 5 | 4.5 | 4 | 3.5 | 3 | 2.5 | 2 | 1.75 | 1.5 | 1.25 | 1 | 0.75 | 0.5 | 0.35 |
| 1 | 0.44 | 0.43 | 0.42 | 0.36 | 0.32 | 0.32 | 0.25 | 0.25 | 0.23 | 0.22 | 0.22 | 0.19 | 0.18 | 0.16 | 0.10 | 0.09 |
| 2 | 0.36 | 0.34 | 0.37 | 0.32 | 0.27 | 0.29 | 0.22 | 0.21 | 0.21 | 0.20 | 0.20 | 0.16 | 0.15 | 0.14 | 0.09 | 0.08 |
| 3 | 0.32 | 0.29 | 0.28 | 0.28 | 0.22 | 0.23 | 0.19 | 0.19 | 0.18 | 0.15 | 0.17 | 0.13 | 0.12 | 0.10 | 0.07 | 0.06 |
| 4 | 0.27 | 0.24 | 0.26 | 0.25 | 0.20 | 0.19 | 0.17 | 0.16 | 0.16 | 0.13 | 0.15 | 0.11 | 0.10 | 0.06 | 0.06 | |
| 5 | 0.25 | 0.23 | 0.24 | 0.22 | 0.19 | 0.18 | 0.16 | 0.15 | 0.14 | 0.11 | 0.10 | 0.10 | 0.06 | | | |
| 6 | 0.23 | 0.22 | 0.21 | 0.19 | 0.18 | 0.16 | 0.16 | 0.13 | 0.11 | 0.09 | 0.06 | 0.06 | | | | |
| 7 | 0.22 | 0.21 | 0.20 | 0.18 | 0.16 | 0.15 | 0.14 | 0.12 | 0.09 | 0.08 | | | | | | |
| 8 | 0.21 | 0.20 | 0.19 | 0.17 | 0.15 | 0.14 | 0.12 | 0.11 | 0.06 | 0.06 | | | | | | |
| 9 | 0.19 | 0.18 | 0.18 | 0.15 | 0.14 | 0.13 | 0.11 | 0.09 | | | | | | | | |
| 10 | 0.17 | 0.16 | 0.16 | 0.14 | 0.14 | 0.11 | 0.10 | 0.06 | | | | | | | | |
| 11 | 0.16 | 0.16 | 0.14 | 0.12 | 0.12 | 0.09 | 0.08 | | | | | | | | | |
| 12 | 0.15 | 0.15 | 0.12 | 0.10 | 0.10 | 0.06 | 0.06 | | | | | | | | | |
| 13 | 0.14 | 0.14 | 0.09 | 0.09 | 0.09 | | | | | | | | | | | |
| 14 | 0.13 | 0.11 | 0.06 | 0.06 | 0.06 | | | | | | | | | | | |
| 15 | 0.11 | 0.09 | | | | | | | | | | | | | | |
| 16 | 0.09 | 0.06 | | | | | | | | | | | | | | |
| 17 | 0.06 | | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | | |
| Total | 3.50 | 3.21 | 2.92 | 2.63 | 2.34 | 2.05 | 1.76 | 1.47 | 1.18 | 1.04 | 0.90 | 0.75 | 0.61 | 0.46 | 0.32 | 0.23 |

UN EXTERNAL THREAD

| No. of Passes | Pitch TPI | | | | | | | | | | | | | | | | | | |
|---------------|-----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | 4 | 4.5 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 16 | 18 | 20 | 24 | 28 | 32 | 48 |
| 1 | 0.44 | 0.43 | 0.42 | 0.37 | 0.33 | 0.29 | 0.29 | 0.26 | 0.25 | 0.25 | 0.24 | 0.23 | 0.22 | 0.21 | 0.20 | 0.20 | 0.18 | 0.18 | 0.13 |
| 2 | 0.38 | 0.35 | 0.37 | 0.32 | 0.28 | 0.22 | 0.24 | 0.22 | 0.22 | 0.23 | 0.22 | 0.20 | 0.20 | 0.19 | 0.16 | 0.17 | 0.15 | 0.16 | 0.09 |
| 3 | 0.33 | 0.30 | 0.32 | 0.27 | 0.23 | 0.20 | 0.23 | 0.20 | 0.19 | 0.20 | 0.18 | 0.18 | 0.18 | 0.17 | 0.15 | 0.14 | 0.11 | 0.12 | 0.07 |
| 4 | 0.29 | 0.28 | 0.27 | 0.25 | 0.22 | 0.18 | 0.22 | 0.17 | 0.17 | 0.18 | 0.16 | 0.14 | 0.14 | 0.16 | 0.13 | 0.11 | 0.09 | 0.06 | 0.06 |
| 5 | 0.27 | 0.26 | 0.26 | 0.24 | 0.21 | 0.17 | 0.18 | 0.16 | 0.16 | 0.16 | 0.14 | 0.12 | 0.11 | 0.11 | 0.11 | 0.06 | 0.06 | | |
| 6 | 0.26 | 0.23 | 0.24 | 0.18 | 0.19 | 0.16 | 0.16 | 0.15 | 0.15 | 0.14 | 0.13 | 0.11 | 0.09 | 0.06 | 0.06 | | | | |
| 7 | 0.24 | 0.22 | 0.22 | 0.17 | 0.18 | 0.16 | 0.15 | 0.14 | 0.13 | 0.11 | 0.10 | 0.10 | 0.06 | | | | | | |
| 8 | 0.23 | 0.21 | 0.20 | 0.16 | 0.15 | 0.15 | 0.12 | 0.12 | 0.12 | 0.06 | 0.06 | 0.06 | | | | | | | |
| 9 | 0.21 | 0.20 | 0.19 | 0.15 | 0.14 | 0.14 | 0.11 | 0.11 | 0.06 | | | | | | | | | | |
| 10 | 0.20 | 0.19 | 0.18 | 0.13 | 0.14 | 0.14 | 0.06 | 0.06 | | | | | | | | | | | |
| 11 | 0.19 | 0.18 | 0.17 | 0.12 | 0.12 | 0.11 | | | | | | | | | | | | | |
| 12 | 0.18 | 0.17 | 0.14 | 0.10 | 0.06 | 0.06 | | | | | | | | | | | | | |
| 13 | 0.18 | 0.15 | 0.11 | 0.11 | | | | | | | | | | | | | | | |
| 14 | 0.17 | 0.14 | 0.06 | 0.06 | | | | | | | | | | | | | | | |
| 15 | 0.16 | 0.12 | | | | | | | | | | | | | | | | | |
| 16 | 0.13 | 0.06 | | | | | | | | | | | | | | | | | |
| 17 | 0.06 | | | | | | | | | | | | | | | | | | |
| Total | 3.92 | 3.49 | 3.15 | 2.63 | 2.25 | 1.98 | 1.76 | 1.59 | 1.45 | 1.33 | 1.23 | 1.14 | 1.00 | 0.90 | 0.81 | 0.68 | 0.59 | 0.52 | 0.35 |

UN INTERNAL THREAD

| No. of Passes | Pitch TPI | | | | | | | | | | | | | | | | | | |
|---------------|-----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | 4 | 4.5 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 16 | 18 | 20 | 24 | 28 | 32 | 48 |
| 1 | 0.43 | 0.43 | 0.42 | 0.34 | 0.31 | 0.29 | 0.29 | 0.25 | 0.24 | 0.24 | 0.23 | 0.22 | 0.21 | 0.20 | 0.19 | 0.19 | 0.17 | 0.17 | 0.12 |
| 2 | 0.34 | 0.35 | 0.37 | 0.28 | 0.27 | 0.22 | 0.23 | 0.21 | 0.20 | 0.21 | 0.21 | 0.20 | 0.19 | 0.18 | 0.16 | 0.16 | 0.14 | 0.15 | 0.09 |
| 3 | 0.32 | 0.29 | 0.28 | 0.26 | 0.22 | 0.19 | 0.20 | 0.19 | 0.18 | 0.19 | 0.17 | 0.17 | 0.17 | 0.16 | 0.14 | 0.13 | 0.10 | 0.11 | 0.07 |
| 4 | 0.28 | 0.24 | 0.26 | 0.22 | 0.20 | 0.17 | 0.20 | 0.16 | 0.16 | 0.17 | 0.15 | 0.13 | 0.13 | 0.15 | 0.11 | 0.10 | 0.08 | 0.06 | 0.06 |
| 5 | 0.26 | 0.23 | 0.24 | 0.21 | 0.19 | 0.16 | 0.16 | 0.15 | 0.15 | 0.15 | 0.13 | 0.11 | 0.10 | 0.09 | 0.10 | 0.06 | 0.06 | | |
| 6 | 0.25 | 0.22 | 0.21 | 0.18 | 0.18 | 0.16 | 0.15 | 0.13 | 0.14 | 0.13 | 0.12 | 0.10 | 0.09 | 0.06 | 0.06 | | | | |
| 7 | 0.23 | 0.21 | 0.20 | 0.17 | 0.16 | 0.14 | 0.14 | 0.12 | 0.12 | 0.10 | 0.09 | 0.09 | 0.06 | | | | | | |
| 8 | 0.21 | 0.20 | 0.19 | 0.16 | 0.15 | 0.14 | 0.13 | 0.12 | 0.10 | 0.06 | 0.06 | 0.06 | | | | | | | |
| 9 | 0.20 | 0.19 | 0.18 | 0.15 | 0.14 | 0.13 | 0.11 | 0.11 | 0.06 | | | | | | | | | | |
| 10 | 0.19 | 0.18 | 0.16 | 0.13 | 0.14 | 0.12 | 0.06 | 0.06 | | | | | | | | | | | |
| 11 | 0.18 | 0.17 | 0.16 | 0.12 | 0.10 | 0.08 | | | | | | | | | | | | | |
| 12 | 0.17 | 0.16 | 0.13 | 0.10 | 0.06 | 0.06 | | | | | | | | | | | | | |
| 13 | 0.16 | 0.14 | 0.10 | 0.09 | | | | | | | | | | | | | | | |
| 14 | 0.16 | 0.12 | 0.06 | 0.06 | | | | | | | | | | | | | | | |
| 15 | 0.14 | 0.10 | | | | | | | | | | | | | | | | | |
| 16 | 0.12 | 0.06 | | | | | | | | | | | | | | | | | |
| 17 | 0.06 | | | | | | | | | | | | | | | | | | |
| Total | 3.70 | 3.29 | 2.96 | 2.47 | 2.12 | 1.86 | 1.67 | 1.50 | 1.35 | 1.25 | 1.16 | 1.08 | 0.95 | 0.84 | 0.76 | 0.64 | 0.55 | 0.49 | 0.34 |

THREADING TECHNICAL DATA - RECOMMENDED N° OF PASSES

W. EXTERNAL THREAD

| No. of Passes | Pitch TPI | | | | | | | | | | | | | | | | | | |
|---------------|-----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | 4 | 4.5 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 14 | 16 | 18 | 19 | 20 | 24 | 28 | 32 | 48 |
| 1 | 0.45 | 0.44 | 0.43 | 0.38 | 0.34 | 0.30 | 0.28 | 0.27 | 0.26 | 0.26 | 0.24 | 0.22 | 0.24 | 0.22 | 0.21 | 0.20 | 0.18 | 0.19 | 0.16 |
| 2 | 0.40 | 0.36 | 0.38 | 0.33 | 0.29 | 0.24 | 0.25 | 0.23 | 0.23 | 0.23 | 0.21 | 0.18 | 0.21 | 0.19 | 0.19 | 0.18 | 0.15 | 0.16 | 0.14 |
| 3 | 0.35 | 0.31 | 0.33 | 0.28 | 0.24 | 0.21 | 0.22 | 0.21 | 0.20 | 0.21 | 0.17 | 0.15 | 0.16 | 0.17 | 0.15 | 0.16 | 0.12 | 0.13 | 0.06 |
| 4 | 0.31 | 0.29 | 0.28 | 0.27 | 0.23 | 0.19 | 0.21 | 0.18 | 0.18 | 0.19 | 0.15 | 0.13 | 0.15 | 0.14 | 0.13 | 0.11 | 0.10 | 0.06 | |
| 5 | 0.28 | 0.27 | 0.27 | 0.25 | 0.22 | 0.18 | 0.20 | 0.17 | 0.17 | 0.17 | 0.14 | 0.12 | 0.11 | 0.11 | 0.10 | 0.06 | 0.06 | | |
| 6 | 0.27 | 0.24 | 0.25 | 0.19 | 0.20 | 0.17 | 0.17 | 0.16 | 0.16 | 0.15 | 0.12 | 0.10 | 0.06 | 0.06 | 0.06 | | | | |
| 7 | 0.25 | 0.23 | 0.23 | 0.18 | 0.19 | 0.17 | 0.17 | 0.14 | 0.13 | 0.12 | 0.10 | 0.09 | | | | | | | |
| 8 | 0.24 | 0.22 | 0.21 | 0.17 | 0.16 | 0.16 | 0.15 | 0.13 | 0.12 | 0.06 | 0.06 | 0.06 | | | | | | | |
| 9 | 0.22 | 0.21 | 0.20 | 0.16 | 0.15 | 0.14 | 0.13 | 0.11 | 0.06 | | | | | | | | | | |
| 10 | 0.21 | 0.20 | 0.19 | 0.14 | 0.15 | 0.13 | 0.06 | 0.06 | | | | | | | | | | | |
| 11 | 0.20 | 0.19 | 0.18 | 0.12 | 0.12 | 0.11 | | | | | | | | | | | | | |
| 12 | 0.19 | 0.18 | 0.15 | 0.10 | 0.06 | 0.06 | | | | | | | | | | | | | |
| 13 | 0.18 | 0.16 | 0.12 | 0.11 | | | | | | | | | | | | | | | |
| 14 | 0.18 | 0.15 | 0.06 | 0.06 | | | | | | | | | | | | | | | |
| 15 | 0.17 | 0.13 | | | | | | | | | | | | | | | | | |
| 16 | 0.13 | 0.06 | | | | | | | | | | | | | | | | | |
| 17 | 0.06 | | | | | | | | | | | | | | | | | | |
| Total | 4.09 | 3.64 | 3.28 | 2.74 | 2.35 | 2.06 | 1.84 | 1.66 | 1.51 | 1.39 | 1.19 | 1.05 | 0.93 | 0.89 | 0.84 | 0.71 | 0.61 | 0.54 | 0.36 |

W. INTERNAL THREAD

| No. of Passes | Pitch TPI | | | | | | | | | | | | | | | | | | |
|---------------|-----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | 4 | 4.5 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 14 | 16 | 18 | 19 | 20 | 24 | 28 | 32 | 48 |
| 1 | 0.45 | 0.44 | 0.43 | 0.38 | 0.34 | 0.30 | 0.28 | 0.27 | 0.26 | 0.26 | 0.24 | 0.22 | 0.24 | 0.22 | 0.21 | 0.20 | 0.18 | 0.19 | 0.16 |
| 2 | 0.40 | 0.36 | 0.38 | 0.33 | 0.29 | 0.24 | 0.25 | 0.23 | 0.23 | 0.23 | 0.21 | 0.18 | 0.21 | 0.19 | 0.19 | 0.18 | 0.15 | 0.16 | 0.14 |
| 3 | 0.35 | 0.31 | 0.33 | 0.28 | 0.24 | 0.21 | 0.22 | 0.21 | 0.20 | 0.21 | 0.17 | 0.15 | 0.16 | 0.17 | 0.15 | 0.16 | 0.12 | 0.13 | 0.06 |
| 4 | 0.31 | 0.29 | 0.28 | 0.27 | 0.23 | 0.19 | 0.21 | 0.18 | 0.18 | 0.19 | 0.15 | 0.13 | 0.15 | 0.14 | 0.13 | 0.11 | 0.10 | 0.06 | |
| 5 | 0.28 | 0.27 | 0.27 | 0.25 | 0.22 | 0.18 | 0.20 | 0.17 | 0.17 | 0.17 | 0.14 | 0.12 | 0.11 | 0.11 | 0.10 | 0.06 | 0.06 | | |
| 6 | 0.27 | 0.24 | 0.25 | 0.19 | 0.20 | 0.17 | 0.17 | 0.16 | 0.16 | 0.15 | 0.12 | 0.10 | 0.06 | 0.06 | 0.06 | | | | |
| 7 | 0.25 | 0.23 | 0.23 | 0.18 | 0.19 | 0.17 | 0.17 | 0.14 | 0.13 | 0.12 | 0.10 | 0.09 | | | | | | | |
| 8 | 0.24 | 0.22 | 0.21 | 0.17 | 0.16 | 0.16 | 0.15 | 0.13 | 0.12 | 0.06 | 0.06 | 0.06 | | | | | | | |
| 9 | 0.22 | 0.21 | 0.20 | 0.16 | 0.15 | 0.14 | 0.13 | 0.11 | 0.06 | | | | | | | | | | |
| 10 | 0.21 | 0.20 | 0.19 | 0.14 | 0.15 | 0.13 | 0.06 | 0.06 | | | | | | | | | | | |
| 11 | 0.20 | 0.19 | 0.18 | 0.12 | 0.12 | 0.11 | | | | | | | | | | | | | |
| 12 | 0.19 | 0.18 | 0.15 | 0.10 | 0.06 | 0.06 | | | | | | | | | | | | | |
| 13 | 0.18 | 0.16 | 0.12 | 0.11 | | | | | | | | | | | | | | | |
| 14 | 0.18 | 0.15 | 0.06 | 0.06 | | | | | | | | | | | | | | | |
| 15 | 0.17 | 0.13 | | | | | | | | | | | | | | | | | |
| 16 | 0.13 | 0.06 | | | | | | | | | | | | | | | | | |
| 17 | 0.06 | | | | | | | | | | | | | | | | | | |
| Total | 4.09 | 3.64 | 3.28 | 2.74 | 2.35 | 2.06 | 1.84 | 1.66 | 1.51 | 1.39 | 1.19 | 1.05 | 0.93 | 0.89 | 0.84 | 0.71 | 0.61 | 0.54 | 0.36 |

NPT EXTERNAL & INTERNAL

| No. of Passes | Pitch TPI | | | | |
|---------------|-----------|------|------|------|------|
| | 4 | 11.5 | 14 | 18 | 27 |
| 1 | 0.32 | 0.23 | 0.22 | 0.18 | 0.14 |
| 2 | 0.25 | 0.19 | 0.18 | 0.15 | 0.11 |
| 3 | 0.21 | 0.17 | 0.15 | 0.13 | 0.11 |
| 4 | 0.17 | 0.16 | 0.14 | 0.13 | 0.10 |
| 5 | 0.16 | 0.15 | 0.13 | 0.12 | 0.09 |
| 6 | 0.16 | 0.13 | 0.12 | 0.11 | 0.08 |
| 7 | 0.15 | 0.12 | 0.10 | 0.09 | 0.06 |
| 8 | 0.15 | 0.10 | 0.10 | 0.08 | |
| 9 | 0.14 | 0.10 | 0.09 | 0.06 | |
| 10 | 0.13 | 0.10 | 0.08 | | |
| 11 | 0.13 | 0.09 | 0.06 | | |
| 12 | 0.12 | 0.08 | | | |
| 13 | 0.12 | 0.06 | | | |
| 14 | 0.10 | | | | |
| 15 | 0.08 | | | | |
| 16 | 0.06 | | | | |
| Total | 2.45 | 1.68 | 1.37 | 1.05 | 0.69 |

NPTF EXTERNAL & INTERNAL

| No. of Passes | Pitch TPI | | | | |
|---------------|-----------|------|------|------|------|
| | 8 | 11.5 | 14 | 18 | 27 |
| 1 | 0.31 | 0.22 | 0.21 | 0.17 | 0.14 |
| 2 | 0.24 | 0.17 | 0.17 | 0.14 | 0.10 |
| 3 | 0.20 | 0.16 | 0.14 | 0.13 | 0.09 |
| 4 | 0.16 | 0.16 | 0.14 | 0.12 | 0.09 |
| 5 | 0.16 | 0.14 | 0.14 | 0.11 | 0.08 |
| 6 | 0.15 | 0.13 | 0.12 | 0.10 | 0.08 |
| 7 | 0.15 | 0.12 | 0.10 | 0.09 | 0.06 |
| 8 | 0.14 | 0.11 | 0.10 | 0.08 | |
| 9 | 0.14 | 0.10 | 0.09 | 0.06 | |
| 10 | 0.13 | 0.10 | 0.08 | | |
| 11 | 0.13 | 0.09 | 0.06 | | |
| 12 | 0.12 | 0.08 | | | |
| 13 | 0.12 | 0.06 | | | |
| 14 | 0.10 | | | | |
| 15 | 0.08 | | | | |
| 16 | 0.06 | | | | |
| Total | 2.39 | 1.64 | 1.35 | 1.00 | 0.64 |

