A

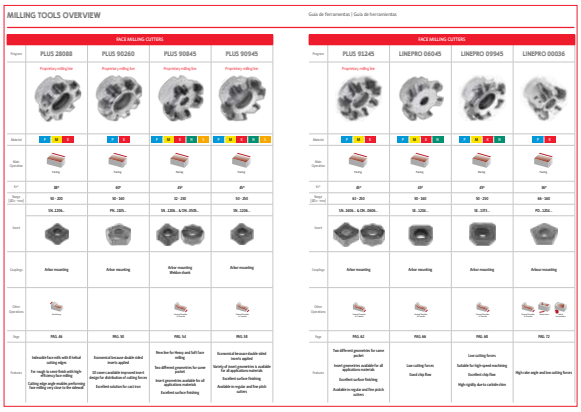
MILLING

1 - Define your operation type:

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

Select your tool:

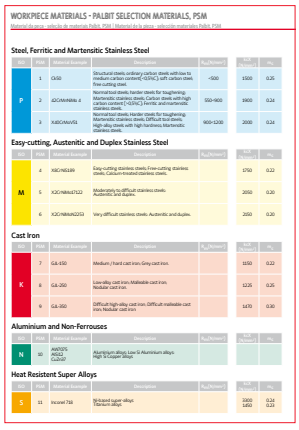
See page A - 18



2 - Define your material according to ISO:

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

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

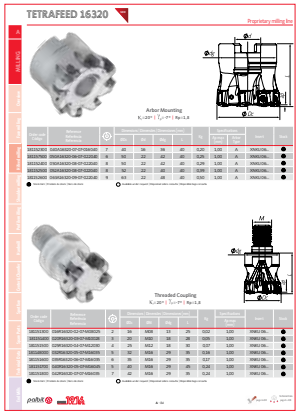


3 - Select your milling cutter.

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 mouting 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

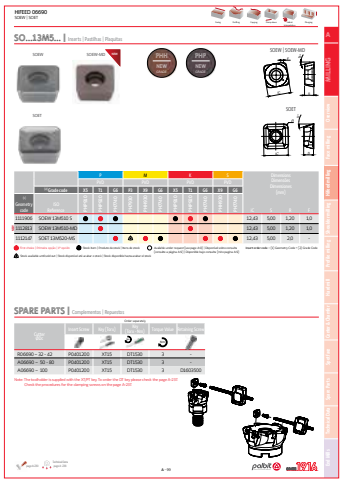


4 - Select your insert.

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:

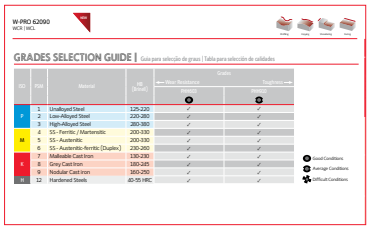
Qty	*IC Size
300	≤ IC 25 mm
150	> IC 25 mm



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			

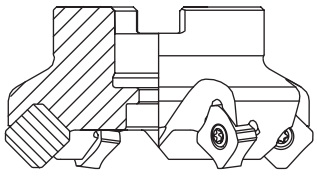
COUPLING TYPES

Tipo de acoplamento | Tipo de acoplamiento

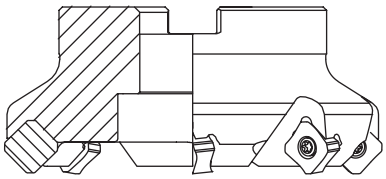
Symbol Símbolo Símblo	Coupling type Tipo de acoplamento Tipo de acoplamiento	Inserts fixation type Fixação de pastilhas Fijación de plaquitas	Standard Norma Norma
A	Arbor mounting Montagem tipo árvore Montaje tipo husillo	Insert screw Parafuso pastilha Tornillo de la plaquita	ISO 6462
B		Wedge Cunha 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
X	Special coupling Acoplamento especial Acoplamiento especial	Any type Qualquer tipo Cualquier tipo	

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

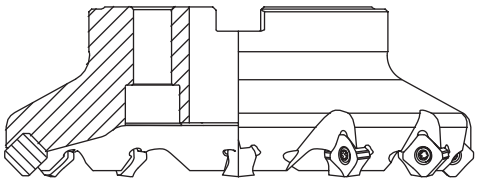
Arbor type A



Arbor type B



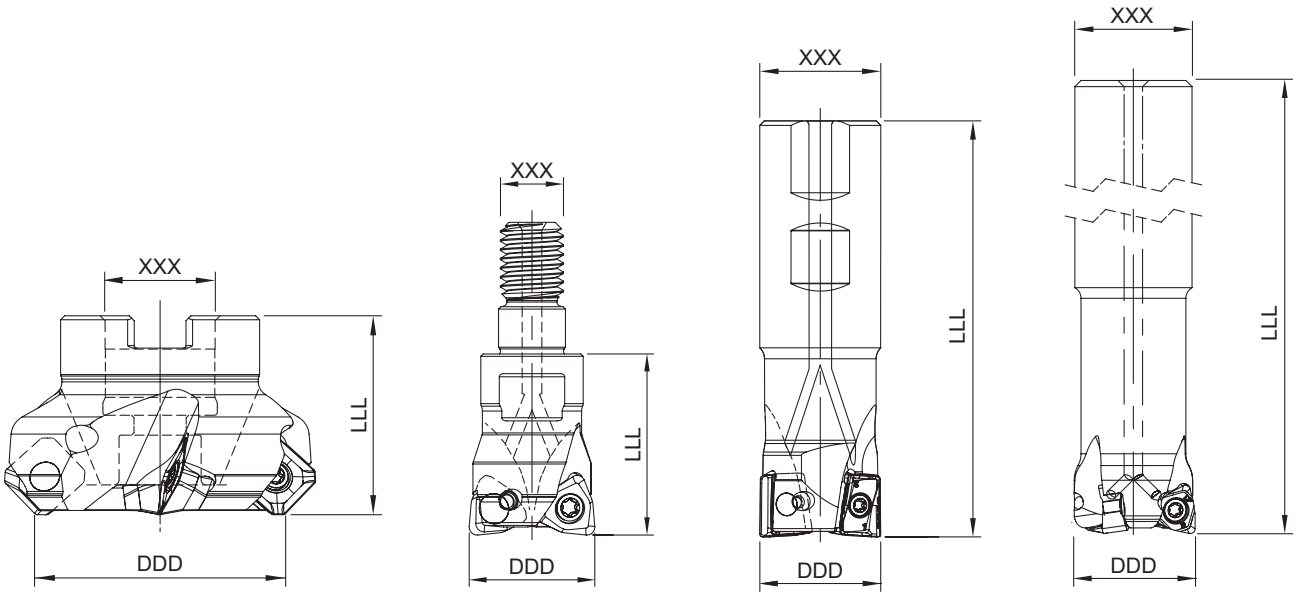
Arbor type C



NOTE: For each type of arbor mounting (see previous table of coupling type on simbols 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



DDD Y ZZZ TT-NN-LL-U XXX LLL-L-AAA ##

- DDD — Diameter / Diâmetro / Diametro
- Y — Coupling Type (A-10) / Tipo de acoplamento (A-10) / Tipo de acoplamiento (A-10)
- ZZZ — Insert Type (A-9) / Pastilha aplicável (A-9) / Inserto aplicable (A-9)
- TT — Lead angle / Ângulo de posicionamento da pastilha / Ángulo de posicion del inserto
- NN — Number of teeth / Número de dentes / Numero de dientes
- LL — Axial angle (angle of the tool construtions) / Ângulo Axial (ângulo de construção da ferramenta) / Ángulo Axial (ángulo de la construcción de herramienta)
- U — Cooling system / Refrigeração / Refrigeración
  - U - Whitout cooling system
  - U - Sem refrigeração
  - U - Sin refrigeración
- XXX — Coupling diameter / Diâmetro de acoplamento / Diámetro de acoplamiento
- LLL — Total length / Comprimento total / Longitud total
- L — Rotation (R/L) / Rotação (R/L) / Rotación (R/L)
  *In case of right rotation the "R" is supressed.
- AAA — Depth of cut / Profundidade de corte / Profundidad del corte
  *In case it is a helical cutter
- ## — Number of inserts / Número de pastilhas / Número de Insertos
  *In case it is a helical cutter

MILLING TOOLS OVERVIEW

	LINEPRO 00036	LINEPRO 06045	NEW LINEPRO 06290	P. HIFEED 06320	HIFEED 06410	HIFEED 06590	HIFEED 06690	HIFEED 06815	ALUPRO 08390	LINEPRO 09945	NEW TETRAFEED 16320	LINEPRO 17090
Page	82	76	178	88	92	116	98	104	176	78	84	180
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...
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
Weldon Shank	-	-	-	-	Ø 20-32	Ø 20-32	-	-	-	-	Ø 16-32	Ø 16-25
Cylindrical Shank	-	-	-	Ø 20-40	-	-	-	-	-	-	-	-
Threaded Coupling	-	-	-	Ø 16-42	Ø 20-42	Ø 20-42	Ø 32-42	-	Ø 32	-	Ø 16-42	Ø 16-25
Facing	●	●	○	●	●	●	●	●	○	●	●	○
Shouldering			○						○			○
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	-	-
	●	●	●	●	○	○	●	●	●	●	●	●	○
	○	○	○	○	○	○	○						●
			●		●	●	●	●	●	●	●	●	
			●		●	●	●	●	●	●	●	●	
	●	●		●	●	●	●	●	●	●	●	●	
					● (only with XPET-HF)	● (only with XPET-HF)							
	●	●	●	●	●	●	●	●	●	●	●	●	
					●	●		○	○	○	○	○	
					●	●		○	○	○	○	○	

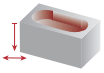
MILLING TOOLS OVERVIEW

	TOROMILL 33590	TOROMILL 33690	TOROMILL 33890	TOROMILL 33990	TURBOMILL 34190 NEW	TURBOMILL 34290 NEW	TOROMILL X2 35190	LINEPRO 40095	LINEPRO 40595	LINEPRO 41095	PLUS 45095
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...
Arbor mouting	-	-	Ø 50-125	Ø 80-125	Ø 42-52	Ø 40-80	Ø 40-80	-	Ø 52-80	-	-
Weldon Shank	-	-	-	-	-	-	Ø 32	-	-	-	-
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
Facing	●	●	●	●	●	●	●	●	●	●	●
Shouldering											
Slanted Shoulder & Chamfer											
Ramp down	●	●	●	●	●	●	●	●	●	●	
Helical Interpolation	●	●	●	●	●	●	●	●	●	●	
Plunging											
Side milling											
Slotting	●	●	●	●	●	●	●	●	●	●	
Profiling	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉
Copying	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉	◉
Plunging & Recessing											

◉ Main Operation ● Other Operations

	PLUS 49090	PLUS 49095	HEXAPLUS 49590 NEW	HIFEED 50060	HIFEED 50560	W-PRO 62090 NEW	BALLPRO 63090 NEW	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	-
	●	●	●	●	●	●		●	●	●	●	●
	●		●			●		●	●	●	●	●
			●	●	●				●	●		
			●	●	●				●	●		
				●								
			●									
									●	●	●	●
		●		●	●	●	●					
		●		●	●	●	●					
									●	●		

MILLING TOOLS OVERVIEW

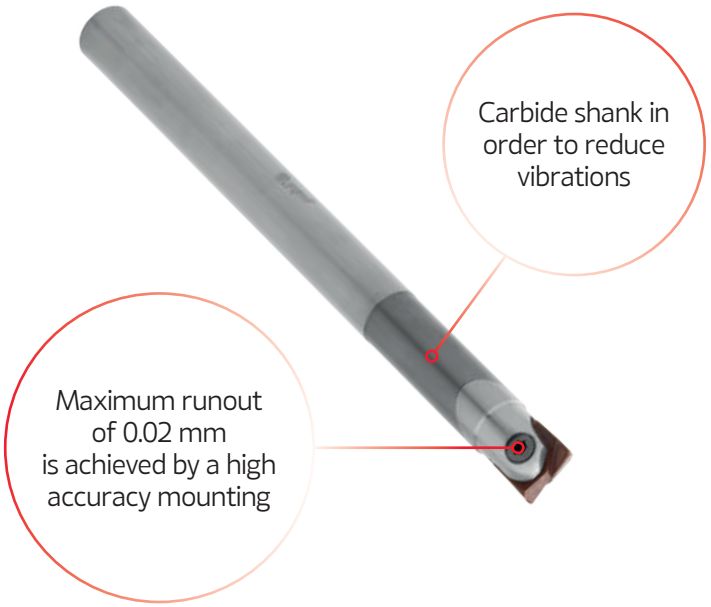
	PLUS 90260	TGPLUS 90390	PLUS 90845	PLUS 90945	PLUS 91245
Page	60	164	64	68	72
Insert	PN... 1105...	LNXT 1506...	SN... 1206... ON... 0505...	SN...1206...	SN... 1606... ON... 0606...
Arbor mouting	Ø 50-160	Ø 50-160	Ø 50-250	Ø 50-250	Ø 63-250
Weldon Shank	-	-	Ø 32-40	-	-
Cylindrical Shank	-	-	-	-	-
Threaded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

● Main Operation ○ Other Operations

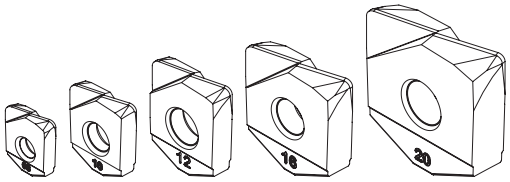
NEW W-PRO 62090 - NEW GRADE PHH

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

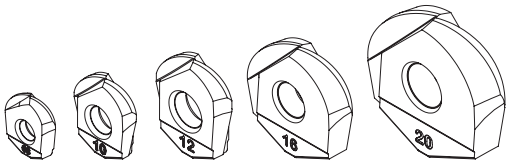
The new W-PRO is the combination of the most refined inserts and the most stable shanks. When looking for a finishing solution for Steels, Stainless Steels, Cast Irons, HRSA or Hardened Steels that can work for a long time while delivering a flawless machined surface, this is the best solution.



WCL



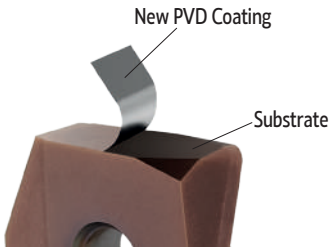
WCR



One toolholder for two types of inserts

PHH NEW GRADE

PHH GRADE - PVD grade



PHH603 NEW
H05-H15
P01-P05

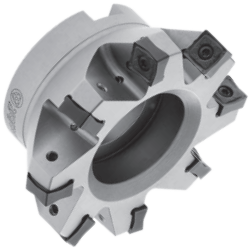
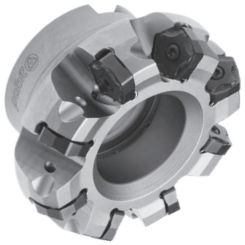
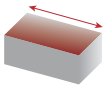
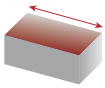
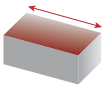
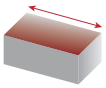
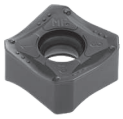
Recommended for finishing operations in steels and hardened steels. First choice in mold and die finishing applications.

PHH910 NEW
P05-P10
H15-H30

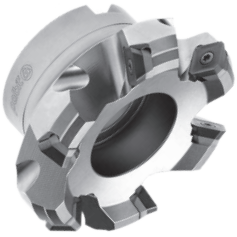
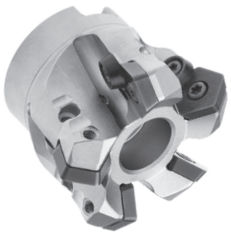
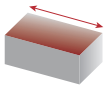
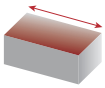
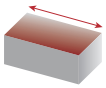
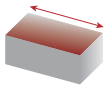
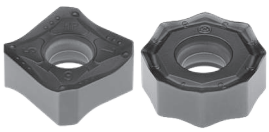
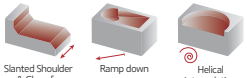
Recommended for finishing operations in steels and hardened steels in unstable conditions.

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 termal stability. It is the perfect coating for machining hardened material.

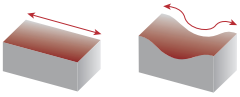
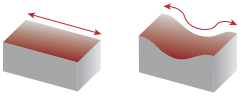
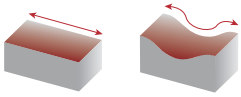
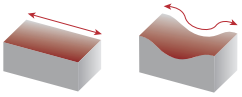
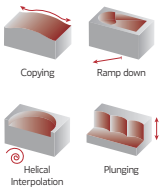
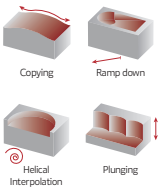
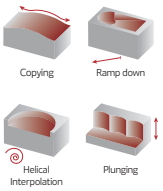
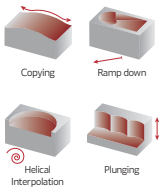
FACE MILLING CUTTERS

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 corners 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

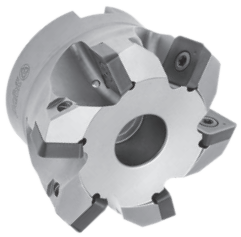
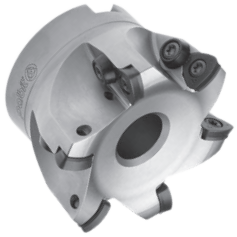
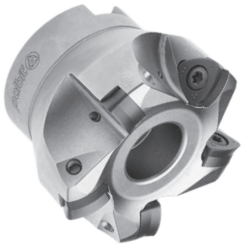
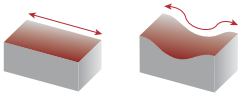
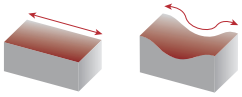
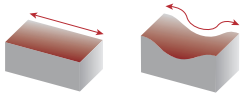
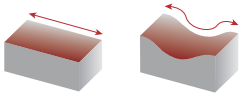
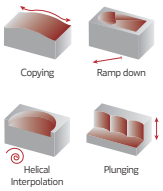
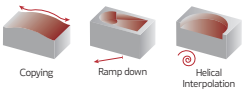
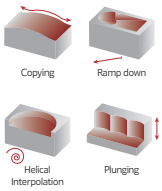
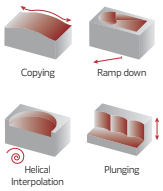
FACE MILLING CUTTERS

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

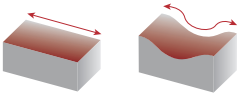
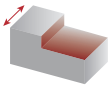
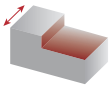
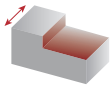
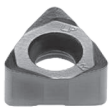
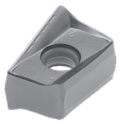
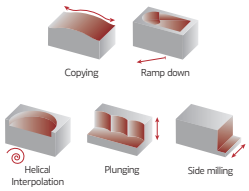
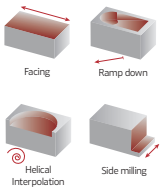
HIFEED MILLING CUTTERS

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	

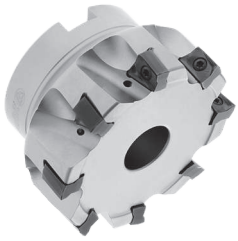
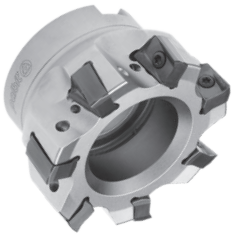
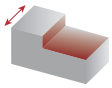
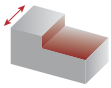
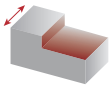
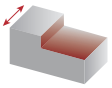
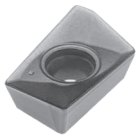
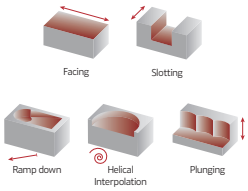
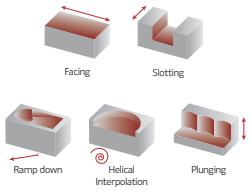
HIFEED MILLING CUTTERS

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	 Copying Ramp down Helical Interpolation Plunging	 Copying Ramp down Helical Interpolation	 Copying Ramp down Helical Interpolation Plunging	 Copying Ramp down Helical Interpolation Plunging
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

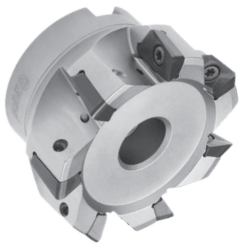
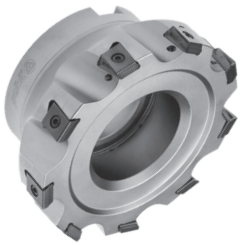
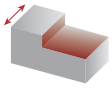
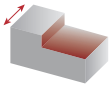
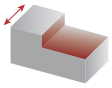
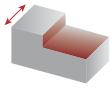
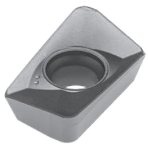
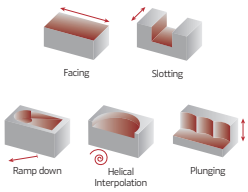
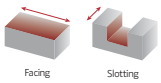
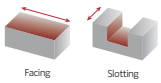
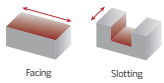
MILLING TOOLS OVERVIEW

	HIFFED MILLING CUTTERS	SHOULDER MILLING CUTTERS		
Program	PRO 20090 | 20190	HEXAPLUS 49590 NEW	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
Insert	XPET 0602... - HF | XPET 1003... - HF 	WNXT 0806... 	WNHU 04T308 	ANHX 1004... 
Couplings	Arbor mounting Weldon shank 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

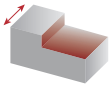
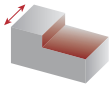
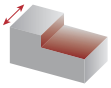
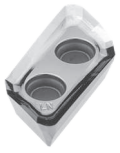
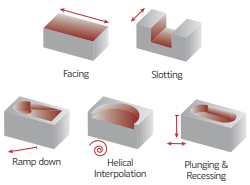
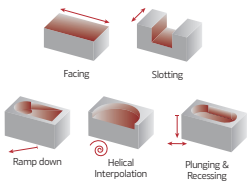
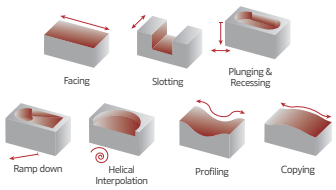
SHOULDER MILLING CUTTERS

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
Insert	ANHX 1206... 	ANHX 1607... 	XP...0602... 	XP...1003... 
Couplings	Arbor mounting Weldon shank Cylindrical shank Threaded coupling	Arbor mounting Weldon shank Threaded coupling	Cylindrical shank Threaded coupling	Arbor mounting Weldon shank Cylindrical shank Threaded coupling
Other Operations				
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	

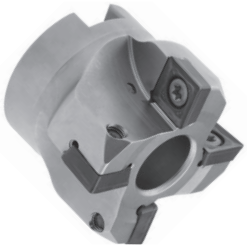
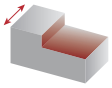
SHOULDER MILLING CUTTERS

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
Insert	XP...1706... 	LNXT 0904... 	LNXT 1306... 	LNXT 1506... 
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	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	Tangential inserts with 4 corners available High rake angle insert reduces cutting force Excellent insert rigidity and excellent machining stability Improved pocket configuration Available in regular and fine pitch cutters		

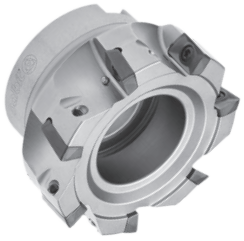
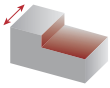
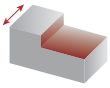
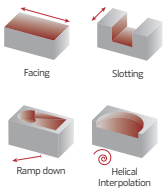
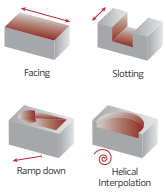
SHOULDER MILLING CUTTERS

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

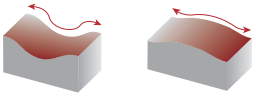
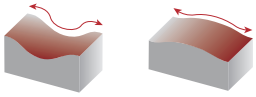
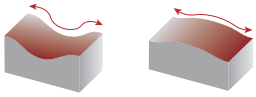
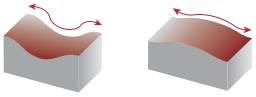
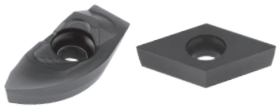
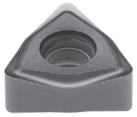
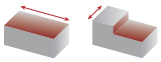
SHOULDER MILLING CUTTERS

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

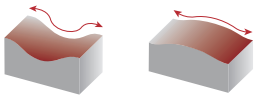
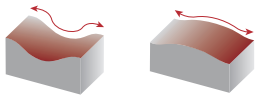
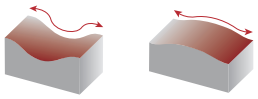
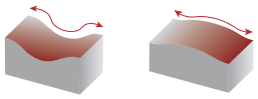
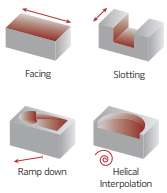
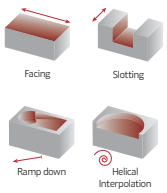
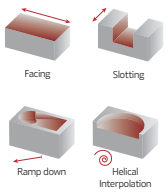
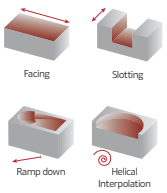
SHOULDER MILLING CUTTERS

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	 Facing, Slotting, Ramp down, Helical Interpolation	 Facing, Slotting, Ramp down, Helical Interpolation
Page	180	186
Features	Strong insert and low cutting force Helical cutting edge Good chip evacuation	

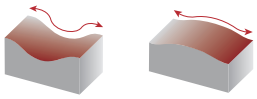
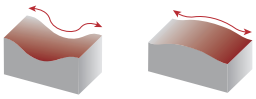
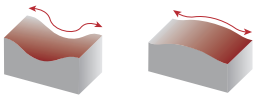
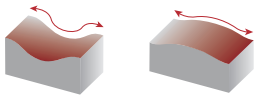
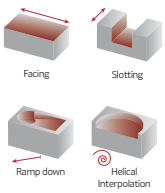
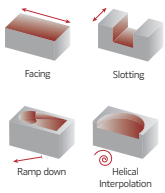
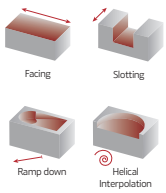
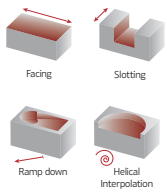
PROFILE MILLING CUTTERS

Program	W-PRO 62090 NEW	BALLPRO 63090 NEW	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
	WCL... | WCR...	XPGT 3206... | DCMW 11T3...	WNHU 04T310	WNHU 0604...
Insert				
Couplings	Cylindrical shank Threaded coupling	Threaded coupling	Threaded coupling	Threaded coupling
Other Operations	 Facing Shouldering	-	 Facing	 Facing
Page	190	194	196	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 miling Robust geometry	

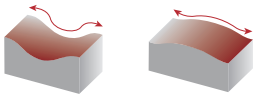
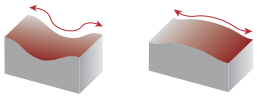
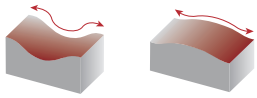
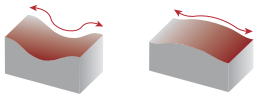
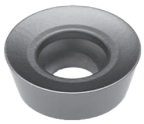
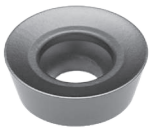
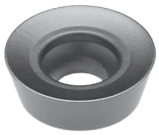
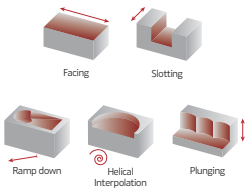
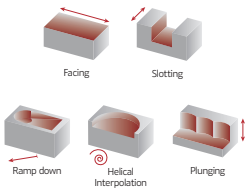
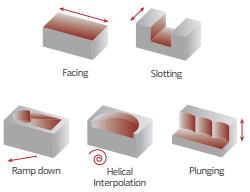
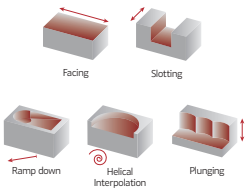
PROFILE MILLING CUTTERS

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	Excellent solution for Profile milling Low power requirement & smooth cutting possible due to positive helical angle First choice for problematic materials (M and S material classes) High positive cutting rake geometry			