TR EXTERNAL & INTERNAL

| No. of Passes | Pitch (MM) | | | | | | |
|---------------|------------|------|------|------|------|------|------|
| | 7.0 | 6.0 | 5.0 | 4.0 | 3.0 | 2.0 | 1.5 |
| 1 | 0.38 | 0.36 | 0.34 | 0.32 | 0.31 | 0.30 | 0.24 |
| 2 | 0.34 | 0.32 | 0.30 | 0.28 | 0.26 | 0.26 | 0.22 |
| 3 | 0.28 | 0.28 | 0.25 | 0.23 | 0.23 | 0.22 | 0.17 |
| 4 | 0.26 | 0.25 | 0.23 | 0.20 | 0.19 | 0.18 | 0.14 |
| 5 | 0.25 | 0.24 | 0.22 | 0.19 | 0.19 | 0.16 | 0.12 |
| 6 | 0.23 | 0.23 | 0.21 | 0.18 | 0.18 | 0.12 | 0.06 |
| 7 | 0.22 | 0.22 | 0.19 | 0.17 | 0.15 | 0.06 | |
| 8 | 0.21 | 0.20 | 0.18 | 0.16 | 0.12 | | |
| 9 | 0.20 | 0.19 | 0.17 | 0.15 | 0.11 | | |
| 10 | 0.19 | 0.17 | 0.16 | 0.14 | 0.06 | | |
| 11 | 0.19 | 0.16 | 0.14 | 0.12 | | | |
| 12 | 0.18 | 0.15 | 0.13 | 0.10 | | | |
| 13 | 0.18 | 0.13 | 0.12 | 0.06 | | | |
| 14 | 0.16 | 0.13 | 0.10 | | | | |
| 15 | 0.16 | 0.12 | 0.06 | | | | |
| 16 | 0.15 | 0.12 | | | | | |
| 17 | 0.15 | 0.11 | | | | | |
| 18 | 0.14 | 0.11 | | | | | |
| 19 | 0.12 | 0.06 | | | | | |
| 20 | 0.06 | | | | | | |
| Total | 4.05 | 3.55 | 2.80 | 2.30 | 1.80 | 1.30 | 0.95 |

THREADING TECHNICAL DATA - RECOMMENDED N° OF PASSES

ACME EXTERNAL & INTERNAL

| No. of Passes | Pitch TPI | | | | | | | |
|---------------|-----------|------|------|------|------|------|------|------|
| | 4 | 5 | 6 | 8 | 10 | 12 | 14 | 16 |
| 1 | 0.36 | 0.34 | 0.31 | 0.27 | 0.26 | 0.26 | 0.25 | 0.24 |
| 2 | 0.32 | 0.30 | 0.29 | 0.23 | 0.23 | 0.22 | 0.21 | 0.22 |
| 3 | 0.28 | 0.25 | 0.25 | 0.19 | 0.20 | 0.18 | 0.18 | 0.18 |
| 4 | 0.25 | 0.23 | 0.21 | 0.18 | 0.19 | 0.16 | 0.15 | 0.15 |
| 5 | 0.24 | 0.22 | 0.18 | 0.17 | 0.16 | 0.14 | 0.13 | 0.12 |
| 6 | 0.23 | 0.21 | 0.17 | 0.16 | 0.14 | 0.12 | 0.10 | 0.06 |
| 7 | 0.22 | 0.19 | 0.16 | 0.15 | 0.12 | 0.10 | 0.06 | |
| 8 | 0.20 | 0.19 | 0.15 | 0.14 | 0.11 | 0.06 | | |
| 9 | 0.19 | 0.18 | 0.15 | 0.12 | 0.10 | | | |
| 10 | 0.17 | 0.17 | 0.14 | 0.12 | 0.06 | | | |
| 11 | 0.15 | 0.15 | 0.13 | 0.10 | | | | |
| 12 | 0.14 | 0.13 | 0.12 | 0.06 | | | | |
| 13 | 0.13 | 0.12 | 0.10 | | | | | |
| 14 | 0.12 | 0.10 | 0.06 | | | | | |
| 15 | 0.11 | 0.06 | | | | | | |
| 16 | 0.11 | | | | | | | |
| 17 | 0.10 | | | | | | | |
| 18 | 0.10 | | | | | | | |
| 19 | 0.06 | | | | | | | |
| Total | 3.48 | 2.84 | 2.42 | 1.89 | 1.57 | 1.24 | 1.08 | 0.97 |

STUB ACME EXTERNAL & INTERNAL

| No. of Passes | Pitch TPI | | | | | | | |
|---------------|-----------|------|------|------|------|------|------|------|
| | 4 | 5 | 6 | 8 | 10 | 12 | 14 | 16 |
| 1 | 0.31 | 0.30 | 0.27 | 0.23 | 0.23 | 0.22 | 0.21 | 0.18 |
| 2 | 0.26 | 0.26 | 0.23 | 0.19 | 0.17 | 0.17 | 0.18 | 0.16 |
| 3 | 0.21 | 0.21 | 0.20 | 0.16 | 0.14 | 0.14 | 0.15 | 0.13 |
| 4 | 0.19 | 0.18 | 0.16 | 0.15 | 0.13 | 0.12 | 0.12 | 0.12 |
| 5 | 0.17 | 0.16 | 0.15 | 0.13 | 0.12 | 0.10 | 0.06 | 0.06 |
| 6 | 0.17 | 0.15 | 0.14 | 0.12 | 0.11 | 0.06 | | |
| 7 | 0.16 | 0.15 | 0.13 | 0.11 | 0.10 | | | |
| 8 | 0.15 | 0.13 | 0.12 | 0.10 | 0.06 | | | |
| 9 | 0.15 | 0.12 | 0.10 | 0.06 | | | | |
| 10 | 0.14 | 0.10 | 0.06 | | | | | |
| 11 | 0.13 | 0.06 | | | | | | |
| 12 | 0.11 | | | | | | | |
| 13 | 0.06 | | | | | | | |
| Total | 2.21 | 1.82 | 1.56 | 1.25 | 1.06 | 0.81 | 0.72 | 0.65 |

UNJ EXTERNAL THREAD

| No. of Passes | Pitch TPI | | | | | | | | | | | | |
|---------------|-----------|------|------|------|------|------|------|------|------|------|------|------|------|
| | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 16 | 18 | 20 | 24 | 28 | 32 |
| 1 | 0.29 | 0.29 | 0.26 | 0.25 | 0.25 | 0.24 | 0.23 | 0.22 | 0.21 | 0.20 | 0.20 | 0.18 | 0.18 |
| 2 | 0.22 | 0.24 | 0.22 | 0.22 | 0.23 | 0.22 | 0.20 | 0.20 | 0.19 | 0.16 | 0.17 | 0.14 | 0.15 |
| 3 | 0.20 | 0.22 | 0.19 | 0.19 | 0.19 | 0.18 | 0.17 | 0.17 | 0.16 | 0.14 | 0.13 | 0.10 | 0.11 |
| 4 | 0.18 | 0.20 | 0.17 | 0.16 | 0.17 | 0.15 | 0.14 | 0.13 | 0.15 | 0.12 | 0.10 | 0.09 | 0.06 |
| 5 | 0.16 | 0.17 | 0.15 | 0.15 | 0.15 | 0.13 | 0.11 | 0.10 | 0.10 | 0.10 | 0.06 | 0.06 | |
| 6 | 0.16 | 0.16 | 0.14 | 0.14 | 0.13 | 0.12 | 0.10 | 0.09 | 0.06 | 0.06 | | | |
| 7 | 0.15 | 0.14 | 0.13 | 0.12 | 0.10 | 0.09 | 0.09 | 0.06 | | | | | |
| 8 | 0.14 | 0.12 | 0.11 | 0.11 | 0.06 | 0.06 | 0.06 | | | | | | |
| 9 | 0.13 | 0.10 | 0.10 | 0.06 | | | | | | | | | |
| 10 | 0.12 | 0.06 | 0.06 | | | | | | | | | | |
| 11 | 0.10 | | | | | | | | | | | | |
| 12 | 0.06 | | | | | | | | | | | | |
| Total | 1.91 | 1.70 | 1.53 | 1.40 | 1.28 | 1.19 | 1.10 | 0.97 | 0.87 | 0.78 | 0.66 | 0.57 | 0.50 |

UNJ INTERNAL THREAD

| No. of Passes | Pitch TPI | | | | | | | | | | | | |
|---------------|-----------|------|------|------|------|------|------|------|------|------|------|------|------|
| | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 16 | 18 | 20 | 24 | 28 | 32 |
| 1 | 0.29 | 0.29 | 0.26 | 0.25 | 0.25 | 0.24 | 0.23 | 0.22 | 0.21 | 0.20 | 0.20 | 0.18 | 0.18 |
| 2 | 0.22 | 0.24 | 0.22 | 0.22 | 0.23 | 0.22 | 0.20 | 0.20 | 0.19 | 0.16 | 0.17 | 0.14 | 0.15 |
| 3 | 0.20 | 0.22 | 0.19 | 0.19 | 0.19 | 0.18 | 0.17 | 0.17 | 0.16 | 0.14 | 0.13 | 0.10 | 0.11 |
| 4 | 0.18 | 0.20 | 0.17 | 0.16 | 0.17 | 0.15 | 0.14 | 0.13 | 0.15 | 0.12 | 0.10 | 0.09 | 0.06 |
| 5 | 0.16 | 0.17 | 0.15 | 0.15 | 0.15 | 0.13 | 0.11 | 0.10 | 0.10 | 0.10 | 0.06 | 0.06 | |
| 6 | 0.16 | 0.16 | 0.14 | 0.14 | 0.13 | 0.12 | 0.10 | 0.09 | 0.06 | 0.06 | | | |
| 7 | 0.15 | 0.14 | 0.13 | 0.12 | 0.10 | 0.09 | 0.09 | 0.06 | | | | | |
| 8 | 0.14 | 0.12 | 0.11 | 0.11 | 0.06 | 0.06 | 0.06 | | | | | | |
| 9 | 0.13 | 0.10 | 0.10 | 0.06 | | | | | | | | | |
| 10 | 0.12 | 0.06 | 0.06 | | | | | | | | | | |
| 11 | 0.10 | | | | | | | | | | | | |
| 12 | 0.06 | | | | | | | | | | | | |
| Total | 1.91 | 1.70 | 1.53 | 1.40 | 1.28 | 1.19 | 1.10 | 0.97 | 0.87 | 0.78 | 0.66 | 0.57 | 0.50 |

THREADING TECHNICAL DATA - RECOMMENDED N° OF PASSES

MJ INTERNAL THREAD

| No. of Passes | Pitch (MM) | | | | | |
|---------------|------------|------|------|------|------|------|
| | 1.0 | 1.25 | 1.5 | 2.0 | 2.5 | 3.0 |
| 1 | 0.16 | 0.17 | 0.22 | 0.23 | 0.24 | 0.24 |
| 2 | 0.13 | 0.14 | 0.19 | 0.21 | 0.21 | 0.20 |
| 3 | 0.11 | 0.12 | 0.14 | 0.18 | 0.18 | 0.18 |
| 4 | 0.09 | 0.10 | 0.11 | 0.16 | 0.16 | 0.17 |
| 5 | 0.06 | 0.09 | 0.09 | 0.14 | 0.14 | 0.16 |
| 6 | | 0.06 | 0.06 | 0.10 | 0.13 | 0.15 |
| 7 | | | | 0.06 | 0.12 | 0.13 |
| 8 | | | | | 0.10 | 0.12 |
| 9 | | | | | 0.06 | 0.10 |
| 10 | | | | | | 0.09 |
| 11 | | | | | | 0.06 |
| 12 | | | | | | |
| Total | 0.55 | 0.68 | 0.81 | 1.08 | 1.34 | 1.60 |

MJ EXTERNAL THREAD

| No. of Passes | Pitch (MM) | | | | | |
|---------------|------------|------|------|------|------|------|
| | 1.0 | 1.25 | 1.5 | 2.0 | 2.5 | 3.0 |
| 1 | 0.18 | 0.18 | 0.22 | 0.23 | 0.25 | 0.26 |
| 2 | 0.15 | 0.16 | 0.20 | 0.22 | 0.21 | 0.22 |
| 3 | 0.13 | 0.14 | 0.18 | 0.18 | 0.19 | 0.19 |
| 4 | 0.10 | 0.12 | 0.15 | 0.16 | 0.16 | 0.17 |
| 5 | 0.06 | 0.10 | 0.11 | 0.14 | 0.15 | 0.16 |
| 6 | | 0.06 | 0.06 | 0.12 | 0.14 | 0.15 |
| 7 | | | | 0.10 | 0.13 | 0.14 |
| 8 | | | | 0.06 | 0.12 | 0.13 |
| 9 | | | | | 0.10 | 0.12 |
| 10 | | | | | 0.06 | 0.11 |
| 11 | | | | | | 0.09 |
| 12 | | | | | | 0.06 |
| Total | 0.62 | 0.76 | 0.92 | 1.21 | 1.51 | 1.80 |

RD (DIN 20400) EXTERNAL & INTERNAL THREAD

| No. of Passes | Pitch (MM) | | | |
|---------------|------------|------|------|------|
| | 6.0 | 5.0 | 4.0 | 3.0 |
| 1 | 0.35 | 0.32 | 0.25 | 0.24 |
| 2 | 0.33 | 0.28 | 0.24 | 0.23 |
| 3 | 0.32 | 0.27 | 0.23 | 0.21 |
| 4 | 0.31 | 0.26 | 0.22 | 0.20 |
| 5 | 0.30 | 0.25 | 0.21 | 0.19 |
| 6 | 0.29 | 0.24 | 0.20 | 0.18 |
| 7 | 0.26 | 0.22 | 0.19 | 0.14 |
| 8 | 0.23 | 0.20 | 0.18 | 0.11 |
| 9 | 0.22 | 0.19 | 0.16 | 0.10 |
| 10 | 0.19 | 0.16 | 0.14 | 0.09 |
| 11 | 0.17 | 0.15 | 0.12 | 0.06 |
| 12 | 0.15 | 0.13 | 0.10 | |
| 13 | 0.12 | 0.12 | 0.06 | |
| 14 | 0.10 | 0.06 | | |
| 15 | 0.06 | | | |
| Total | 3.40 | 2.85 | 2.30 | 1.75 |

RD (DIN 405) EXTERNAL & INTERNAL THREAD

| No. of Passes | Pitch TPI | | | |
|---------------|-----------|------|------|------|
| | 4 | 6 | 8 | 10 |
| 1 | 0.35 | 0.25 | 0.24 | 0.23 |
| 2 | 0.32 | 0.24 | 0.22 | 0.21 |
| 3 | 0.31 | 0.22 | 0.20 | 0.19 |
| 4 | 0.30 | 0.21 | 0.19 | 0.18 |
| 5 | 0.29 | 0.20 | 0.18 | 0.16 |
| 6 | 0.28 | 0.19 | 0.16 | 0.14 |
| 7 | 0.25 | 0.18 | 0.14 | 0.11 |
| 8 | 0.22 | 0.16 | 0.11 | 0.09 |
| 9 | 0.21 | 0.15 | 0.10 | 0.06 |
| 10 | 0.18 | 0.13 | 0.09 | |
| 11 | 0.16 | 0.12 | 0.06 | |
| 12 | 0.13 | 0.11 | | |
| 13 | 0.12 | 0.06 | | |
| 14 | 0.10 | | | |
| 15 | 0.06 | | | |
| Total | 3.28 | 2.22 | 1.69 | 1.37 |

PG INTERNAL & EXTERNAL

| No. of Passes | Pitch TPI | | |
|---------------|-----------|------|------|
| | 20 | 18 | 16 |
| 1 | 0.17 | 0.18 | 0.19 |
| 2 | 0.15 | 0.14 | 0.16 |
| 3 | 0.14 | 0.12 | 0.13 |
| 4 | 0.10 | 0.10 | 0.11 |
| 5 | 0.06 | 0.09 | 0.10 |
| 6 | | 0.06 | 0.09 |
| 7 | | | 0.06 |
| Total | 0.62 | 0.69 | 0.78 |

AMERICAN BUTTRESS EXTERNAL & INTERNAL

| No. of Passes | Pitch TPI | | | | | |
|---------------|-----------|------|------|------|------|------|
| | 6 | 8 | 10 | 12 | 16 | 20 |
| 1 | 0.28 | 0.25 | 0.22 | 0.21 | 0.20 | 0.18 |
| 2 | 0.24 | 0.22 | 0.20 | 0.19 | 0.18 | 0.16 |
| 3 | 0.21 | 0.19 | 0.19 | 0.18 | 0.17 | 0.14 |
| 4 | 0.20 | 0.19 | 0.17 | 0.16 | 0.14 | 0.13 |
| 5 | 0.20 | 0.17 | 0.16 | 0.15 | 0.13 | 0.12 |
| 6 | 0.19 | 0.16 | 0.15 | 0.14 | 0.12 | 0.10 |
| 7 | 0.19 | 0.16 | 0.13 | 0.13 | 0.10 | 0.06 |
| 8 | 0.18 | 0.15 | 0.12 | 0.12 | 0.06 | |
| 9 | 0.17 | 0.14 | 0.12 | 0.11 | | |
| 10 | 0.16 | 0.13 | 0.11 | 0.06 | | |
| 11 | 0.15 | 0.12 | 0.10 | | | |
| 12 | 0.14 | 0.11 | 0.06 | | | |
| 13 | 0.14 | 0.10 | | | | |
| 14 | 0.13 | 0.06 | | | | |
| 15 | 0.12 | | | | | |
| 16 | 0.10 | | | | | |
| 17 | 0.06 | | | | | |
| Total | 2.86 | 2.15 | 1.73 | 1.45 | 1.10 | 0.89 |

THREADING TECHNICAL DATA - RECOMMENDED N° OF PASSES

SAGENGWINDE (DIN 513) EXTERNAL

| No. of Passes | Pitch (MM) | | |
|---------------|------------|------|------|
| | 4.0 | 3.0 | 2.0 |
| 1 | 0.32 | 0.30 | 0.29 |
| 2 | 0.30 | 0.28 | 0.26 |
| 3 | 0.27 | 0.26 | 0.24 |
| 4 | 0.25 | 0.24 | 0.19 |
| 5 | 0.23 | 0.22 | 0.18 |
| 6 | 0.21 | 0.21 | 0.17 |
| 7 | 0.20 | 0.20 | 0.15 |
| 8 | 0.19 | 0.18 | 0.14 |
| 9 | 0.18 | 0.17 | 0.11 |
| 10 | 0.17 | 0.15 | 0.06 |
| 11 | 0.16 | 0.14 | |
| 12 | 0.15 | 0.13 | |
| 13 | 0.15 | 0.11 | |
| 14 | 0.15 | 0.06 | |
| 15 | 0.14 | | |
| 16 | 0.14 | | |
| 17 | 0.13 | | |
| 18 | 0.12 | | |
| 19 | 0.06 | | |
| Total | 3.52 | 2.65 | 1.79 |

SAGENGWINDE (DIN 513) INTERNAL

| No. of Passes | Pitch (MM) | | |
|---------------|------------|------|------|
| | 4.0 | 3.0 | 2.0 |
| 1 | 0.32 | 0.31 | 0.29 |
| 2 | 0.30 | 0.29 | 0.27 |
| 3 | 0.27 | 0.27 | 0.25 |
| 4 | 0.24 | 0.24 | 0.21 |
| 5 | 0.23 | 0.23 | 0.18 |
| 6 | 0.21 | 0.22 | 0.16 |
| 7 | 0.20 | 0.20 | 0.12 |
| 8 | 0.19 | 0.19 | 0.06 |
| 9 | 0.18 | 0.16 | |
| 10 | 0.17 | 0.13 | |
| 11 | 0.16 | 0.06 | |
| 12 | 0.15 | | |
| 13 | 0.14 | | |
| 14 | 0.13 | | |
| 15 | 0.10 | | |
| 16 | 0.06 | | |
| Total | 3.05 | 2.30 | 1.54 |