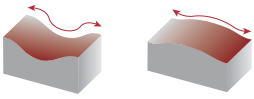
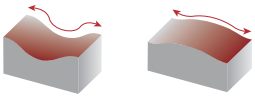
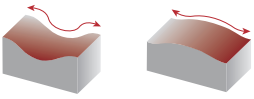
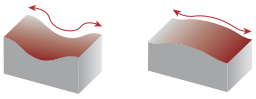
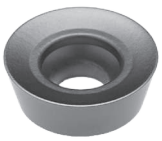
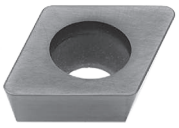
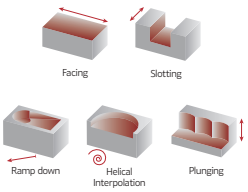
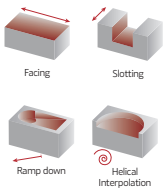
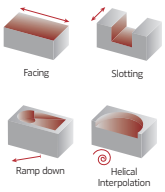
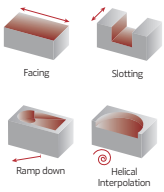
PROFILE MILLING CUTTERS

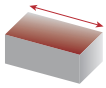
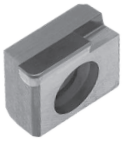
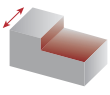
Program	TOROMILL 33990	TURBOMILL 34190 NEW	TURBOMILL 34290 NEW	TOROMILL X2 35190
	Proprietary milling line 	Proprietary milling line 	Proprietary milling line 	Proprietary milling line 
Material	P M S	P M S	P M S	P M K S
Main Operation	 Profiling Copying	 Profiling Copying	 Profiling Copying	 Profiling Copying
Kr°	-	-	-	-
Range (ØDc - mm)	80 - 125	42 - 52	40 - 80	32 - 80
Insert	RPHT 2006... 	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	Excellent solution for Profile milling Low power requirement & smooth cutting possible due to positive helical angle First choice for problematic materials (M and S material classes) High positive cutting rake geometry	Excellent solution for Profile milling First choice for problematic materials (M and S material classes) Improved insert seat		Excellent solution for Profile milling "First choice for problematic materials (M and S material classes) High positive cutting rake geometry

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	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			

PROFILE MILLING CUTTERS

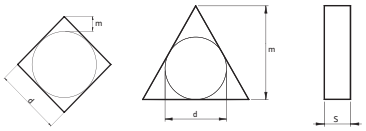
Program	TOROMILL 25390	LINEPRO 40095	LINEPRO 40595	LINEPRO 41095
				
Material	P K H	P K N H	P K N H	P K N H
Main Operation	 Profiling Copying	 Profiling Copying	 Profiling Copying	 Profiling Copying
Kr°	-	95°	95°	95°
Range (ØDc - mm)	80 - 160	16 - 25	25 - 80	10 - 12
Insert	RD...2006... 	XD...0602... 	XD...10T3... 	XD...0401... 
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	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	Designed for finishing and profile milling Low power consumption		

	HARDMILL	CENTER & CHAMFER	SPOT FACE
Program	HARDMILL 72090	CENTER & CHAMFER	SPOT FACE
			
Material	K N	P M K	P M K
	 Facing		
	90º		
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

MILLING INSERTS ISO IDENTIFICATION SYSTEM

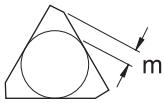
H	120°	M	86°
O	135°	V	35°
P	108°	W	80°
S	90°	L	90°
T	60°	A	85°
C	80°	B	82°
D	55°	K	55°
E	75°	R	
F	50°	X	Special

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
3°	5°	7°	15°	20°
F	G	N	P	O
25°	30°	0	11°	Other clearance angle

2 - Normal clearance symbol

ISO | ANSI

S N H X

4 - Insert symbol

symbol	Type	Hole type	Chipbreaker	Shape
W	with hole	Round hole / one countersink (40°~60°)	Without chipbreaker	
T			Chipbreaker on one side	
Q		Round hole / double countersink (40°~60°)	Without chipbreaker	
U			Chipbreaker on both sides	
B		Round hole / one countersink (70°~90°)	Without chipbreaker	

symbol	Type	Hole type	Chipbreaker	Shape
H	with hole	Round hole / one countersink (70°~90°)	Chipbreaker on one side	
C		Round hole / double countersink (70°~90°)	Without chipbreaker	
J			Chipbreaker on both sides	
A		Round hole	Without chipbreaker	
M			Chipbreaker on one side	

symbol	Type	Hole type	Chipbreaker	Shape
G	with hole	Round hole	Chipbreaker on both sides	
N	without hole	-	Without chipbreaker	
R		-	Chipbreaker on one side	
F		-	Chipbreaker on both sides	
X	-	-	-	On request

R's	V's (35°)	D's (55°)	C's (80°)	S's (90°)	T's (60°)	W's (80°)	Ø CI mm	Ø CI inch	ANSI 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

12 06 00 AN S N - MP

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.: ANHX 160708 PNER - 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
*only when required.			

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°
*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
	Chamfred with honing	S
*only when required.		

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

PHH - NEW MILLING GRADE | PHH - Novo grau de fresagem | PHH - Nuevo calidad de fresado

NEW

A new step on coating innovation!

NEW

PHH
NEW
GRADE

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.

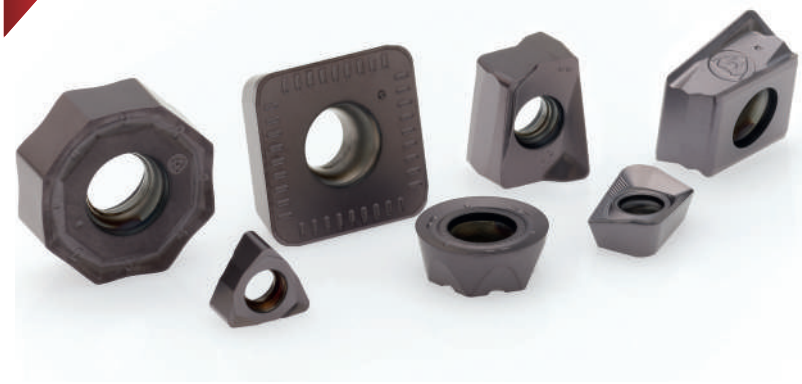
PHH808 NEW
M30-M40
S30-S40

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

PHP - NEW MILLING GRADE | PHP - Novo grau de fresagem | PHP - Nuevo calidad de fresado

A new step on coating innovation!

NEW



PHP
NEW
GRADE

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

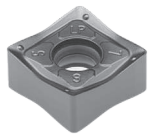
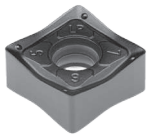
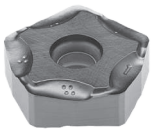
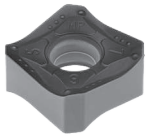
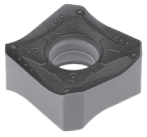
High heat resistance grade. Economic choice for cold-section turbine blade milling.

GRADES CODIFICATION SYSTEM | Sistema de codificação de graus | Codificación de calidad

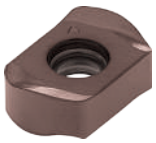
PH	X	X	XX
PH - Palbit Hardmetal PD - Palbit diamond PB - Palbit PCBN	Coating PCD | PCBN Grade	1 - Steel 2 - Stainess steel 3 - Cast Iron 4 - Non Ferrous 5 - Super Alloys 6 - Hardened Materials 7 - Wearparts 9 - Universal Range	01 - ISO Field (...) 50 - ISO Field

MILLING INSERTS OVERVIEW

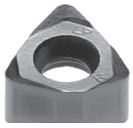
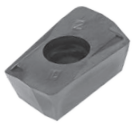
FACE MILLING INSERTS

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

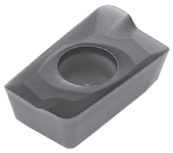
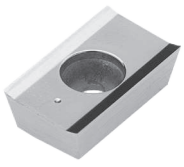
HIFEED MILLING INSERTS

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

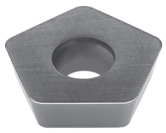
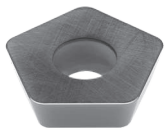
SHOULDER MILLING INSERTS

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	125	126 | 132 | 135	139 | 147 | 153	139 | 147

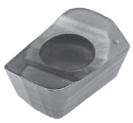
SHOULDER MILLING INSERTS

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

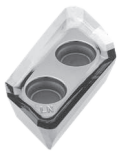
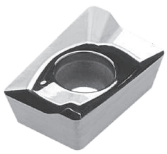
FACE MILLING INSERTS

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	76 | 79	76 | 79	82	82

HIFEED 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

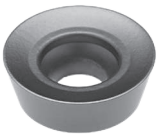
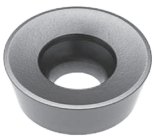
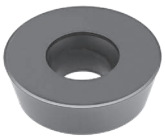
Reference	LNXT	XDGX	VCGX	SPGX NEW	SPMX NEW	APET
	Proprietary milling insert 					
Size	09 | 13 | 15	15 | 22	22	12	12	10
Material	P M K	N	N	P M K S	P M K S	N
Page	158 | 161 | 165	169 | 173	176	178	178	181

MILLING INSERTS OVERVIEW

PROFILE MILLING INSERTS

Reference	WCR NEW	WCL NEW	WNHU	RDHT	RPHT	RNHX
	Proprietary milling insert	Proprietary milling insert	Proprietary milling insert	Proprietary milling insert	Proprietary milling insert	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	196 | 198	203	203	211

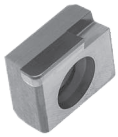
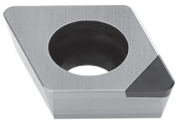
PROFILE MILLING INSERTS

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

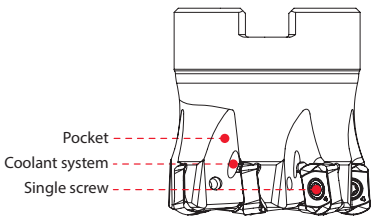
CENTER & CHAMFER INSERTS

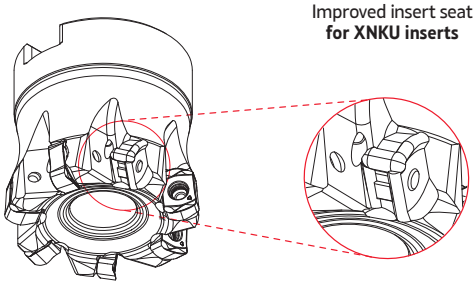
SPOT FACE

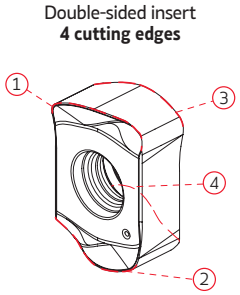
Reference	XNHW	XDHW	SOMT	SOGT NEW	SPKX
					
Size	12	04 | 06 | 10	11	11	05 | 06 | 07 | 09 | 11
Material	K N	N H	P M K	P M K	P M K S
Page	229	223	230	230	232

TETRAFEED 16320

NEW







MILLING CUTTER

Design
- Optimized design for better chip evacuation;

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

INSERT

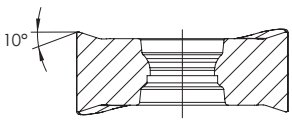
Insert Width
- Large cross section;

Cutting edge
- Improved cutting edge;
- Improved wear resistance;

Double-sided insert
- Double-sided insert with 4 cutting edges;

XNKU 06T3

XNKU-MP



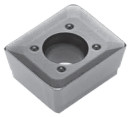
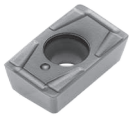
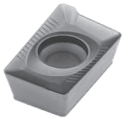
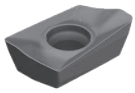
P M K S

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.

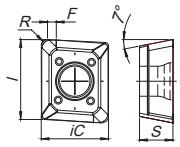
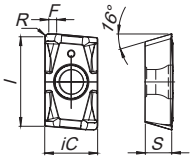
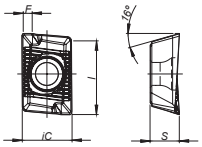
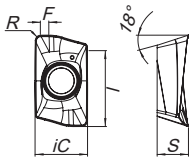
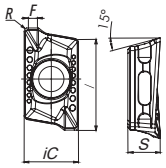
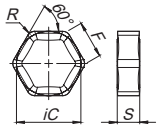
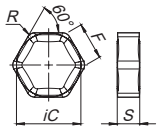
All information: Page - 84

MILLING INSERTS OVERVIEW

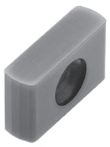
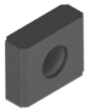
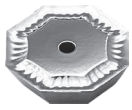
Inserts Pastilhas Plaquitas	(1) Geometry code	ISO Reference	P							M			K									N	
			PVD							PVD			CVD		PVD							UNC	UNC
		(2) Grade code	M6	54	68	66	78	86	I5	68	66	I5	L5	L9	D2	54	68	67	66	I5	17	10
			PH6103	PH6910	PH6920	PH6930	PH6125	PH6135	PH6740	PH6920	PH6930	PH6740	PH5705	PH5740	PH6705	PH6910	PH6920	PH6325	PH6930	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 | 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 (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

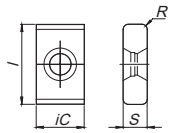
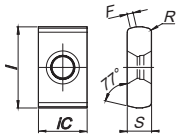
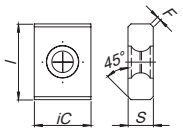
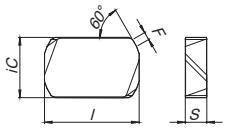
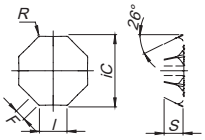
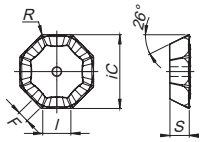
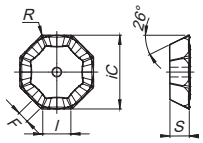
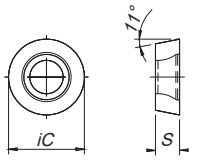
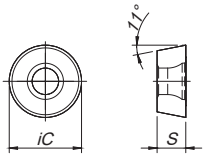
Dimensions (mm) | Dimensões (mm) | Dimensiones (mm)						Drawing
ic	S	l	R	a	F	
12,7	6,35	15,00	1,20	-	1,70	
9,53	4,76	16,00	0,80	-	2,00	
9,53	4,76	16,00	0,80	-	2,00	
9,53	4,76	16,00	0,80	-	2,00	
9,54	5,63	15,70	-	-	1,60	
9,54	5,63	15,70	-	-	1,60	
9,54	5,63	15,70	-	-	1,60	
8,13	4,85	11,50	1,20	-	1,40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

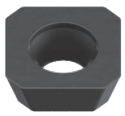
Inserts Pastilhas Plaquitas	(1) Geometry code	ISO Reference	P							M			K								N	
			PVD							PVD			CVD		PVD						UNC	UNC
		(2) Grade code	54	68	G4	66	78	86	I5	68	66	I5	L5	L9	D2	54	68	67	I5	17	10
			PH6910	PH6920	PH7920	PH6930	PH6125	PH6135	PH6740	PH6920	PH6930	PH6740	PH5705	PH5740	PH6705	PH6910	PH6920	PH6325	PH6740	PH0325	PH0910
	1111876	LNE 323-02															○				
	1111877	LNE 323-10															○				
	1110952	LNE 323-02 SP															○				
	1113037	LNE 434 R08-SP																			
	1113038	LNE 434 R16-SP																			
	1111420	LNE 434-02															○				
	1111894	LNE 434-05																			
	1111416	LNJN 2205 DDSR-A1															○				
	1111518	OFEN 070405 TN	◎	◎					◎				△			◎	◎		◎		
	1111569	OFKR 070408 FN-LN																			◎
	1111568	OFKR 070408 SN-MP	◎	◎			◎		◎			◎				◎	◎		◎		
	1112133	RPEW 1204 M0		○							○						○				
	1121742	RPMT 1003 M0T		○													○				
	1120448	RPMT 1204 M0T		○													○				

◎ 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 (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	
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	
14,25	5,85	18,55	0,80	-	-	
14,25	5,85	18,55	1,60	-	-	
14,25	6,35	19,05	-	-	0,80	
14,25	6,35	19,05	1,60	-	-	
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	-	-	-	-	

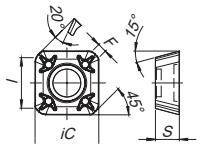
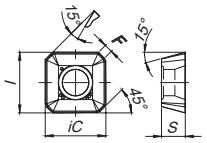
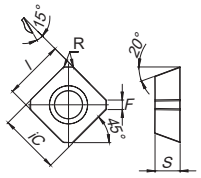
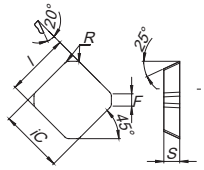
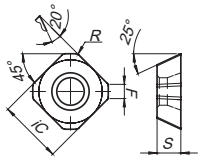
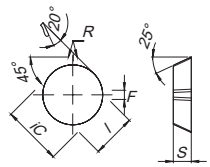
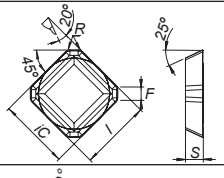
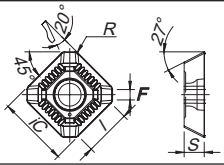
MILLING INSERTS OVERVIEW

Inserts Pastilhas Plaquitas	(1) Geometry code	ISO Reference	P							M			K								N	
			PVD							PVD			CVD	PVD						UNC	UNC	
		(2) Grade code	M6	54	68	66	78	86	I5	68	66	I5	L9	D2	54	68	67	I5	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			○											○						
	1110219	SEHW 1204 AFEN			◬				◬			◬				◬		◬				
	1110222	SEHW 1204 AFTN			◬				◬			◬				◬		◬				
	1111146	SEHW 13T3 AGFN			◬											◬						
	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 | 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 (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

palbit TOOLING SOLUTIONS EXPERTS SINCE 1916

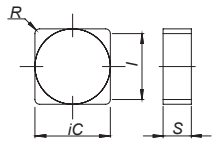
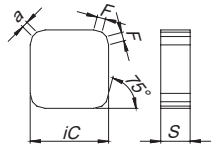
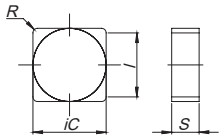
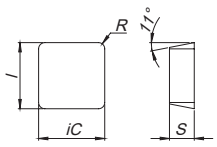
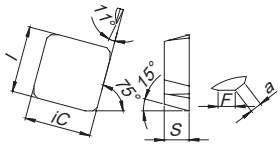
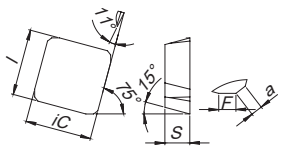
Dimensions (mm) | Dimensões (mm) | Dimensiones (mm)						Drawing
ic	S	I	R	a	F	
12,70	4,76	10,00	-	-	1,80	
12,70	4,76	10,00	-	-	1,80	
12,70	4,76	10,00	-	-	1,80	
9,53	3,97	7,30	0,30	-	1,50	
9,53	3,97	7,30	0,30	-	1,50	
12,70	4,76	9,00	-	-	2,50	
12,70	4,76	9,00	-	-	2,50	
15,88	4,76	-	1,20		-	
12,70	3,18	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	
12,70	4,76	12,70	-	-	2,80	
12,70	4,76	12,70	-	-	2,80	
13,36	3,96	10,00	-	-	2,00	
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	

MILLING INSERTS OVERVIEW

Inserts Pastilhas Plaquitas	(1) Geometry code	ISO Reference	P							M			K							N	
			PVD							PVD			CVD	PVD						UNC	UNC
		(2) Grade code	M6	54	68	66	78	86	I5	68	66	I5	L9	D2	54	68	67	I5	17	10
			PH6103	PH6910	PH6920	PH6930	PH6125	PH6135	PH6740	PH6920	PH6930	PH6740	PH5740	PH6705	PH6910	PH6920	PH6325	PH6740	PH0325	PH0910
	1110266	SNGN 120408			○											○				
	1110267	SNGN 120412			○											○				
	1110597	SNGN 190412			○											○				
	1110598	SNGN 190416			○											○				
	1110271	SNKN 1204 ENEN			◎											◎				
	1110273	SNKN 1204 ENSN			◎											◎				
	1120541	SNUN 120404			○											○				
	1120542	SNUN 120408			○											○				
	1120544	SNUN 120412			○											○				
	1121880	SNUN 190612T				○														
	1110765	SPGN 090312			○											○				
	1111173	SPGN 090316			○											○				
	1110300	SPGN 120308			○											○				
	1110301	SPGN 120312			○											○				
	1110303	SPGN 120408			○											○				
	1110588	SPGN 120412			○											○				
	1110590	SPGN 150408			○											○				
	1110304	SPGN 150412			○											○				
	1110326	SPKN 1203 EDFR																	◇	
	1110328	SPKN 1203 EDSR			○		◎	◎								○				
	1110330	SPKN 1203 EDTR			◎		◎	◎	◎							◎		◎		
	1110331	SPKN 1204 EDER			◎															
	1110332	SPKN 1204 EDSR			◎				◎							◎		◎		
	1110333	SPKN 1204 EDTR			○											○				
	1110336	SPKN 1504 EDER			◎		◎									◎				
	1110337	SPKN 1504 EDFR			○											○			◎	
	1110339	SPKN 1504 EDSR			◎				◎							◎		◎		
	1110340	SPKN 1504 EDTR			◎		◎		◎							◎		◎		
	1110335	SPKN 1504 EDEL			○											○				
	1110338	SPKN 1504 EDSL			○											○				

◎ 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 (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

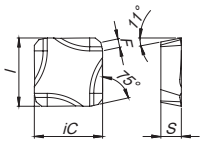
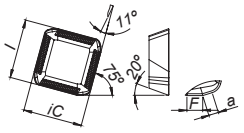
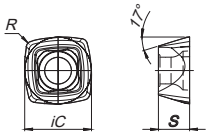
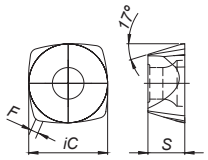
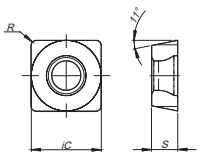
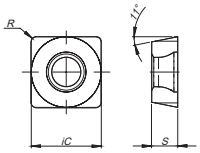
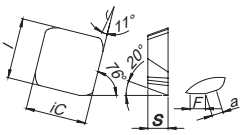
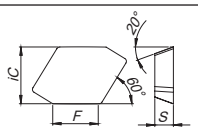
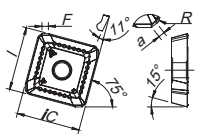
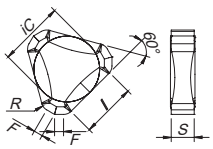
Dimensions (mm) | Dimensões (mm) | Dimensiones (mm)						Drawing
ic	S	l	R	a	F	
12,70	4,76	-	0,80	-	-	
12,70	4,76	-	1,20	-	-	
19,05	4,76	-	1,20	-	-	
19,05	4,76	-	1,60	-	-	
						
12,70	4,76	-	-	1,50	0,80	
12,70	4,76	-	-	1,50	0,80	
						
12,70	4,76	11,10	0,40	-	-	
12,70	4,76	11,10	0,80	-	-	
12,70	4,76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

MILLING INSERTS OVERVIEW

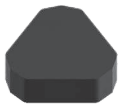
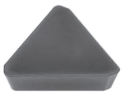
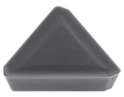
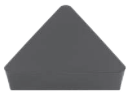
Inserts Pastilhas Plaquitas	(1) Geometry code	ISO Reference	P							M		K								S
			PVD							PVD		CVD		PVD					UNC	PVD
		(2) Grade code	54	68	G4	78	86	I5	G6	68	I5	L5	L9	D2	54	68	67	I5	17	I5
			PH6910	PH6920	PH7920	PH6125	PH6135	PH6740	PH7740	PH6920	PH6740	PH5705	PH5740	PH6705	PH6910	PH6920	PH6325	PH6740	PH0325	PH6740
	1111976	SPKR 1203 EDTR		○												○				
	1110564	SPKR 1504 EDFR		○												○				
	1111449	SPKR 1504 EDSR		○												○				
	1111107	SPKR 1906		○												○				
	1111314	SPKT 08T308-E		◈												◈				
	1111195	SPKT 130510-E		○												○				
	1111364	SPKW 08T308-E		◈						◈						◈				
	1121227	SPKW 08T308-S		◈		◇	◇									◈				
	1111153	SPKW 130510 F												○		○				
	1111355	SPKW 130510-E		◈			○			◈						◈				
	1110888	SPKW 130510-S		◈		◇	◇									◈				
	1111609	SPMT 120408-MP		◈				◈		◈	◈					◈		◈		◈
	1120572	SPMW 120408		○				◈			◈			○		○		◈		
	1191186	SPXN 1906		○			○	○					○			○				
	1112384	SPXN 1906-W		○												○				
	1112134	SPXR 1203 EDSR-MP		◈	○			◈	○							◈	○	◈		
	1110393	TNHF 1204 AN-CA										◈	◈	◈	◈	○				
	1111333	TNHF 1204 AN-K										◈	◈		○	○				

◈ 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 (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

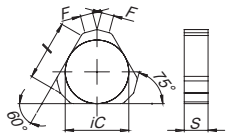
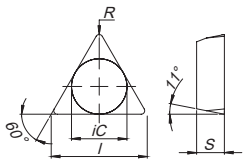
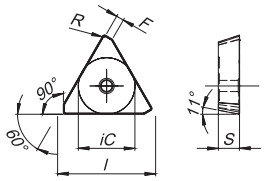
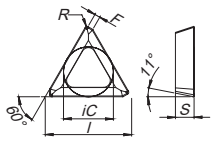
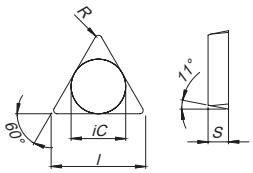
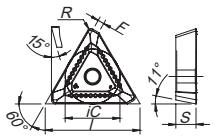
Dimensions (mm) | Dimensões (mm) | Dimensiones (mm)						Drawing
ic	S	I	R	a	F	
12,70	3,18	12,70	-	1,00	1,40	
15,88	4,76	15,88	-	1,00	1,40	
15,88	4,76	15,88	-	1,00	1,40	
19,05	6,35	19,05	-	1,00	1,40	
8,51	4,04	-	0,80	-	-	
13,00	5,56	-	1,00	-	-	
8,51	3,96	-	0,80	-	-	
8,51	3,96	-	0,80	-	-	
13,00	5,56	-	1,00	-	-	
13,00	5,56	-	1,00	-	-	
13,00	5,56	-	1,00	-	-	
12,70	4,76	-	0,80	-	-	
12,70	4,76	-	0,80	-	-	
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	

MILLING INSERTS OVERVIEW

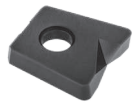
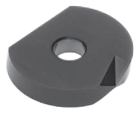
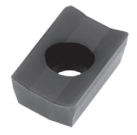
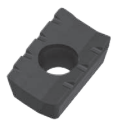
Inserts Pastilhas Plaquitas	(1) Geometry code	ISO Reference	P								M			K							
			PVD						CVD		PVD			CVD		PVD					UNC
		(2) Grade code	54	68	G4	66	I5	G6	L8	L9	68	66	I5	L5	L9	54	68	67	I5	17
			PH6910	PH6920	PH7920	PH6930	PH6740	PH7740	PH5125	PH5740	PH6920	PH6930	PH6740	PH5705	PH5740	PH6910	PH6920	PH6325	PH6740	PH0325
	1111911	TNJN 1204 ANEN		○													○			
	1110422	TPGN 110304															○			
	1110423	TPGN 110308		○													○			
	1110425	TPGN 160304		◈													◈			
	1110426	TPGN 160308		◈													◈			
	1110431	TPGN 220408		○													○			
	1110432	TPGN 220412		○													○			
	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		◈			◈										◈		◈	
	1110921	TPKR 1603 PDTR		○													○			
	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 | 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 (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