API EXTERNAL & INTERNAL

| No. of Passes | VO.038R 4 TPI | | VO.050 4 TPI | | VO.040 5 TPI | Buttress casing 5 TPI | |
|---------------|---------------|-------|--------------|-------|--------------|-----------------------|---------|
| | 2 IPF | 3 IPF | 2 IPF | 3 IPF | 3 IPF | 0.75 IPF | 1.0 IPF |
| 1 | 0.45 | 0.45 | 0.44 | 0.44 | 0.41 | 0.24 | 0.24 |
| 2 | 0.38 | 0.38 | 0.39 | 0.39 | 0.36 | 0.22 | 0.22 |
| 3 | 0.33 | 0.33 | 0.34 | 0.34 | 0.32 | 0.18 | 0.18 |
| 4 | 0.30 | 0.30 | 0.31 | 0.31 | 0.28 | 0.14 | 0.14 |
| 5 | 0.28 | 0.28 | 0.28 | 0.28 | 0.26 | 0.12 | 0.12 |
| 6 | 0.24 | 0.24 | 0.26 | 0.26 | 0.24 | 0.12 | 0.12 |
| 7 | 0.22 | 0.22 | 0.24 | 0.24 | 0.22 | 0.12 | 0.12 |
| 8 | 0.20 | 0.20 | 0.23 | 0.23 | 0.20 | 0.10 | 0.10 |
| 9 | 0.18 | 0.18 | 0.21 | 0.21 | 0.18 | 0.10 | 0.10 |
| 10 | 0.14 | 0.14 | 0.19 | 0.19 | 0.14 | 0.10 | 0.10 |
| 11 | 0.13 | 0.13 | 0.18 | 0.18 | 0.13 | 0.10 | 0.10 |
| 12 | 0.12 | 0.12 | 0.16 | 0.16 | 0.12 | 0.06 | 0.06 |
| 13 | 0.11 | 0.10 | 0.14 | 0.14 | 0.11 | | |
| 14 | 0.06 | 0.06 | 0.13 | 0.13 | 0.06 | | |
| 15 | | | 0.12 | 0.12 | | | |
| 16 | | | 0.10 | 0.11 | | | |
| 17 | | | 0.06 | 0.06 | | | |
| Total | 3.14 | 3.13 | 3.79 | 3.78 | 3.03 | 1.60 | 1.60 |

API EXTERNAL & INTERNAL

| No. of Passes | Extreme Line Casing 6 TPI 1.5 IPF | | Extreme Line Casing 5 TPI 1.5 IPF | | Round API 0.75 IPF 8 TPI | | Round API 0.75 IPF 10 TPI | |
|---------------|--------------------------------------|----------|--------------------------------------|----------|-----------------------------|----------|------------------------------|----------|
| | External | Internal | External | Internal | External | Internal | External | Internal |
| 1 | 0.23 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| 2 | 0.20 | 0.20 | 0.22 | 0.23 | 0.22 | 0.22 | 0.20 | 0.20 |
| 3 | 0.16 | 0.17 | 0.20 | 0.21 | 0.20 | 0.20 | 0.17 | 0.17 |
| 4 | 0.15 | 0.15 | 0.18 | 0.19 | 0.18 | 0.18 | 0.15 | 0.15 |
| 5 | 0.13 | 0.14 | 0.15 | 0.16 | 0.16 | 0.16 | 0.14 | 0.14 |
| 6 | 0.12 | 0.13 | 0.14 | 0.15 | 0.15 | 0.15 | 0.13 | 0.13 |
| 7 | 0.11 | 0.12 | 0.13 | 0.14 | 0.14 | 0.14 | 0.12 | 0.12 |
| 8 | 0.10 | 0.12 | 0.12 | 0.13 | 0.13 | 0.13 | 0.12 | 0.12 |
| 9 | 0.06 | 0.10 | 0.11 | 0.12 | 0.12 | 0.12 | 0.10 | 0.10 |
| 10 | | 0.06 | 0.10 | 0.11 | 0.11 | 0.11 | 0.06 | 0.06 |
| 11 | | | 0.10 | 0.11 | 0.11 | 0.11 | | |
| 12 | | | 0.06 | 0.10 | 0.06 | 0.06 | | |
| 13 | | | | 0.06 | | | | |
| Total | 1.26 | 1.44 | 1.76 | 1.96 | 1.83 | 1.83 | 1.44 | 1.44 |

THREADING TECHNICAL DATA

TAPER PIPE THREAD: NPT / ANSI/ASME B 1.20.1-1983 - INTERNAL THREAD AMERICAN NATIONAL STANDARD TAPER PIPE THREADS

| Thread Size | | | | Recommended Tools | |
|-------------|-----------|----------|---------------|-------------------|---------------|
| | Pitch TPI | Pitch MM | Profile Depth | Insert | Toolholder |
| NPT 1/16 | 27 | 0.941 | 0.69 | 06IR 27NPT | S12H SXFNR 06 |
| NPT 1/8 | 27 | 0.941 | 0.69 | 08IR 27NPT | S16K SXFNR 08 |
| NPT 1/4 | 18 | 1,411 | 1.05 | 08IR 18NPT | S16K SXFNR 08 |
| NPT 3/8 | 18 | 1,411 | 1.05 | 11IR 18NPT | S10K SXFNR 11 |
| NPT 1/2 | 14 | 1,814 | 1.37 | 16IR 14NPT | S13M SXFNR 16 |
| NPT 3/4 | 14 | 1,814 | 1.37 | 16IR 14NPT | S16P SXFNR 16 |
| NPT 1 | 11.5 | 2,209 | 1.68 | 16IR 11.5NPT | S20P SXFNR 16 |
| NPT 1 1/4 | 11.5 | 2,209 | 1.68 | 16IR 11.5NPT | S25R SXFNR 16 |
| NPT 1 1/2 | 11.5 | 2,209 | 1.68 | 16IR 11.5NPT | S32S SXFNR 16 |
| NPT 2 | 11.5 | 2,209 | 1.68 | 16IR 11.5NPT | S32S SXFNR 16 |
| NPT 2 1/2 | 8 | 3,175 | 2.45 | 16IR 8NPT | S40T SXFNR 16 |
| NPT 3 | 8 | 3,175 | 2.45 | 16IR 8NPT | S40T SXFNR 16 |
| NPT 3 1/2 | 8 | 3,175 | 2.45 | 16IR 8NPT | S40T SXFNR 16 |
| NPT 4 | 8 | 3,175 | 2.45 | 16IR 8NPT | S40T SXFNR 16 |
| NPT 5 | 8 | 3,175 | 2.45 | 16IR 8NPT | S40T SXFNR 16 |

TAPER PIPE THREAD: NPTF / ANSI B 1.20.3-1976 - INTERNAL THREAD AMERICAN NATIONAL STANDARD DRYSEAL PIPE THREADS


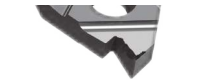


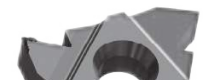
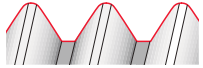
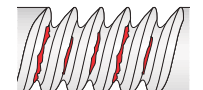
| Thread Size | | | | Recommended Tools | |
|-------------|-----------|----------|---------------|-------------------|---------------|
| | Pitch TPI | Pitch MM | Profile Depth | Insert | Toolholder |
| NPTF 1/16 | 27 | 0.941 | 0.64 | 06IR 27NPTF | S12H SXFNR 06 |
| NPTF 1/8 | 27 | 0.941 | 0.64 | 08IR 27NPTF | S16K SXFNR 08 |
| NPTF 1/4 | 18 | 1,411 | 1.00 | 08IR 18NPTF | S16K SXFNR 08 |
| NPTF 3/8 | 18 | 1,411 | 1.00 | 11IR 18NPTF | S10K SXFNR 11 |
| NPTF 1/2 | 14 | 1,814 | 1.35 | 16IR 14NPTF | S13M SXFNR 16 |
| NPTF 3/4 | 14 | 1,814 | 1.35 | 16IR 14NPTF | S16P SXFNR 16 |
| NPTF 1 | 11.5 | 2,209 | 1.64 | 16IR 11.5NPTF | S20P SXFNR 16 |
| NPTF 1 1/4 | 11.5 | 2,209 | 1.64 | 16IR 11.5NPTF | S25R SXFNR 16 |
| NPTF 1 1/2 | 11.5 | 2,209 | 1.64 | 16IR 11.5NPTF | S32S SXFNR 16 |
| NPTF 2 | 11.5 | 2,209 | 1.64 | 16IR 11.5NPTF | S32S SXFNR 16 |
| NPTF 2 1/2 | 8 | 3,175 | 2.39 | 16IR 08NPTF | S40T SXFNR 16 |
| NPTF 3 | 8 | 3,175 | 2.39 | 16IR 08NPTF | S40T SXFNR 16 |

PARALLEL PIPE THREAD / BSP (G) - INTERNAL THREAD

| Thread Size | | | | | Recommended Tools | |
|-------------|-----------|----------|---------------|---------------|-------------------|---------------|
| | Pitch TPI | Pitch MM | Profile Depth | Bore Diameter | Insert | Toolholder |
| G1/16 | 28 | 0.907 | 0.581 | 6,561 | 06IR 28W | S12H SXFNR 06 |
| G1/8 | 28 | 0.907 | 0.581 | 8,556 | 08IR 28W | S16K SXFNR 08 |
| G1/4 | 19 | 1,337 | 0.856 | 11,445 | 08IR 19W | S16K SXFNR 08 |
| G3/8 | 19 | 1,337 | 0.856 | 14,950 | 11IR 19W | S10K SXFNR 11 |
| G1/2 | 14 | 1,814 | 1,162 | 18,631 | 16IR 14W | S13M SXFNR 16 |
| G5/8 | 14 | 1,814 | 1,162 | 20,587 | 16IR 14W | S16P SXFNR 16 |
| G3/4 | 14 | 1,814 | 1,162 | 24,117 | 16IR 14W | S16P SXFNR 16 |
| G7/8 | 11 | 1,814 | 1,162 | 27,877 | 16IR 14W | S20P SXFNR 16 |
| G1 | 11 | 2,309 | 1,479 | 30,291 | 16IR 11W | S20P SXFNR 16 |
| G1 1/8 | 11 | 2,309 | 1,479 | 34,939 | 16IR 11W | S25R SXFNR 16 |
| G1 1/4 | 11 | 2,309 | 1,479 | 38,952 | 16IR 11W | S25R SXFNR 16 |
| G1 1/2 | 11 | 2,309 | 1,479 | 44,845 | 16IR 11W | S32S SXFNR 16 |
| G1 3/4 | 11 | 2,309 | 1,479 | 50,788 | 16IR 11W | S32S SXFNR 16 |
| G2 | 11 | 2,309 | 1,479 | 56,656 | 16IR 11W | S32S SXFNR 16 |

TAPER PIPE THREAD / B SPT (RC) - INTERNAL THREAD

| Thread Size | | | | | Recommended Tools | |
|-------------|-----------|----------|---------------|---------------|-------------------|---------------|
| | Pitch TPI | Pitch MM | Profile Depth | Bore Diameter | Insert | Toolholder |
| Rc 1/16 | 28 | 0.907 | 0.581 | 6,561 | 06IR 28BSPT | S12H SXFNR 06 |
| Rc 1/8 | 28 | 0.907 | 0.581 | 8,556 | 08IR 28BSPT | S16K SXFNR 08 |
| Rc 1/4 | 19 | 1,337 | 0.856 | 11,445 | 08IR 19BSPT | S16K SXFNR 08 |
| Rc 3/8 | 19 | 1,337 | 0.856 | 14,950 | 11IR 19BSPT | S10K SXFNR 11 |
| Rc 1/2 | 14 | 1,814 | 1,162 | 18,631 | 16IR 14BSPT | S13M SXFNR 16 |
| Rc 5/8 | 14 | 1,814 | 1,162 | 20,587 | 16IR 14BSPT | S16P SXFNR 16 |
| Rc 3/4 | 14 | 1,814 | 1,162 | 24,117 | 16IR 14BSPT | S16P SXFNR 16 |
| Rc 7/8 | 14 | 1,814 | 1,162 | 27,877 | 16IR 14BSPT | S20P SXFNR 16 |
| Rc 1 | 11 | 2,309 | 1,479 | 30,291 | 16IR 11BSPT | S20P SXFNR 16 |
| Rc 1 1/8 | 11 | 2,309 | 1,479 | 34,939 | 16IR 11BSPT | S25R SXFNR 16 |
| Rc 1 1/4 | 11 | 2,309 | 1,479 | 38,952 | 16IR 11BSPT | S25R SXFNR 16 |
| Rc 1 1/2 | 11 | 2,309 | 1,479 | 44,845 | 16IR 11BSPT | S32S SXFNR 16 |
| Rc 1 3/4 | 11 | 2,309 | 1,479 | 50,788 | 16IR 11BSPT | S32S SXFNR 16 |
| Rc 2 | 11 | 2,309 | 1,479 | 56,656 | 16IR 11BSPT | S32S SXFNR 16 |

| Problem Problema | Possible Cause Causa Possível Causa Posible | Solution Solução Solución |
|---|--|---|
| <p>Increased flank wear Desgaste da aresta Desgaste del flanco</p>  | <ul style="list-style-type: none"> • Cutting speed too high • Velocidade de corte alta • Alta velocidad de corte • Depth of cut too low/ too many passes • Profundidade de corte demasiado baixa / demasiados passos • Profundidad de corte demasiado baja / demasiados pasos • Unsuitable carbide grade • Grau desajustado • Grado desajustado • Insufficient cooling • Refrigeração insuficiente • Insuficiente refrigeración | <ul style="list-style-type: none"> • Reduce cutting speed / Use coated insert • Reduza a velocidade de corte / Use uma pastilha revestida • Reducir la velocidad de corte / Utilice un inserto recubierto • Increase the depth of cut per pass • Aumente a profundidade de corte por passo • Aumento de la profundidad de corte por paso • Use a coated carbide grade • Use um grau revestido • Utilice un grado recubierto • Increase coolant flow rate • Aumente o fluxo de refrigeração • Aumentar el flujo de refrigeración |
| <p>Uneven cutting edge wear Deformação da aresta de corte Deformación del flanco de corte</p>  | <ul style="list-style-type: none"> • Incorrect helix angle • Ângulo da hélice incorrecto • Ângulo de hélice incorrecta • Wrong infeed method • Método de avanço incorrecto • Método incorrecto de avance | <ul style="list-style-type: none"> • Choose the correct anvil • Escolha o ângulo correcto • Elija el ángulo correcto • Use the Alternating Flank Infeed method • Use um método alternativo de avanço • Utilizar un método alternativo de avance |
| <p>Extreme plastic deformation Deformação plástica extrema Deformación plástica extrema</p>  | <ul style="list-style-type: none"> • Depth of cut too large • Profundidade de corte demasiado larga • Profundidad de corte demasiado grande • Insufficient cooling • Refrigeração insuficiente • Insuficiente refrigeración • Cutting speed too high • Velocidade de corte alta • Alta velocidad de corte • Unsuitable carbide grade • Grau não aconselhável • Grado no es aconsejable • Nose radius too small • Raio demasiado pequeno • Radio demasiado pequeno | <ul style="list-style-type: none"> • Decrease depth of cut / Increase number of passes • Diminua a profundidade de corte / Aumente o número de passos • Reducir la profundidad de corte / Aumentar el número de pasos • Increase coolant flow rate • Aumente o fluxo de refrigeração • Aumentar el flujo de refrigeración • Reduce cutting speed • Reduza a velocidade de corte • Reducir la velocidad de corte • Use a tougher carbide • Use um grau mais macio • Usar un grado más suave • Use an insert with a larger radius, if possible • Use uma pastilha com um raio mais largo, se possível • Utilice un inserto con un radio más amplio, si es posible |
| <p>Cutting edge breakage Quebra da aresta de corte Rotura del flanco de corte</p>  | <ul style="list-style-type: none"> • Depth of cut too large • Profundidade de corte demasiado larga • Profundidad de corte demasiado grande • Extreme plastic deformation • Deformação plástica extrema • Deformación plástica extrema • Insufficient cooling • Refrigeração insuficiente • Insuficiente refrigeración • Unsuitable carbide grade • Grau não aconselhável • Grado no es aconsejable • Instability • Instabilidade • Inestabilidad | <ul style="list-style-type: none"> • Decrease depth of cut / Increase number of passes • Diminua a profundidade de corte / Aumente o número de passos • Reducir la profundidad de corte / Aumentar el número de pasos • Use a tougher carbide • Use um grau mais macio • Usar un grado más suave • Increase flow rate and/ or correct flow direction • Aumento o fluxo ou melhore o direcionamento da refrigeração • Aumentar o mejorar la dirección del flujo de la refrigeración • Use a tougher carbide • Use um grau mais macio • Usar un grado más suave • Check stability of the system • Verifique a estabilidade do sistema • Compruebe la estabilidad del sistema |
| <p>Built-up edge Aresta postica Filos recrescidos</p>  | <ul style="list-style-type: none"> • Incorrect cutting speed • Velocidade de corte incorrecta • Velocidad de corte incorrecta • Unsuitable carbide grade • Grau não aconselhável • Grado no es aconsejable | <ul style="list-style-type: none"> • Change the cutting speed • Altere a velocidade de corte • Cambiar la velocidad de corte • Use a coated carbide • Utilize um grau revestido • Utilice un grado recubierto |
| <p>Thread profile is too shallow Perfil da rosca muito irregular Perfil de la rosca muy irregular</p>  | <ul style="list-style-type: none"> • The tool is not at the workpiece axis height • A pastilha não está a maquinar a crista da rosca • El inserto no está mecanizando • Insert is not machining the thread crest • A ferramenta não está posicionada correctamente • La herramienta no está colocada correctamente a cresta de la rosca • Worn insert • Pastilha gasta • Inserto pasado | <ul style="list-style-type: none"> • Change tool height • Altere o posicionamento em altura da ferramenta • Cambiar la posición en la altura de la herramienta • Measure the workpiece diameter • Medir o diâmetro correcto da peça de trabalho • Medir el diámetro de la pieza de trabajo • Change the cutting edge sooner • Mudar antecipadamente a aresta de corte • Cambiar el flanco de corte en anticipo |
| <p>Thread profile is too shallow Má qualidade superfície Acabado de superficie malo</p>  | <ul style="list-style-type: none"> • Cutting speed too low • Velocidade de corte baixa • Velocidad de corte baja • Wrong anvil • Colchão errado • Colchón cambiado • Flank infeed method is not appropriate • Posição de avanço inapropriada • Posición de avance inadecuada | <ul style="list-style-type: none"> • Increase cutting speed • Aumente a velocidade de corte • Aumentar la velocidad de corte • Choose correct anvil • Escolha um colchão mais apropriado • Elija un colchón más apropiado • Use the alternate flank or radial infeed method • Use um método de flanqueamento ou radial alternativo • Utilice un método flanqueamento o radial alternativo |

WORKPIECE MATERIALS = PALBIT SELECTION MATERIALS, PSM

Material da peça - seleção de materiais Palbit, PSM | Material de la pieza - selección materiales Palbit, PSM

Steel, Ferritic and Martensitic Stainless Steel

| ISO | PSM | Material Example | Description | R _m (N/mm ²) | kcX (N/mm ²) | m _c |
|----------|-----|------------------|---|-------------------------------------|--------------------------|----------------|
| P | 1 | Ck50 | Structural steels; ordinary carbon steels with low to medium carbon content(<0,5%C); soft carbon steel; free cutting steel. | <500 | 1500 | 0.25 |
| | 2 | 42CrMnNiMo 4 | Normal tool steels; harder steels for toughening; Martensitic stainless steels; Carbon steels with high carbon content (>0,5%C); Ferritic and martensitic stainless steels. | 550<900 | 1900 | 0.24 |
| | 3 | X40CrMoV51 | Normal tool steels; Harder steels for toughening; Martensitic stainless steels; Difficult tool steels; High-alloy steels with high hardness; Martensitic stainless steels. | 900<1200 | 2000 | 0.24 |

Easy-cutting, Austenitic and Duplex Stainless Steel

| ISO | PSM | Material Example | Description | R _m (N/mm ²) | kcX (N/mm ²) | m _c |
|----------|-----|------------------|---|-------------------------------------|--------------------------|----------------|
| M | 4 | X8CrNiS189 | Easy-cutting stainless steels; Free-cutting stainless steels; Calcium-treated stainless steels. | | 1750 | 0.22 |
| | 5 | X2CrNiMo17122 | Moderately to difficult stainless steels: Austenitic and duplex. | | 2050 | 0.20 |
| | 6 | X2CrNiMoN2253 | Very difficult stainless steels: Austenitic and duplex. | | 2150 | 0.20 |

Cast Iron

| ISO | PSM | Material Example | Description | R _m (N/mm ²) | kcX (N/mm ²) | m _c |
|----------|-----|------------------|--|-------------------------------------|--------------------------|----------------|
| K | 7 | GJL-150 | Medium / hard cast iron; Grey cast iron. | | 1150 | 0.22 |
| | 8 | GJL-250 | Low-alloy cast iron; Malleable cast iron; Nodular cast iron. | | 1225 | 0.25 |
| | 9 | GJL-350 | Difficult high-alloy cast iron; Difficult malleable cast iron; Nodular cast iron | | 1470 | 0.30 |

Aluminium and Non-Ferrous

| ISO | PSM | Material Example | Description | R _m (N/mm ²) | kcX (N/mm ²) | m _c |
|----------|-----|----------------------------|---|-------------------------------------|--------------------------|----------------|
| N | 10 | AW7075 AlSi12 CuZn37 | Aluminium alloys: Low Si Aluminium alloys: High Si Copper alloys | | | |

Heat Resistant Super Alloys

| ISO | PSM | Material Example | Description | R _m (N/mm ²) | kcX (N/mm ²) | m _c |
|----------|-----|------------------|--|-------------------------------------|--------------------------|----------------|
| S | 11 | Inconel 718 | Ni-based super-alloys Titanium alloys | | 3300 1450 | 0.24 0.23 |

Please note that the R_m value is only for selection of the material group and when the material has been heat treatment or other methods that increase the strength of the material.