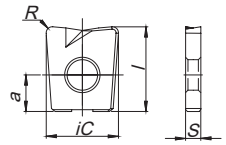
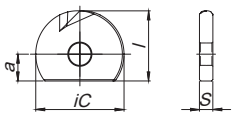
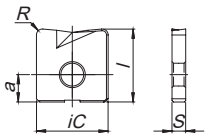
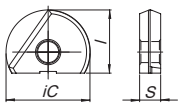
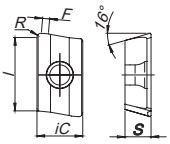
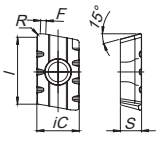
Dimensions (mm) | Dimensões (mm) | Dimensiones (mm)						Drawing
ic	S	I	R	a	F	
12,70	4,76	12,00	-	-	2,50	
6,35	3,18	-	0,40	-	-	
6,35	3,18	-	0,40	-	-	
9,53	3,18	-	0,40	-	-	
9,53	3,18	-	0,80	-	-	
12,70	4,76	-	0,80	-	-	
12,70	4,76	-	1,20	-	-	
9,53	3,18	16,50	0,70	-	1,20	
9,53	3,18	16,50	0,70	-	1,40	
9,53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

MILLING INSERTS OVERVIEW

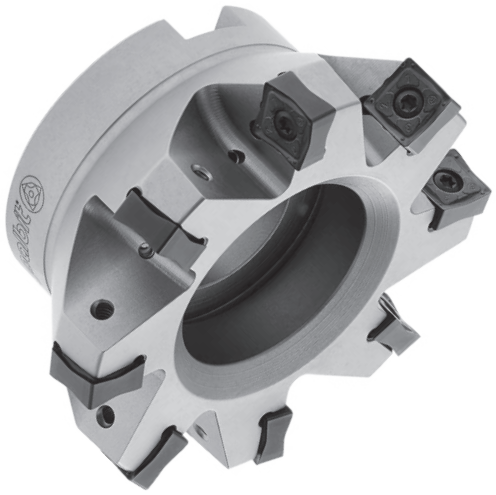
Inserts Pastilhas Plaquitas	(1) Geometry code	ISO Reference	(2) Grade code	P							M			K								UNC
				PVD							PVD			CVD		PVD						
				M6	54	68	66	78	86	I5	68	66	I5	L5	L9	D2	54	68	67	I5	17	
				PH6103	PH6910	PH6920	PH6930	PH6125	PH6135	PH6740	PH6920	PH6930	PH6740	PH5705	PH5740	PH6705	PH6910	PH6920	PH6325	PH6740	PH0325	
	1110851	WPB 08		○	○	○											○	○				
	1110852	WPB 10		○	○	○											○	○				
	1110853	WPB 12		○	○	○											○	○				
	1110923	WPB 16		○	○	○											○	○				
	1111019	WPB 20		○	○	○											○	○				
	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			◎	◎											◎	◎				
	1110820	WPV 08		△	△	○		○									○	○				
	1110821	WPV 10		△	△	○		○									○	○				
	1110822	WPV 12		△	△	○		○									○	○				
	1110948	WPV 16		△	△	○		○									○	○				
	1111020	WPV 20		○	○	○		○									○	○				
	1110543	WPZ 08		◎	○	○											○	○				
	1110551	WPZ 10		◎	○	○											○	○				
	1110552	WPZ 12		◎	○	○											○	○				
	1110544	WPZ 16		◎	○	○											○	○				
	1110553	WPZ 20		◎	△	○											△	○				
	1110661	WPZ 25		◎	◎	○											◎	○				
	1110662	WPZ 32		◎	◎	○											◎	○				
	1110910	XPHT 1604 PDTR				○												○				
	1111206	XPHT 160420 PPTR				○												○				
	1110926	XPHT 160432 PDSR				○												○				
	1110958	XPHT 160412-MR				○												○				

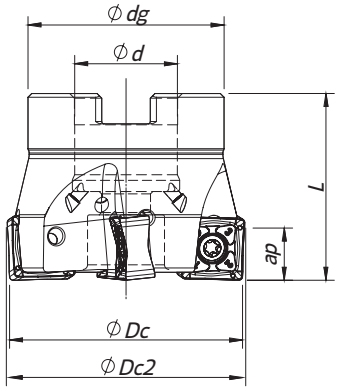
◎ First choice | 1ª Escolha | 1ª Opción
◎ Stock Itens | Itens de stock
△ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock
○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

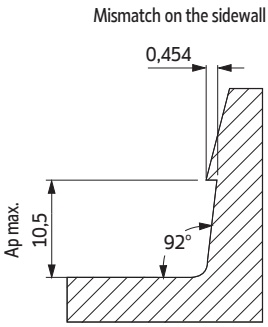
Insert Order Code: (1) Geometry code + (2) Grade code

Dimensions (mm) | Dimensões (mm) | Dimensiones (mm)						Drawing
ic	S	I	R	a	F	
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	

PLUS 28088







Arbor Mounting

K_r=88° | γ_p=-6°

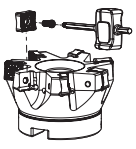
Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)					Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	ØDc2	Ød	Ødg	L		Arbor Type	Ap max (mm)		
181084300	050A28088-05-06-022040	5	50	50,9	22	42	40	0,4	A	10,5	SN... 1206...	◈
181091600	063A28088-06-06-022040	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...	◈

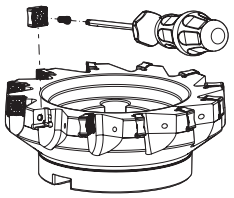
◈ Stock item | Produto de stock | Itens de stock

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

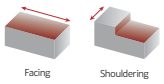
SPARE PARTS | Acessórios | Repuestos

Cutter ØDc	Insert Screw	Key (Torx)	Order separately Key (Torx - Nm)	Torque Value	Order separately 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	-	-



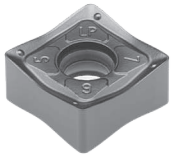


Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
Check the procedures for the clamping screws on the page A-241.

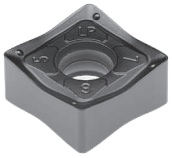


SNH(K)U 1206 | Inserts | Pastilhas | Plaquitas

SNHU-LP
(PHP grade)

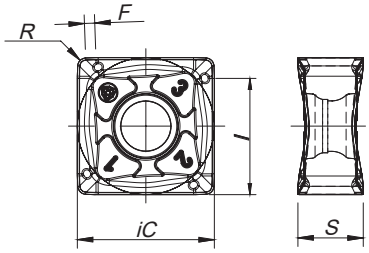


SNKU-LP
(PHP grade)



PHP
NEW
GRADE

SNH(K)U-LP



		P					M		K								Dimensions Dimensões Dimensiones (mm)				
		CVD	PVD				PVD		CVD				PVD								
	(2) Grade code	T9	G4	T1	P3	G6	P3	G6	L5	L6	L9	T9	G4	T1	P3	G6					
(1) Geometry code	ISO Reference	PHS740	PH7920	PHP920	PH7930	PH7740	PH7930	PH7740	PH5705	PH5320	PH5740	PHS740	PH7920	PHP920	PH7930	PH7740	iC	S	l	R	F
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 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 → 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

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palbit TOOLING SOLUTIONS EXPERTS SINCE 1916

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

ISO	PSM	Material	HB (Brinell)	Vc (m/min) ← Wear Resistance			
				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 determinated by speed/feed used.
(Note 4) PH5... and PHS... can be used wet or dry. PH7... use only air.

Selection Example:

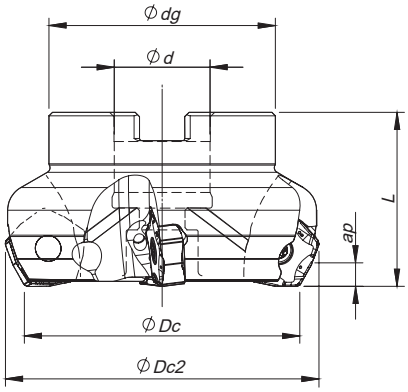
ISO	PSM	Material	HB (brinell)	Vc (m/min) ← Wear Resistance Toughness →		Feed f_z (mm/t)
				PH5705	PH5740	SNHU 1206... SNKU 1206...
K	7	Malleable cast iron	130-230	160 **(180)** 290	160 **(1900)** 260	0,10 **(0,25)** 0,35
	8	Grey cast iron	180-245	170 **(270)** 320	140 **(180)** 240	0,10 **(0,25)** 0,35
	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) Toughness →				Feed fz (mm/t)
PH7930	PH5740	PHS740	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

PDF VIDEO

PLUS 90260



Arbor Mounting

K_r=60° | γ_p -7°

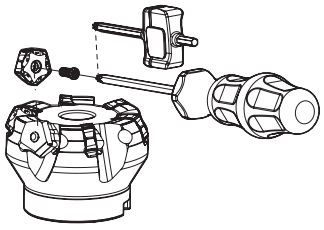
Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)					Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	ØDc2	Ød	Ødg	L		Arbor Type	Ap max (mm)		
181050200	050A90260-05-07-022040	5	50	59,05	22	48	40	0,388	A	5,0	PN... 1105...	◈
181050300	063A90260-06-07-022040	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 | Acessórios | Repuestos

Cutter ØDc	Insert Screw	Key (Torx)	Order separately Key (Torx - Nm)	Torque Value	Order separately 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.

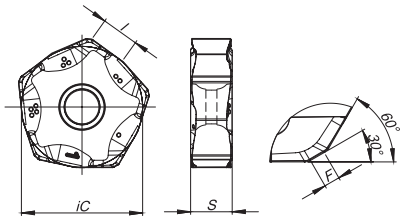
PNH(K)X 1105 | Inserts | Pastilhas | Plaquitas

PNHX-MK

PNHX-HK

PNKX-MK

PNH(K)X-MK | HK



		P		K				Dimensions Dimensões Dimensiones (mm)				
		PVD		CVD		PVD						
	(2) Grade code	G1	G4	L5	L9	G1	G4					
(1) Geometry code	ISO Reference	PH7910	PH7920	PH5705	PH5740	PH7910	PH7920	iC	S	I	R	F
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 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 → 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

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palbit TOOLING SOLUTIONS EXPERTS SINCE 1916

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 ajusted 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.

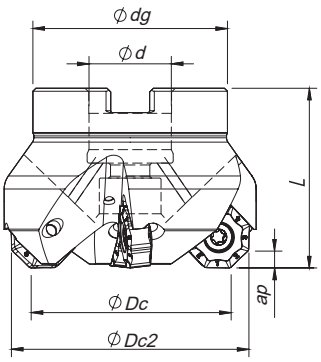
CHIP-BREAKER SELECTION GUIDE | Guia para aplicações do quebra-aparas | Guía para aplicación del rompevirutas

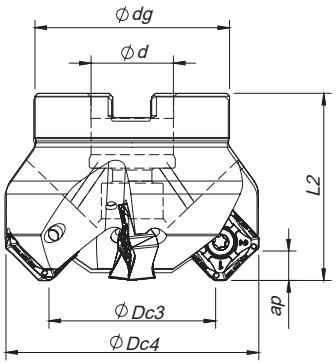
ISO	PSM	Material	HB (Brinell)	Chip-Breaker Application	
				1st choise	Dificult Operations
P	1	Unalloyed Steel	125-220	PNH(K)X 11... MK	-
	2	Low-Alloyed Steel	220-280	PNH(K)X 11... MK	-
	3	High-Alloyed Steel	280-380	PNH(K)X 11... MK	-
K	7	Malleable Cast Iron	130-230	PNH(K)X 11... MK	PNH(K)X 11... HK
	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

PDF VIDEO

page A - 234 Technical Data page A - 242





Arbor Mounting

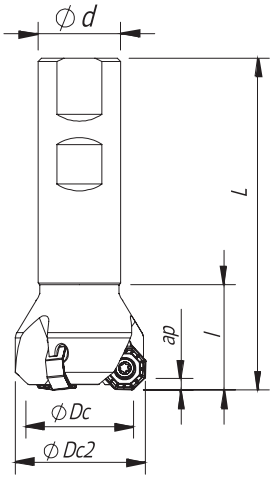
K_r=44,5°~46° | γ_p=-6°

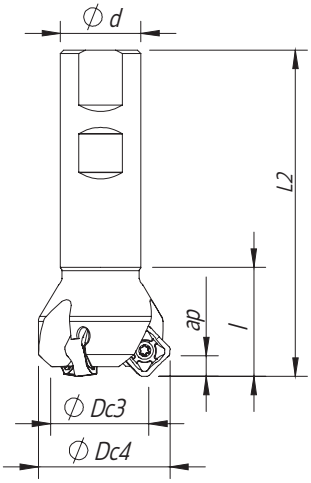
Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)								Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	ØDc2	ØDc3	ØDc4	Ød	Ødg	L	L2		Arbor Type	Ap (mm)		
181111400	050A90845-04-06-022040	4	50	57,6	47,1	62	22	48	40	41,5	0,383	A	3,5 | 6,0	ON...05 | SN...12	⚙
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	70,6	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 pagina A-9)

Weldon Shank

K_r=44,5°~46° | γ_p=-6°





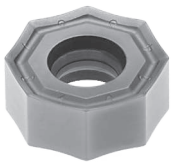
Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)							Kg	Specifications	Insert Pastilha Inserto	Stock
			ØDc	ØDc2	ØDc3	ØDc4	Ød	L	L2		Ap (mm)		
181118000	032W90845-03-06-025100	3	32	39,6	29,1	44	25	100	101,5	0,375	3,5 | 6,0	ON...05 | SN...12	⚙
181118100	040W90845-04-06-032110	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 pagina A-9)

Facing | Slanted Shoulder & Chamfer

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

ONH(K)X-LP

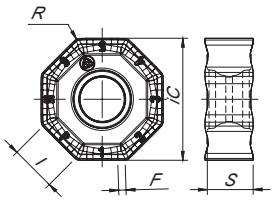


ONH(K)X-MK

ONH(K)X-MP
(PHS grade)

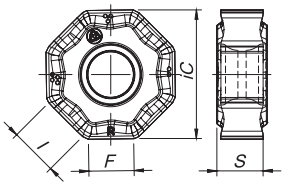
PHP
NEW
GRADE

ONH(K)X-MK | LP | MP



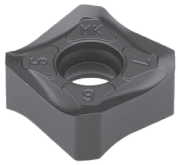
ONHX-W
8 Cutting Edges (8R)

ONHX-W

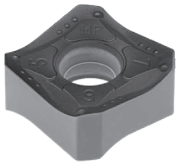


SNHX-LP

SNH(K)X-MK

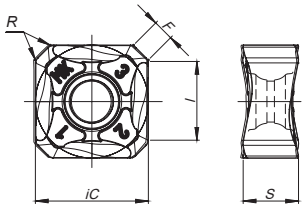


SNH(K)X-MP
(PHS grade)



SNHX-LN

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



		P							M		K									N	S		Dimensions Dimensões Dimensiones (mm)				
		CVD	PVD						PVD		CVD				PVD					UNC	PVD						
	(2) Grade code	T9	X5	G4	T1	P3	P4	G6	X9	G6	L5	L6	L9	T9	X5	G4	T1	P3	P4	G6	10	X9	G6					
(1) Geometry code	ISO Reference	PHS740	PHP910	PH7920	PHP920	PH7930	PHP930	PH7740	PHH930	PH7740	PH5705	PH5320	PH5740	PHS740	PHP910	PH7920	PHP920	PH7930	PHP930	PH7740	PH0910	PHH930	PH7740	iC	S	l	R	F
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
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

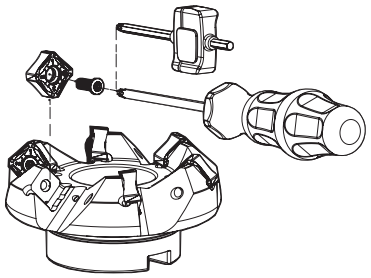
◉ First choice | 1ª Escolha | 1ª Opción
◉ Stock Itens | Itens de stock
△ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock
○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

Insert Order Code: (1) Geometry code + (2) Grade code

PLUS 90845

SPARE PARTS | Acessórios | Repuestos

Cutter ØDc	Insert Screw	Key (Torx)	Order separately Key (Torx - Nm)	Torque Value	Order separately 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) ← Wear Resistance				Toughness →	Feed fz (mm/t)	
				PHH930	PH7930	PH5740	PHS740	PH7740	SNH(K)X 12...	ONH(K)X 05...
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/Dc=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 choise	Dificult 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	-

PDF VIDEO

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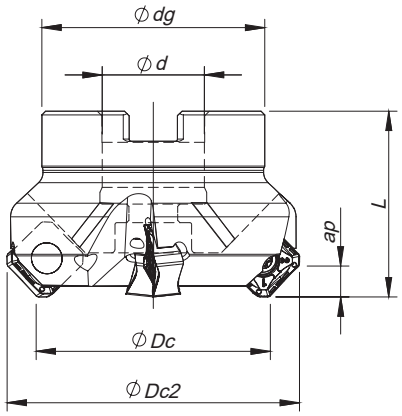
palbit SINCE 1916

PLUS 90945



Arbor Mounting

K_r=44,5°~46° | γ_p=-6°

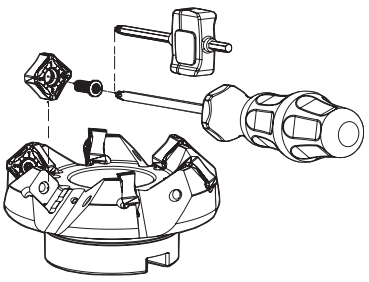
Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)					Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	ØDc2	Ød	Ødg	L		Arbor Type	Ap max (mm)		
181048200	050A90945-04-06-022040	4	50	63	22	48	40	0,424	A	6,0	SN... 1206	●
181067000	050A90945-06-06-022040	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 pagina A-9)

SPARE PARTS | Acessórios | Repuestos

Cutter ØDc	Insert Screw	Key (Torx)	Order separately Key (Torx - Nm)	Torque Value	Order separately 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	-	-



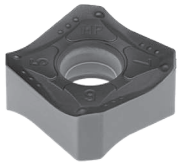
Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
Check the procedures for the clamping screws on the page A-241.

Facing | Slanted Shoulder & Chamfer

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

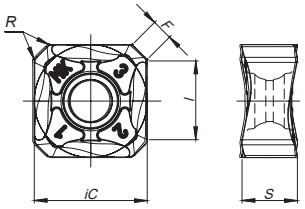
SNHX-LP

SNH(K)X-MP

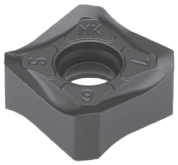


PHP NEW GRADE

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



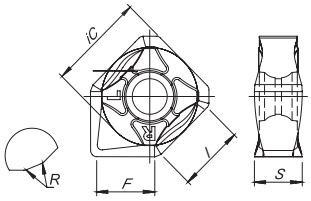
SNH(K)X-MK



SNHX-LN

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

SNHX-W



		P							M		K									N	S		Dimensions Dimensões Dimensiones (mm)				
		CVD	PVD						PVD		CVD			PVD						UNC	PVD						
	(2) Grade code	T9	X5	G4	T1	P3	P4	G6	X9	G6	L5	L6	L9	T9	X5	G4	T1	P3	P4	G6	10	X9	G6					
(1) Geometry code	ISO Reference	PHS740	PHP910	PH7920	PHP920	PH7930	PHP930	PH7740	PHH930	PH7740	PH5705	PH5320	PH5740	PHS740	PHP910	PH7920	PHP920	PH7930	PHP930	PH7740	PH0910	PHH930	PH7740	iC	S	I	R	F
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 | 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 (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

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

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palbit TOOLING SOLUTIONS EXPERTS SINCE 1916

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 $a_e/Dc=70\%$.
(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.

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 choise	Dificult 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	-

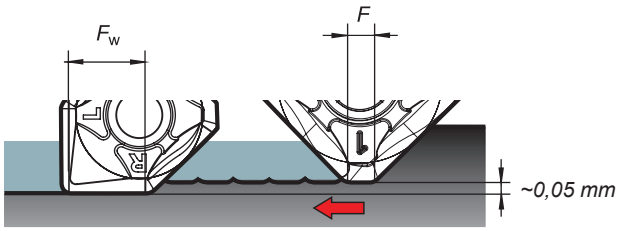
PDF VIDEO

Vc (m/min) Toughness →					Feed fz (mm/t)				
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_n should be equal to 0,8 x F_W
- 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_n) 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.
- $f_n \leq 0,8 \times F_W = f_Z \leq 0,8 \times F_W / Z$

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 workpiece cutting surface.

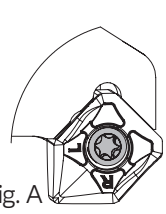


Fig. A

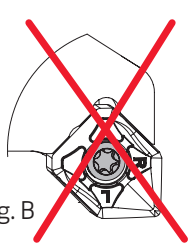
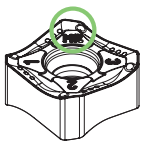
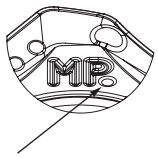


Fig. B

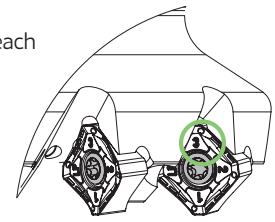
When using wiper insert, install the insert as shown on Fig. A if the insert is installed as shown on Fig. B breakage of the insert is inevitable and normal surface finish can not been obtained.





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.



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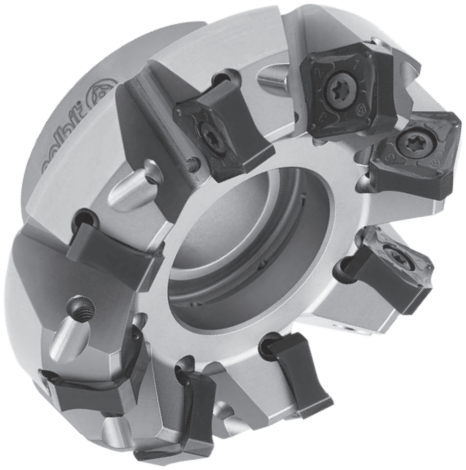
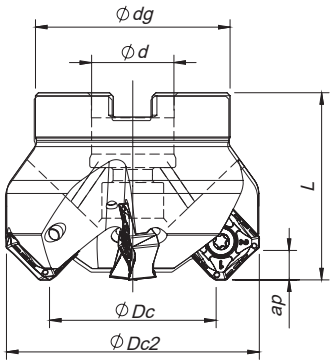
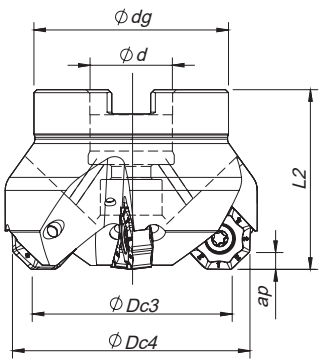
PLUS 91245







Arbor Mounting

K_r=44,5°~46° | γ_p=-6°

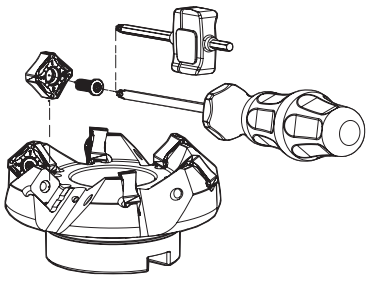
Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)								Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	ØDc2	ØDc3	ØDc4	Ød	Ødg	L	L2		Arbor Type	Ap (mm)		
181088900	063A91245-05-06-022050	5	63	80,1	66,6	76,0	22	52	50	48	0,81	A	3,8 | 8,5	ON...06 | SN...16	◈
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

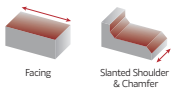
◯ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

SPARE PARTS | Acessórios | Repuestos

Cutter ØDc	Insert Screw	Key (Torx)	Order separately Key (Torx - Nm)	Torque Value	Order separately 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 | Plaquitas

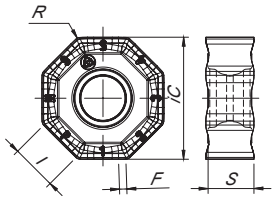
ONH(K)X-LP

ONH(K)X-MP
(PHP grade)

ONH(K)X-MK

PHP
NEW
GRADE

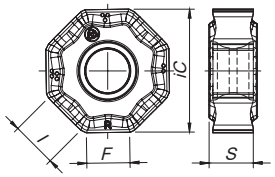
ONH(K)X-LP | MP | MK



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

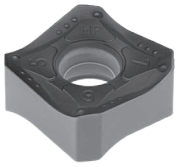
ONHX-LS
(PHH grade)
NEW

ONHX-W

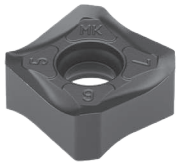


SNHX-LP

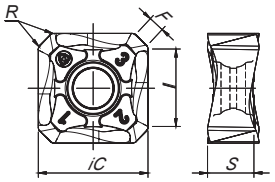
SNH(K)X-MP
(PHS grade)



SNH(K)X-MK



SNH(K)X-MK | LP | MP



		P						M			K								S			Dimensions Dimensões Dimensiones (mm)				
		CVD	PVD					PVD			CVD			PVD					PVD							
	(2) Grade code	T9	G4	T1	P3	P4	G6	P3	X9	G6	L5	L6	L9	T9	G4	T1	P3	P4	G6	P3	X9	G6					
(1) Geometry code	ISO Reference	PHS740	PH7920	PHP920	PH7930	PHP930	PH7740	PH7930	PHH930	PH7740	PH5705	PH5320	PH5740	PHS740	PH7920	PHP920	PH7930	PHP930	PH7740	PH7930	PHH930	PH7740	iC	S	l	R	F
1111954	ONHX 0606 ANEN-LP			◉	△	◉	◉	△		◉						◉	△	◉	◉	△		◉	16,50	6,35	6,20	0,80	1,00
NEW 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 | 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 (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

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

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palbit TOOLING SOLUTIONS EXPERTS SINCE 1916

PLUS 91245

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) ← Wear Resistance — Toughness → PH7930	PH5740	PHS740	PH7740	Feed fz (mm/t) 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/Dc=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.

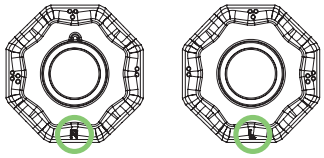
(Note 3) PH5... and PHS... can be used wet or dry. PH7... use only air.

PDF VIDEO

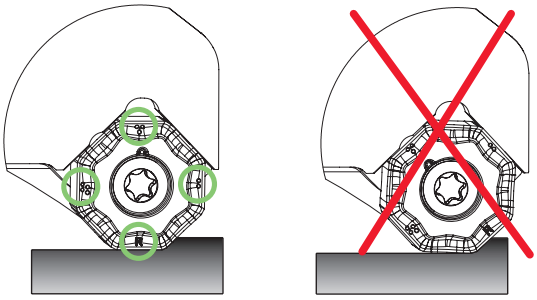
CHIP-BREAKER SELECTION GUIDE | Guia para aplicações do quebra-aparas | Guía para aplicación del rompevirutas

ISO	PSM	Material	HB (Brinell)	Chip-Breaker Application	
				1st choice	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

WIPER INSERTS

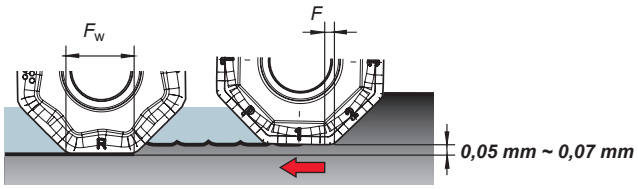


Wiper insert with 4 Right and 4 Left-hand cutting edges.
The side work of the insert it's indicated by the letter R (Right) & L (Left).



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

Recommended Cutting Conditions:
- f_n should be equal to 0,8 x F_W
- 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.
- $f_n \leq 0,8 \times F_W = f_Z \leq 0,8 \times F_W / Z$

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 workpiece cutting surface.
- The points and the letter (R or L) on the insert indicates the side that should be parallel to the workpiece material.
- The side work of the insert it's indicated by the letter (R - Right & L - Left).