WORKPIECE MATERIALS - PALBIT SELECTION MATERIALS, PSM

| ISO | DIN | W.-Nr | EN | EN-Nr | AFNOR | BS | UNI | |
|-----------|----------|----------|-----------|----------|---------------|---------------|---------------|----------|
| 1 | 20Mn5 | 1.1133 | | | 20M5 | 120M19 | G22Mn3 | |
| | 30Mn5 | 1.1165 | G28Mn6 | 1.1165 | | 120M36 | | |
| | C10 | 1.0301 | C10 | 1.0301 | AF34C 10;XC10 | 045M10 | C10 | |
| | C15 | 1.0401 | | | AF37C 12;XC18 | 080M15 | C15;C16 | |
| | C22 | 1.0402 | C22+N | 1.0402 | C20 | 050A20 | C20;C21 | |
| | C25 | 1.0406 | C25+N | 1.0406 | AF50C30 | 070M26 | C25 | |
| | Ck10 | 1.1121 | C10E | 1.1121 | XC10 | 040A10 | C10 | |
| | Ck15 | 1.1141 | C15R | 1.1141 | XC15;XC18 | 080M15 | 15;C16 | |
| | Ck22 | 1.1151 | C22E | 1.1151 | XC25;XC18 | 040A22 | C20 | |
| | Ck25 | 1.1158 | | | XC25 | 060A25 | C25 | |
| | St37-2 | 1.0037 | S235JR | 1.0037 | E24-2 | | Fe360B | |
| | St37-3 | 1.0116 | S235JRG2 | 1.0038 | E24-3;E24-4 | 4360-40C | Fe360DFF | |
| | St44-2 | 1.0044 | S275J0H | 1.0149 | E28-2 | 4360-43B | Fe430BFN | |
| | St44-3N | 1.0144 | S275J2G3 | 1.0144 | E28-3;E28-4 | 4360-43C | Fe430DFF | |
| | 10S20 | 1.0721 | 10S20 | 1.0721 | 10F1 | 210M15 | CF10S20 | |
| | 10SPb20 | 1.0722 | | | 10PbF2 | | CF10SPb20 | |
| | 15S20 | 1.0723 | 15SMn13 | 1.0725 | | 210A15 | | |
| | 35S20 | 1.0726 | 35S20 | 1.0726 | 35MF4 | 212M36 | | |
| | 46S20 | 1.0727 | 46S20 | 1.0727 | 45MF4 | 212M44 | | |
| | 60S20 | 1.0728 | 60S20 | 1.0728 | 60MF4 | | | |
| | 9S20 | 1.0711 | | | | 220M07 | CF9S22 | |
| | 9SMn28 | 1.0715 | 11SMn30 | 1.0715 | S250 | 230M07 | CF9SMn28 | |
| | 9SMn36 | 1.0736 | 11SMn37 | 1.0736 | S300 | 240M07 | CF9SMn36 | |
| | 9SMnPb28 | 1.0718 | 11SMnPb30 | 1.0718 | S250Pb | | CF9SMnPb28 | |
| | 9SMnPb36 | 1.0737 | 11SMnPb37 | 1.0737 | S300Pb | | CF9SMnPb36 | |
| | 14Ni6 | 1.5622 | | | 16N6 | | 14Ni6 | |
| | 16Mo5 | 1.5423 | | | | 1503-245-420 | 16Mo5 | |
| | 36Mn5 | 1.1167 | G28Mn6+QT | 1.1165 | 40M5 | 150M36 | | |
| | 40Mn4 | 1.1157 | | | 35M5 | 150M36 | | |
| | C30 | 1.0528 | | | C30 | 080A30 | | |
| | C35 | 1.0501 | C35+N | | AF55C35 | 060A35 | C35 | |
| | C40 | 1.0511 | C40+N | | AF60C40 | 080M40 | C40 | |
| | C45 | 1.0503 | E335 | 1.0503 | AF65C45 | 80M46 | C45 | |
| | C50 | 1.0540 | C50+N | | C50 | 080M50 | | |
| | Ck30 | 1.1178 | C30E | 1.1178 | | 060A30 | | |
| | Ck35 | 1.1181 | C35E | 1.1181 | XC38H1;XC32 | 080M36 | C35 | |
| | Ck40 | 1.1186 | C40E | 1.1186 | XC42H1 | 080M40 | C40 | |
| | Ck50 | 1.1206 | C50E | 1.1206 | XC48H1 | 080M50 | | |
| | Ck55 | 1.1203 | C55E | 1.1203 | XC55 | 070M55 | C50 | |
| | St52-3 | 1.0570 | S355JR | 1.0570 | E36-3;E36-4 | 4360-50C | Fe510B;C;D | |
| | St70-2 | 1.0535 | E360 | 1.0070 | A70-2 | | Fe690 | |
| | 2 | 12Ni19 | 1.5680 | | | Z18N5 | | |
| | | 13Cr2 | 1.7012 | | | | | |
| | | 13CrMo44 | 1.7335 | 13CrMo45 | 1.7335 | 15CD3.5 | 1501-620Gr.27 | 14CrMo45 |
| | | 14MoV63 | 1.7715 | | | | 1503-660-440 | |
| | | 14NiCr10 | 1.5732 | | | 14NC11 | | 16NiCr11 |
| | | 14NiCr14 | 1.5752 | 14NiCr14 | 1.5752 | 12NC15 | 655M13 | |
| 15Cr3 | | 1.7015 | | | 12C3 | 523M15 | | |
| 15CrMo5 | | 1.7262 | | | 12CD4 | | 12CrMo4 | |
| 15CrMoV59 | | 1.8521 | | | | | | |
| 15CrNi6 | | 1.5919 | | | 16NC6 | S107 | 16CrNi4 | |
| 15Mo3 | | 1.5415 | 16Mo3 | 1.5415 | 15D3 | 1501-240 | 16Mo3 | |
| 15NiCr14 | | 1.2735 | | | 10NC12 | | | |
| 16CrMo44 | | 1.7337 | | | 15CD4.5 | 1501-620Gr.27 | 14CrMo45 | |
| 16MnCr5 | | 1.7131 | 16MnCr5 | 1.5715 | 16MC5 | 527M17 | 16MnCr5 | |
| 16MnCrS5 | | 1.7139 | 16MnCrS5 | 1.7139 | | | | |
| 18CrNi8 | | 1.5920 | | | 20NC6 | | | |
| 18CrNiMo6 | | 1.6587 | 17CrNiMo6 | 1.6587 | 18NCD6 | 820A16 | 18NiCrMo7 | |
| 20CrMo2 | | 1.7311 | | | | | | |
| 20CrMo5 | | 1.7264 | 20CrMo5 | 1.7264 | 18CD4 | | | |
| 20MnCr5 | | 1.7147 | 20MnCr5 | 1.7147 | 20MC5 | | 20MnCr5 | |
| 20MnCrS5 | | 1.7149 | 20MnCrS5 | 1.7149 | 20MnCrS5 | | | |
| 20MoCr4 | | 1.7321 | | | | | | |
| 20MoCrS4 | | 1.7323 | | | | | | |
| 21MnCr5 | | 1.2162 | | | 20NC5 | | | |

| JIS | SS | UNS | AISI/ASTM | Misc. Brand | Condition | Form | Structure |
|-----------------|-----------|--------|---------------|-------------|-----------|------|-----------|
| SMnC420 | | G10220 | 1022;1518 | | | | |
| SMn1H;SCMn2 | | G13300 | 1330 | | | | |
| S10C | | G10100 | 1010 | | | | |
| | 1350 | G10170 | 1015 | | | | |
| | 1450 | G10200 | 1023 | | | | |
| S25C | | | 1025 | | | | |
| S10C;S9CK | 1265 | G10100 | 1010 | | | | |
| S15C;S15CK | 1370 | G10170 | 1015 | | | | |
| S22C;S20CK | | | 1022 | | | | |
| S25C | | G10250 | 1025 | | | | |
| STKM12C | 1311 | | | | | | |
| | 1312;1313 | | A573Gr.58 | | | | |
| SM41B | 1412 | | A570Gr.40 | | | | |
| SM41C | 1412;1414 | | A573Gr.70 | | | | |
| | | | 1108 | | | | |
| | | | 11L08 | | | | |
| SUM32 | 1922 | | | | | | |
| | 1957 | G11400 | 1140 | | | | |
| | 1973 | G11460 | 1146 | | | | |
| SUM21 | | G12120 | 1212 | | | | |
| SUM22 | 1912 | G12130 | 1213 | | | | |
| | | G12150 | 1215 | | | | |
| SUM22L | 1914 | G12134 | 12L13 | | | | |
| | 1926 | G12144 | 12L14 | | | | |
| | | | A350-LF5 | | | | |
| SB450M | | G45200 | 4520 | | | | |
| SMn438(H);SCMn3 | 2120 | G13350 | 1335 | | | | |
| | | G10390 | 1039 | | | | |
| S30C | | | | | | | |
| | 1550 | G10350 | 1035 | | | | |
| S40C | | | 1040 | | | | |
| S45C | 1650 | G10430 | 1045 | | | | |
| S50C | | | 1049 | | | | |
| S30C | | | 1030 | | | | |
| S35C | 1572 | G10340 | 1035 | | | | |
| S40C | | | 1040 | | | | |
| | | | 1050 | | | | |
| S55C | | | 1055 | | | | |
| SM50YA | 2172;2132 | | | | | | |
| | 1655 | | 1055 | | | | |
| | | | 2515 | | | | |
| | 2216 | | A182-F11;F12 | | | | |
| SNC415(H) | | | 3415 | | | | |
| SNC815(H) | | G33106 | 3310;9314 | | | | |
| SCr415(H) | | G50150 | 5015 | | | | |
| SCM415(H) | | | | | | | |
| | | | 4320 | | | | |
| | 2912 | | A204Gr.A | | | | |
| SNC22 | | T51606 | P6 | | | | |
| | 2216 | | A387Gr.12Cl.2 | | | | |
| SCR415 | 2511 | G51170 | 5115 | | | | |
| | | | | | | | |
| | | | | | | | |
| SCM421 | | | | | | | |
| SMnC420(H) | | G51200 | 5120 | | | | |
| SMnC21H | | | 5120H | | | | |
| | | | | | | | |
| SCR420H | | | | | | | |

WORKPIECE MATERIALS - PALBIT SELECTION MATERIALS, PSM

| ISO | DIN | W.-Nr | EN | EN-Nr | AFNOR | BS | UNI |
|-----------|-------------|--------|--------------|-----------|--------------|--------------|---------------|
| 2 | 21NiCrMo2 | 1.6523 | 20NiCrMoS22 | 1.6526 | 20NCD2 | 805M20 | 20NiCrMo2 |
| | 23CrMoB33 | 1.7271 | | | | | |
| | 25CrMo4 | 1.7218 | 25CrMo4 | 1.7218 | 25CD4S | 1717CDS110 | 25CrMo4(KB) |
| | 25MoCr4 | 1.7325 | | | | | |
| | 25MoCrS4 | 1.7326 | | | | | |
| | 28Cr4 | 1.7030 | 28Cr4 | 1.7030 | | 530A30 | |
| | 28NiCrMo4 | 1.6513 | | | | | |
| | 30CrMoV9 | 1.7707 | | | | | |
| | 30CrNiMo8 | 1.6580 | | | 30CND8 | 823M30 | 30NiCrMo8 |
| | 31CrMoV9 | 1.8519 | 31CrMoV9 | 1.8519 | 32CDV12 | | |
| | 31NiCr14 | 1.5755 | | | 30NC11 | 653M31 | |
| | 32Cr2 | 1.7020 | | | | | |
| | 32CrMo12 | 1.7361 | | | 30CD12 | 722M24 | 32CrMo12 |
| | 34Cr4 | 1.7033 | 34Cr4 | 1.7033 | 32C4 | 530A32 | 34Cr4(KB) |
| | 34CrMo4 | 1.7220 | 34CrMo4 | 1.7220 | 35CD4 | 708A37 | 35CrMo4 |
| | 35CrMo4 | 1.2330 | | | 34CD4 | 708A37 | 35CrMo4 |
| | 35NiCr18 | 1.5864 | | | | | |
| | 36CrNiMo4 | 1.6511 | 36CrNiMo4+TA | | 40NCD3 | 816M40 | 38NiCrMo4(KB) |
| | 36NiCr10 | 1.5736 | | | 35NC11 | | 35NiCr9 |
| | 36NiCr6 | 1.5710 | | | 35NC6 | 640A35 | |
| | 37Cr4 | 1.7034 | | | 38C4 | 530A36 | 38Cr4 |
| | 37MnSi4 | 1.5122 | | | | | |
| | 38Cr2 | 1.7003 | 38Cr2 | 1.7003 | 38C2 | | 38Cr2 |
| | 38MnSi4 | 1.5120 | | | | | |
| | 39CrMoV139 | 1.8523 | | | | 897M39 | 36CrMoV139 |
| | 40CrMnMo7 | 1.2311 | | | | | |
| | 40CrMnMoS86 | 1.2312 | | | 40CMD8S | | |
| | 40CrMnNiMo8 | 1.2738 | | | 40CND8 | | |
| | 41Cr4 | 1.7035 | 41Cr4 | 1.7035 | 42C4 | 530M40 | 41Cr4 |
| | 41CrMo4 | 1.7223 | | | 42CD4TS | 708M40 | 41CrMo4 |
| | 42Cr4 | 1.7045 | | | 42C4TS | 530A40 | 41Cr4 |
| | 42CrMo4 | 1.7225 | 42CrMo4 | 1.7225 | 42CD4 | 708M40 | 42CrMo4 |
| | 42CrV6 | 1.7561 | | | | | |
| | 42MnV7 | 1.5223 | | | | | |
| | 43CrMo4 | 1.3563 | | | | | |
| | 44Cr2 | 1.3561 | | | | | |
| | 46Cr2 | 1.7006 | | | 42C2 | | 45Cr2 |
| | 46MnSi4 | 1.5121 | | | | | |
| | 48CrMo4 | 1.3565 | | | | | |
| | 50CrMo4 | 1.7228 | | | | 708A47 | |
| | 50CrV4 | 1.8159 | 50CrV4 | 1.8159 | 50CV4 | 735A50 | 51CrV4 |
| | 50MnSi4 | 1.5131 | 50MnSi4 | 1.5131 | | | |
| | 53MnSi4 | 1.5141 | | | | | |
| | 55Cr3 | 1.7176 | 55Cr3 | 1.7176 | 55C3 | 527A60 | 55Cr3 |
| | 55Si7 | 1.0904 | 55SiCr7 | 1.7100 | 55S7 | 250A53 | 55Si8 |
| | 58SiCr8 | 1.2103 | | | | | |
| | 60SiCr7 | 1.0961 | | | 60SC7 | | 60SiCr8 |
| | 62SiMnCr4 | 1.2101 | | | | | |
| | C45W | 1.1730 | | | Y342 | | |
| | C55W | 1.1820 | | | | | |
| | C60 | 1.0601 | C60+N | 1.0601 | CC55 | 080A62 | C60 |
| | C60W | 1.1740 | | | Y355 | | |
| C67W | 1.1744 | | | | | | |
| C70W1 | 1.1520 | | | | | | |
| C70W2 | 1.1620 | | | | | | |
| C75W | 1.1750 | C75W | 1.1750 | | BW1A | | |
| C80W1 | 1.1525 | | | Y190;Y180 | | C80KU | |
| C80W2 | 1.1625 | | | Y180 | BW1B | C80KU | |
| C85W | 1.1830 | | | Y390 | | | |
| Ck45 | 1.1191 | C45E | 1.1191 | XC42 | 080M46 | C45 | |
| Ck60 | 1.1221 | C60E | 1.1221 | XC60 | 080A62 | C60 | |
| Ck67 | 1.1231 | C67S | 1.1231 | XC68 | 060A67 | C70 | |
| Ck75 | 1.1248 | C75S | 1.1248 | XC75 | 060A78 | C75 | |
| GS-50CrV4 | 1.8159 | | | | | | |
| St60-2 | 1.0060 | E335 | 1.0060 | A60-2 | 4360-SSE;SSC | Fe590;Fe60-2 | |

| JIS | SS | UNS | AISI/ASTM | Misc. Brand | Condition | Form | Structure |
|----------|-----------|--------|-----------|-------------|-----------|------|-----------|
| SUS410 | 2506 | G86170 | 8620 | | | | |
| SUS405 | | | | | | | |
| SUH442 | 2225 | G41300 | 4130 | | | | |
| SUS410 | | | | | | | |
| SUS430F | | | | | | | |
| SUS416 | | | 5130 | | | | |
| SUS410J1 | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| SCS5 | | | | | | | |
| SUH409 | | | | | | | |
| SUS403 | 2240 | | | | | | |
| SUS430 | | G51320 | 5132 | | | | |
| SUS405 | 2234 | G41350 | 4135;4137 | | | | |
| | 2234 | T51620 | 4135 | | | | |
| SUS430LX | | | | | | | |
| SUS430LX | | G98400 | 9840 | | | | |
| | | | 3435 | | | | |
| SUJ2 | | | 3135 | | | | |
| SKS3 | | | 5135 | | | | |
| SKS43 | | | | | | | |
| SKS31 | | | | | | | |
| | | | | | | | |
| | | | P20 | | | | |
| | | | P20+S | | | | |
| | | | P20+Ni | | | | |
| | | G51400 | 5140 | | | | |
| | 2244 | G41420 | 4142;4140 | | | | |
| | 2245*) | | 5140 | | | | |
| | 2244 | G41400 | 4142;4140 | | | | |
| | | | | | | | |
| SNCM447 | | | | | | | |
| SNCM240 | | | | | | | |
| SNCM439 | | | | | | | |
| SACM645 | | | 5045 | | | | |
| | | | 5045 | | | | |
| | | | | | | | |
| | | G41470 | 4150 | | | | |
| | 2230 | H61500 | 6150 | | | | |
| | | | | | | | |
| | | | | | | | |
| | 2253 | G51550 | 5155 | | | | |
| | 2085;2090 | | 9255 | | | | |
| | | | | | | | |
| | | | 9262 | | | | |
| SK3 | | | | | | | |
| SK2 | | | | | | | |
| SK1 | | G10600 | 1060 | | | | |
| SUP4 | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | T72301 | W1 | | | | |
| | | | W108 | | | | |
| SUS420J1 | | | | | | | |
| | | | | | | | |
| SUS431 | 1672 | G10420 | | | | | |
| | 1665;1678 | G10640 | 1064 | | | | |
| SUS420J2 | 1770 | G10700 | 1070 | | | | |
| | 1774;1778 | G10780 | 1078;1080 | | | | |
| | | | 6150H | | | | |
| SUS420 | | | | | | | |