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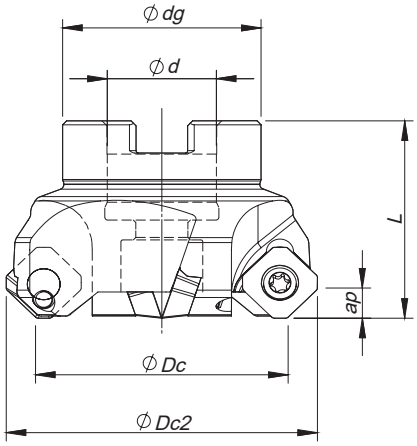
LINEPRO 06045



Arbor Mounting

K_r=45° | γ_p=+19°

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)					Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	ØDc2	Ød	Ødg	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

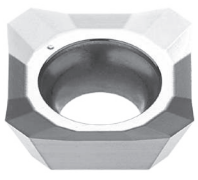
○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

SEH... 1204 | Inserts | Pastilhas | Plaquitas

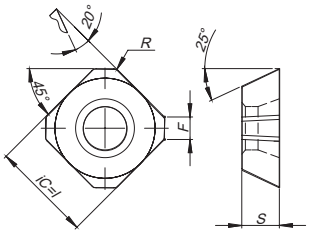
SEHW

SEHT

SEHT-LN



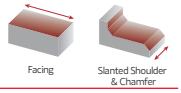
SEHW | SEHT | SEHT-LN



		P		M	K		N	Dimensions Dimensões Dimensiones (mm)			
		PVD			PVD		UNC				
	(2) Grade code	68	I5	I5	68	I5	10				
(1) Geometry code	ISO Reference	PH6920	PH6740	PH6740	PH6920	PH6740	PH0910	iC	S	I	F
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

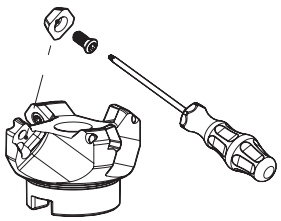


SPARE PARTS | Acessórios | Repuestos

Order separately

Cutter ØDc	Insert Screw	Key (Torx)	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 selecção 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	✓		

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 →	Feed fz (mm/t)		
				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	-

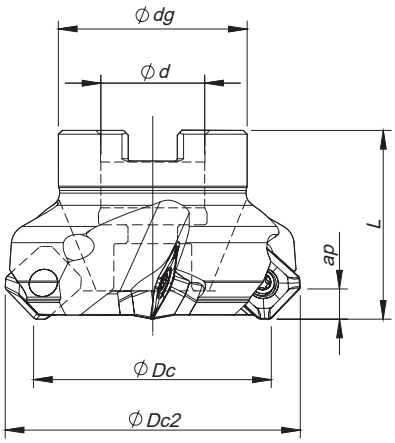
(Note 1) Cutting conditions ae/DC=70%
(Note 2) Cutting conditions should be ajusted according to the machine and work rigidity.
(Note 3) If chattering occurs, reduce ap and Vc by 30% and keep the same fz per tooth.

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

ISO	PSM	Material	HB (Brinell)	Chip-Breaker Application	
				1st choise	Dificult 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	-

VIDEO

LINEPRO 09945



Arbor Mounting

K_r=45° | γ_p=+20° ~+21°

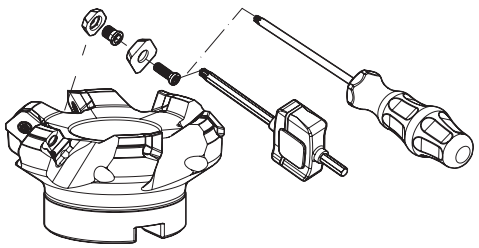
Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)					Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	ØDc2	Ød	Ødg	L		Arbor Type	Ap max (mm)		
181034700	050A09945-04-20-U022040	4	50	63	22	40	40	0,36	A	6,0	SE...13T3	◎
181024200	063A09945-05-21-U022040	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

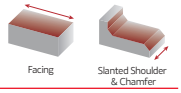
○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

SPARE PARTS | Acessórios | Repuestos

Cutter ØDc	Insert Screw	Key (Torx)	Order separately Key (Torx - Nm)	Torque Value	Order separately 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.

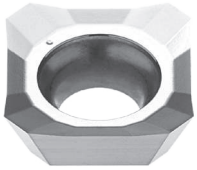


SE... 13T3 | Inserts | Pastilhas | Plaquitas

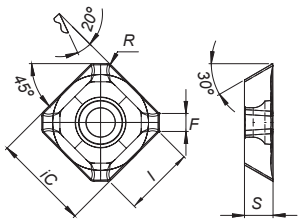
SEHT

SEHW

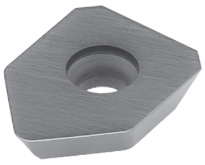
SEHT-LN



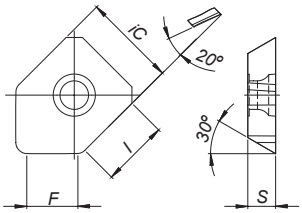
SEHT | SEHW | SEHT-LN



SEHT-W



SEHT-W



		P		M	K		N	Dimensions Dimensões Dimensiones (mm)			
		PVD		PVD			UNC				
	(2) Grade code	68	15	15	68	15	10				
(1) Geometry code	ISO Reference	PH6920	PH6740	PH6740	PH6920	PH6740	PH0910	iC	S	l	F
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 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	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

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palbit TOOLING SOLUTIONS EXPERTS SINCE 1916

LINEPRO 09945

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

ISO	PSM	Material	HB (Brinell)	Vc (m/min) ← Wear Resistance Toughness →			Feed fz (mm/t)			
				PH0910	PH6920	PH6740	SEHT 13T3 AGSN	SEHW 13T3 AGFN	SEHT 13T3 AGFN-LN	SEHT 13T3 AGSN-W
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 ajusted 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 choise	Dificult 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 fn (f_n=f_z x 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.

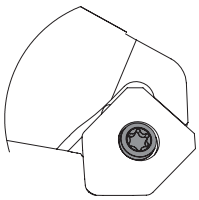

Fig. A

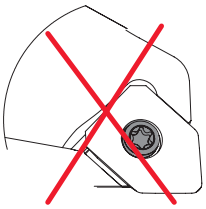

Fig. B

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 been obtained.

VIDEO

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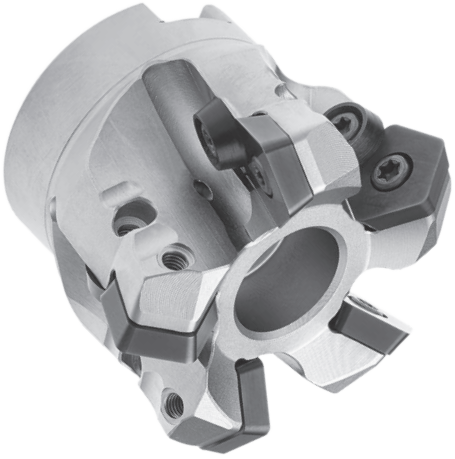
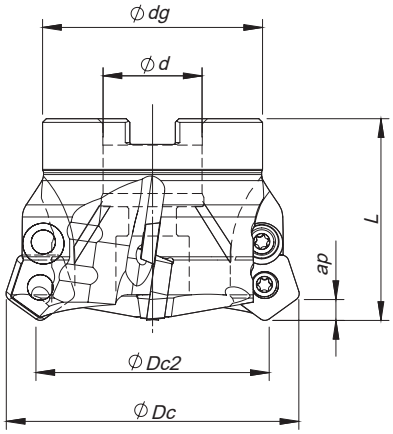
LINEPRO 00036





Arbor Mounting

K_r=36° | γ_p=+9° | R_p=7,0

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)					Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	ØDc2	Ød	Ødg	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	◈

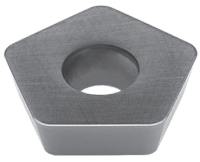
◈ Stock item | Produto de stock | Itens de stock

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

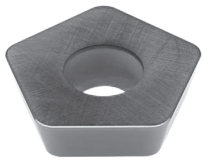
◈ Stock available until sold out | Stock disponível até acabar o stock Stock disponible hasta acabar el stock

PD... 1204... | Inserts | Pastilhas | Plaquitas

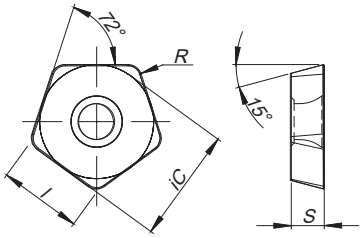
PDMW



PDHW



PDM(H)W



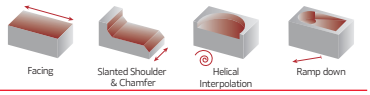
(1) Geometry code	ISO Reference	P PVD (2) Grade code 68	P PVD 78	P PVD 86	K PVD 68	Dimensions Dimensões Dimensiones (mm) iC	S	l	R
		PH6920	PH6125	PH6135	PH6920				
1110555	PDMW 120420 T		◈	◈		16,52	4,76	12,0	2,0
1110554	PDHW 120420 T	◈	◈	◈	◈	16,52	4,76	12,0	2,0

◈ First choice | Primeira opção | 1ª opción

◈ Stock item | Produto de stock | Itens de stock

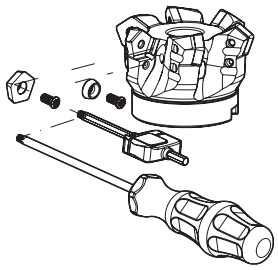
◯ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

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



SPARE PARTS | Acessórios | Repuestos

ScrewCutter ØDc	Insert Screw	Key (Torx)	Key (Torx - Nm) (Order separately)	Torque Value	Washer (Order separately)	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

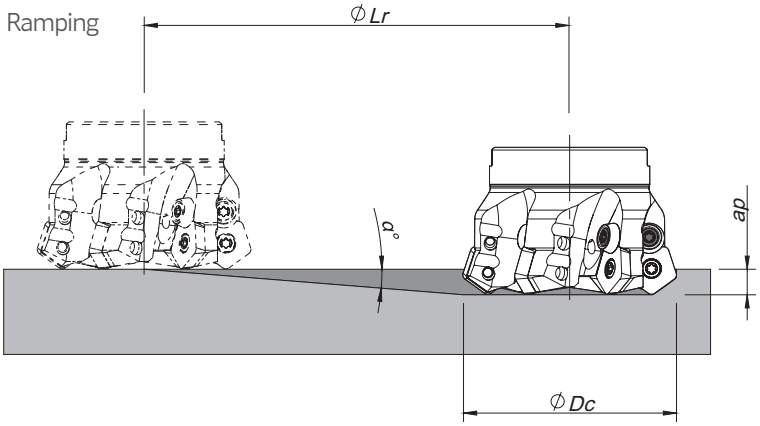
ISO	PSM	Material	HB (Brinell)	Vc (m/min) ← Wear Resistance		Toughness →	Feed fz (mm/t)
				PH6920	PH6125	PH6135	PDHW / PDMW
P	1	Unalloyed Steel	125-220	150-230	160-190	150-180	0,25-0,50
	2	Low-Alloyed Steel	220-280	140-220	140-180	140-170	0,25-0,50
	3	High-Alloyed Steel	280-380	130-180	130-160	120-150	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 ajusted 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.

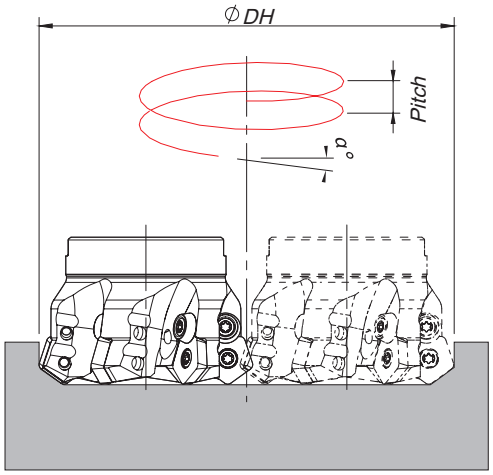
RAMPING AND HELICAL INTERPOLATION

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

Ramping



Helical Interpolation



Ødi = ØDH - ØDc

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

Note: During helical interpolation do not exceed max a_p.

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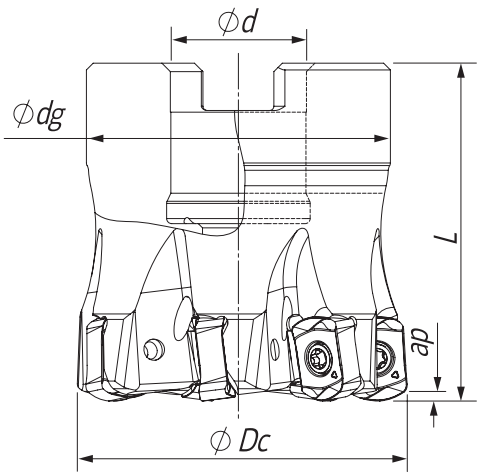
TETRAFEED 16320

NEW



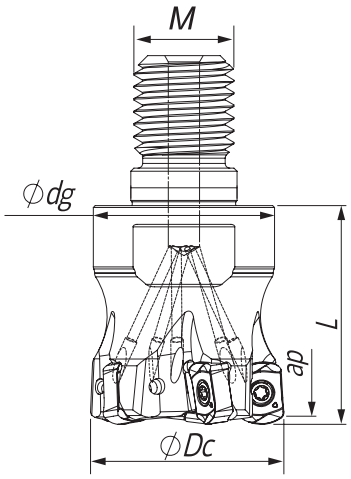
Arbor Mounting

K_r=20° | γ_p=-7° | Rp=1,8

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications		Insert	Stock
			ØDc	Ød	Ødg	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	42	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...	◎
NEW 181177800	080A16320-10-07-027050	10	80	27	60	50	0,95	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° | γ_p=-7° | Rp=1,8

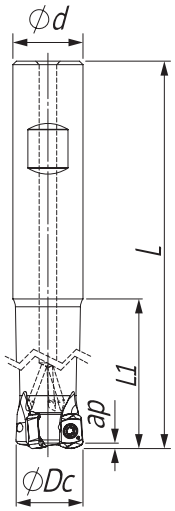
Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications	Insert	Stock
			ØDc	ØM	Ødg	L		Ap max (mm)		
181151300	016R16320-02-07-M08025	2	16	M08	13	25	0,02	1,00	XNKU 06...	◎
181151400	020R16320-03-07-M10028	3	20	M10	18	28	0,05	1,00	XNKU 06...	◎
181151500	025R16320-04-07-M12035	4	25	M12	21	35	0,07	1,00	XNKU 06...	◎
181148000	032R16320-05-07-M16035	5	32	M16	29	35	0,16	1,00	XNKU 06...	◎
NEW 181178600	035R16320-05-07-M16035	5	35	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...	◎
NEW 181178500	040R16320-06-07-M16035	6	40	M16	29	35	0,23	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)

NEW

Facing | Profiling | Copying | Ramp down | Helical Interpolation | Plunging



Weldon Shank

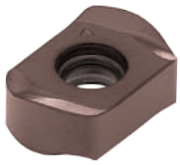
K_r=20° | γ_p=-7° | Rp=1,8

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications	Insert	Stock
			ØDc	Ød	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...	◈

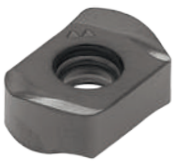
◈ Stock item | Produto de stock | Itens de stock ◯ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

XNKU 06T3... | Inserts | Pastilhas | Plaquitas

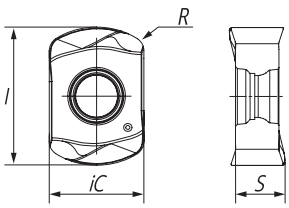
XNKU-MP



XNKU-MS



XNKU-MP | MS



		P					M				K		S			Dimensions Dimensões Dimensiones (mm)			
		CVD	PVD				CVD	PVD			CVD	PVD	CVD	PVD					
	(2) Grade code	T9	X5	T1	P4	Z2	T9	X9	Z2	Z3	T9	T1	T9	X9	Z3				
(1) Geometry code	ISO Reference	PHS740	PHP910	PHP920	PHP930	PHP530	PHS740	PHH930	PHP530	PHH530	PHS740	PHP920	PHS740	PHH930	PHH530	iC	S	l	R
1112802	XNKU 06T310-MP	◈	◈	◈	◯		◈	◈			◈	◈	◈	◈		6,85	3,60	10,00	1,00
NEW 1113209	XNKU 06T310-MS					◈			◈	◈					◈	6,85	3,60	10,00	1,00

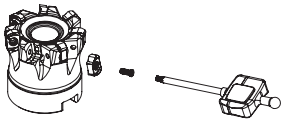
◈ First choice | Primeira opção | 1ª opción ◈ Stock item | Produto de stock | Itens de stock ◯ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

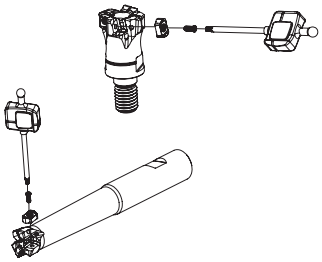
Insert order code = (1) Geometry Code + (2) Grade Code

SPARE PARTS Acessórios | Repuestos

Order separately

Cutter ØDc	Insert Screw	Key (Torx)	Key (Torx - Nm)	Torque Value
A16320 - 40-80	P0250704	XT08	DT0812	1,20
R16320 - 20-42	P0250704	XT08	DT0812	1,20
W16320 - 20-32	P0250704	XT08	DT0812	1,20





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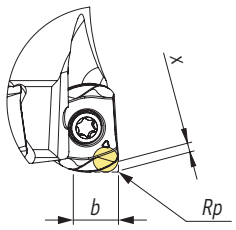
palbit TOOLING SOLUTIONS EXPERTS SINCE 1916

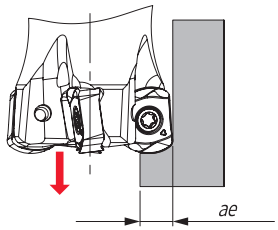
TETRAFEED 16320

NEW

PROGRAMMING DATA | Dados para programação | Datos para la programación

Insert	Programming Data			
	Rp	X	b	a_e
XNKU 06T3...	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	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

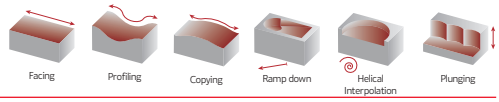
ISO	PSM	Material	HB (Brinell)	Vc (m/min) ← Wear Resistance … Toughness → PHP910	PHP920	PHP930	PHH930	PHS740	PHP530	PHH530	Feed fz (mm/t) XNKU 06...-MP	XNKU 06...-MS
P	1	Unalloyed Steel	125-220	180-250	180-250	160-230	-	160-230	180-340	-	0,50-1,50	0,50-1,50
	2	Low-Alloyed Steel	220-280	160-240	170-210	150-190	-	150-190	180-340	-	0,50-1,50	0,50-1,50
	3	High-Alloyed Steel	280-380	140-230	160-200	140-180	-	140-180	180-330	-	0,50-1,50	0,50-1,50
M	4	SS - Ferritic / Martensitic	200-330	-	-	-	130-170	120-180	150-270	170-280	0,50-1,40	0,50-1,40
	5	SS - Austenitic	200-330	-	-	-	100-160	100-150	-	160-280	0,50-1,40	0,50-1,40
	6	SS - Austenitic-ferritic (Duplex)	230-260	-	-	-	80-140	70-130	-	150-260	0,50-1,40	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	-	30-150	0,50-1,30	0,50-1,30

(Note 1) Cutting conditions a_e/Dc=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 ØDc=16mm apply 70% or less feed (fz) from the table.

PDF

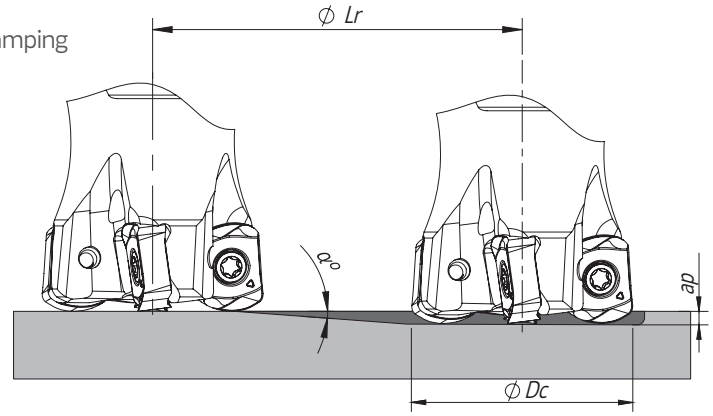
VIDEO



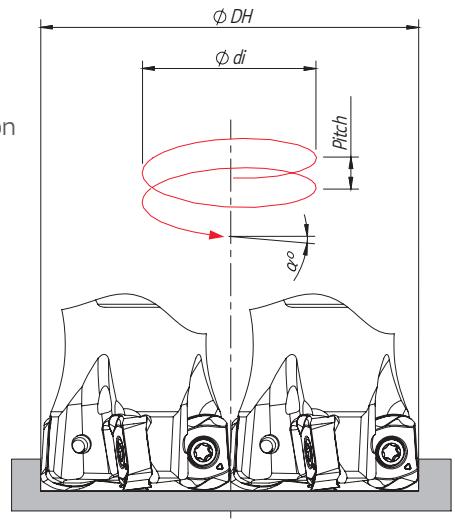
RAMPING AND HELICAL INTERPOLATION

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

Ramping



Helical Interpolation



Blind hole
Flat bottom

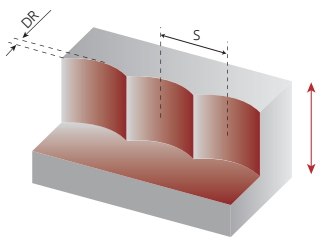
Ødi = ØDH - ØDc

ØDc	Ramping			Helical Interpolation		
	Max Ramp aº	Max a_p	Min Lr	ØDHmin	ØDHmax	Max Pitch/Rev.
16	2,00	1	28,6	24,8 -	- 28,4	0,96 1,00
20	1,30	1	44,1	32,8 -	- 36,4	0,91 1,00
25	0,90	1	63,7	42,8 -	- 46,4	0,87 1,00
32	0,65	1	88,1	56,8 -	- 60,4	0,88 1,00
35	0,55	1	104,2	62,8 -	- 66,4	0,83 0,94
40	0,50	1	114,6	72,8 -	- 76,4	0,89 0,99
42	0,45	1	127,3	76,8 -	- 80,4	0,85 0,94
50	0,35	1	163,7	92,8 -	- 96,4	0,82 0,89
52	0,35	1	163,7	96,8 -	- 100,4	0,85 0,92
63	0,30	1	191,0	118,8 -	- 122,4	0,91 0,97
80	0,20	1	286,5	152,8 -	- 156,4	0,79 0,83

Note: During helical interpolation do not exceed max a_p.
(*) 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.
f_z (mm/t)		
0,08-0,15	0,05 - 0,10	$Smax = \sqrt{DC.Dr-Dr^2}$



S max and DR corresponding cutting diameter Dc (mm)											
DR (mm)	Dc (mm) XNKU 06...										
	16	20	25	32	35	40	42	50	52	60	80
1	3,9	4,4	4,9	5,6	5,8	6,2	6,4	7,0	7,1	7,9	8,9
2	5,3	6,0	6,8	7,7	8,1	8,7	8,9	9,8	10,0	11,0	12,5
3	6,2	7,1	8,1	9,3	9,8	10,5	10,8	11,9	12,1	13,4	15,2

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

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Technical Data
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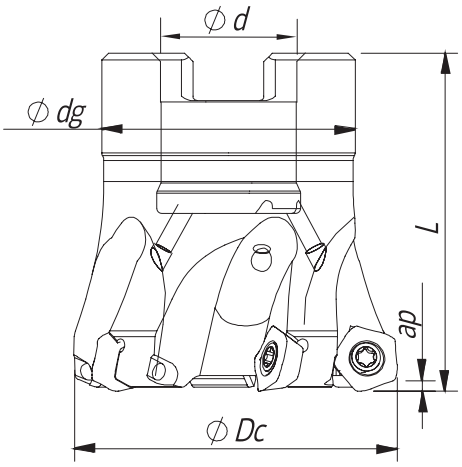
PENTA HIFEED 06320

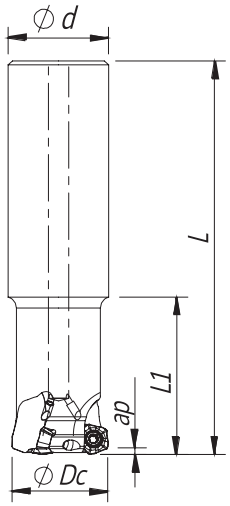


Arbor Mounting

K_r=20° | γ_p=14° | Rp=2,5

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications		Insert	Stock
			ØDc	Ød	Ødg	L		Ap 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)

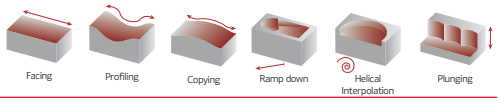


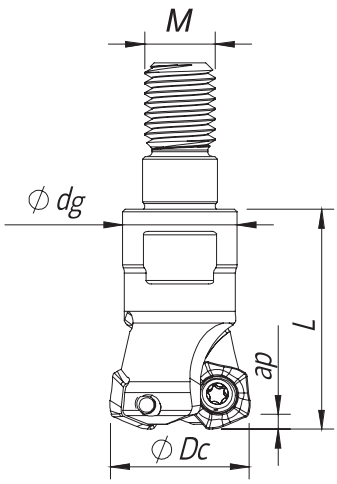
Cylindrical Shank

K_r=20° | γ_p=14° | Rp=2,5

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





Threaded Coupling

K_r=20° | γ_p=14° | Rp=2,5

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications	Insert	Stock
			ØDc	ØM	Ødg	L		Ap 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...	◈

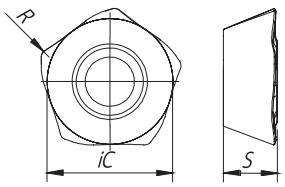
◈ Stock item | Produto de stock | Itens de stock

◯ 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 | Plaquitas

POKT-MP

POKT-MP



		P				K		Dimensions Dimensões Dimensiones (mm)		
		PVD				PVD				
	(2) Grade code	G1	G4	P3	G6	G1	G4			
(1) Geometry code	ISO Reference	PH7910	PH7920	PH7930	PH7740	PH7910	PH7920	iC	S	R
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

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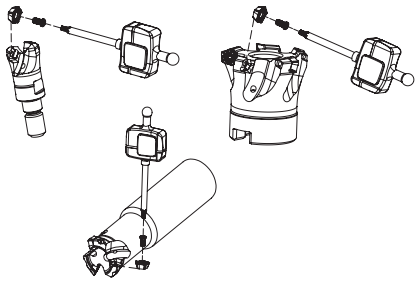
palbit SINCE 1916

PENTA HIFEED 06320

SPARE PARTS Acessórios | Repuestos

Cutter ØDc	Insert Screw	Key (Torx)	Key (Torx - Nm) (Order separately)	Torque Value	Screw (Order separately)	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	✓	✓		

Good Conditions
Average Conditions
Difficult Conditions

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

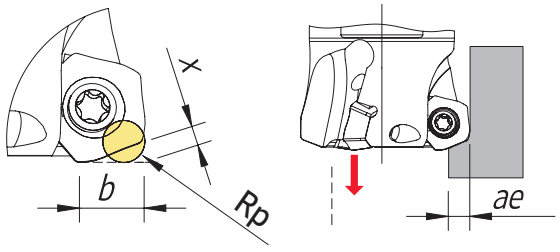
ISO	PSM	Material	HB (Brinell)	Vc (m/min) ← Wear Resistance — Toughness → PH7910	PH7920	PH7930	PH7740	Feed fz (mm/t) POKT 04...-MP
P	1	Unalloyed Steel	125-220	180-250	180-240	160-220	140-200	0,50-1,50
	2	Low-Alloyed Steel	220-280	160-230	160-220	140-200	130-180	0,50-1,51
	3	High-Alloyed Steel	280-380	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/Dc=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.

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

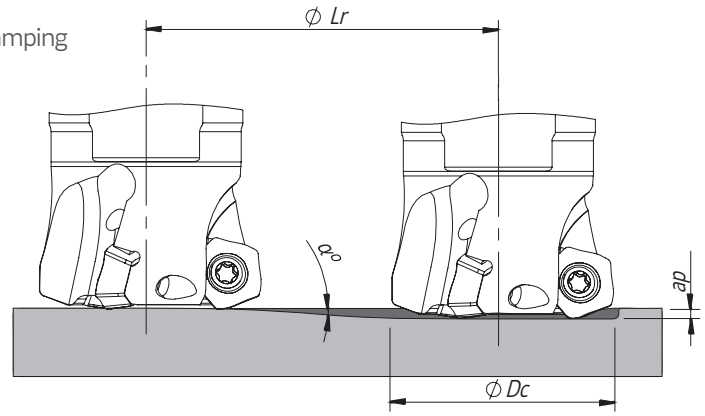


PDF

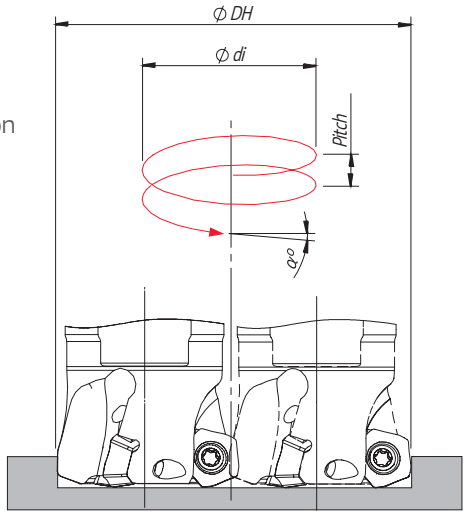
RAMPING AND HELICAL INTERPOLATION

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

Ramping



Helical Interpolation



Blind hole
Flat bottom

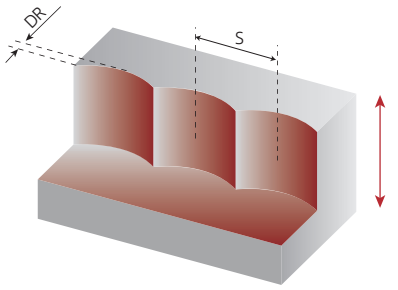
Ødi = ØDH - ØDc

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

Note: During helical interpolation do not exceed max a_p.