WORKPIECE MATERIALS - PALBIT SELECTION MATERIALS, PSM

| ISO | DIN | W.-Nr | EN | EN-Nr | AFNOR | BS | UNI |
|------------|------------------|-----------|--------------|--------|---------------|------------------|---------------|
| 2 | X10Cr13 | 1.4006 | X12Cr13 | 1.4006 | Z12C13 | 410S21 | X12Cr13 |
| | X10CrAl13 | 1.4724 | X10CrAl13 | 1.4724 | Z10C13 | BH12 | X10CrAl12 |
| | X10CrAl24 | 1.4762 | X10CrAl24 | 1.4762 | Z10CAS24 | | X16Cr26 |
| | X12Cr13 | 1.4006 | X12Cr13 | 1.4006 | | 410S21 | |
| | X12CrMoS17 | 1.4104 | X14CrMoS17 | 1.4104 | Z10CF17 | 441S29 | X10CrS17 |
| | X12CrS 13 | 1.4005 | X12CrS 13 | 1.4005 | Z12CF13 | 416S21 | X12CrS13 |
| | X15Cr13 | 1.4024 | X12Cr13 | 1.4024 | Z12C13 | 420S29 | |
| | X2CrMoTi182 | 1.4521 | X2CrMoTi182 | 1.4521 | | | |
| | X2CrMoTi182 | 1.4521 | X2CrMoTi182 | 1.4521 | | | |
| | X2CrNi12 | 1.4003 | X2CrNi13 | 1.4003 | | | |
| | X5CrNi134 | 1.4313 | X3CrNiMo133 | 1.4313 | Z5CN13.4 | 425C11 | X6CrNi1304 |
| | X5CrTi12 | 1.4512 | X5CrTi12 | 1.4512 | Z6CT12 | 409S19 | X6CrTi12 |
| | X6Cr13 | 1.4000 | X6Cr13 | 1.4000 | Z6C12 | 403S17 | X6 Cr13 |
| | X6Cr17 | 1.4016 | X6Cr17 | 1.4016 | Z8C17 | 430S15 | X8 Cr17 |
| | X6CrAl13 | 1.4002 | X6CrAl13 | 1.4002 | Z6CA13 | 405S17 | X6CrAl13 |
| | X6CrMo4 | 1.2341 | X6CrMo4 | 1.2341 | | | |
| | X6CrTi17 | 1.4510 | X6CrTi17 | 1.4510 | Z8CT17 | | X6CrTi17 |
| | X8CrNb 17 | 1.4511 | X3CrNb 17 | 1.4511 | Z8CNb17 | | X6CrNb17 |
| | 10CrMo910 | 1.7380 | 10CrMo910 | 1.7380 | 10CD9.10 | 1501-622Gr.31;45 | 12CrMo910 |
| | 100Cr6 | 1.3505 | 100Cr6 | 1.3505 | 100C6 | 534A99 | 100Cr6 |
| | 100MnCrW4 | 1.2510 | | | 90MWCv5 | BO1 | 95MnWCr5KU |
| | 100V1 | 1.2833 | | | Y1105V | BW2 | 102V2KU |
| | 105WCr6 | 1.2419 | 105WCr6 | 1.2419 | 105WC13 | | 107WCr5KU |
| | 115CrV3 | 1.2210 | 107CrV3 | 1.2210 | 100C3 | | 107CrV3KU |
| | 120WV4 | 1.2516 | | | 110WC20 | BF1 | 110W4KU |
| | 14CrMoV69 | 1.7735 | 14CrMoV69 | 1.7735 | 20CDV5.07 | | |
| | 14NiCr18 | 1.5860 | | | | | |
| | 21CrMoV57 | 1.7709 | | | | | |
| | 32NiCrMo145 | 1.6746 | | | 35NCD14 | 830M31 | |
| | 34CrAl6 | 1.8504 | 34CrAl6 | 1.8504 | | | |
| | 34CrAlMo5 | 1.8507 | | | 30CAD6.12 | 905M31 | 34CrAlMo7 |
| | 34CrAlNi7 | 1.8550 | 34CrAlNi7 | 1.8550 | 34CAND7 | | |
| | 34CrAlS5 | 1.8506 | | | | | |
| 34CrNiMo6 | 1.6582 | 34CrNiMo6 | 1.6582 | 35NCD6 | 817M40 | 35NiCrMo6(KW) | |
| 40NiCrMo22 | 1.6546 | | | 40NCD2 | 311-Type7 | 40NiCrMo2(KB) | |
| 40NiCrMo6 | 1.6565 | | | | 311-Type6 | | |
| 3 | 41CrAlMo7 | 1.8509 | 41CrAlMo710 | 1.8509 | 40CAD6.12 | 905M39 | 41CrAlMo7 |
| | 45WCrV7 | 1.2542 | | | | BS1 | 45WCrV8KU |
| | 50NiCr13 | 1.2721 | | | | | |
| | 58CrV4 | 1.8161 | | | | | |
| | 60MnSiCr4 | 1.2826 | | | | | |
| | 60WCrV7 | 1.2550 | | | 55WC20 | | 55WCrV8KU |
| | 67SiCr5 | 1.7103 | | | | | |
| | 90CrSi5 | 1.2108 | | | | | |
| | 90Mn4 | 1.1273 | | | | | |
| | 90MnCrV8 | 1.2842 | 90MnCrV8 | 1.2842 | 90MV8 | BO2 | 90MnVCr8KU |
| | C105W1 | 1.1545 | C105U | 1.1545 | Y1105 | | C100KU |
| | C105W2 | 1.1645 | | | Y1105 | | C100KU |
| | C110W | 1.1654 | | | | | |
| | C125W | 1.1663 | | | Y2120 | | C120KU |
| | C135W | 1.1673 | | | Y2140 | | C140KU |
| | Ck101 | 1.1274 | C100S | 1.1274 | | 060A96 | |
| | GS-34CoCrMoV1912 | 1.2887 | | | | | |
| | G-X28CrMoV51 | 1.2392 | | | | | |
| | G-X37CrMoV51 | 1.2606 | | | | | |
| | X18CrN28 | 1.4749 | X18CrN28 | 1.4749 | Z18C25 | | |
| | X19NiCrMo4 | 1.2764 | | | | | |
| | X20Cr13 | 1.4021 | X20Cr13 | 1.4021 | Z20C13 | 420S37 | X20Cr13 |
| | X20CrMoWV121 | 1.4935 | X20CrMoWV121 | 1.4935 | | | |
| | X20CrNi172 | 1.4057 | X20CrNi172 | 1.4057 | Z15CN16.02 | 431S29 | X16CrNi16 |
| | X22CrMoV121 | 1.4923 | X22CrMoV121 | 1.4923 | Z21CDV12 | 762 | X22CrMoV121 |
| | X30Cr13 | 1.4028 | X30Cr13 | 1.4028 | Z30C13 | 420S45 | X30Cr13 |
| | X36CrMo17 | 1.2316 | X38CrMo16 | 1.2316 | Z35CD17 | | X38CrMo 161KU |
| | X4CrNiMo165 | 1.4418 | X4CrNiMo165 | 1.4418 | Z6CND16.05.01 | | |
| | X40Cr13 | 1.4031 | X39Cr13 | 1.4031 | Z40C14 | (420S45) | X40Cr14 |

WORKPIECE MATERIALS - PALBIT SELECTION MATERIALS, PSM

| ISO | DIN | W.-Nr | EN | EN-Nr | AFNOR | BS | UNI |
|---------------|-----------------|---------------|-----------------|--------------|--------------------|---------------|----------------|
| 3 | X45Cr13 | 1.4034 | X45Cr13 | 1.4034 | Z40C14 | (420S45) | |
| | X45CrNiW189 | 1.4873 | X45CrNiW189 | 1.4873 | Z35CNWS18.09 | 331S40 | X45CrNiW189 |
| | X45NiCrMo4 | 1.2767 | X45NiCrMo4 | 1.2767 | 45NCD17 | EN20B | 42NiCrMo157 |
| | X65CrMo14 | 1.4109 | X70CrMo15 | 1.4109 | Z70D14 | | |
| | X80CrNiSi20 | 1.4747 | X80CrNiSi20 | 1.4747 | Z80CSN20.02 | 443S65 | X80CrSiNi20 |
| | X90CrMoV18 | 1.4112 | X90CrMoV18 | 1.4112 | Z2CND1805 | 409S19 | XCrTi12 |
| | 54NiCrMoV6 | 1.2711 | 54NiCrMoV6 | 1.2711 | 55NCDV6 | BH224 | |
| | 55NiCrMoV6 | 1.2713 | | | 55NCDV7 | | |
| | 57NiCrMoV77 | 1.2744 | | | | | |
| | 75CrMoNiW67 | 1.2762 | | | | | |
| | 81CrMoV4216 | 1.2369 | | | | | |
| | G-X165CrCoMo12 | 1.2880 | | | | | |
| | G-X165CrMoV12 | 1.2601 | | | | | |
| | G-X165CrV12 | 1.2201 | | | | | |
| | S10-4-3-10 | 1.3207 | HS10-4-3-10 | 1.3207 | Z130WKCDV10-4-3-10 | BT42 | HS10-4-3-10 |
| | S12-1-2 | 1.3318 | HS12-1-2 | 1.3318 | | | |
| | S12-1-4 | 1.3302 | HS12-1-4 | 1.3302 | | | |
| | S12-1-4-5 | 1.3202 | HS12-1-4-5 | 1.3202 | | | |
| | S18-0-1 | 1.3355 | HS18-0-1 | 1.3355 | Z80WCV18-04-01 | BT1 | HS18-0-1 |
| | S18-1-2-10 | 1.3265 | HS18-1-2-10 | 1.3265 | | BT5 | HS18-0-1-10 |
| | S18-1-2-15 | 1.3257 | HS18-1-2-15 | 1.3257 | | | |
| | S18-1-2-5 | 1.3255 | HS18-1-2-5 | 1.3255 | Z80WKCV18-05-04-0 | BT4 | HS18-1-1-5 |
| | S2-10-1-8 | 1.3247 | HS2-10-1-8 | 1.3247 | Z110DKCWW09-08-04 | BM42 | HS2-9-1-8 |
| | S2-9-1 | 1.3346 | HS2-9-1 | 1.3346 | Z85DCWV08-04-02-0 | BM1 | HS1-8-1 |
| | S2-9-2 | 1.3348 | HS2-9-2 | 1.3348 | Z100DCWV09-04-02- | | HS2-9-2 |
| | S2-9-2-8 | 1.3249 | | | | BM34 | |
| | S3-3-2 | 1.3333 | HS3-3-2 | 1.3333 | | | HS3-3-2 |
| | S6-5-2 | 1.3343 | HS6-5-2 | 1.3343 | Z85WDCV06-05-04-0 | BM2 | HS6-5-2 |
| | S6-5-2-5 | 1.3243 | HS6-5-2-5 | 1.3243 | Z85WDCV06-05-04-02 | | HS6-5-2-5 |
| | S6-5-3 | 1.3344 | HS6-5-3 | 1.3344 | Z120WDCV06-05-04- | BM4 | HS6-5-3 |
| | S6-5-3C | 1.3345 | S-6-5-3C | 1.3345 | | | |
| | S7-4-2-5 | 1.3246 | HS7-4-2-5 | 1.3246 | Z110WKCDV07-05-04 | | HS7-4-2-5 |
| | X100CrMoV51 | 1.2363 | X100CrMoV5 | 1.2363 | Z100CDV5 | BA2 | X100CrMoV51KU |
| | X105CrMo17 | 1.4125 | X105CrMo17 | 1.4125 | Z100CD17 | | X105CrMo17 |
| | X155CrVMo121 | 1.2379 | X155CrVMo121 | | Z160CDV12 | BD2 | X155CrVMo121KU |
| | X165CrMoV12 | 1.2601 | | | | | X165CrMoV12KU |
| | X2NiCoMoTi1895 | 1.2709 | | | Z2NKD19-09 | | |
| | X210Cr12 | 1.2080 | X210Cr12 | 1.2080 | Z200C12 | BD3 | X210Cr13KU |
| | X210CrW12 | 1.2436 | | | | | X215CrW121KU |
| | X3NiCrMo1885 | 1.2706 | | | E-Z2NKD18 | | |
| | X30WCrV53 | 1.2567 | | | Z32WCV5 | | X30WCrV53KU |
| | X30WCrV93 | 1.2581 | | | Z30WCV9 | BH21 | X30WCrV93KU |
| X32CrMoCoV333 | 1.2885 | | | | | | |
| X32CrMoV33 | 1.2365 | | | 32DCV28 | BH10 | 30CrMoV1227KU | |
| X38CrMoV51 | 1.2343 | | | Z38CDV5 | BH11 | X37CrMoV51KU | |
| X38CrMoV53 | 1.2367 | | | | | | |
| X40CrMoV51 | 1.2344 | X40CrMoV51 | 1.2344 | Z40CDV5 | BH13 | X40CrMo511KU | |
| 4 | X10CrNiS189 | 1.4305 | X8CrNiS189 | 1.4305 | Z10CNF18.09 | 303S31 | X10CrNi1809 |
| | X12CrNi177 | 1.4310 | X9CrNi188 | 1.4310 | Z12CN17.07 | 301S21 | X12CrNi1707 |
| | X12CrNi188 | 1.4300 | X12CrNi188 | 1.4300 | Z12CN18 | 302S25 | |
| | X5CrNiNb1810 | 1.4546 | X5CrNiNb1810 | 1.4546 | | 347S31 | X6CrNiNb1811 |
| | X6CrNi1810 | 1.4301 | X5CrNi189 | 1.4301 | Z6CN18.09 | 304S31 | X5CrNi1811 |
| | X6CrNi1811 | 1.4948 | X6CrNi18 11 | 1.4948 | Z6CN18.09 | 304S51 | X5CrNi1810KW |
| | X6CrNi1812 | 1.4303 | X4CrNi18 11 | 1.4303 | Z8CN18.11FF | 305S19 | X7CrNi1810 |
| | X6CrNiNb1810 | 1.4550 | X6CrNiNb1810 | 1.4550 | Z6CnNb18.10 | 347S31 | X6CrNiNb1811 |
| 5 | X10CrNiMoNb1812 | 1.4583 | X5CrNiMoNb19112 | 1.4583 | Z6CNDNb17.13 | 318C17 | X6CrNiMoNb1713 |
| | X12CrNi2521 | 1.4335 | X12CrNi2521 | 1.4335 | Z12CN25.20 | 310S24 | X6CrNi2620 |
| | X12CrNiTi189 | 1.4541 | X6CrNiTi1810 | 1.4878 | Z6CNT18.12 | 321S51 | X6CrNiTi1811 |
| | X12CrNiW163 | 1.4962 | X12CrNiW163 | 1.4962 | Z6CnNb18.10 | | |
| | X15CrNiSi2012 | 1.4828 | X15CrNiSi2012 | 1.4828 | Z17CNS20.12 | 309S24 | |
| | X2CrNi1911 | 1.4306 | X2CrNi19 11 | 1.4306 | Z2CN18.10 | 304S12 | X3CrNi1811 |
| | X2CrNiMo17132 | 1.4404 | X2CrNiMo17122 | 1.4404 | Z2CND17.12.02 | 316S11 | X2CrNiMo17122 |
| | X2CrNiMo18143 | 1.4435 | X3CrNiMo18143 | 1.4435 | Z2CND17.13 | 316S12 | X2CrNiMo17132 |
| X2CrNiMo18164 | 1.4438 | X2CrNiMo18154 | 1.4438 | Z2CND19.15.4 | 317S12 | X2CrNiMo1816 | |

| JIS | SS | UNS | AISI/ASTM | Misc. Brand | Condition | Form | Structure |
|----------------|--------|--------|----------------|-------------|-----------|------|--------------------------|
| SUH31 | [2304] | | SAEHNV3 6F7 | | | | Martensite Martensite |
| SUS440A | | S44002 | 440A | | | | Martensite |
| SUH4 | | S65006 | SAEHNV6 | sol.treated | | | PH |
| SUS440B | 2327 | S44003 | 440B 6F2 | | | | Martensite |
| SKT4 | | T61206 | L6 | | | | |
| SKH57 | | | | | | | |
| SKH2 | | T12015 | T15 | | | | |
| SKH4A | | T12001 | T1 | | | | |
| SKH3 | | T12005 | T5 | | | | |
| SKH51 | | T12004 | T4 | | | | |
| | | T11342 | M42 | | | | |
| | | T11301 | H41;M1 | | | | |
| | 2782 | T11307 | M7 | | | | |
| | | T11333 | M33;M34 | | | | |
| SKH9;SKH51 | 2722 | T11302 | M2 | | | | |
| SKH53 | 2723 | | M35 | | | | |
| SKH52;SKH53 | | T11323 | M3Cl.2 | | | | |
| SKH55 | | T11323 | M3 | | | | |
| | | T11341 | M41 | | | | |
| SKD12 | 2260 | T30102 | A2 | | | | |
| SUS440C | | S44004 | 440C | | | | Martensite |
| SKD11 | | T30402 | D2 | | | | |
| | 2310 | | | | | | |
| | | | 18MAR300 | | | | |
| SKD1 | | T30403 | D3 | | | | |
| SKD2 | 2312 | | | | | | |
| | | K93120 | | | | | |
| SKD4 | | | | | | | |
| SKD5 | | T20821 | H21 | | | | |
| SKD7 | | T20810 | H10 | | | | |
| SKD6 | | T20811 | H11 | | | | |
| SKD61 | 2242 | T20813 | H13 | | | | |
| SUS303 | 2346 | S30300 | 303 | | | | Austenite |
| SUS301 | (2331) | S30100 | 301 | | | | Austenite |
| SUS302 | 2331 | S30200 | 302 | | | | Austenite |
| | | S34800 | 348 | | | | Austenite |
| SUS304 | 2333 | S30400 | 304;304H | | | | Austenite |
| SUS304H | 2333 | S30480 | 304H | | | | Austenite |
| SUS305 | 2333 | S30500 | 308;305 | | | | Austenite |
| SUS347 | 2338 | S34700 | 347 | | | | Austenite |
| SCS22 | | | 318 | | | | Austenite |
| SUH310;SUS310S | 2361 | S31008 | 310S | | | | Austenite |
| SUS321 | 2337 | S32100 | 321;321H | | | | Austenite |
| | | S34700 | 347H | | | | Austenite |
| SUH309 | | S30900 | 309 | | | | Austenite |
| SUS304L | 2352 | S30403 | 304L | | | | Austenite |
| SUS316L | 2348 | S31603 | 316L | | | | Austenite |
| SCS16;SUS316L | 2353 | S31603 | 316L | | | | Austenite |
| SUS317L | 2367 | S31703 | 317L | | | | Austenite |

WORKPIECE MATERIALS - PALBIT SELECTION MATERIALS, PSM

| ISO | DIN | W.-Nr | EN | EN-Nr | AFNOR | BS | UNI |
|----------------|------------------|-----------------------|-----------------------|---------------|-----------------|----------------|----------------|
| 5 | X2CrNiN1911 | 1.4311 | X2CrNiN1810 | 1.4311 | Z2CN18.10Az | 304S62 | X2CrNiN1811 |
| | X5CrNiMo17133 | 1.4436 | X5CrNiMo17133 | 1.4436 | Z6CND18.12.03 | 316S33 | X5CrNiMo17132 |
| | X6CrNi189 | 1.4308 | X5CrNi19 10 | 1.4308 | Z6CN18.10M | 304C15 | |
| | X6CrNiMoNb17122 | 1.4580 | X6CrNiMoNb17122 | 1.4580 | Z6CNDNb17.12 | 318S17 | X6CrNiMoNb1712 |
| | X6CrNiMoTi17122 | 1.4571 | X6CrNiMoTi17122 | 1.4571 | Z6CNDT17.12 | 320S31 | X6CrNiMoTi1712 |
| | X15CrNiSi2520 | 1.4841 | X15CrNiSi2520 | 1.4841 | Z15CNS25.20 | 314S25 | X16CrNiSi2520 |
| X5CrNiMo1810 | 1.4401 | X5CrNiMo17122 | 1.4401 | Z3CND17.11.1 | 316S31 | X5CrNiMo1712 | |
| 6 | X1CrNiMoN20187 | 1.4547 | X1CrNiMoN20187 | 1.4547 | | X1CrNiMoN20187 | X1CrNiMoN20187 |
| | X1NiCrMoCuN31274 | 1.4563 | X1NiCrMoCuN31274 | 1.4563 | | | |
| | X10NiCrAlTi3220 | 1.4876 | X10NiCrAlTi3220 | 1.4876 | Incoloy800 | Z10NC32.21 | |
| | X12NiCrSi3616 | 1.4864 | X12NiCrSi3516 | 1.4864 | Z20NCS33.16 | NA17 | |
| | X2CrNiMoN2574 | 1.4410 | X2CrNiMoN 2574 | 1.4410 | Z3CND25.07Az | | X2CrNiMoN2574 |
| | X2CrMoNiCuN2563 | 1.4507 | X2CrMoNiCuN2563 | 1.4507 | | | |
| | X2CrNiMoCuWN2574 | 1.4501 | X2CrNiMoCuWN2574 | 1.4501 | Z3CND25.06Az | | |
| | X2CrNiMoN17122 | 1.4406 | X2CrNiMoN17112 | 1.4406 | Z2CND17.12Az | 316S61 | X2CrNiMoN1712 |
| | X2CrNiMoN17133 | 1.4429 | X2CrNiMoN17133 | 1.4429 | Z2CND17.13Az | 316S62 | X2CrNiMoN17133 |
| | X2CrNiMoN17133 | 1.4439 | X2CrNiMoN17135 | 1.4439 | Z3CND18.14.05Az | (316S63) | |
| | X2CrNiMoN225 | 1.4462 | X2CrNiMoN 2253 | 1.4462 | Z2CND22.05Az | 332S15 | X2CrNiMoN225 |
| | X2CrNiMoN225 | 1.4462 | X2CrNiMoN225 | 1.4462 | Z2CND22.05Az | 318S13 | X2CrNiMoN225 |
| | X2CrNiMoN25227 | 1.4652 | X1CrNiMoN25228 | 1.4652 | | | |
| | X2CrNiN234 | 1.4362 | X2CrNiN234 | 1.4362 | | | |
| | X2NiCrMoCu25205 | 1.4539 | X2NiCrMoCu25205 | 1.4539 | Z2NCDU2520 | 904S13 | |
| | X2NiCrMoCu25205 | 1.4539 | X1NiCrMoCu25205 | 1.4539 | | | |
| X4CrNiCuNb164 | 1.4540 | X4CrNiCuNb164 | 1.4540 | Z4CNUNb16.4M | | | |
| X4CrNiMo2752 | 1.4460 | X3CrNiMo2752 | 1.4460 | Z3CND25.7Az | | X3CrNiMo2752 | |
| X5CrNiCuNb174 | 1.4542 | X5CrNiCuNb164 | 1.4548 | Z6CNU17.4 | | | |
| 7 | GG-10 | 0.6100 | EN-GJL-100 | 0.6100 | Ft10D | Grade100 | G10 |
| | GG-15 | 0.6150 | EN-GJL-150 | 0.6150 | Ft15D | Grade150 | G15 |
| | GGG-35.3 | 0.7033 | EN-GJS-350-22 | 0.7033 | FGS370-17 | Grade350/22 | |
| | GGG-40 | 0.7040 | EN-GJS-400-15 | 0.7040 | FGS400-12 | Grade420/12 | GS400-12 |
| | GGG-40.3 | 0.7043 | EN-GJS-400-18 | 0.7043 | FGS-370-17 | Grade370/17 | GSO42/17 |
| | GTS-35-10 | | EN-GJMB-350-10 | 0.8135 | B340/12 | B340/12 | B35-12 |
| | GTS-45-06 | | EN-GJMB-450-6 | 0.8145 | P440/7 | P440/7 | P45-06 |
| GTS-55-04 | | EN-GJMB-550-4 | 0.8155 | P540/5 | P540/5 | P55-04 | |
| 8 | GG-20 | 0.6200 | EN-GJL-200 | 0.6200 | Ft20D | Grade220 | G20 |
| | GG-25 | 0.6250 | EN-GJL-250 | 0.6250 | Ft25D | Grade260 | G25 |
| | GGG-50 | 0.7050 | EN-GJS-500-7 | 0.7050 | FGS500-7 | Grade500/7 | GS500-7 |
| | GGG-60 | 0.7060 | EN-GJS-600-3 | 0.7060 | FGS600-3 | Grade600/3 | GS600-3 |
| | GGG-NiCr202 | 0.7660 | EN-GJSA-XNiCr20-2 | 0.7660 | FGSNI20Cr2 | GradeS2 | |
| | GGG-NiCr203 | 0.7661 | EN-GJSA-XNiCr20-3 | 0.7661 | FGSNI20Cr3 | GradeS2B | |
| | GGG-NiMn137 | 0.7652 | EN-GJSA-XNiMn13-7 | 0.7652 | FGSNI13Mn7 | GradeS6 | |
| | GGL-NiCr202 | 0.6660 | EN-GJLA-XNiCr20-2 | 0.6660 | FGLNi20Cr2 | GradeF2 | |
| | GGL-NiCr203 | 0.6661 | EN-GJLA-XNiCr20-3 | 0.6661 | FGLNi20Cr3 | | |
| GTS-65-02 | | EN-GJMB-600-3 | 0.8165 | P570/3 | P570/3 | P65-02 | |
| 9 | GG-30 | 0.6300 | EN-GJL-300 | 0.6300 | Ft30D | Grade300 | G30 |
| | GGG-70 | 0.7070 | EN-GJS-700-2 | 0.7070 | FGS700-2 | Grade700/2 | GS700-2 |
| | GGL-NiCuCr1562 | 0.6655 | EN-GJLA-XNiCuCr15-6-2 | 0.6655 | FGLNi15Cu6Cr2 | GradeF1 | |
| | GGL-NiCuCr1563 | 0.6656 | EN-GJLA-XNiCuCr15-6-3 | 0.6656 | FGLNi15Cu6Cr3 | | |
| | GTS-70-02 | | EN-GJMB-700-2 | 0.8170 | P690/2 | P690/2 | P70-02 |
| | GG-35 | 0.6350 | EN-GJL-350 | 0.6350 | Ft35D | Grade350 | G35 |
| | GG-40 | 0.6040 | - | 0.6040 | Fgl400 | Grade400 | |
| | GGG-80 | 0.7080 | EN-GJS-800-2 | 0.7080 | FGS800-2 | | GS800-2 |
| | GGG-Ni22 | 0.7670 | EN-GJSA-XNi22 | 0.7670 | FGSNI22 | | |
| | GGG-Ni35 | 0.7683 | EN-GJSA-XNi35 | 0.7683 | FGSNI35 | | |
| | GGG-NiCr301 | 0.7677 | - | 0.7677 | FGSNI30Cr1 | | |
| | GGG-NiCr303 | 0.7676 | EN-GJSA-XNiCr30-3 | 0.7676 | FGSNI30Cr3 | GradeS3 | |
| | GGG-NiCr353 | 0.7683 | EN-GJSA-XNiCr35-3 | 0.7683 | FGSNI35Cr3 | | |
| | GGG-NiMn234 | 0.7673 | EN-GJSA-XNiMn23-4 | 0.7673 | FGSNI23Mn4 | GradeS2M | |
| | GGG-NiSiCr2052 | 0.7665 | EN-GJSA-XNiSiCr20-5-2 | 0.7665 | FGSNI20Si5Cr2 | | |
| | GGG-NiSiCr3055 | 0.7680 | EN-GJSA-XNiSiCr30-5-5 | 0.7680 | FGSNI30Si5Cr5 | | |
| GGL-NiCr303 | 0.6676 | EN-GJLA-XNiCr30-3 | 0.6676 | FGLNi30Cr3 | GradeF3 | | |
| GGL-NiSiCr2053 | 0.6667 | EN-GJLA-XNiSiCr20-5-3 | 0.6667 | FGLNi20Si5Cr3 | | | |
| GGL-NiSiCr3055 | 0.6680 | - | 0.6680 | FGLNi30Si5Cr5 | | | |

| JIS | SS | UNS | AISI/ASTM | Misc. Brand | Condition | Form | Structure |
|--------------|---------|----------|---------------------|-------------|-------------|------|----------------|
| SUS304LN | 2371 | S30453 | 304LN | | | | Austenite |
| SUS316 | 2343 | S31600 | 316 | | | | Austenite |
| SCS13 | 2333 | | CF8 | | | | Austenite |
| | | S31640 | 316Cb | | | | Austenite |
| SUS316Ti | 2350 | | 316Ti | | | | Austenite |
| SUH310 | | S31000 | 314;310 | | | | Austenite |
| SUS316 | 2347 | S31600 | 316 | | | | Austenite |
| | 2778 | S31254 | | 254SMO | | | Superaustenite |
| | | N08028 | | Sanicro28 | | | Superaustenite |
| NCF800 | | N08800 | | Alloy800 | sol.treated | | PH |
| SUH330 | | N08330 | 330 | IncoloyDS | | | Austenite |
| | 2328 | S32750 | F53 | SAF2507 | | | Superduplex |
| | | S32550 | F55 | Ferralium | | | Superduplex |
| | | S32760 | F55 | Zeron100 | | | Superduplex |
| SUS316LN | | S31653 | 316LN | | | | Austenite |
| SUS316LN | 2375 | S31653 | 316LN | | | | Austenite |
| (SUS316LN) | | (S31653) | (316LN) | | | | Austenite |
| | 2377 | S31803 | 329LN | SAF2205 | | | Duplex |
| SUS329J3L | 2377 | S32205 | 318 | SAF2205 | | | Duplex |
| | | S32654 | | 654SMO | | | Superaustenite |
| | 2327 | S32304 | - | SAF2304 | | | Duplex |
| | 2562 | N08904 | 904L | | | | Superaustenite |
| | 2564 | | CN7M | | | | Superaustenite |
| | | S15500 | XM-12 | 15-5-PH | sol.treated | | PH |
| SUS329J1 | 2324 | S32900 | 329 | | | | Duplex |
| SCS24;SUS630 | | S17400 | 630 | 17-4-PH | sol.treated | | Superaustenite |
| FC100 | 0110-00 | F11401 | A1820B | | | | GCI |
| FC150 | 0115-00 | F11601 | A4825B | | | | GCI |
| FCD350-22L | 0717-15 | | | | | | DCI |
| FCD400-18L | 0717-02 | F32800 | 60-40-18 | | | | DCI |
| | 0717-12 | F32800 | 60-40-18 | | | | DCI |
| FCMB35-10 | 0815-00 | F22200 | A4732510 | | | | Martensite |
| PCMP45-06 | 0852-00 | F23130 | A22045008 | | | | Martensite |
| PCMP55-04 | 0854-00 | F24130 | A22060004 | | | | Martensite |
| FC200 | 0120-00 | F12101 | A4830B | | | | GCI |
| FC250 | 0125-00 | F12401 | A4835B | | | | GCI |
| FCD500-7 | 0727-02 | F33800 | A53680-55-6 | | | | DCI |
| FCD600-3 | 0732-03 | F34100 | A47680-60-03 | | | | DCI |
| | | F43000 | A436TypeD-2 | | | | Austenite |
| | | F43001 | A436TypeD-2B | | | | Austenite |
| | 0772-00 | - | - | | | | Austenite |
| | 0523-00 | F41002 | A436 Type2 | | | | Austenite |
| | | F41003 | A436Type2b | | | | Austenite |
| PCMP60-03 | 0856-00 | F24830 | A22070003 | | | | Martensite |
| FC300 | 0130-00 | F13101 | A4845B | | | | GCI |
| FCD700-2 | 0737-01 | F34800 | A536100-70-03 | | | | DCI |
| | | F41000 | A436 Type1 | | | | Austenite |
| | | F41001 | A436 Type1b | | | | Austenite |
| PCMP70-02 | 0862-00 | F26230 | A22090001 | | | | Martensite |
| FC350 | 0135-00 | F13502 | A4850B | | | | GCI |
| | 0140-00 | F14102 | A27860B | | | | GCI |
| FCD800-2 | | F36200 | A536120-90-02 | | | | Martensite |
| | | | A439TypeD-2B | | | | Austenite |
| | | F43006 | A439TypeD-5 | | | | Austenite |
| | | F43004 | A436TypeD-3A | | | | Austenite |
| | | F43003 | A436TypeD-3 | | | | Austenite |
| | | F43007 | A436TypeD-5B | | | | Austenite |
| | | F43010 | A439TypeD-2M | | | | Austenite |
| | | - | NicrosilalSpheronic | | | | Austenite |
| | | F43005 | A439TypeD-4 | | | | Austenite |
| | | F41004 | A436 Type3 | | | | Austenite |
| | | | Nicrosilal | | | | Austenite |
| | | | A436TypeD-4 | | | | Austenite |

WORKPIECE MATERIALS - PALBIT SELECTION MATERIALS, PSM

| ISO | DIN | W.-Nr | EN | EN-Nr | AFNOR | BS | UNI |
|--------------|----------------|-----------|--------------|---------------|---------------|--------------|-----|
| 10 | Al99 | 3.0205 | AW-1200 | Al99 | A-4/1200 | 1C/1200 | |
| | Al99.5 | 3.0255 | AW-105 0A | Al99.5 | A-5/1050A | 1B/1050A | |
| | Al99.7 | 3.0275 | AW-1070 | Al99.7 | A-7/1070 | | |
| | Al99.8 | 3.0285 | AW-1080 | Al99.8 | A-8/1080 | 1A | |
| | AlCu2.5Mg0.5 | 3.1305 | | | A-U2G | 2L69 | |
| | AlCuBiPb | 3.1655 | AW-2011 | AlCuBiPb | A-U5PbBi/2011 | FC1/2011 | |
| | AlCuMg1 | 3.1325 | AW-2024 | AlCuMg1 | A-U4G/2024 | H14 | |
| | AlCuMg2 | 3.1355 | | | A-U4G1 | 2L97/98 | |
| | AlCuSiMn | 3.1255 | AW-2014 | AlCuSiMn | A-U4SG/2014 | H15/2014 | |
| | AlMg1 | 3.3315 | AW-5005A | AlMg1 | A-G0.6 | N41/5005 | |
| | AlMg1.5 | 3.3316 | | | A-G1.5 | | |
| | AlMg1SiCu | 3.3211 | AW-6061 | AlMg1SiCu | (6061) | H20 | |
| | AlMg2.5 | 3.3523 | AW-5052 | AlMg2.5 | A-G2.5C/5052 | (N4) | |
| | AlMg2.7Mn | 3.3537 | AW-5454 | AlMg2.7Mn | A-G2.5MC/5454 | N51/5454 | |
| | AlMg2Mn0.3 | 3.3525 | AW-5251 | AlMg2Mn0.3 | A-G2M | N4/5251 | |
| | AlMg2Mn0.8 | 3.3527 | AW-5049 | AlMg2Mn0.8 | A-G2Mn0.8 | | |
| | AlMg3 | 3.3535 | AW-5754 | AlMg3 | A-G3M | | |
| | AlMg4.5 | 3.3345 | | | | | |
| | AlMg4.5Mn | 3.3547 | AW-5083 | AlMg4.5Mn | A-G4.5MC | N8/5083 | |
| | AlMg4Mn | 3.3545 | AW-5086 | AlMg4Mn | A-G4MC/5086 | (N5/6) | |
| | AlMgSi0.5 | 3.3206 | AW-6060 | AlMgSi0.5 | A-GS/6060 | (H9)/(6060) | |
| | AlMgSi0.7 | 3.3210 | AW-6063 | AlMgSi0.7 | A-GSUC/6061 | (H10) | |
| | AlMgSi1 | 3.2315 | AW-6082 | AlMgSi1 | A-SGM0.7/6082 | H30/6082 | |
| | AlMgSiPb | 3.0615 | | | A-SGPb | | |
| | AlMn0.5Mg0.5 | 3.0505 | AW-3105 | AlMn0.5Mg0.5 | | N31 | |
| | AlMn0.5Mg0.5 | 3.0525 | AW-3005 | AlMn0.5Mg0.5 | A-MG0.5/3005 | | |
| | AlMn1 | 3.0515 | AW-3103 | AlMn1 | | N3/3103 | |
| | AlMn1Cu | 3.0517 | AW-3003 | AlMn1Cu | A-M1/3003 | | |
| | AlMn1Mg1 | 3.0526 | AW-3004 | AlMn1Mg1 | A-M1G/3004 | | |
| | AlZn4.5Mg1 | 3.4335 | AW-7020 | AlZn4.5Mg1 | A-Z5G/7020 | H17/7020 | |
| | AlZnMgCu0.5 | 3.4345 | | | A-Z4GU | | |
| | AlZnMgCu1.5 | 3.4365 | AW-7075 | | A-Z5GU/7075 | 2L95/96 | |
| | G-AlCu4Ti | 3.1841 | AC-21100 | AlCu4Ti | | | |
| | G-AlCu4TiMg | 3.1371 | AC-21000 | AlCu4TiMg | A-U5GT | 2L91/92 | |
| | G-AlMg3 | 3.3541 | AC-51100 | AlMg3 | A-G3T | | |
| | G-AlMg3Si | 3.3241 | | | | | |
| | G-AlMg5 | 3.3261 | AC-51400 | AlMg5(Si) | | | |
| | G-AlMg5 | 3.3555 | AC-51400 | AlMg5 | | LM5 | |
| | G-AlMg9 | 3.3292 | AC-51200 | AlMg9 | | | |
| | G-AlSi10Mg | 3.2381 | AC-43400 | AlSi10Mg(Fe) | A-S10G | LM9 | |
| | G-AlSi5Mg | 3.2341 | AC-42000 | | A-S7G | LM25 | |
| | G-AlSi6Cu4 | 3.2151 | AC-45000 | AlSi6Cu4 | | | |
| | G-AlSi7Mg | 3.2371 | AC-42100 | AlSi7Mg | A-S7GO3 | 2L99 | |
| | G-AlSi8Cu3 | 3.2161 | AC-46200 | AlSi8Cu3(Si) | | | |
| | G-AlSi9Mg | 3.2373 | AC-43200 | AlSi9Mg | A-S10G | | |
| | G-MgAg3Se2Zr1 | 3.5106 | | | | | |
| | G-MgAl3Zn | 3.5314 | MG-P-62 | MgAl3Zn | G-A3-Z1 | MAG-E-111 | |
| | G-MgAl6Mn | 3.5662 | MC21230 | MgAl6Mn | | | |
| | G-MgAl6Zn | 3.5612 | MG-P-63 | MgAl6Zn | G-A6-Z1 | MAG-E-121 | |
| | G-MgAl8Zn | 3.5812 | MG-P-61 | MgAl8Zn | G-A9 | MAG1-M | |
| | G-MgAl8Zn1 | 3.5812 | MC21110 | MgAl8Zn1 | G-A92 | A82 | |
| | G-MgAl9Zn1 | 3.5912 | MC21120 | MgAl9Zn1 | G-A92 | MAG3 | |
| | G-MgMn2 | 3.5200 | | | G-M2 | MAG-E-101 | |
| | G-MgSe3Zn2Zr1 | 3.5103 | MB65110 | MgSe3Zn2Zr1 | ZRE1 | MAG6-TE | |
| | G-MgTh3Zn2Zr1 | 3.5105 | | | | | |
| | G-AlSi10Mg(Cu) | 3.2383 | AC-43200 | AlSi10Mg(Cu) | | | |
| | GD-AlSi12 | 3.2382 | AC-44200 | AlSi12 | | | |
| | | | AC-46100 | AlSi11Cu2(Fe) | | LM9 | |
| | | | AC-47100 | AlSi12Cu1(Fe) | | | |
| | | | | AlSi17Cu5 | | | |
| | Cu | | CW004A | | | | |
| | CuAg0.1 | 2.1203 | CW013A | CuAg0.1 | | Cu-Ag-4 | |
| | CuAl10Fe | 2.0940.01 | CC331G | | | CuAl10Fe | AB1 |
| | CuAl10Fe5Ni5 | | CC333G-GZ | | | | |
| | CuAl10Ni | 2.0975.01 | CC333G | | | CuAl10Ni5Fe5 | AB2 |
| CuAl10Ni5Fe4 | 2.0966 | CW307G | CuAl10Ni5Fe4 | CuAl10Ni | CA104 | | |

| JIS | SS | UNS | AISI/ASTM | Misc. Brand | Condition | Form | Structure |
|---------|-----------|---------|-----------|-------------|-----------|------|-----------|
| A1200 | 4010 | AA1200 | | | | | |
| (A1050) | 4007 | AA1050A | | | | | |
| | 4005 | AA1070A | | | | | |
| | 4004 | AA1080A | | | | | |
| | | AA2117 | | | | | |
| A2011 | 4355 | AA2011 | | | | | |
| A2017 | | AA2017A | | | | | |
| | | AA2024 | | | | | |
| | 4338 | AA2014 | | | | | |
| | 4106 | AA5005A | | | | | |
| | | AA5050B | | | | | |
| A6061 | | AA6061 | | | | | |
| A5052 | 4120 | AA5052 | | | | | |
| A5454 | | AA5454 | | | | | |
| | | AA5251 | | | | | |
| | 4115 | AA5049 | | | | | |
| | 4125 | AA5754 | | | | | |
| A5082 | | AA5082 | | | | | |
| | 4140 | AA5083 | | | | | |
| | | AA5086 | | | | | |
| | 4103 | AA6060 | | | | | |
| (A6063) | 4104,4107 | AA6005 | | | | | |
| | 4212 | AA6082 | | | | | |
| | | AA6012 | | | | | |
| | | AA3105 | | | | | |
| - | | AA3005 | | | | | |
| | 4054 | AA3103 | | | | | |
| A3003 | | AA3003 | | | | | |
| - | | AA3004 | | | | | |
| | 4425 | AA7020 | | | | | |
| | | AA7022 | | | | | |
| A7075 | | AA7075 | | | | | |
| | 4337 | A02040 | 204 | | | | |
| | | A05140 | 5140 | | | | |
| | | | 5056A | | | | |
| | 4163 | | | | | | |
| | 4253 | A13600 | B85 | | | | |
| | 4244 | | B26 | | | | |
| | 4245 | A13560 | | | | | |
| | 4251 | | A380 | | | | |
| | | | 359,2 | | | | |
| | | | 4418 | | | | |
| | 4633 | AZ31B | | | | | |
| | | AM60A | | | | | |
| | | AZ61A | | | | | |
| | | AZ80A | | | | | |
| | 4637 | AZ81A | | | | | |
| | 4635 | AZ91A/B | 4437 | | | | |
| | | M1A | | | | | |
| | | B80 | 4442 | | | | |
| | | B80 | | | | | |
| | | | A413.2 | | | | |
| ADC12 | | | A384.0 | | | | |
| | | AA384 | | | | | |
| ADC14 | | | B390.0 | | | | |
| | 5015 | | | | | | |
| | 5030 | C11600 | | | | | |
| | 5710 | C95200 | CA952 | | | | |
| | 5716 | C95500 | CA955 | | | | |
| C6301 | | C62730 | | | | | |