PLUNGING | Mergulho | Plunge

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



S max and DR corresponding cutting diameter Dc (mm)											
DR (mm)	Dc (mm)										
	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	2,7	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 ≤ 4 Dc for extra long tool this step and side cut must be reduced.

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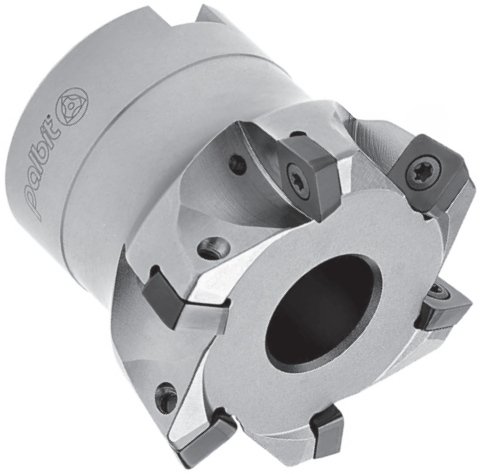
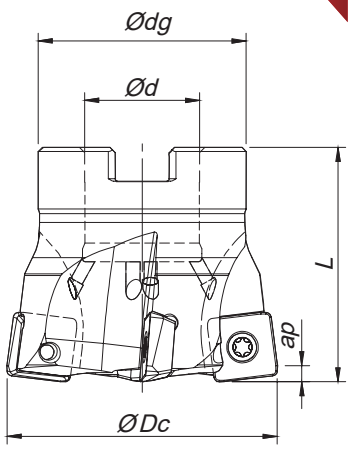
NEW



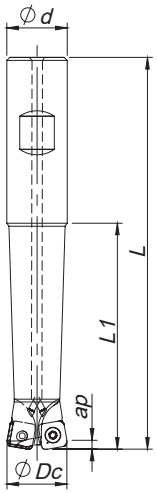


Arbor Mounting

K_r=10° | γ_p=+2° | γ_f=+2° | R_p=2,0

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	Ød	Ødg	L		Ap max (in)	Arbor Type		
181149800	040A06410-05-02-016040	5	40	16	30	40	0,157	1,00	A	SO...0803...	◉
181153200	050A06410-06-02-022045	6	50	22	40	45	0,312	1,00	A	SO...0803...	◉
181149900	052A06410-06-02-022045	6	52	22	40	45	0,331	1,00	A	SO...0803...	◉

◉ 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)

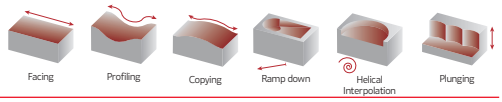


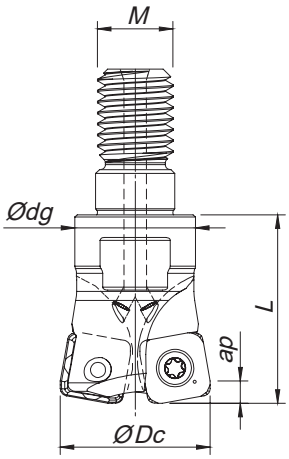
Weldon Shank

K_r=10° | γ_p=+2° | γ_f=+2° | R_p=2,0

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications	Insert Pastilha Inserto	Stock
			ØDc	Ød	L	L1		Ap max (mm)		
181076300	020W06410-02-02-020130	2	20	20	130	75	0,360	1,00	SO...0803...	◉
181080900	020W06410-02-02-020190	2	20	20	190	110	0,340	1,00	SO...0803...	◉
181076400	025W06410-03-02-025140	3	25	25	140	80	0,410	1,00	SO...0803...	◉
181081100	025W06410-03-02-025200	3	25	25	200	130	0,570	1,00	SO...0803...	◉
181076500	032W06410-04-02-032150	4	32	32	150	90	0,760	1,00	SO...0803...	◉
181081300	032W06410-04-02-032200	4	32	32	200	130	1,010	1,00	SO...0803...	◉

◉ 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° | γ_p=+2° | γ_f=+2° | 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	2	20	M10	16	25	0,040	1,00	SO...0803...	●
181076600	025R06410-03-02-M12028	3	25	M12	21	28	0,070	1,00	SO...0803...	●
181076700	032R06410-04-02-M16035	4	32	M16	29	35	0,160	1,00	SO...0803...	●
181076800	035R06410-04-02-M16035	4	35	M16	29	35	0,180	1,00	SO...0803...	●
181076900	042R06410-05-02-M16035	5	42	M16	29	35	0,220	1,00	SO...0803...	●

● 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)

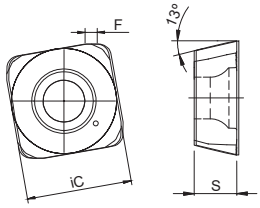
SO...0803... | Inserts | Pastilhas | Plaquitas

SOEW

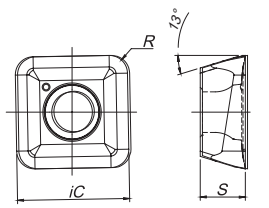
SOET

PHP NEW GRADE

SOEW



SOET



		P			M		K			S		Dimensions Dimensões Dimensiones (mm)			
		PVD			PVD		PVD			PVD					
	(2) Grade code	X5	T1	G6	X9	G6	X5	T1	G6	X9	G6				
(1) Geometry code	ISO Reference	PHP910	PHP920	PH7740	PHH930	PH7740	PHP910	PHP920	PH7740	PHH930	PH7740	iC	S	R	F
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 (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

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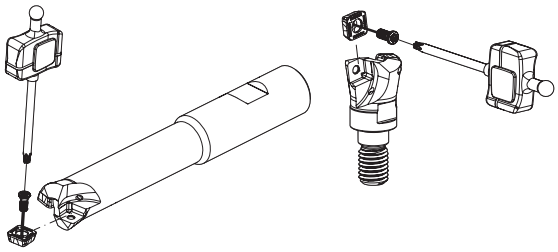
palbit TOOLING SOLUTIONS EXPERTS SINCE 1916

HIFEED 06410

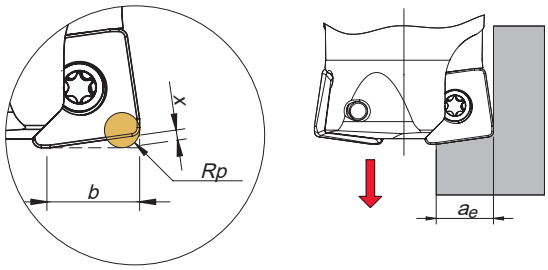
SPARE PARTS | Acessórios | Repuestos

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	a_e
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) ← Wear Resistance Toughness →				Feed fz (mm/t)	
				PHP910	PHP920	PHH930	PH7740	SOEW 08...	SOET 08...
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/Dc=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 choise	Dificult 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...	-

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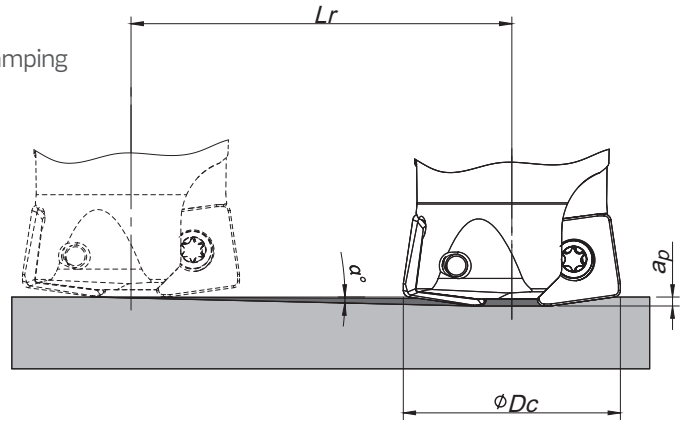
HIFEED 06410

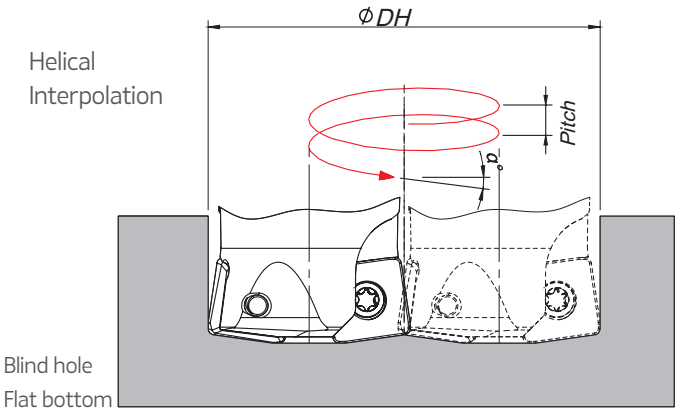
RAMPING AND HELICAL INTERPOLATION

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

Ramping



Helical Interpolation



Blind hole
Flat bottom

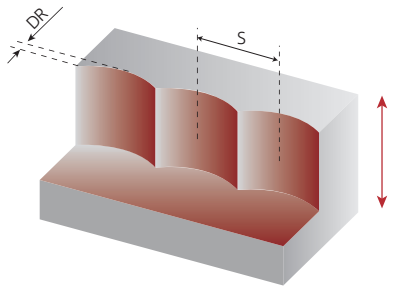
Ødi = ØDH - ØDc

ØDc	Ramping			Helical Interpolation		
	Max Ramp a°	Max a_p	Min Lr	ØDHmin	ØDHmax	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 -	- 80,0	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 a_p.

PLUNGING | Mergulho | Plunge

L≤3Dc	L>3Dc	S max.
f_z (mm/t)		
0,08-0,15	0,05-0,10	$Smax = \sqrt{DC.DR-DR^2}$



S max and DR corrsponding 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 ≤ 4 Dc for extra long tool this step and side cut must be reduced.

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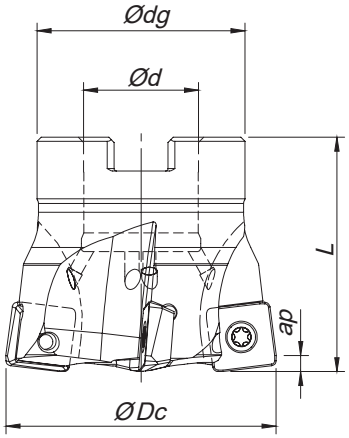


Arbor Mounting

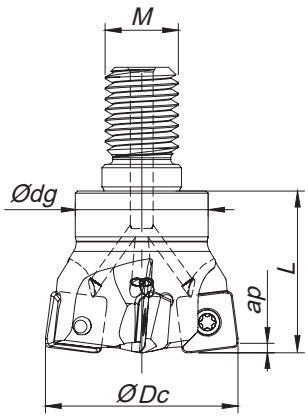
K_r=10° | γ_p=+5° | R_p=2,5

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	Ød	Ødg	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)

* For shank assembly a DIN 6912 screw is needed.



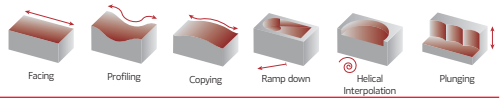
Threaded Coupling

K_r=10° | γ_p=+5° | R_p=2,5

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications	Insert Pastilha Inserto	Stock
			ØDc	ØM	Ødg	L		Ap max (mm)		
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 | Plaquitas

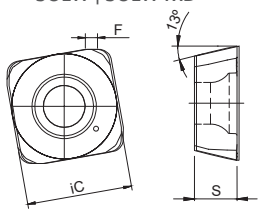
SOEW

SOEW-MD NEW

PHH NEW GRADE

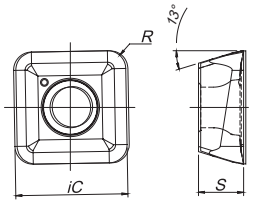
PHP NEW GRADE

SOEW | SOEW-MD



SOET

SOET



		P			M		K			S		Dimensions Dimensões Dimensiones (mm)			
		PVD			PVD		PVD			PVD					
	(2) Grade code	X5	T1	G6	X9	G6	X5	T1	G6	X9	G6				
(1) Geometry code	ISO Reference	PHP910	PHP920	PH7740	PHH930	PH7740	PHP910	PHP920	PH7740	PHH930	PH7740	iC	S	R	F
1111906	SOEW 13M510 S	◈	◈	◈			◈	◈	◈			12,43	5,00	1,20	1,0
NEW 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 pagina A-9)

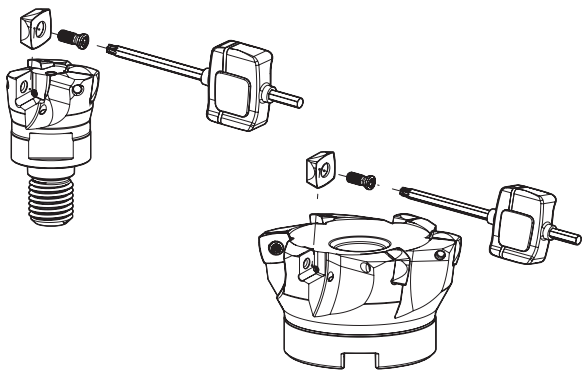
Insert order code = (1) Geometry Code + (2) Grade Code

SPARE PARTS | Acessórios | Repuestos

Order separately

Cutter ØDc	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.



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HIFEED 06690

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) ← Wear Resistance — Toughness → PHP910	PHP920	PHH930	PH7740	Feed fz (mm/t) SOEW S	SOEW MD	SOET MS
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 $a_e/Dc=70\%$.

(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.

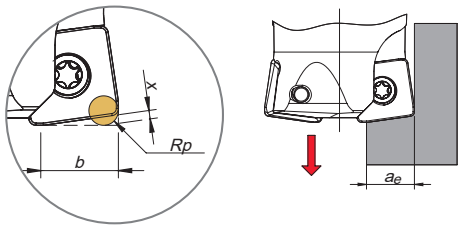
(Note 3) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:
- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

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

ISO	PSM	Material	HB (Brinell)	Chip-Breaker Application	
				1st choise	Dificult 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	a_e
SO... 13M5..	2,5	1,1	10,5	10,0



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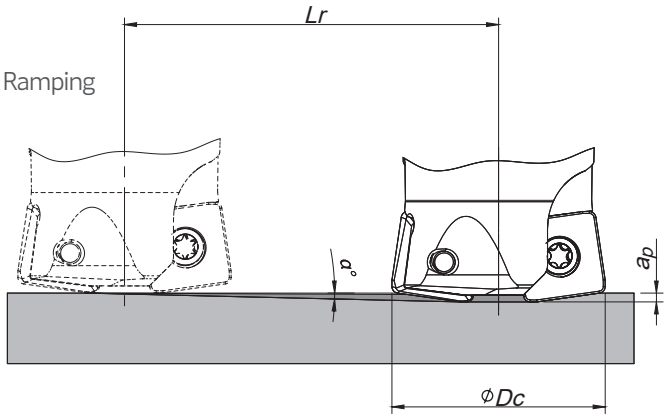
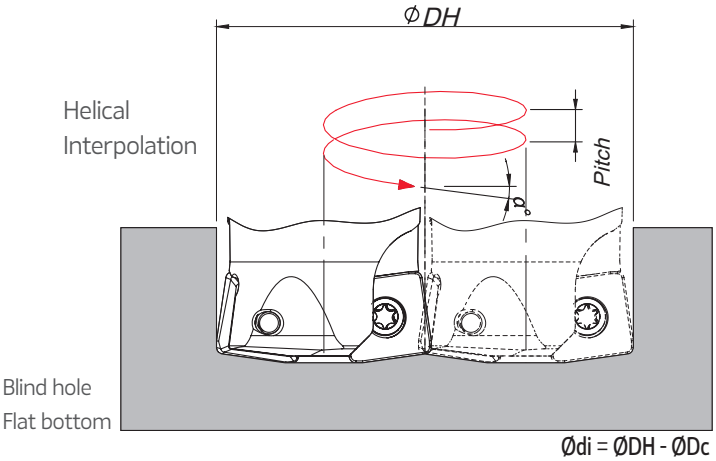
RAMPING AND HELICAL INTERPOLATION

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





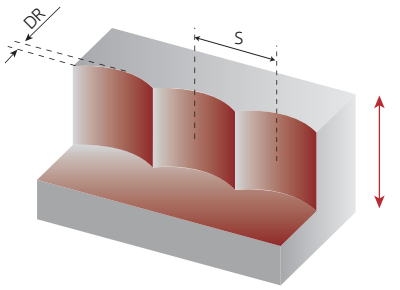
Ødi = ØDH - ØDc

ØDc	Ramping			Helical Interpolation		
	Max Ramp a°	Max a_p	Min Lr	ØDHmin	ØDHmax	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 a_p.

PLUNGING | Mergulho | Plunge

L≤3Dc	L>3Dc	S max.
f_z (mm/t)		
0,10-0,20	0,07-0,14	$Smax = \sqrt{DC.DR-DR^2}$



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.

PDF VIDEO

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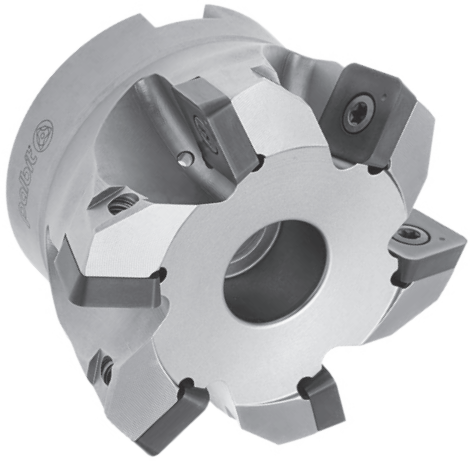
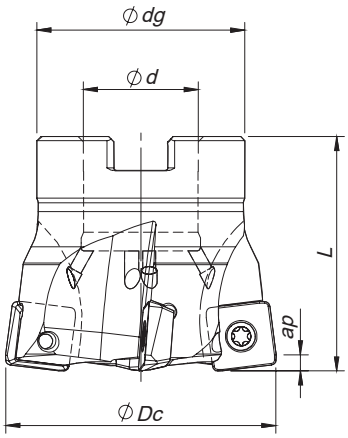




Arbor Mounting

K_r=15° | γ_p=+2° | R_p=4,5

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	Ød	Ødg	L		Ap max (mm)	Arbor Type		
181100400	063A06815-05-02-027050	5	63	27	48	50	0,460	3,50	A	SO...1605...	◈
181081900	066A06815-05-02-027050	5	66	27	48	50	0,500	3,50	A	SO...1605...	◈
181082000	080A06815-06-02-027050	6	80	27	60	50	0,900	3,50	A	SO...1605...	◈
181082100	100A06815-08-02-032050	8	100	32	80	50	1,600	3,50	B	SO...1605...	◈
181082200	125A06815-10-02-040063	10	125	40	90	63	2,900	3,50	B	SO...1605...	◈
181082300	160A06815-12-02-U040063	12	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)

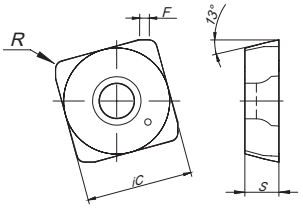
SO...1605... ‖ Inserts | Pastilhas | Plaquitas

SOEW

PHH NEW GRADE

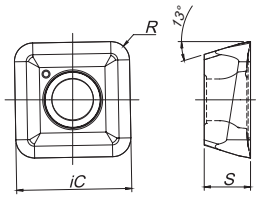
PHP NEW GRADE

SOEW



SOET

SOET



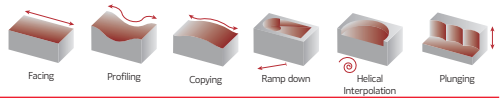
(1) Geometry code	ISO Reference	P PVD (2) Grade code X5	P PVD T1	P PVD G6	M PVD X9	M PVD G6	K PVD X5	K PVD T1	K PVD G6	S PVD X9	S PVD G6	Dimensions Dimensões Dimensiones (mm) iC	S	R	F
		PHP910	PHP920	PH7740	PHH930	PH7740	PHP910	PHP920	PH7740	PHH930	PH7740				
1111907	SOEW 160512 S	◈	◈	◈		◈	◈	◈	◈			16,40	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

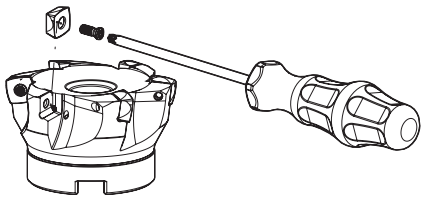
◯ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

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



SPARE PARTS | Acessórios | Repuestos

Cutter ØDc	Insert Screw	Key (Torx)	Key (Torx - Nm) (Order separately)	Torque Value	Screw (Order separately)	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) ← Wear Resistance — Toughness → PHP910	PHP920	PHH930	PH7740	Feed fz (mm/t) SOEW S...	SOET MS...
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/Dc=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.

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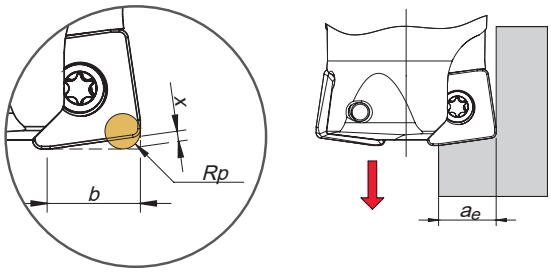
CHIP-BREAKER SELECTION GUIDE | Guia para aplicações do quebra-aparas | Guía para aplicación del rompevirutas

ISO	PSM	Material	HB (Brinell)	Chip-Breaker Application	
				1st choise	Dificult Operations
P	1	Unalloyed Steel	125-220	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...	-

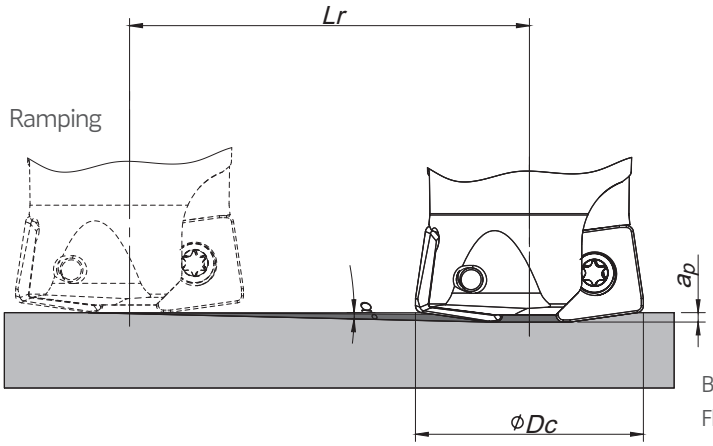
PROGRAMMING DATA | Dados para programação | Datos para la programación

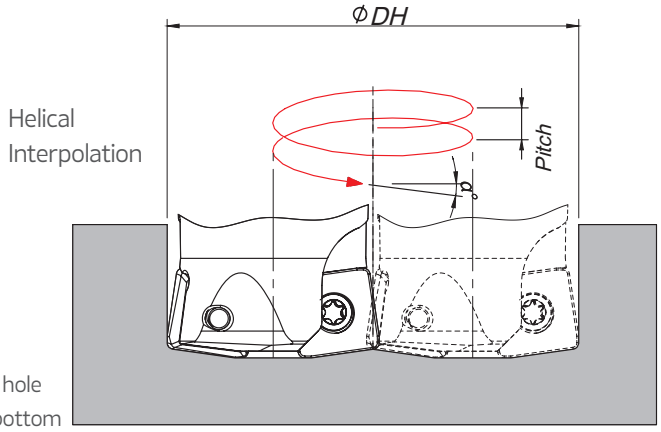
Insert	Programming Data			
	Rp	X	b	a_e
SO... 1605..	4,5	2,3	13,5	12,8



RAMPING AND HELICAL INTERPOLATION

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





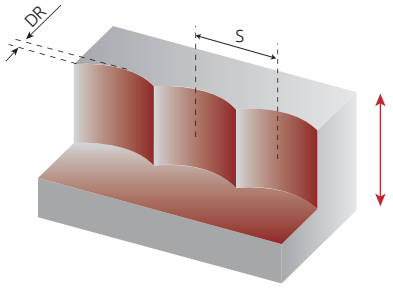
Ødi = ØDH - ØDc

ØDc	Ramping			Helical Interpolation		
	Max Ramp a°	Max a_p	Min Lr	ØDHmin	ØDHmax	Max Pitch/Rev.
63	3,5	3,5	80,2	99,0 -	- 123,6	6 11
66	3,0	3,5	66,8	105 -	- 129,6	6 10
80	2,0	3,5	100,2	133 -	- 157,5	5 8
100	1,5	3,5	133,7	173 -	- 197,5	6 8
125	1,0	3,5	200,5	223 -	- 247,5	5 6
160	0,5	3,5	401,1	293 -	- 317,5	3 4

Note: During helical interpolation do not exceed max a_p.

PLUNGING | Mergulho | Plunge

L≤3Dc	L>3Dc	S max.
f_z (mm/t)		
0,10-0,20	0,07-0,14	$Smax = \sqrt{DC.DR-DR^2}$



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 ≤ 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

PDF

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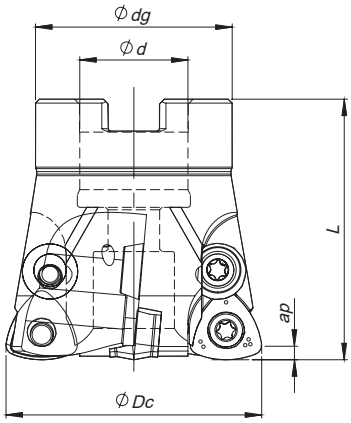


Arbor Mounting

γ_p=+5° | R_p=3,2

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	Ød	Ødg	L		Ap max (mm)	Arbor Type		
181020800	052C50560-04-05-022053	4	52	22	40	53	0,390	1,5	A	WD... 1204...	◈
181172400	063C50560-05-05-027053	5	63	27	48	53	0,590	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...	◈

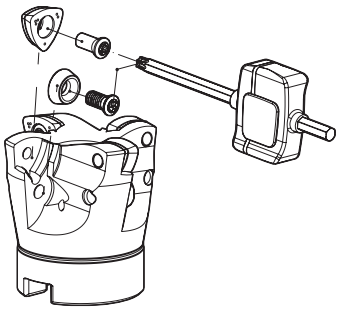
◈ Stock item | Produto de stock | Itens de stock

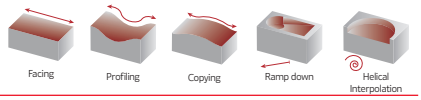
◯ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

SPARE PARTS | Acessórios | Repuestos

ScrewCutter ØDc	Insert Screw	Key (Torx)	Order separately Key (Torx - Nm)	Torque Value	Order separately 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.



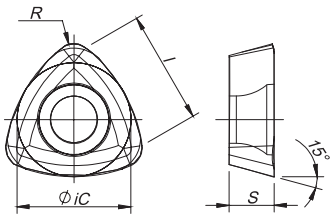


WD... 1204... | Inserts | Pastilhas | Plaquitas

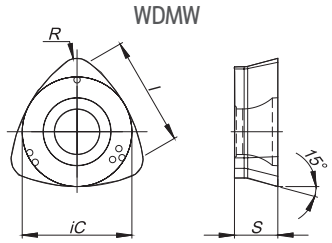
WDET

WDMW

WDET



WDMW



		P			M		K		S		Dimensions Dimensões Dimensiones (mm)			
		PVD			PVD		PVD		PVD					
	(2) Grade code	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	l	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 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 → 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

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

ISO	PSM	Material	HB (Brinell)	Vc (m/min) ← Wear Resistance — Toughness →				Feed fz (mm/t)	
				PH7910	PH7920	PH7930	PH7740	WDMW 12...	WDET 12...
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

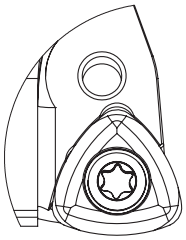
(Note 1) Cutting conditions a_e/Dc=70%.