WORKPIECE MATERIALS - PALBIT SELECTION MATERIALS, PSM

| ISO | DIN | W.-Nr | EN | EN-Nr | AFNOR | BS | UNI |
|--------------|---------------|-----------|-------------|---------------|---------------|-------|--------|
| 10 | CuAl5 | 2.0916 | | | | | |
| | CuAl5As | 2.0918 | CW300G | CuAl5As | | | |
| | CuAl8Fe3 | 2.0932 | | | | | |
| | CuCr | 2.1291 | | | | | |
| | CuFe2P | 2.1310 | CW107C | CuFe2P | | | |
| | CuNi1.5Si | 2.0853 | CW109C | CuNi1Si | | | |
| | CuNi10Fe1Mn | 2.0872 | | CuNi10Fe1Mn | CuNi10Fe1Mn | CN102 | |
| | CuNi10Zn45 | | | | | | |
| | CuNi12Zn30Pb1 | 2.0780 | CW406J | CuNi12Zn30Pb1 | | | |
| | CuNi18Zn19Pb | 2.0790 | | CW408J | CuNi18Zn19Pb1 | | |
| | CuNi18Zn19Pb1 | 2.0790 | CW408J | CuNi18Zn19Pb1 | CuNi18Zn19Pb1 | | |
| | CuNi18Zn20 | 2.0740 | CW409J | CuNi18Zn20 | CuNi18Zn20 | NS106 | |
| | CuNi18Zn27 | 2.0742 | CW410J | CuNi18Zn27 | | NS107 | |
| | CuNi20 | 2.0822 | | | | | |
| | CuNi25 | 2.0830 | | | CuNi25 | CN105 | |
| | CuNi30 | 2.0835 | | | | | CuNi30 |
| | CuNi30Fe2Mn2 | 2.0883 | | | | | |
| | CuNi30FeMn | | | | | | |
| | CuNi30Mn1Fe | 2.0882 | CW354H | CuNi30Mn1Fe | CuNi30Mn1Fe | CN107 | |
| | CuNi3Si | 2.0857 | CW112C | CuNi3Si | | | |
| | CuNi44Mn1 | 2.0842 | | | CuNi44Mn | | |
| | CuNi5Fe1Mn | | | | CuNi5Fe1Mn | | |
| | CuNi9Sn2 | 2.0875 | CW351H | CuNi9Sn2 | | | |
| | CuPb10Sn | 2.1176 | CW352H | | CuSn10Pb10 | LB2 | |
| | CuPb15Sn | 2.1183 | CC496K-GZ | | | | |
| | CuPb1P | 2.1160 | CW113C | CuPb1P | | | |
| | CuPb20Sn | 2.1189 | | | | | |
| | CuSn10 | 2.1050.01 | CC480K | | CuSn10 | CT1 | |
| | CuSn10Zn | 2.1087 | | | | | |
| | CuSn12 | 2.1051.01 | CC483K | | CuSn12 | PB2 | |
| | CuSn14 | | | | CuSn14 | | |
| | CuSn4 | 2.1016 | CW450K | CuSn4 | CuSn4P | PB101 | |
| | CuSn5 | | | CW451K | | | |
| | CuSn6 | 2.1020 | CW452K | CuSn6 | CuSn6 | PB103 | |
| | CuSn6Zn6 | 2.1080 | | | | | |
| | CuSn7 | | | | | | CuSn7 |
| | CuSn7ZnPb | 2.1090.03 | CC493K-GZ | | | | |
| | CuSn8 | 2.1030 | CW453K | CuSn8 | CuSn8P | PB104 | |
| | CuZn10 | 2.0230 | CW501L | CuZn10 | CuZn10 | CZ101 | |
| | CuZn15 | 2.0240 | CW502L | CuZn15 | CuZn15 | CZ102 | |
| | CuZn20 | 2.0250 | CW503L | CuZn20 | | CZ103 | |
| | CuZn20Al2 | 2.0460 | CW702R | CuZn20Al2 | CuZn22Al2 | CZ110 | |
| | CuZn25Al15 | | | | | | |
| | CuZn28 | 2.0261 | CW504L | CuZn28 | | CZ105 | |
| | CuZn28Sn1 | 2.0470 | CW706R | CuZn28Sn1 | CuZn29Sn1 | | |
| | CuZn30 | 2.0265 | CW505L | CuZn30 | CuZn30 | CZ106 | |
| | CuZn30AlFeMn | | | | CuZn30AlFeMn | | |
| | CuZn31Si1 | 2.0490 | CW708R | CuZn31Si1 | | | |
| | CuZn33 | 2.0280 | CW506L | CuZn33 | | CZ107 | |
| | CuZn35Al1 | 2.0592.01 | CC765S | | CuZn30AlFeMn | HTB1 | |
| CuZn35Ni2 | 2.0540 | CW710R | CuZn35Ni2 | | | | |
| CuZn36 | 2.0335 | CW507L | CuZn36 | CuZn36 | CZ108 | | |
| CuZn36Pb1.5 | 2.0331 | CW601N | CuZn35Pb2 | CuZn35Pb2 | CZ131 | | |
| CuZn36Pb3 | 2.0375 | CW602N | CuZn36Pb3 | CuZn36Pb3 | CZ124 | | |
| CuZn37 | 2.0321 | CW508L | CuZn37 | CuZn37 | CZ108 | | |
| CuZn37Pb0.5 | 2.0332 | CW604N | CuZn37Pb0.5 | | CZ118 | | |
| CuZn38Pb1.5 | 2.0371 | CW607N | CuZn38Pb1.5 | (CuZn38Pb2) | CZ119 | | |
| CuZn38Sn1 | 2.0530 | CW717R | CuZn38Sn1 | | | | |
| CuZn38SnAl | 2.0525 | CW715R | CuZn38SnAl | | | | |
| CuZn39AlFeMn | | | | | | | |
| CuZn39Pb0.5 | 2.0372 | CW610N | CuZn39Pb0.5 | CuZn39Pb0.8 | CZ123 | | |
| CuZn39Pb2 | 2.0380 | CW612N | CuZn39Pb2 | | CZ128 | | |
| CuZn39Pb3 | 2.0401 | CW614N | CuZn39Pb3 | CuZn39Pb3 | CZ121 | | |
| CuZn40 | 2.0360 | CW509 | CuZn40 | CuZn40 | CZ109 | | |
| CuZn40Al2 | 2.0550 | CW713R | | | | | |

| JIS | SS | UNS | AISI/ASTM | Misc. Brand | Condition | Form | Structure |
|-------|--------|--------|-----------|-------------|-----------|------|-----------|
| C6140 | | C60800 | | | | | |
| | | C18400 | | | | | |
| | | C19400 | | | | | |
| | | 5667 | C70600 | | | | |
| | | | C79300 | | | | |
| C7451 | | C76300 | | | | | |
| | | C76300 | | | | | |
| | | C75200 | | | | | |
| | | C77000 | | | | | |
| | | | C71300 | | | | |
| | | C71580 | | | | | |
| | 5682 | C70600 | | | | | |
| | | C70250 | | | | | |
| | | C72150 | | | | | |
| 5640 | | C72500 | | | | | |
| | | C93700 | CA937 | | | | |
| | | C93800 | | | | | |
| | | C19000 | | | | | |
| | | C94100 | | | | | |
| 5443 | | C90700 | | | | | |
| | | 5458 | C90500 | | | | |
| | | 5465 | | CA907 | | | |
| 5475 | C91000 | | | | | | |
| C5111 | | C51100 | | | | | |
| C5191 | 5428 | C51000 | | | | | |
| | | C51900 | | | | | |
| | | C93200 | | | | | |
| | | C83600 | | | | | |
| C5210 | | C52100 | | | | | |
| C2200 | | C22000 | | | | | |
| C2300 | 5112 | C23000 | | | | | |
| C2400 | 5217 | C24000 | | | | | |
| | | C68700 | | | | | |
| C4430 | 5220 | C86300 | | | | | |
| | | C25600 | | | | | |
| | | C44300 | | | | | |
| C2600 | 5122 | C26000 | | | | | |
| C2680 | 5256 | C26800 | | | | | |
| | | C96500 | CA865 | | | | |
| C2720 | | C27200 | | | | | |
| | | C34200 | | | | | |
| | | C36000 | | | | | |
| | | 5150 | C27200 | | | | |
| | | | C33500 | | | | |
| 5165 | | C35300 | | | | | |
| | | C46400 | | | | | |
| | | C47000 | | | | | |
| C2800 | 5170 | C36500 | | | | | |
| | | C37700 | | | | | |
| | | C38500 | | | | | |
| | | C28000 | | | | | |
| | | C67410 | | | | | |

WORKPIECE MATERIALS - PALBIT SELECTION MATERIALS, PSM

| ISO | DIN | W.-Nr | EN | EN-Nr | AFNOR | BS | UNI |
|-----|-------------|--------|---------------|----------------|-----------|-------|-----|
| 10 | CuZn40Mn1 | 2.0572 | CW723R | CuZn40Mn1 | | | |
| | CuZn40Mn1Pb | 2.0580 | CW720R | CuZn40Mn1Pb | | | |
| | CuZn40Pb2 | 2.0402 | CW612N | CuZn40Pb2 | CuZn39Pb2 | | |
| | CuZn44Pb2 | 2.0410 | CW622N | CuZn44Pb2 | | | |
| | CuZn5 | 2.0220 | CW500L | CuZn5 | | CZ136 | |
| | | | | | | CZ120 | |
| | | | | | | CZ104 | |
| | | | | | | CZ125 | |
| | | | | | | | |
| | | | | | | | |
| 11 | | | | | | | |
| | | | | | | | |
| | | | 1.4876 | X2NiCrAlTi3220 | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | 2.4810 | NiMo30 | | | |
| | | | 2.4810 | NiMo30 | | | |
| | | | 2.4602 | | | | |
| | | | 2.4819 | NiMo16Cr15W | | | |
| | | | 2.4610 | NiMo16Cr16Ti | | | |
| | | | 2.4619 | | | | |
| | | | | | | | |
| | | | NiCr21Fe18Mo9 | | | | |
| | | 2.4665 | | | | | |

GENERAL TECHNICAL DATA

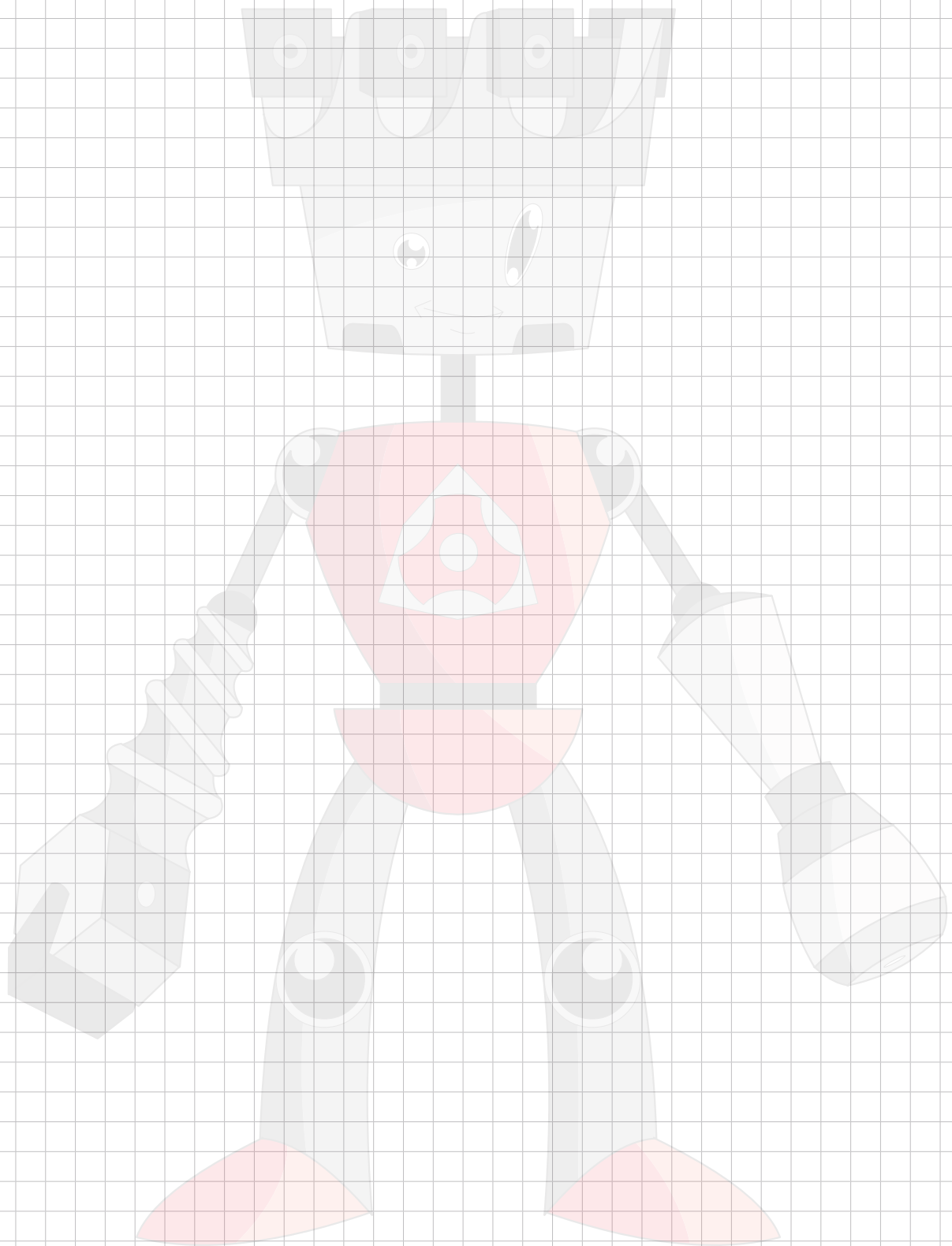
| JIS | SS | UNS | AISI/ASTM | Misc. Brand | Condition | Form | Structure |
|-------|--------------|--------|-----------|----------------|-----------------|----------------|-----------|
| C2100 | 5168 5272 | C37800 | | | | | |
| | | C68700 | | | | | |
| | | C21000 | | | | | |
| | | | | | AMPCO15 | | |
| | | | | | AMPCO18 | | |
| | | | | | AMPCO18.136 | | |
| | | | | | AMPCO18.22 | | |
| | | | | | AMPCO18.23 | | |
| | | | | | AMPCO21 | | |
| | | | | | AMPCO22 | | |
| | | | | | AMPCO25 | | |
| | | | | | AMPCO26 | | |
| | | | | | AMPCO45 | | |
| | | | | | AMPCO483 | | |
| | | | | | AMPCO642 | | |
| | | | | AMPCO673 | | | |
| | | | | AMPCO674 | | | |
| | | | | AMPCO8 | | | |
| | | | | AMPCO863 | | | |
| | | | | AMPCOM4 | | | |
| | | S66286 | | A286 | precip.hardened | | |
| | | S35000 | | AM350 | | cast | |
| | | S35000 | | AM350 | heattreated | | |
| | | S35500 | | AM355 | | | |
| | | S45500 | | Custom455 | | | |
| | | | | Discalloy | | | |
| | | N08800 | | Incoloy800 | | | |
| | | | | Incoloy801 | | | |
| | | N19909 | | Incoloy909 | | | |
| | | | | Lapelloy | | | |
| | | | | M-308 | | | |
| | | R30155 | | N-155 | | bar,forge,ring | |
| | | R30155 | | N-155 | | | |
| | | | | Air Resist13 | | | |
| | | | | FSX-414 | | | |
| | | | | H531 | | | |
| | | | | Haynes188 | | bar,forge,ring | |
| | | | | Haynes188 | | tube | |
| | | | | Haynes25 | | | |
| | | | | Mar-M-302 | | | |
| | | | | Mar-M-509 | | | |
| | | R30195 | | MP159 | | | |
| | | | | MP35N | | | |
| | | | | Stellite21 | | | |
| | | | | Stellite30 | | | |
| | | | | Stellite31 | | | |
| | | | | W152 | | | |
| | | | | W162 | | | |
| | | | | Astroloy | | allforms | |
| | | | | GTD222 | | | |
| | | N10665 | | HastelloyB-2 | | | |
| | | N10002 | | HastelloyC | | plate | |
| | | N10002 | | HastelloyC | | cast | |
| | | | | HastelloyC-22 | | | |
| | | N10276 | | HastelloyC-276 | | | |
| | | N06455 | | HastelloyC-4 | | | |
| | | N06007 | | HastelloyG | | | |
| | | N06985 | | HastelloyG-3 | | | |
| | | N10003 | | HastelloyN | | bar,forge,ring | |
| | | N10003 | | HastelloyN | | cast | |
| | | N06635 | | HastelloyS | | allforms | |
| | | N10004 | | HastelloyW | | | |
| | | N06002 | | HastelloyX | | allforms | |