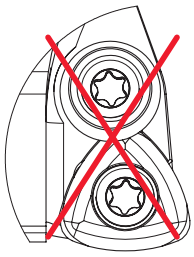
(Note 2) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:
- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

(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.



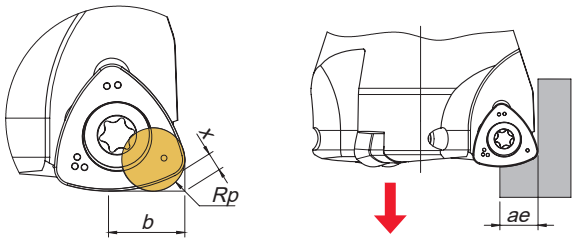


CHIP-BREAKER SELECTION GUIDE | Guia para aplicações do quebra-aparas | Guía para aplicación del rompevirutas

ISO	PSM	Material	HB (Brinell)	Chip-Breaker Application	
				1st choise	Dificult 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...	-

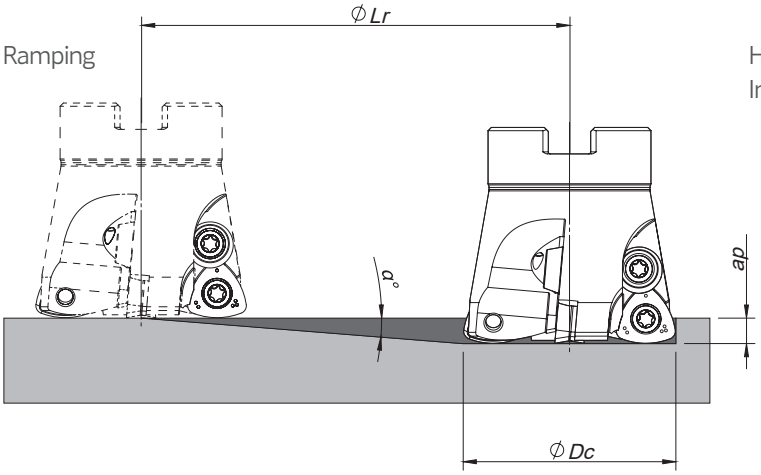
PROGRAMMING DATA | Dados para programação | Datos para la programación

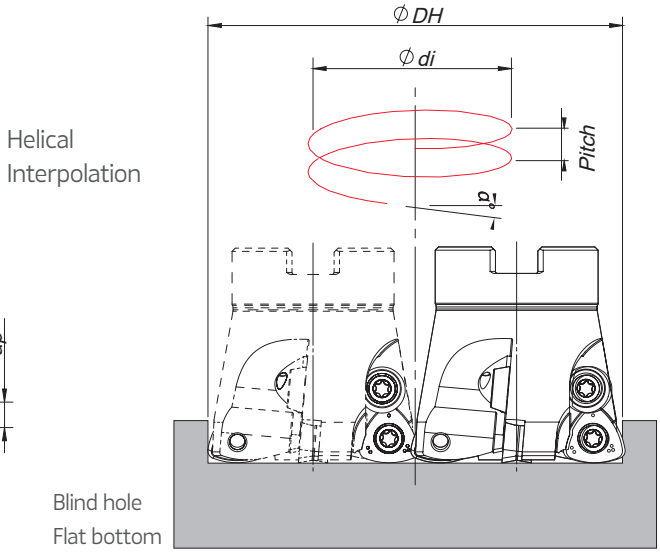
Insert	Programming Data			
	Rp	x	b	a_e
WD... 1204	3,2	0,7	7,2	7,0



RAMPING AND HELICAL INTERPOLATION

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





Ødi = ØDH - ØDc

ØDc	Ramping			Helical Interpolation		
	Max Ramp a°	Max a_p	Min Lr	ØDHmin	ØDHmax	Max Pitch/Rev.
52	0,8	1,5	107,4	89,6 -	- 102,0	1 2
66	0,4	1,5	214,9	117,6 -	- 130,0	1 1
80	0,3	1,5	286,5	145,6 -	- 158,0	1 1

Note: During helical interpolation do not exceed max a_p.

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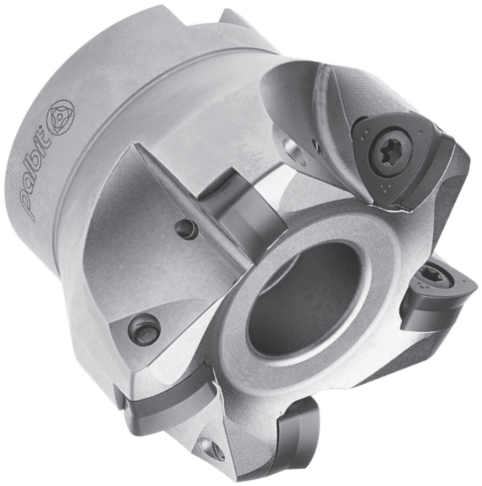
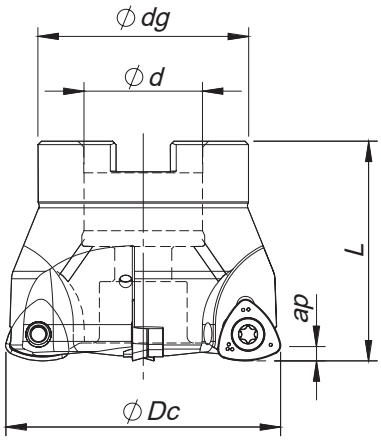




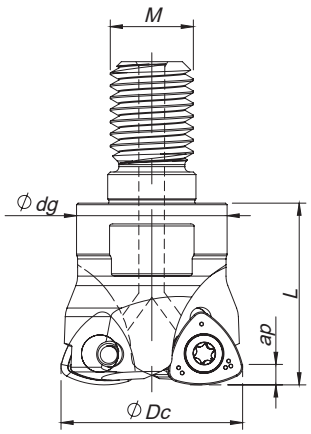
Arbor Mounting

γ_p=0° | R_p=3,5

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	Ød	Ødg	L		Ap 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)



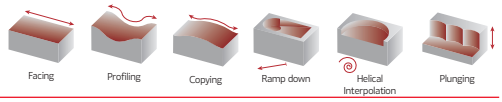
Threaded Coupling

γ_p=0° | R_p=3,5

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications	Insert Pastilha Inserto	Stock
			ØDc	ØM	Ødg	L		Ap max (mm)		
181039000	035R50060-02-M16035	2	35	M16	29	35	0,166	1,8	WN... 1207	◈

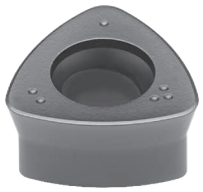
◈ Stock item | Produto de stock | Itens de stock

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

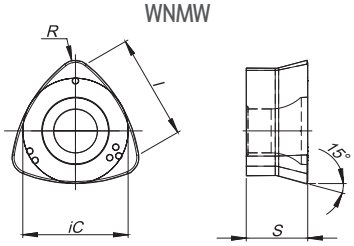


WNMW 1207 | Inserts | Pastilhas | Plaquitas

WNMW



WNMW



		P				K		Dimensions Dimensões Dimensiones (mm)			
		PVD				PVD					
	(2) Grade code	G1	G4	78	86	G1	G4				
(1) Geometry code	ISO Reference	PH7910	PH7920	PH6125	PH6135	PH7910	PH7920	iC	S	l	R
1121148	WNMW 1207-SP	●	●	●	●	●	●	12,00	7,00	11,90	2,00

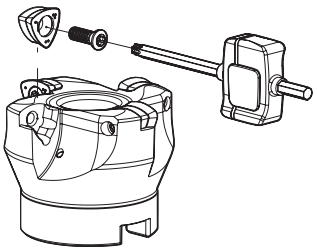
● First choice | Primeira opção | 1ª opción ● Stock item | Produto de stock | Itens de stock ○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

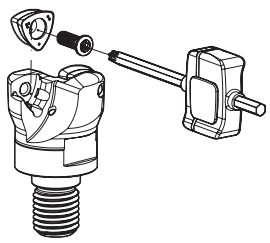
Insert order code = (1) Geometry Code + (2) Grade Code

SPARE PARTS | Acessórios | Repuestos

Order separately

Cutter ØDc	Insert Screw	Key (Torx)	Key (Torx - Nm)	Torque Value
			Nm	Nm
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

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

ISO	PSM	Material	HB (Brinell)	Vc (m/min) ← Wear Resistance — Toughness →				Feed fz (mm/t)
				PH7910	PH7920	PH6125	PH6135	WNMW 12...
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

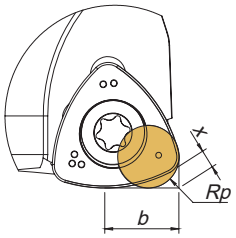
(Note 1) Cutting conditions a_e/Dc=70%.

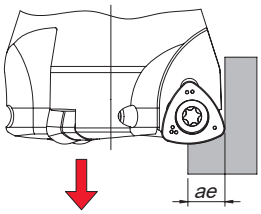
(Note 2) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:
- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

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

PROGRAMMING DATA | Dados para programação | Datos para la programación

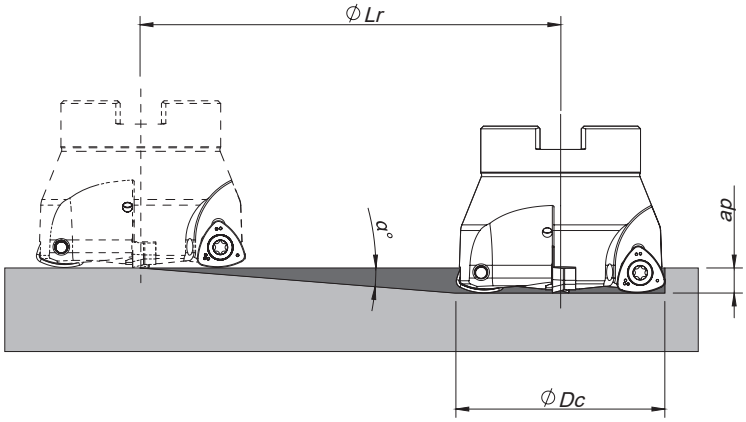
Insert	Programming Data			
	Rp	X	b	a_e
WNMW 12	3,5	0,9	8,4	8,0



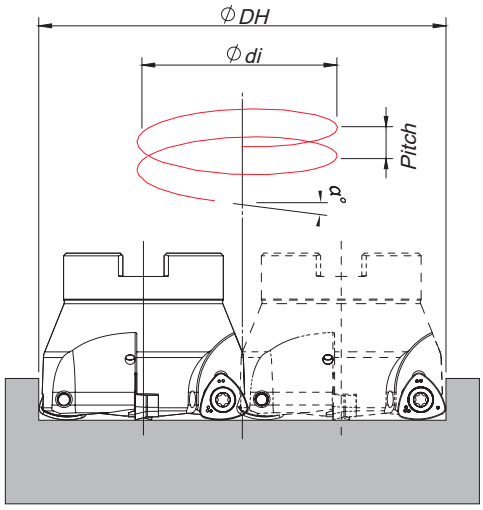


RAMPING AND HELICAL INTERPOLATION

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



Helical Interpolation



Blind hole
Flat bottom

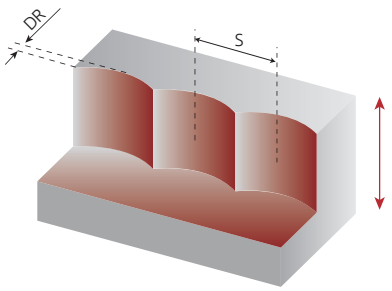
Ødi = ØDH - ØDc

ØDc	Ramping			Helical Interpolation		
	Max Ramp a°	Max ap	Min Lr	ØDHmin	ØDHmax	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 ap.

PLUNGING | Mergulho | Plunge

L≤3Dc	L>3Dc	S max.
f_z (mm/t)		
0,10-0,20	0,07-0,14	Smax = $\sqrt{DC.DR-DR^2}$



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 ≤ 4 Dc, forL > 4DC steps must be reduced to 40%.

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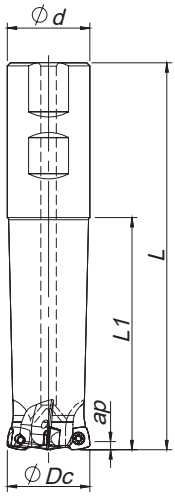
Technical Data page A - 242

HIFEED 06590



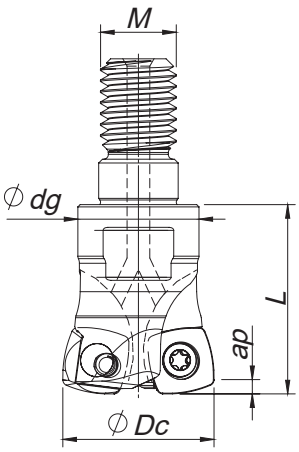
Weldon Shank

γ_p=+5° | R_p=1,8

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications	Insert Pastilha Inserto	Stock
			ØDc	Ød	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)



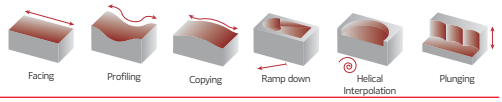
Threaded Coupling

γ=+5° | R_p=1,8

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications	Insert Pastilha Inserto	Stock
			ØDc	ØM	Ødg	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)

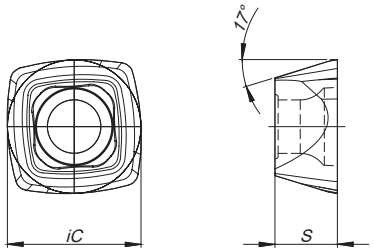


SP...08T3... | Inserts | Pastilhas | Plaquitas

SPKW

SPKT

SPKW | SPKT



		P	M	K	Dimensions Dimensões Dimensiones (mm)	
		PVD	PVD	PVD		
	(2) Grade code	68	68	68		
(1) Geometry code	ISO Reference	PH6920	PH6920	PH6920	iC	S
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 pagina A-9)

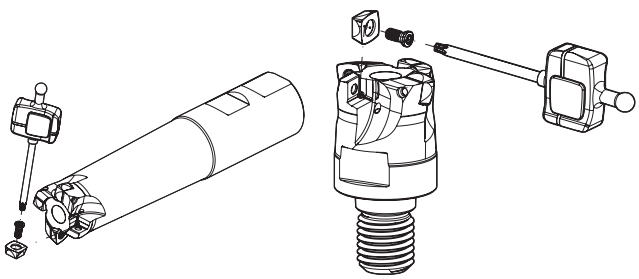
Insert order code = (1) Geometry Code + (2) Grade Code

SPARE PARTS | Acessórios | Repuestos

Order separately

Cutter ØDc	Insert Screw	Key (Torx)	Key (Torx - Nm)	Torque Value
			Nm	Nm
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.



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HIFEED 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/Dc=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.

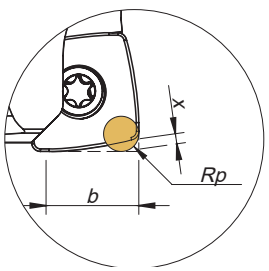
(Note 4) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:
- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

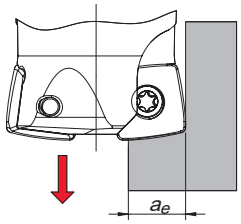
CHIP-BREAKER SELECTION GUIDE | Guia para aplicações do quebra-aparas | Guía para aplicación del rompevirutas

ISO	PSM	Material	HB (Brinell)	Chip-Breaker Application	
				1st choise	Dificult 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

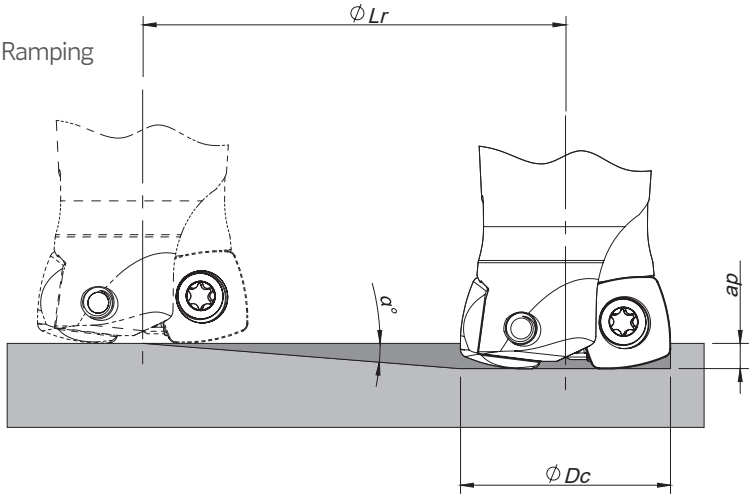




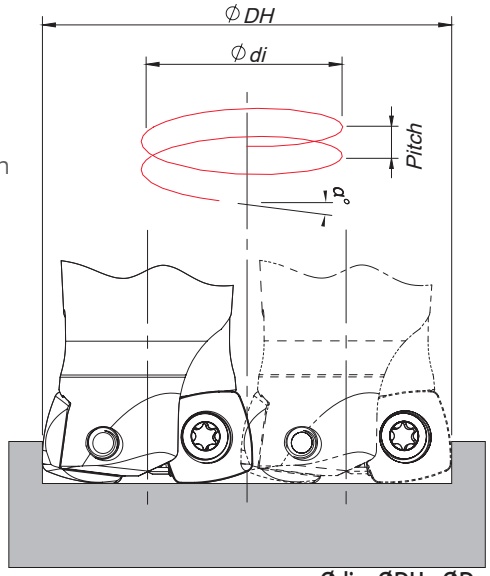
RAMPING AND HELICAL INTERPOLATION

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

Ramping



Helical Interpolation



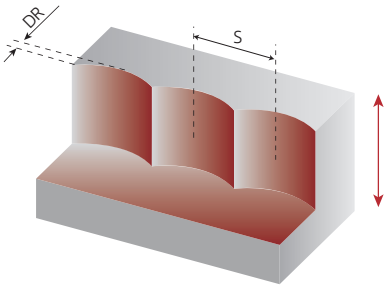
Ødi = ØDH - ØDc

ØDc	Ramping			Helical Interpolation		
	Max Ramp a°	Max a_p	Min Lr	ØDHmin	ØDHmax	Max Pitch/Rev.
20	0,5	1,2	137,5	27,8 -	- 38,0	0,2 0,5
25	1	1,2	68,7	37,8 -	- 48,0	0,7 1,2
32	1,4	1,2	49,1	51,8 -	- 62,0	1,5 2,3
35	1,1	1,2	62,5	57,8 -	- 68,0	1,3 2,0
42	0,9	1,2	76,4	71,8 -	- 82,0	1,4 1,9

Note: During helical interpolation do not exceed max a_p.

PLUNGING | Mergulho | Plunge

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



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

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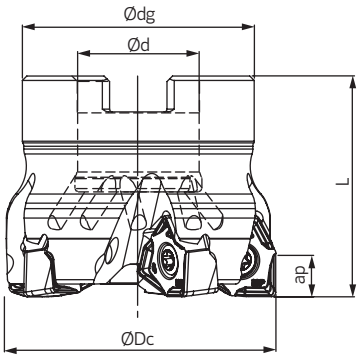
HEXAPLUS 49590

NEW



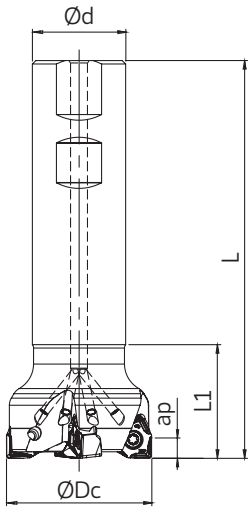
Arbor Mounting

$K_r = 90°$ | $\gamma_p = -6°$

Order code Código	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	3	40	16	32	40	0,15	A	7,5	WNXT 0806...	●
181175000	040A49590-04-06-016040	4	40	16	32	40	0,13	A	7,5	WNXT 0806...	○
181173400	050A49590-04-06-022040	4	50	22	42	40	0,39	A	7,5	WNXT 0806...	●
181165600	050A49590-05-06-022040	5	50	22	42	40	0,38	A	7,5	WNXT 0806...	●
181173500	063A49590-05-06-022040	5	63	22	52	40	0,50	A	7,5	WNXT 0806...	●
181173600	063A49590-06-06-022040	6	63	22	52	40	0,49	A	7,5	WNXT 0806...	●
181173700	080A49590-07-06-027050	7	80	27	60	50	1,18	B	7,5	WNXT 0806...	●
181173800	080A49590-09-06-027050	9	80	27	60	50	1,16	B	7,5	WNXT 0806...	○
181173900	100A49590-08-06-032050	8	100	32	80	50	1,62	B	7,5	WNXT 0806...	●
181174000	100A49590-11-06-032050	11	100	32	80	50	1,55	B	7,5	WNXT 0806...	○
181174100	125A49590-11-06-040063	11	125	40	90	63	2,82	B	7,5	WNXT 0806...	●
181174200	125A49590-14-06-040063	14	125	40	90	63	2,76	B	7,5	WNXT 0806...	○

● 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

$K_r = 90°$ | $\gamma_p = -6°$

Order code Código	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	2	32	32	125	40	0,65	7,5	WNXT 0806...	●
181174500	040W49590-03-06-032130	3	40	32	130	40	0,70	7,5	WNXT 0806...	●
181174600	040W49590-04-06-032130	4	40	32	130	40	0,65	7,5	WNXT 0806...	○
181174700	050W49590-04-06-032140	4	50	32	140	45	0,86	7,5	WNXT 0806...	○
181174800	050W49590-05-06-032140	5	50	32	140	45	0,81	7,5	WNXT 0806...	○

● 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)

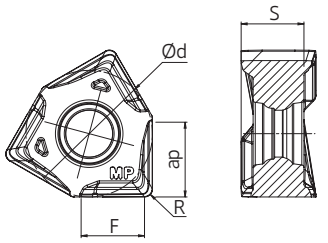
NEW

Facing | Shouldering | Helical Interpolation | Plunging

WNXT | Inserts | Pastilhas | Plaquitas

WNXT

PHP NEW GRADE



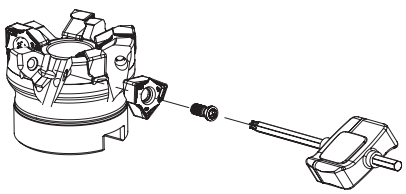
(1) Geometry code	Reference Referência Referencia	P PVD (2) Grade code T1 PHP920	P PVD (2) Grade code P4 PHP930	K PVD (2) Grade code T1 PHP920	K PVD (2) Grade code P4 PHP930	Dimensions | Dimensões | Dimensiones (mm) iC	S	R	F
1113000	WNXT 080608 PNSR-MP	◉	◉	◉	◉	12,7	6,3	0,8	4,1

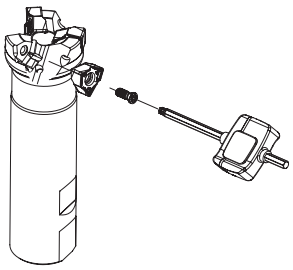
◉ First choice | Primeira opção | 1ª opción
◉ Stock item | Produto de stock | Itens de stock
○ Available under request | Disponível sobre consulta | Disponible bajo consulta

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

SPARE PARTS Acessórios | Repuestos

Cutter ØDc	Order separately: Insert Screw	Key (Torx)	Key (Torx - Nm)	Torque Value	Order separately: Screw	DIN 6368 Wrench	Retaining Screw
W49590 - 32 - 50	P0401200	XT15	DT1530	3,0	-	-	-
A49590 - 40	P0401200	XT15	DT1530	3,0	-	-	290087600
A49590 - 50 - 63	P0401200	XT15	DT1530	3,0	-	-	-
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	-





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palbit TOOLING SOLUTIONS EXPERTS SINCE 1916

HEXAPLUS 49590

NEW

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	✓	✓

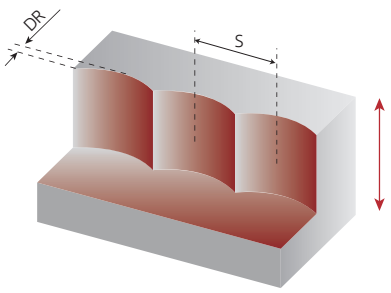
Good Conditions
Average Conditions
Difficult Conditions

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

ISO	PSM	Material	HB (Brinell)	Vc (m/min) ← Wear Resistance — Toughness → PHP920	PHP930	Feed fz (mm/t) WNXT
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

PLUNGING | Mergulho | Plunge

L≤3Dc	L>3Dc	S max.
f_z (mm/t)		
0,10-0,15	0,08-0,12	$Smax = \sqrt{DC.Dr - Dr^2}$



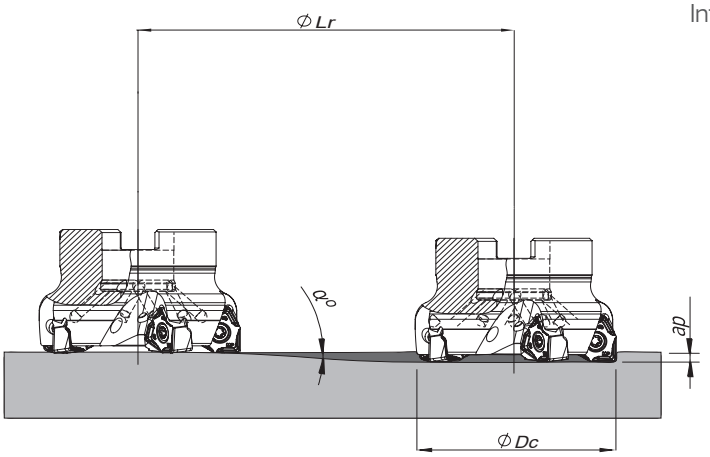
S max and DR corresponding cutting diameter Dc (mm)							
DR (mm)	Dc (mm)						
	32	40	50	63	80	100	125
1,0	5,6	6,2	7,0	7,9	8,9	9,9	11,1
2,0	7,7	8,7	9,8	11,0	12,5	14,0	15,7
3,0	9,3	10,5	11,9	13,4	15,2	17,1	19,1
4,0	10,6	12,0	13,6	15,4	17,4	19,6	22,0

NEW

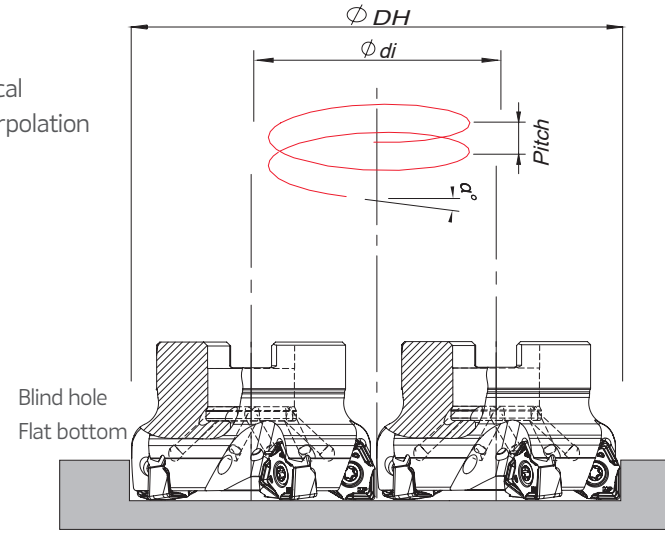
RAMPING AND HELICAL INTERPOLATION

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

Ramping



Helical Interpolation



Ødi = ØDH - ØDc

ØDc	Ramping			Helical Interpolation		
	Max Ramp a°	Max a_p	Min Lr	ØDHmin	ØDHmax	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 7,5
50	3,5	7,5	122,6	88 -	- 98	7,3 7,5
63	3,5	7,5	122,6	114 -	- 124	7,5 7,5
80	3,0	7,5	143,1	148 -	- 158	7,5 7,5
100	2,1	7,5	204,5	188 -	- 198	7,5 7,5
125	1,4	7,5	306,9	238 -	- 248	7,5 7,5

Note: During helical interpolation do not exceed max ap.
(*) 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.

PDF VIDEO

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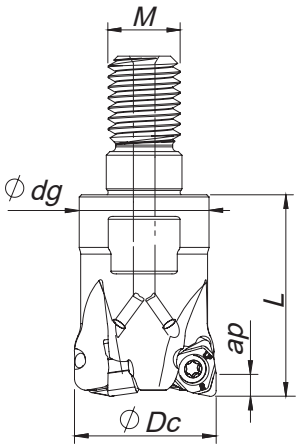
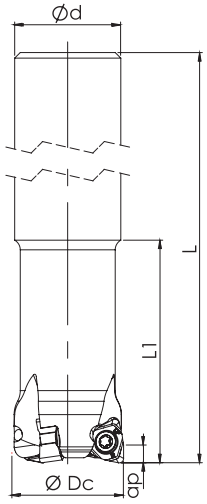


Threaded Coupling

K_r=90º | γ_p = -7º

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specification	Insert Pastilha Inserto	Stock
			ØDc	M	Ødg	L		Ap 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

K_r=90º | γ_p = -7º

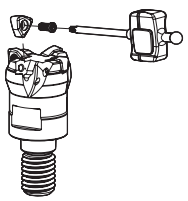
Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specification	Insert Pastilha Inserto	Stock
			ØDc	Ød	L	L1		Ap max (mm)		
181136100	016E49090-02-07-U015150	2	16	15	150	32	0,185	3,00	WNHU 04T308-LP	⊛
181136200	020E49090-03-07-U019150	3	20	19	150	40	0,292	3,00	WNHU 04T308-LP	⊛
181136300	025E49090-04-07-U024150	4	25	24	150	50	0,471	3,00	WNHU 04T308-LP	⊛

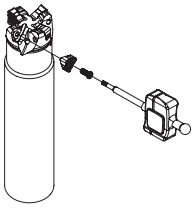
⊛ Stock item | Produto de stock | Itens de stock ◯ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

SPARE PARTS | Acessórios | Repuestos

Order separately

Cutter ØDc	Insert Screw	Key (Torx)	Key (Torx - Nm)	Torque Value
			Nm	Nm
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 the page A-241.

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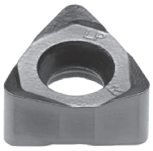
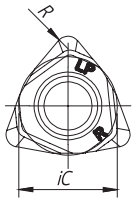
WNHU 04T308 | Inserts | Pastilhas | Plaquitas

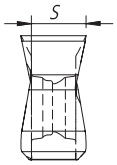
WNHU-LP



WNHU-LN

PHP
NEW
GRADE





		P			K			N	Dimensions Dimensões Dimensiones (mm)		
		PVD			PVD			UNC			
	(2) Grade code	X5	T1	P4	X5	T1	P4	10			
(1) Geometry code	ISO Reference	PHP910	PHP920	PHP930	PHP910	PHP920	PHP930	PH0910	iC	S	R
1112277	WNHU 04T308 PNER-LP	●	●	●	●	●	●		6,35	3,50	0,80
1112988	WNHU 04T308 PNFR-LN							●	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 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 → PH0910	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		✓	✓	✓
N	10	Aluminium and Non Ferrous	30-130	✓			

● 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	PHP910	PHP920	PHP930	Feed fz (mm/t) 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
N	10	Aluminium and Non Ferrous	30-130	100-2000	-	-	-	0,10-0,30

Insert	Feed f_z (mm/t)		a_p 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 a_p and V_c by 30% and keep the same f_z per tooth.

PDF

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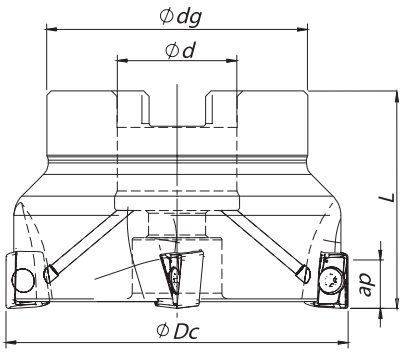
palbit SINCE 1916

PLUS 17190



Arbor Mounting

$K_r = 90°$ | $\gamma_p = -7°$

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	Ød	Ødg	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

ANHX-LP

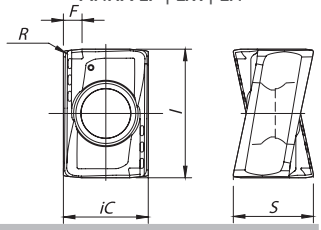
ANHX-LM

ANHX-LN

PHH NEW GRADE

PHP NEW GRADE

ANHX-LP | LM | LN



		P						M		K						N	S		Dimensions Dimensões Dimensiones (mm)				
		CVD	PVD					PVD		CVD	PVD					UNC	PVD						
	(2) Grade code	T9	G1	X5	T1	P4	G6	X9	G6	T9	G1	X5	T1	P4	G6	10	X9	G6					
(1) Geometry code	ISO Reference	PHS740	PH7910	PHP910	PHP920	PHP930	PH7740	PHH930	PH7740	PHS740	PH7910	PHP910	PHP920	PHP930	PH7740	PH0910	PHH930	PH7740	iC	S	l	R	F
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
1112021	ANHX 100416 PNER-LP				○								○						6,60	6,20	10,00	1,60	0,20
1112513	ANHX 100402 PNER-LM				○			○					○				○		6,60	6,20	10,00	0,20	1,10
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 | 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 (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

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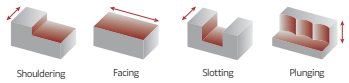
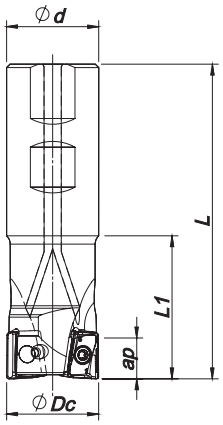




Weldon Shank

K_r = 90° | γ_p = -7° (-6°*)

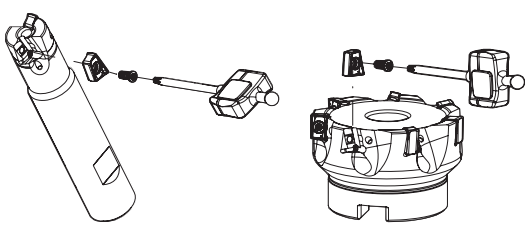
Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications	Insert Pastilha Inserto	Stock
			ØDc	Ød	L	L1		Ap max (mm)		
181075000	014W17190-01-06-016090*	1	14	16	90	23	0,188	9,00	ANHX 1004...	◈
181101400	016W17190-02-06-016090*	2	16	16	90	25	0,123	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 | Acessórios | Repuestos

Cutter ØDc	Insert Screw	Key (Torx)	Order separately Key (Torx - Nm)	Torque Value	Order separately 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.

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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	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 →	Feed fz (mm/t)		
				PH0910	PHP910	PHP920	PHP930	PHH930	PHS740	PH7740	ANHX... LP	ANHX... LM	ANHX... LN
P	1	Unalloyed Steel	125-220	-	180-250	180-250	160-230	-	140-220	140-200	0,08-0,20	0,08-0,20	-
	2	Low-Alloyed Steel	220-280	-	160-240	160-230	140-210	-	120-200	130-180	0,08-0,20	0,08-0,15	-
	3	High-Alloyed Steel	280-380	-	140-230	140-220	120-200	-	100-190	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	-	160-300	140-220	0,08-0,25	0,08-0,20	-
	8	Grey Cast Iron	180-245	-	160-250	140-250	140-230	-	150-260	120-210	0,08-0,20	0,08-0,20	-
	9	Nodular Cast iron	160-250	-	150-210	120-210	100-200	-	80-220	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 $a_e/Dc=70\%$.

(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

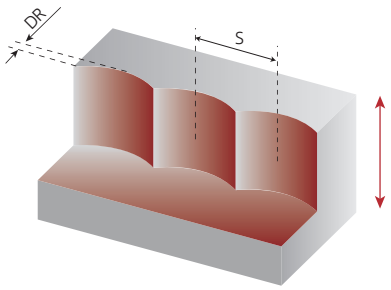
(Note 3)
It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:
- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

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

ISO	PSM	Material	HB (Brinell)	Chip Breaker Application	
				1st 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	$Smax = \sqrt{DC.Dr - Dr^2}$



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

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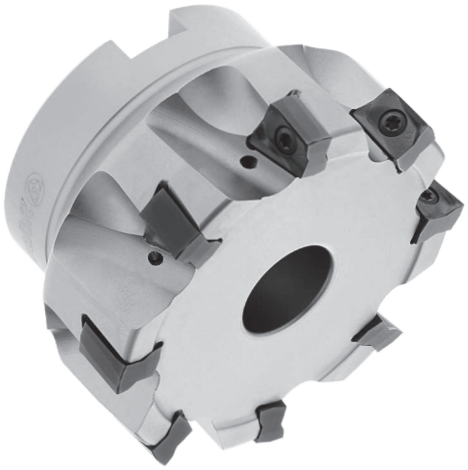
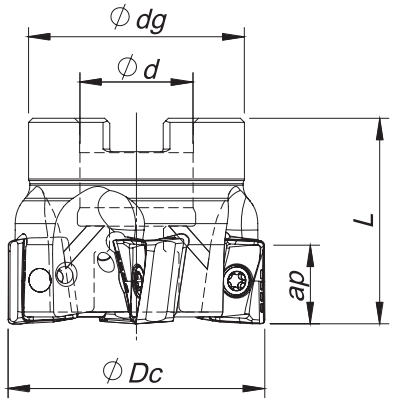




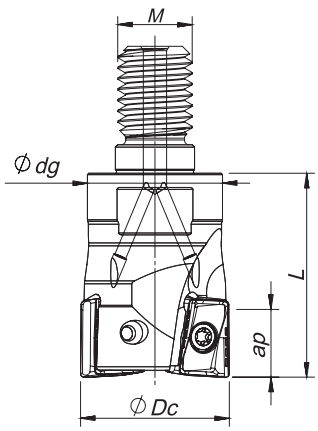
Arbor Mounting

$\kappa_r = 90°$ | $\gamma_p = -6°$

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	Ød	ØDg	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)



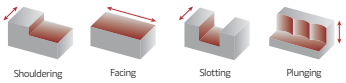
Threaded Coupling

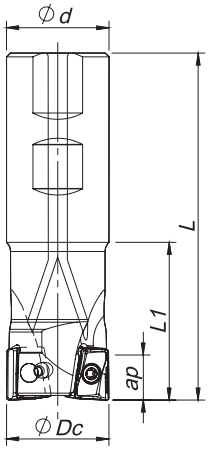
$\kappa_r = 90°$ | $\gamma_p = -6°$

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications	Insert Pastilha Inserto	Stock
			ØDc	ØM	Ødg	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)





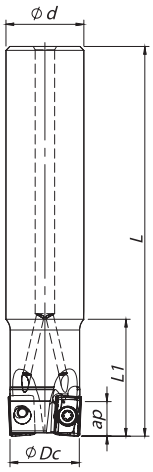
Weldon Shank

$K_r = 90°$ | $\gamma_p = -6°$

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications	Insert Pastilha Inserto	Stock
			ØDc	Ød	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

$K_r = 90°$ | $\gamma_p = -6°$

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications	Insert Pastilha Inserto	Stock
			ØDc	Ød	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 | Acessórios | Repuestos

Order separately

Cutter ØDc	Insert Screw	Key (Torx)	Key (Torx - Nm)	Torque Value
				Nm
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.

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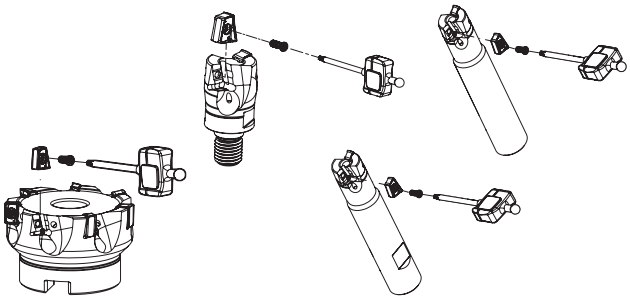

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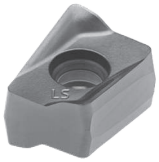
PLUS 17590

ANHX 1206.. | Inserts | Pastilhas | Plaquitas

ANHX-LS

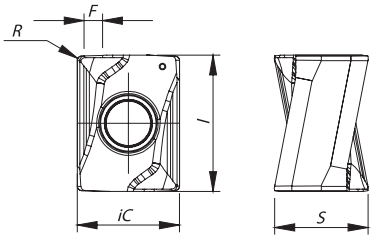


ANHX-MP

PHH NEW GRADE

PHP NEW GRADE

ANHX-LS | MP



		P					M			K						S			Dimensions Dimensões Dimensiones (mm)				
		CVD					PVD			CVD	PVD					PVD							
	(2) Grade code	T9	T1	P3	P4	G6	P3	X9	G6	T9	L6	T1	P3	P4	G6	P3	X9	G6					
(1) Geometry code	ISO Reference	PHS740	PHP920	PH7930	PHP930	PH7740	PH7930	PHH930	PH7740	PHS740	PH5320	PHP920	PH7930	PHP930	PH7740	PH7930	PHH930	PH7740	iC	S	I	R	F
1112474	ANHX 120604 PNER-LS		●	◇	○	◉		●	◉			●		◉	◉		●	◉	9,00	8,30	12,00	0,40	1,60
1112237	ANHX 120608 PNER-LS		●		◉	◉		●	◉			●		◉	◉		●	◉	9,00	8,30	12,00	0,80	1,20
1112429	ANHX 120616 PNER-LS		●	◇	○	◉	◇	●	◉			●	◇	○	◉	◇	●	◉	9,00	8,30	12,00	1,60	0,40
1112473	ANHX 120604 PNSR-MP		●			◉			◉		◉	●			◉			◉	9,00	8,30	12,00	0,40	1,60
1112238	ANHX 120608 PNSR-MP	◉	●			◉			◉	◉	◉	●			◉			◉	9,00	8,30	12,00	0,80	1,20
1112430	ANHX 120616 PNSR-MP		◉			●			◉		◉	◉			●			◉	9,00	8,30	12,00	1,60	0,40

● 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)

◇ 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

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

ISO	PSM	Material	HB (Brinell)	Vc (m/min) ← Wear Resistance — Toughness →						Feed f_z (mm/t)	
				PH5320	PHP920	PHH930	PH7930	PHS740	PH7740	ANHX 12... LS	ANHX 12... MP
P	1	Unalloyed Steel	125-220	-	180-250	-	160-220	140-220	140-200	0,08-0,20	0,08-0,30
	2	Low-Alloyed Steel	220-280	-	160-230	-	140-200	120-200	130-180	0,08-0,20	0,08-0,25
	3	High-Alloyed Steel	280-380	-	140-220	-	120-190	100-190	100-170	0,08-0,15	0,08-0,20
M	4	SS - Ferritic / Martensitic	200-330	-	-	140-210	140-200	-	130-180	0,08-0,20	-
	5	SS - Austenitic	200-330	-	-	120-170	120-160	-	110-160	0,08-0,15	-
	6	SS - Austenitic-ferritic (Duplex)	230-260	-	-	100-150	100-140	-	90-150	0,08-0,15	-
K	7	Malleable Cast Iron	130-230	150-280	160-270	-	150-240	160-300	140-220	0,08-0,20	0,08-0,30
	8	Grey Cast Iron	180-245	160-320	140-250	-	140-230	150-260	120-210	0,08-0,20	0,08-0,25
	9	Nodular Cast iron	160-250	100-190	120-210	-	100-190	80-220	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/Dc=70%.

(Note 2)

Operation	ae	Vc & fz	ap (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	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				✓		✓

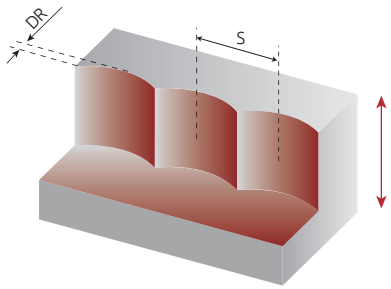
Good Conditions Average Conditions Difficult Conditions

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

ISO	PSM	Material	HB (Brinell)	Chip Breaker Application	
				1st 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	$Smax = \sqrt{DC.Dr - Dr^2}$



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

PDF VIDEO

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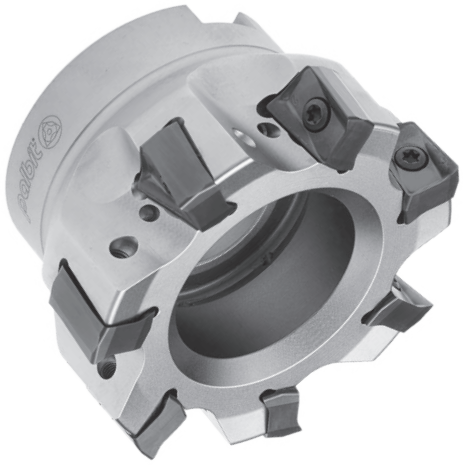
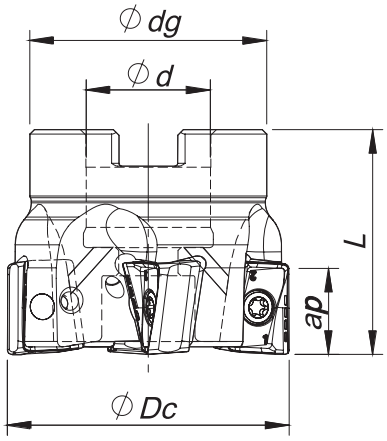


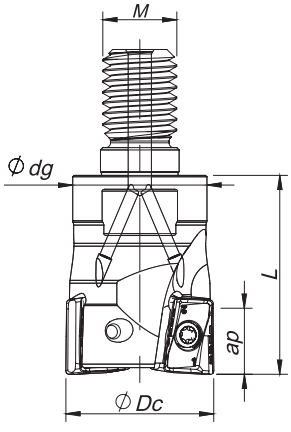


Arbor Mounting

$\kappa_r = 90°$ | $\gamma_p = -4°$

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	Ød	ØDg	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)

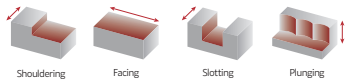


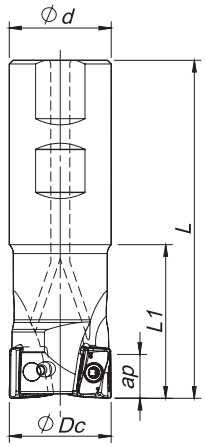
Threaded Coupling

$\kappa_r = 90°$ | $\gamma_p = -4°$

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications	Insert Pastilha Inserto	Stock
			ØDc	ØM	Ødg	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

$K_r = 90°$ | $\gamma_p = -4°$

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications	Insert Pastilha Inserto	Stock
			ØDc	Ød	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 | Plaquitas

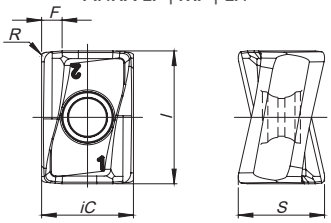
ANHX-LP

ANHX-MP

ANHX-LN

PHP NEW GRADE

ANHX-LP | MP | LN



		P							K							N	Dimensions Dimensões Dimensiones (mm)				
		CVD	PVD						CVD	PVD						UNC					
	(2) Grade code	T9	G1	X5	G4	T1	P3	P4	T9	G1	X5	G4	T1	P3	P4	10					
(1) Geometry code	ISO Reference	PHS740	PH7910	PHP910	PH7920	PHP920	PH7930	PHP930	PHS740	PH7910	PHP910	PH7920	PHP920	PH7930	PHP930	PH0910	iC	S	I	R	F
1111519	ANHX 160708 PNR-LP		◬	○		◈	◬	◈		◬	○		◈	◬	◈		11,20	10,80	16,00	0,80	1,40
1111596	ANHX 160712 PNER-LP			○	◬	◈	◬	◈			○	◬	◈	◬	◈		11,20	10,50	16,00	1,20	1,20
1111595	ANHX 160708 PNER-MP	◈	◬	○		◈	◬	◈	◈	◬	○		◈	◬	◈		11,20	10,80	16,00	0,80	1,40
1111598	ANHX 160712 PNER-MP			○	◬	◈		◈			○	◬	◈		◈		11,20	10,50	16,00	1,20	1,20
1111659	ANHX 160708 PNFR-LN															◈	11,20	10,80	16,00	0,80	1,40
1111597	ANHX 160712 PNFR-LN															◈	11,20	10,50	16,00	1,20	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)

◬ 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

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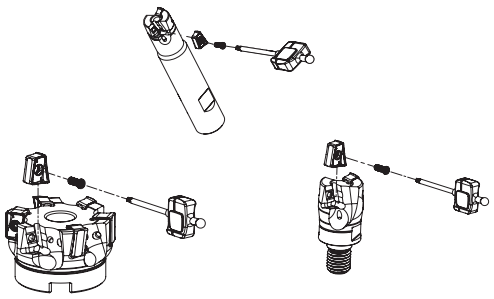
palbit TOOLING SOLUTIONS EXPERTS SINCE 1916

PLUS 18190

SPARE PARTS | Acessórios | Repuestos

Cutter ØDc	Insert Screw	Key (Torx)	Order separately Key (Torx - Nm)	Torque Value	Order separately 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 recomendas

ISO	PSM	Material	HB (Brinell)	Vc (m/min) ← Wear Resistance						Toughness →	Feed f_z (mm/t)		
				PH0910	PH7910	PHP920	PH7920	PHP930	PH7930	PHS740	ANHX 12... LP	ANHX 12... MP	ANHX 12... LN
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	160-300	0,10-0,25	0,10-0,25	-
	8	Grey Cast Iron	180-245	-	160-250	140-250	140-240	140-230	140-230	150-260	0,10-0,25	0,10-0,25	-
	9	Nodular Cast iron	160-250	-	150-200	120-210	120-200	100-200	100-190	80-220	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/Dc=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	✓						

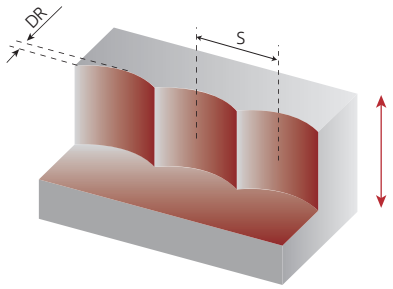
Good Conditions
Average Conditions
Difficult Conditions

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

ISO	PSM	Material	HB (Brinell)	Chip Breaker Application	
				1st 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	$S_{max} = \sqrt{DC.DR - DR^2}$



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

PDF

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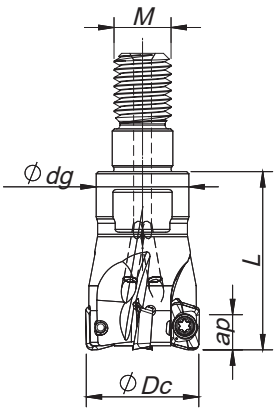


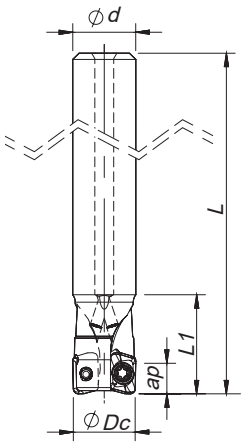
Threaded Coupling

K_r=90° | γ_p=+4°

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Max ap (mm)			Insert Pastilha Inserto	Stock
			ØDc	ØM	Ødg	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 pagina A-8)



Cylindrical Shank

K_r=90° | γ_p=+4°

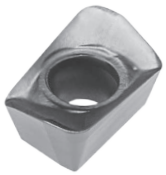
Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Max ap (mm)			Insert Pastilha Inserto	Stock
			ØDc	Ød	L	L1		LP|LN	HF	MH		
181087100	010E20090-02-04-010055	2	10	10	55	16	0,03	4,00	0,30	2,00	XP... 0602...	◈
181108300	010E20090-02-04-010100	2	10	10	100	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

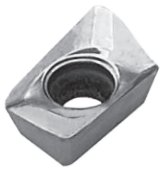
◯ Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8))

XP... 0602... | Inserts | Pastilhas | Plaquitas

XPET-LP



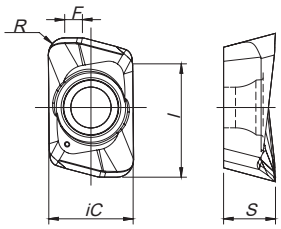
XPET-LN



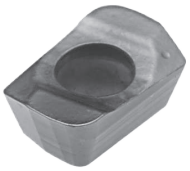
PHH NEW GRADE

PHP NEW GRADE

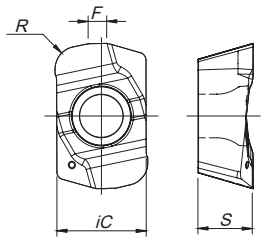
XPET-LP | LN



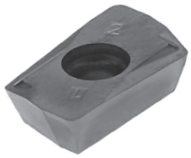
XPET-HF
(HiFeed geometry)



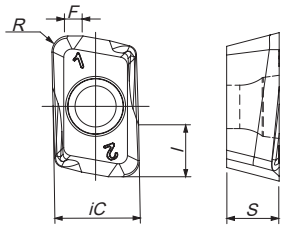
XPET-HF



XPHW-MH
(finishing geometry)



XPHW-MH



		P				M	K		N	S	H		Dimensions Dimensões Dimensiones (mm)				
		PVD				PVD	PVD		UNC	PVD	PVD						
	(2) Grade code	X4	X6	T1	P4	X9	T1	P4	10	X9	X4	X6					
(1) Geometry code	ISO Reference	PHH603	PHH910	PHP920	PHP930	PHH930	PHP920	PHP930	PH0910	PHH930	PHH603	PHH910	iC	S	l	R	F
1112520	XPET 060202 PDER-LP			○		○	○			○			3,90	2,40	5,10	0,20	1,00
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

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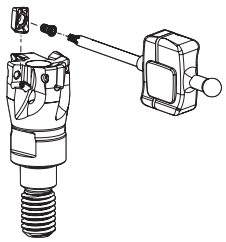
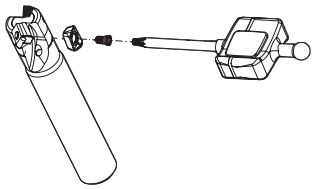
SPARE PARTS | Acessórios | Repuestos

Order separately

Cutter ØDc	Insert Screw	Key (Torx)	Key (Torx - Nm)	Torque Value
				
E20090 - 10	P0180300	XT06IP	DT0606IP	0,6
E20090 - 12-21	P0180400	XT06IP	DT0606IP	0,6
R20090 - 10	P0180300	XT06IP	DT0606IP	0,6
R20090 - 12-32	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.