WORKPIECE MATERIALS - PALBIT SELECTION MATERIALS, PSM

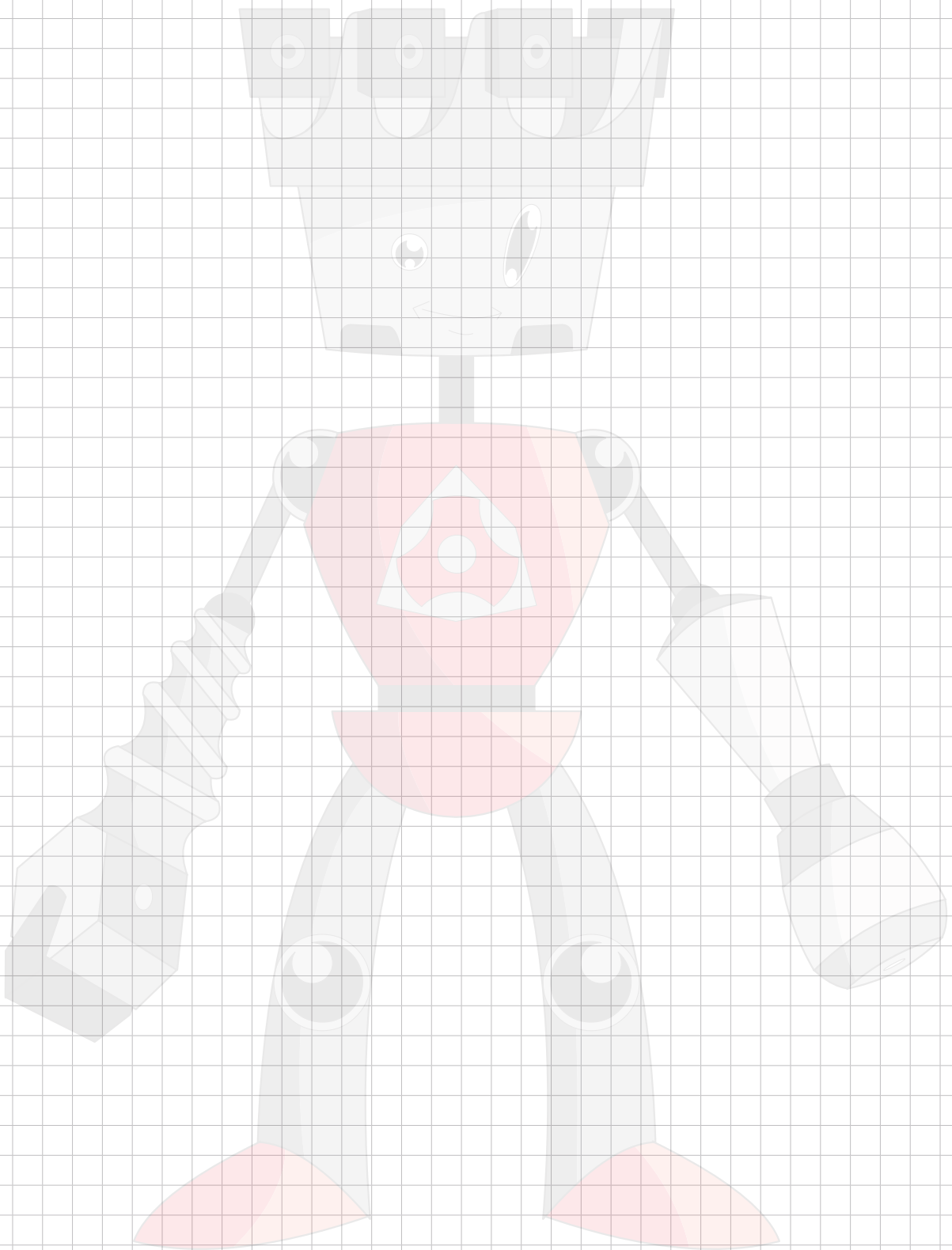
| ISO | DIN | W.-Nr | EN | EN-Nr | AFNOR | BS | UNI |
|-----|-------------|--------|--------------------|---------------------|-------|----|-----|
| 11 | | 2.4816 | NiCr15Fe | | | | |
| | | 2.4851 | | | | | |
| | | 2.4856 | NiCr22Mo9Nb | | | | |
| | | 2.4856 | NiCr22Mo9Nb | | | | |
| | | 2.4856 | NiCr22Mo9Nb | | | | |
| | | | NiFe38Cr16Nb | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | 2.4668 | NiCr19Fe19Nb5Mo3 | | | |
| | | | 2.4668 | NiCr19Fe19Nb5Mo3 | | | |
| | | | 2.4668 | NiCr19Fe19Nb5Mo3 | | | |
| | | | | | | | |
| | | | 2.4669 | | | | |
| | | | 2.4669 | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | 2.4061 | Ni99.6 | | | |
| | | | | | | | |
| | | | 2.4634 | | | | |
| | | | 2.4636 | | | | |
| | | | 2.4650 | | | | |
| | | | 2.4631 | NiCr20TiAl | | | |
| | | | | | | | |
| | | | 2.4632 | | | | |
| | | | 2.4662 | | | | |
| | | | | | | | |
| | | | ppm | | | | |
| | | | | NiCr19Co18Mo4Ti3Al3 | | | |
| | | | | | | | |
| | | 2.4654 | NiCr20Co13Mo4Ti3Al | | | | |
| | | 2.4654 | NiCr20Co13Mo4Ti3Al | | | | |
| | | 3.7024 | | | | | |
| | | 3.7024 | | | | | |
| | TiV10Fe2Al3 | | | | | | |
| | | | | | | | |
| | | 3.7124 | TiCu2 | | | | |
| | | | | | | | |
| | | | TiAl5Sn2.5 | | | | |
| | | | TiAl5Sn2.5 | | | | |
| | | | TiAl5Sn2.5 | | | | |
| | | | | | | | |
| | | | | | | | |
| | | 3.7164 | TiAl6V4 | | | | |
| | | 3.7164 | TiAl6V4 | | | | |
| | | | TiAl6V4 | | | | |
| | | 3.7164 | TiAl6V4 | | | | |
| | | 3.7164 | TiAl6V4 | | | | |

| JIS | SS | UNS | AISI/ASTM | Misc. Brand | Condition | Form | Structure |
|-----|----|--------|-----------------|----------------------|-----------------|----------------------|-----------|
| | | | | IN100 | | | |
| | | N06600 | | Inconel600 | | allforms | |
| | | N06601 | | Inconel601 | | allforms | |
| | | N06625 | | Inconel625 | | bar,forge,ring | |
| | | N06625 | | Inconel625 | | tube | |
| | | N06625 | | Inconel625 | | cast | |
| | | N09706 | | Inconel706 | | | |
| | | | | Inconel708 | | bar,forge,ring | |
| | | N07713 | | Inconel713 | | | |
| | | | | Inconel713LC | | | |
| | | N07718 | | Inconel718 | | bar,forge,ring | |
| | | N07718 | | Inconel718 | | tube | |
| | | N07718 | | Inconel718 | | cast | |
| | | | | Inconel901 | | | |
| | | N07750 | | InconelX-750 | sol.treated | | |
| | | N07750 | | InconelX-750 | precip.hardened | | |
| | | | | Mar-M-200 | | | |
| | | | | Mar-M-247 | | allforms | |
| | | | | Mod.IN100 | | | |
| | | | | Mod.IN792 | | | |
| | | N02205 | | Nickel201 | | | |
| | | | | Nimonic101 | | | |
| | | | | Nimonic105 | | | |
| | | | | Nimonic115 | | | |
| | | N07263 | | Nimonic263 | | | |
| | | N07080 | | Nimonic80A | | | |
| | | | | Nimonic81 | | | |
| | | | | Nimonic86 | | | |
| | | N07090 | | Nimonic90 | | | |
| | | N09901 | | Nimonic901 | | | |
| | | | | Nimonic91 | | | |
| | | | | René95 | | | |
| | | N03260 | | TDNickel | | | |
| | | N07500 | | Udimet500 | | | |
| | | | | Udimet520 | | | |
| | | | | Udimet700 | | | |
| | | | | Udimet720 | | | |
| | | N07001 | | Waspalloy | | bar,forge | |
| | | N07001 | | Waspalloy | | cast | |
| | | | | Ti(pure) | | pure-tube | Ti(?) |
| | | | AMS4900,-01,-21 | Ti(pure)(grd1-4) | | pure-plate,bar,forge | Ti(?) |
| | | | AMS4986 | Ti10V-2Fe-3Al | | | Ti(?) |
| | | R58210 | ASTMGrade21 | Ti15Mo-3Nb-3Al-0.2Si | | | Ti(?) |
| | | R58650 | AMS4995 | Ti17 | | | Ti(a+b) |
| | | | | Ti2Cu | | | Ti(?) |
| | | R56320 | AMS4943 | Ti3Al-2.5V | annealed | tube | Ti(?+?) |
| | | R56320 | AMS4943 | Ti3Al-2.5V | | bar,forge | Ti(?+?) |
| | | R54520 | AMS4910 | Ti5Al-2.5Sn | ELI | | Ti(?) |
| | | R54521 | AMS4909 | Ti5Al-2.5Sn | | | Ti(?) |
| | | R54520 | AMS4910 | Ti5Al-2.5Sn | annealed | | Ti(?) |
| | | R54620 | AMS4919 | Ti6-2-4-2 | annealed | | Ti(?) |
| | | R54621 | AMS4919 | Ti6-2-4-2 | precip.hardened | | Ti(?) |
| | | R56260 | AMS4981 | Ti6-2-4-6 | annealed | | Ti(?+?) |
| | | R56260 | AMS4981 | Ti6-2-4-6 | precip.hardened | | Ti(?+?) |
| | | R56400 | AMS4920 | Ti6Al-4V | annealed | | Ti(?+?) |
| | | R56400 | AMS4920,Grd5 | Ti6Al-4V | annealed | | Ti(?+?) |
| | | R56401 | AMS4981 | Ti6Al-4V | ELI | ELI | Ti(?+?) |
| | | R56400 | AMS4920 | Ti6Al-4V | | extrusion | Ti(?+?) |
| | | R56400 | AMS4920 | Ti6Al-4V | precip.hardened | | Ti(?+?) |

NOTES



NOTES





AEROSPACE &
DEFENSE



GENERAL
ENGINEERING



AUTOMOTIVE



MOULD & DIE



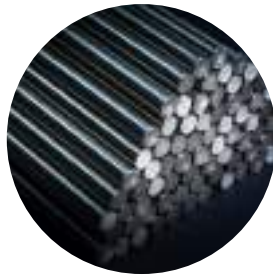
RAILWAY



SHIPBUILDING



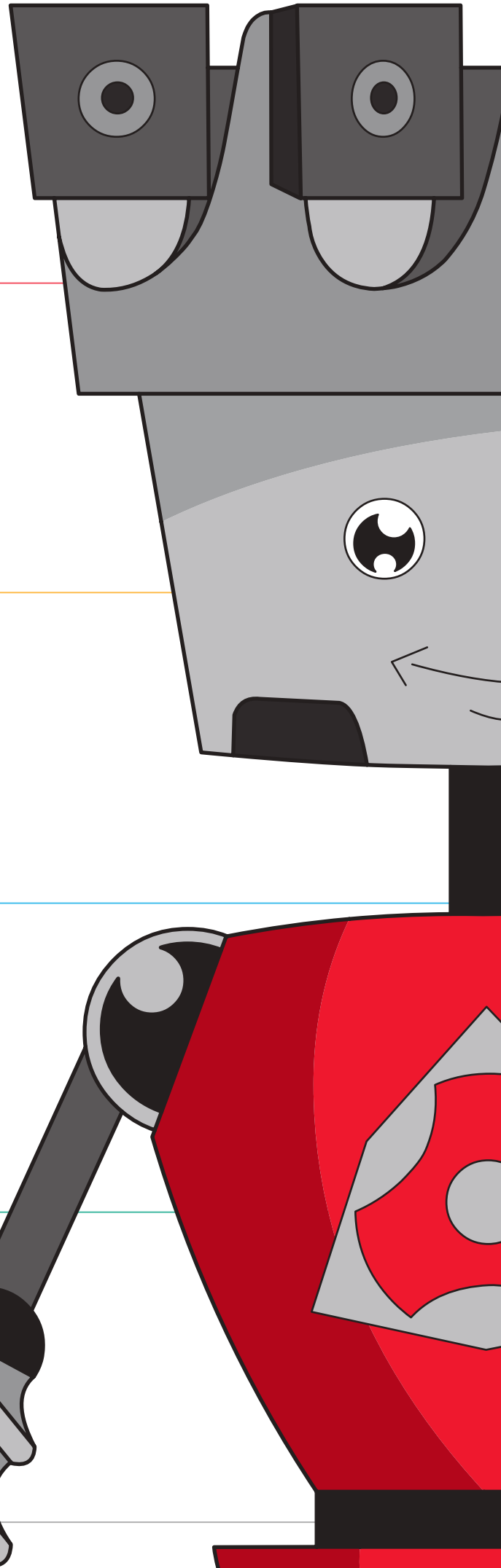
WIND ENERGY

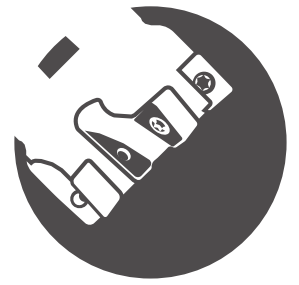
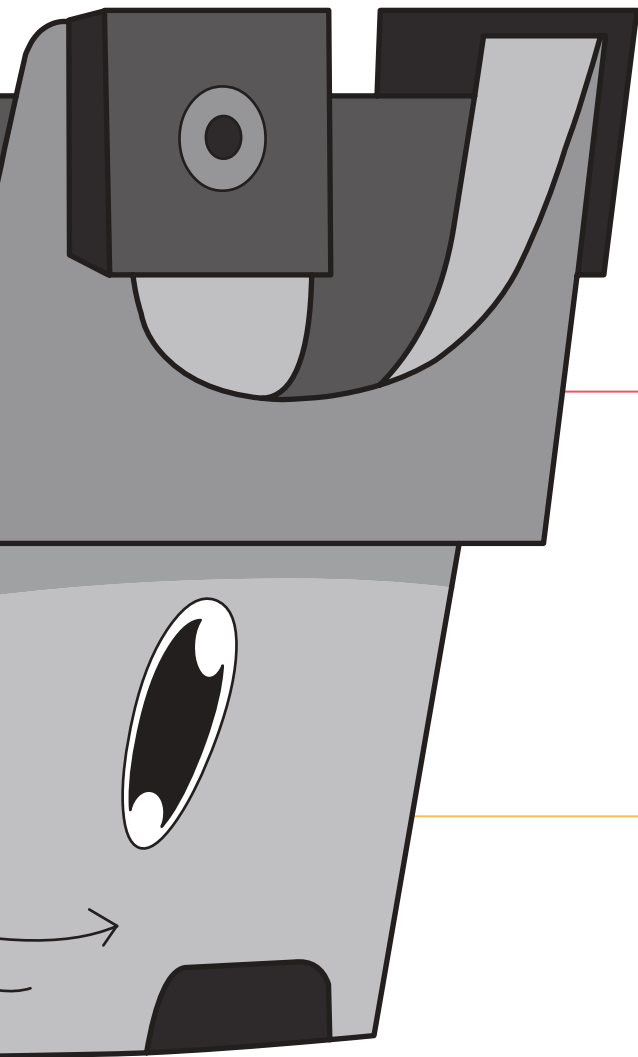


BAR PEELING



POWER
GENERATION





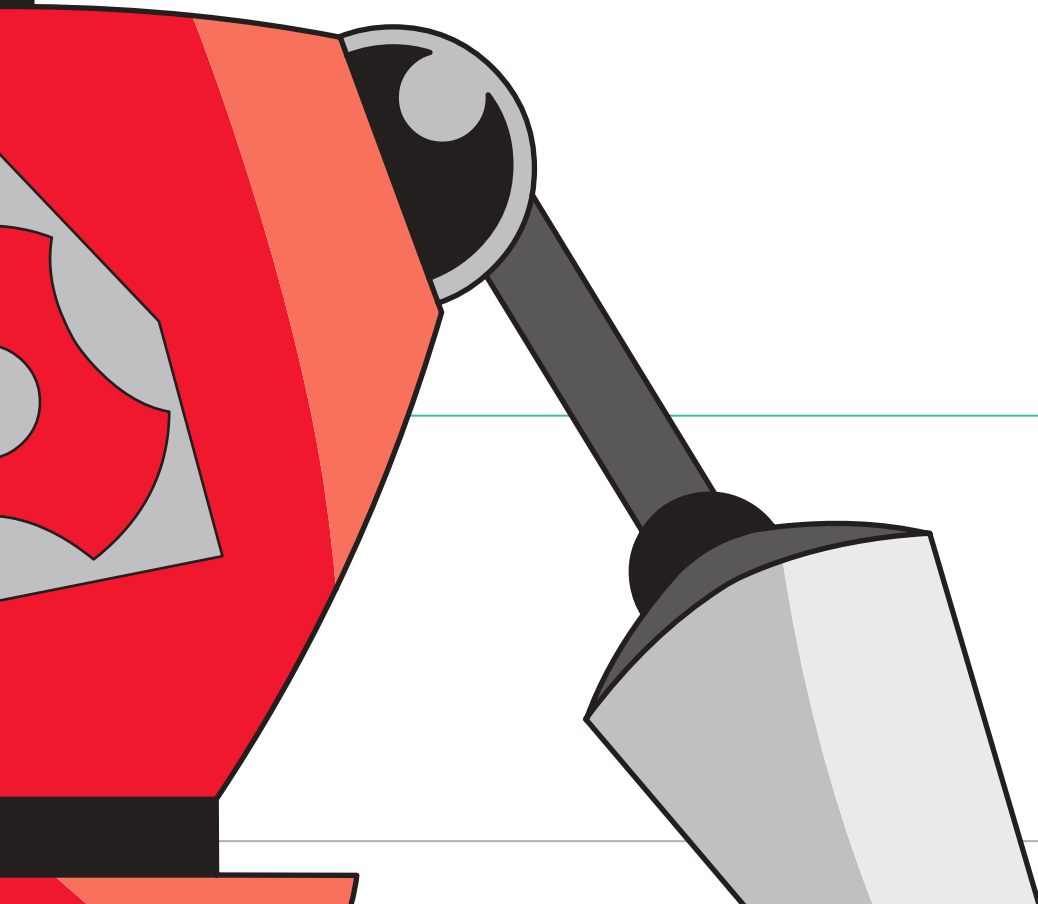
MILLING



DRILLING



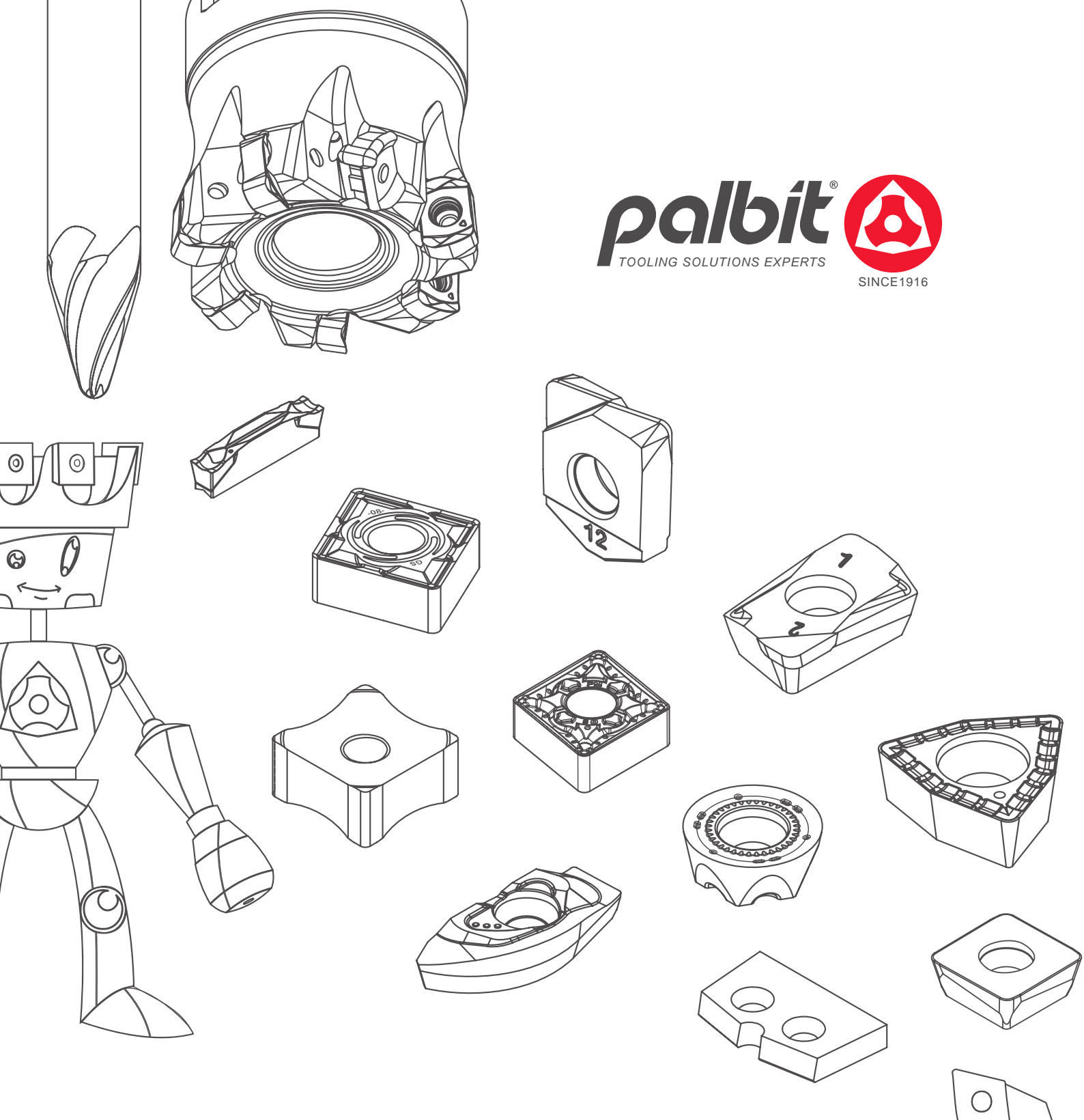
TURNING



GROOVING &
PARTING OFF



THREADING



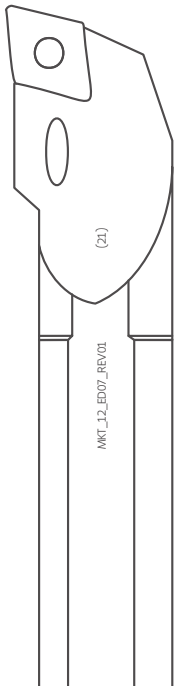
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