GRADES SELECTION GUIDE | Guia para selecção 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	0,05-0,07	-	0,40-0,80	-
	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/Dc=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

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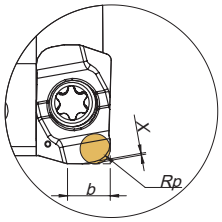
CHIP-BREAKER SELECTION GUIDE | Guia para aplicações do quebra-aparas | Guía para aplicación del rompevirutas

ISO	PSM	Material	HB (Brinell)	Chip-Breaker Application	
				1st choise	Dificult Operations
P	1	Unalloyed Steel	125-220	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

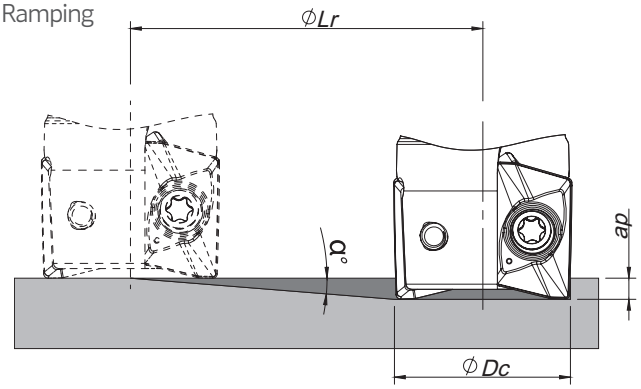
Insert	Programming Data		
	Rp	X	b
XPET 06 HF	1,1	0,84	2,3



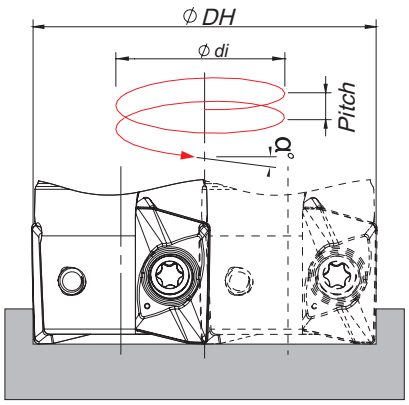
RAMPING AND HELICAL INTERPOLATION

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

Ramping



Helical Interpolation



Blind hole
Flat bottom

Ødi = ØDH - ØDc

ØDc	Ramping			Helical Interpolation		
				Diameter for Blind Hole, Flat Bottom Face (1)		Max Pitch/Rev.
	Max Ramp a°	Max a_p	Min Lr	ØDHmin	ØDHmax	
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 ØDHmin and ØDHmax use the equation below:
- Minimum Diameter: ØDHmin = 2 x (ØDc - (R corner radius + F width of edge wiper)
- Maximum Diameter: ØDHmax = 2 x (ØDc - R corner radius)
(On HF insert the corner radius should be corner radius programming)

PDF

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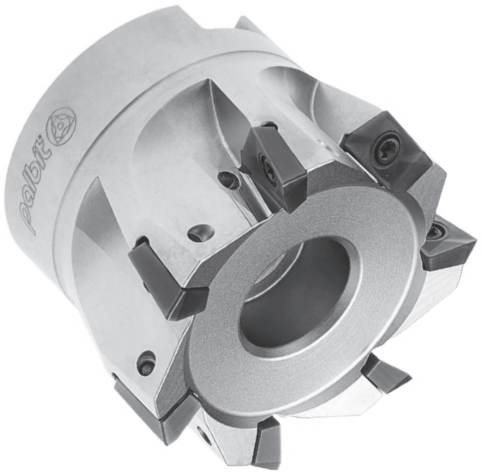
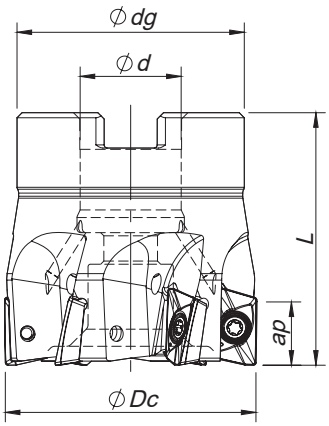




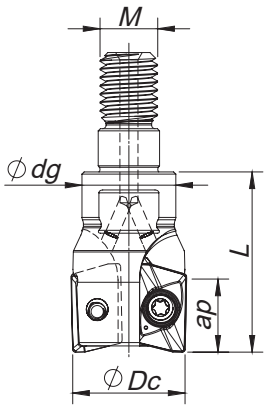
Arbor Mounting

κ_r=90° | γ_p=+8°

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Max ap (mm)			Arbor Style	Insert Pastilha Inserto	Stock
			ØDc	Ød	Ødg	L		LP/MP/LN	HF	MH			
181088600	040A20190-06-08-016040	6	40	16	36	40	0,22	10,0	0,80	3,00	A	XP... 1003...	◉
181088700	050A20190-07-08-022040	7	50	22	42	40	0,31	10,0	0,80	3,00	A	XP... 1003...	◉
181088800	063A20190-08-08-022040	8	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)



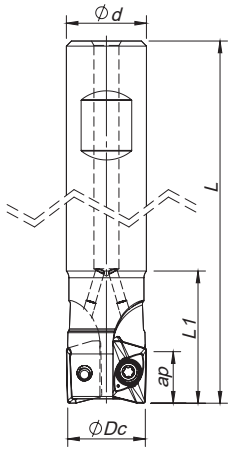
Threaded Coupling

κ_r=90° | γ_p=+5° ~+6°

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Max ap (mm)			Insert Pastilha Inserto	Stock
			ØDc	ØM	Ødg	L		LP/MP/LN	HF	MH		
181088200	016R20190-02-05-M08025	2	16	M8	14	25	0,03	10,0	0,80	3,00	XP... 1003...	◉
181088300	020R20190-03-05-M10030	3	20	M10	18	30	0,06	10,0	0,80	3,00	XP... 1003...	◉
181088400	025R20190-04-05-M12035	4	25	M12	21	35	0,12	10,0	0,80	3,00	XP... 1003...	◉
181088500	032R20190-05-06-M16035	5	32	M16	29	35	0,15	10,0	0,80	3,00	XP... 1003...	◉
181149100	040R20190-06-08-M16043	6	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)



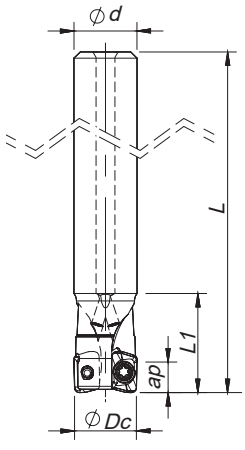
Weldon Shank

κ_r=90° | γ_p=+5°~8°

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Max ap (mm)			Insert Pastilha Inserto	Stock
			ØDc	Ød	L	L1		LP/MP/LN	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

κ_r=90° | γ_p=+4°

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Max ap (mm)			Insert Pastilha Inserto	Stock
			ØDc	Ød	L	L1		LP/MP/LN	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)

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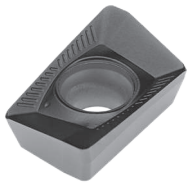
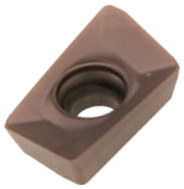
LINEPRO 20190

XP... 1003... | Inserts | Pastilhas | Plaquitas

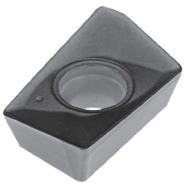
XPET-LP



XPET-LS NEW

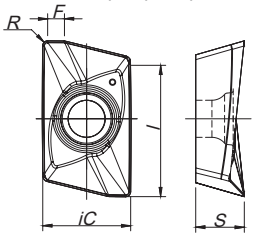


XPET-MP

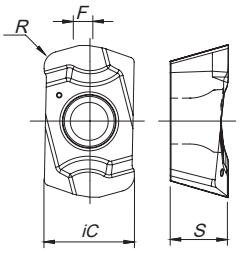


XPET-LN

XPET-LP | LS | MP | LN

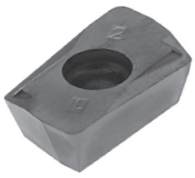


XPET-HF

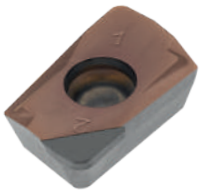


XPET-HF
(HiFeed geometry)

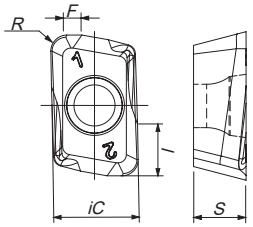
XPHW-MH
(finishing geometry)



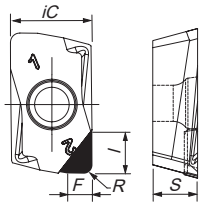
XPHW-R Z1



XPHW-MH



XPHW-R Z1



		P					M	K					N		S	H		Dimensions Dimensões Dimensiones (mm)				
		CVD	PVD				PVD	CVD		PVD			UNC	PCD	PVD	PVD						
	(2) Grade code	T9	G1	X5	T1	P4	X9	L5	L9	X5	T1	P4	10	D6	X9	X4	X6					
(1) Geometry code	ISO Reference	PH5740	PH7910	PHP910	PHP920	PHP930	PHH930	PH5705	PH5740	PHP910	PHP920	PHP930	PH0910	PDP410	PHH930	PHH603	PHH910	iC	S	I	R	F
1113132	XPET 100302 PDER-LP						◈								◈			6,95	3,96	10,50	0,20	1,50
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
NEW 1113365	XPET 100304 PDER-LS				◈		◈				◈				◈			6,95	3,96	10,5	0,40	1,90
NEW 1112197	XPET 100308 PDER-LS				◈		◈				◈				◈			6,95	3,96	10,5	0,80	1,50
NEW 1113358	XPET 100312 PDER-LS				◈		◈				◈				◈			6,95	3,96	10,5	1,20	1,00
NEW 1113366	XPET 100316 PDER-LS				◈		◈				◈				◈			6,95	3,96	10,5	1,60	0,80
NEW 1113359	XPET 100320 PDER-LS				◈		◈				◈				◈			6,95	3,96	10,5	2,00	1,60
NEW 1113360	XPET 100332 PDER-LS				◈		◈				◈				◈			6,95	3,96	10,5	3,20	0,50
NEW 1113394	XPET 100340 PDER-LS				○		○				○				○			6,95	3,96	10,5	4,00	0,20
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)

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

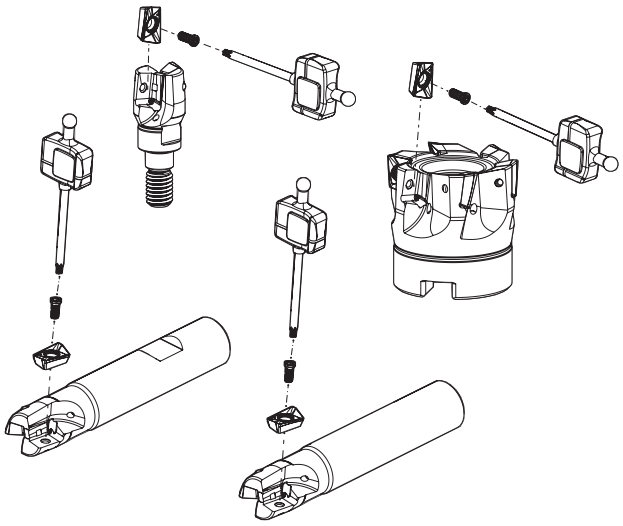
Insert order code = (1) Geometry Code + (2) Grade Code

SPARE PARTS | Acessórios | Repuestos

Order separately

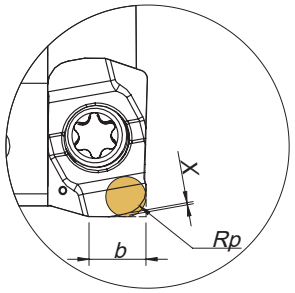
Cutter ØDc	Insert Screw	Key (Torx)	Key (Torx - Nm)	Torque Value
			Nm	Nm
A20190 - 40-63	P0250704	XT08	DT0812	1,2
R20190 - 16	P0250503	XT08	DT0812	1,2
R20190 - 20-40	P0250704	XT08	DT0812	1,2
W20190 - 16-17	P0250503	XT08	DT0812	1,2
W20190 - 20-32	P0250704	XT08	DT0812	1,2
E20190 - 16	P0250503	XT08	DT0812	1,2
E20190 - 20-25	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.



PROGRAMMING DATA | Dados para programação | Datos para la programación

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



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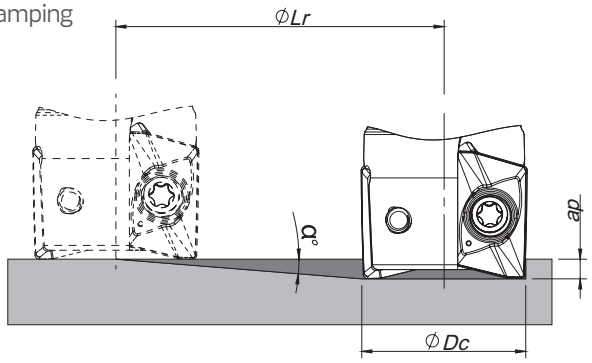
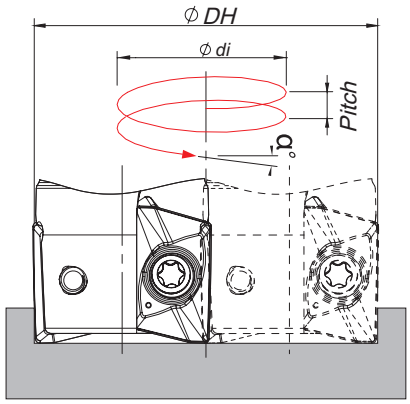
RAMPING AND HELICAL INTERPOLATION

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

Ramping



Helical Interpolation



Blind hole
Flat bottom

Ødi = ØDH - ØDc

ØDc	Ramping			Helical Interpolation		
				Diameter for Blind Hole, Flat Bottom Face (1)		Max Pitch/Rev.
	Max Ramp a°	Max a_p	Min Lr	ØDHmin	ØDHmax	
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 ØDHmin and ØDHmax use the equation below:
- Minimum Diameter: ØDHmin = 2 x (ØDc - (R corner radius + F width of edge wiper))
- Maximum Diameter: ØDHmax = 2 x (ØDc - R 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 choise	Dificult 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 ... LS	XPET 10 ... LP/HF
	5	SS - Austenitic	200-330	XPET 10 ... LS	XPET 10 ... LP/HF
	6	SS - Austenitic-ferritic (Duplex)	230-260	XPET 10 ... LS	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/R Z1	-
S	11	Heat Resistant Super Alloys	200-320	XPET 10 ... LS	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 →			PCD
				PH0910	PH5705	PHH603	PHP910	PHP920	PHP930	PHH930	PH5740	PHS740	PDP410
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

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

ISO	PSM	Material	HB (Brinell)	Vc (m/min) ← Wear Resistance						Toughness →			PCD
				PH0910	PH5705	PHH603	PHP910	PHP920	PHP930	PHH930	PH5740	PHS740	PDP410
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	-	-	-	-	-	-	-	-	800-3000
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/Dc=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... LS	XPET 10... MP	XPET 10... LN	XPET 10... HF	XPHW 10... R Z1	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	0,08-0,20	0,10-0,20	-	0,40-0,70	-	-
0,08-0,20	0,08-0,20	0,10-0,20	-	0,40-0,70	-	-
0,08-0,15	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	-	0,10-0,25	-
0,05-0,07	0,05-0,07	-	-	0,40-0,60	-	-
-	-	-	-	-	-	0,08-0,15

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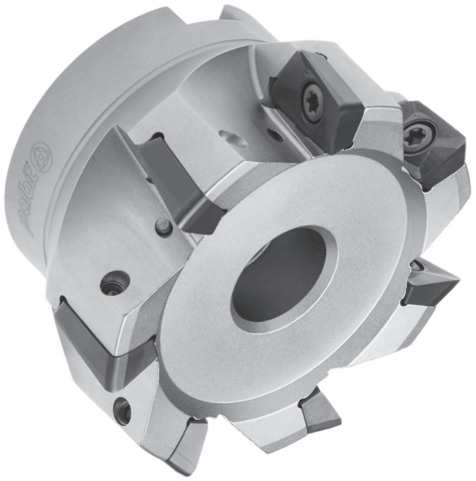
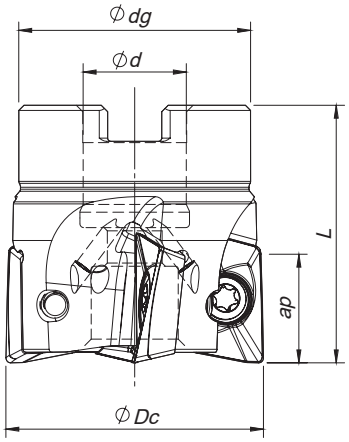




Arbor Mounting

K_r=90° | γ_p=+7° ~+8°

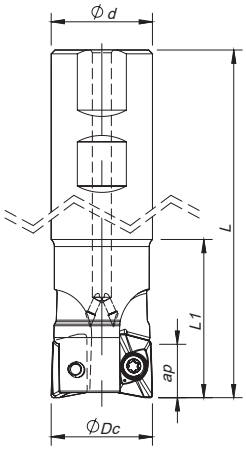
Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications			Insert Pastilha Inserto	Stock
			ØDc	Ød	Ødg	L		Arbor Type	Ap max (LP|MP|LS|LN)	Ap max (LN Z1|Z1W)		
181090900	040A20290-04-07-016040	4	40	16	32	40	0,18	A	17,0	8,0	XPET 1706...	◈
181091000	050A20290-05-08-022040	5	50	22	42	40	0,29	A	17,0	8,0	XPET 1706...	◈
181091100	063A20290-06-08-027040*	6	63	27	52	40	0,53	A	17,0	8,0	XPET 1706...	◬
181091200	080A20290-07-08-027050	7	80	27	60	50	0,92	A	17,0	8,0	XPET 1706...	◈
181091300	100A20290-08-08-032050	8	100	32	80	50	1,68	A	17,0	8,0	XPET 1706...	◈
181091400	125A20290-09-08-040063	9	125	40	90	63	3,01	A	17,0	8,0	XPET 1706...	◈

◈ 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)

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

* For shank assembly a DIN 6912 screw is needed.



Weldon Shank

K_r=90° | γ_p=+6° ~+7°

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	Ød	L	L1		Ap max (LP|MP|LS|LN)	Ap max (LN Z1|Z1W)		
181090500	032W20290-02-06-032110	2	32	32	110	50	0,56	17,0	8,0	XPET 1706...	◈
181090600	032W20290-02-06-032200	2	32	32	200	60	1,10	17,0	8,0	XPET 1706...	◈
181090700	040W20290-03-07-032115	3	40	32	115	50	0,67	17,0	8,0	XPET 1706...	◈
181090800	040W20290-03-07-032200	3	40	32	200	60	1,19	17,0	8,0	XPET 1706...	◈

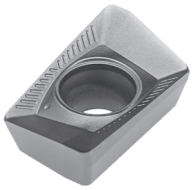
◈ Stock item | Produto de stock | Itens de stock

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

Shouldering | Facing | Slotting | Ramp down | Helical Interpolation | Plunging

XPET 1706... | Inserts | Pastilhas | Plaquitas

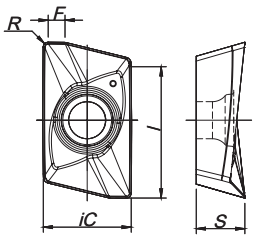
XPET-LP



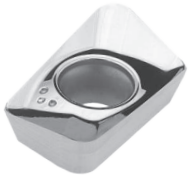
XPET-LS NEW

XPET-MP

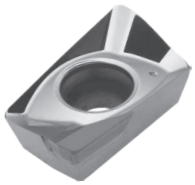
XPET-LP | LS | MP | LN



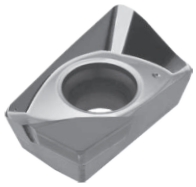
XPET-LN



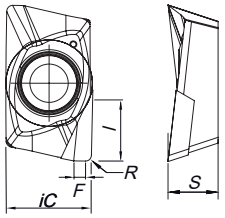
XPET-LN Z1



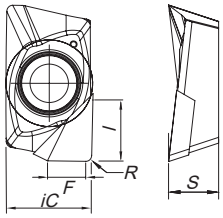
XPET-LN Z1W



XPET-LN Z1



XPET-LN Z1W



		P			M		K				N		S		Dimensions Dimensões Dimensiones (mm)				
		CVD	PVD		PVD		CVD		PVD		UNC	PCD	PVD						
	(2) Grade code	T9	T1	G6	X9	G6	L5	L9	T1	G6	10	D6	X9	G6					
(1) Geometry code	ISO Reference	PHS740	PHP920	PH7740	PHH930	PH7740	PH5705	PH5740	PHP920	PH7740	PH0910	PDP410	PHH930	PH7740	iC	S	l	R	F
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
NEW 1112223	XPET 170608 PDER-LS				◬	◬							◬	◬	11,30	6,35	17,50	0,80	1,80
NEW 1113373	XPET 170612 PDER-LS				○								○		11,30	6,35	17,50	1,20	1,56
NEW 1113361	XPET 170616 PDER-LS				◬								◬		11,30	6,35	17,50	1,60	1,19
NEW 1113362	XPET 170620 PDER-LS				◬								◬		11,30	6,35	17,50	2,00	2,10
NEW 1113363	XPET 170632 PDER-LS				◬								◬		11,30	6,35	17,50	3,20	0,96
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
1113085	XPET 170608 PDFR-LN Z1											◬			11,20	6,50	8,00	0,80	1,51
1113086	XPET 170608 PDFR-LN Z1W											◬			11,20	6,50	8,00	0,80	4,91

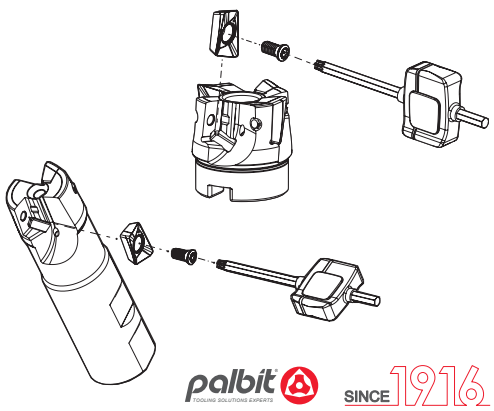
◬ First choice | Primeira opção | 1ª opción ◬ Stock item | Produto de stock | Itens de stock ○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

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

SPARE PARTS | Acessórios | Repuestos

Order separately

Cutter ØDc	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.

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LINEPRO 20290

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

ISO	PSM	Material	HB (Brinell)	Grades ← Wear Resistance — Toughness → PH0910	PH5705	PHP920	PHP930	PHH930	PH5740	PHS740	PH7740	PCD PDP410
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 choise	Dificult Operations
P	1	Unalloyed Steel	125-220	XPET 17... LP	XPET 17... MP
	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 | LN Z1 | LN Z1W	-
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 ajusted according to the machine and work rigidity.
(Note 3):

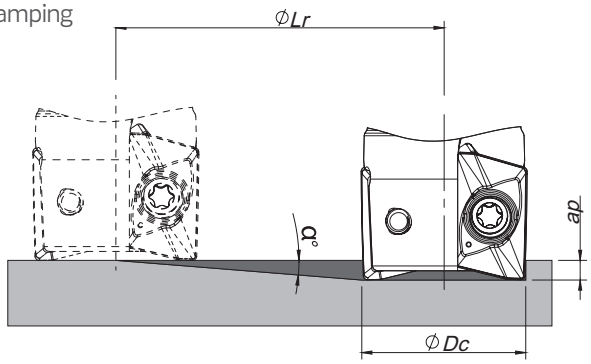
Operation	a_e	Vc & fz	a_p (mm)
Slotting	100%	<20%	2,0-6,0
Shouldering	<50%	>8%	7,0-13,0
	≤25%	>12%	13,0-16,0

(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.

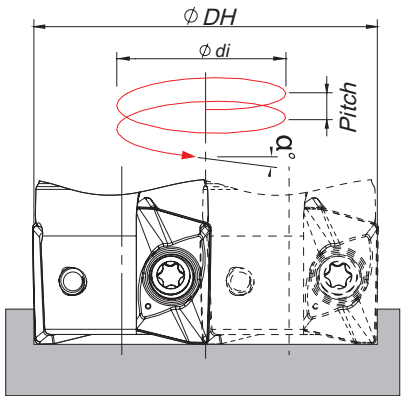
RAMPING AND HELICAL INTERPOLATION

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

Ramping



Helical Interpolation



Ødi = ØDH - ØDc

ØDc	Ramping			Helical Interpolation		
				Diameter for Blind Hole, Flat Bottom Face (1)		Max Pitch/Rev.
	Max Ramp a°	Max a_p	Min Lr	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: ØDHmin = 2 x (ØDc - (R corner radius + F width of edge wiper))
- Maximum Diameter: ØDHmax = 2 x (ØDc - R corner radius)

Vc (m/min) Toughness →			PCD	Feed fz (mm/t)					
PH5740	PHS740	PH7740	PDP410	XPET 17... LP	XPET 17... LS	XPET 17... MP	XPET 17... LN	XPET 17... LN Z1	XPET 17... LN Z1W
-	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	010-0,25	-	-	-	-
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	-	-	-
-	-	-	800-3000	-	-	-	0,10-0,35	0,10-0,35	0,10-0,35
-	-	30-100	-	0,10-0,20	0,10-0,20	-	-	-	-

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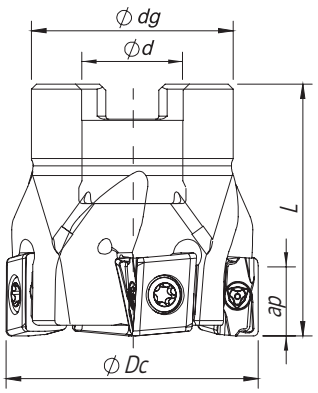


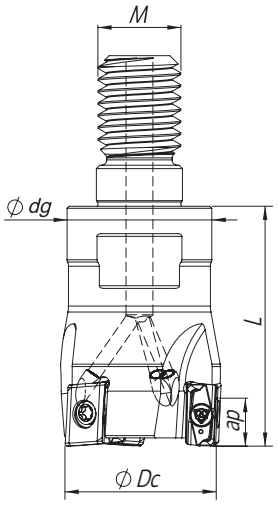
Arbor Mounting

K_r=90° | γ_p=-4°

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications		Insert	Stock
			ØDc	Ød	ØDg	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

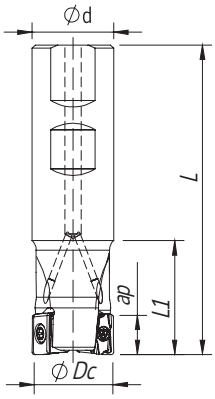
K_r=90° | γ_p=-4°

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications	Insert	Stock
			ØDc	ØM	Ødg	L		Ap max (mm)		
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)

Shouldering Facing Slotting



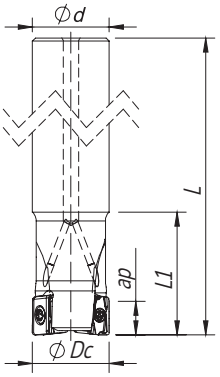
Weldon Shank

K_r = 90° | γ_p = -4° ~ -6°

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications	Insert	Stock
			ØDc	Ød	L	L1		Ap 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° | γ_p = -4°

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications	Insert	Stock
			ØDc	Ød	L	L1		Ap 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)

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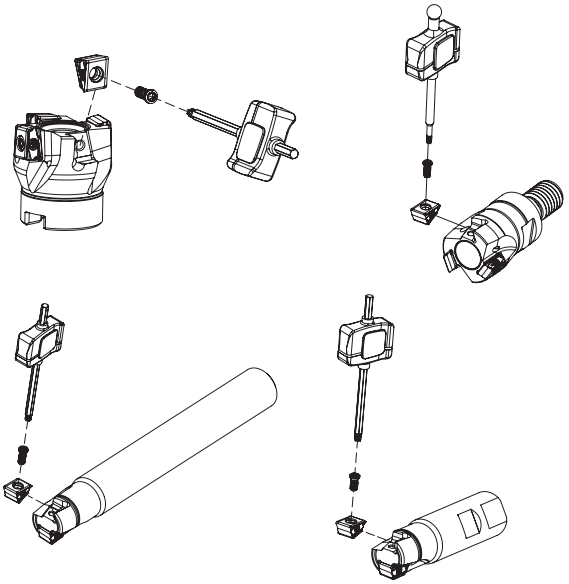
palbit TOOLING SOLUTIONS EXPERTS SINCE 1916

SPARE PARTS | Acessórios | Repuestos

Cutter ØDc	Insert Screw	Key (Torx)	Key (Torx - Nm) (Order separately)	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.



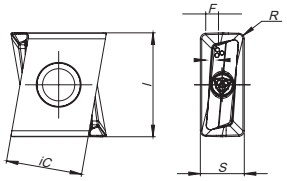
LNXT 0904... | Inserts | Pastilhas | Plaquitas

LNXT-MP

LNXT-LS (PHH grade) NEW

PHH NEW GRADE

LNXT-MP | LS



		P			M	K			S	Dimensions Dimensões Dimensiones (mm)				
		CVD	PVD		PVD	CVD	PVD		PVD					
	(2) Grade code	T9	T1	G6	X9	L6	T1	G6	X9					
(1) Geometry code	ISO Reference	PHS740	PHP920	PH7740	PHH930	PH5320	PHP920	PH7740	PHH930	iC	S	I	R	F
1112225	LNXT 090404 PNER-MP	◈	◈	◈		◈	◈	◈		9,40	4,50	9,00	0,40	-
1112226	LNXT 090408 PNER-MP	◈	◈	◈		◈	◈	◈		9,40	4,50	9,00	0,80	-
NEW 1112868	LNXT 090404 PNER-LS				◈				◈	9,40	4,50	9,00	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

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) ← Wear Resistance				Toughness →	Feed fz (mm/t)	
				PH5320	PHP920	PHH930	PHS740	PH7740	LNXT 09... MP	LNXT 09... LS
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	0,08-025
	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/Dc=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.

PDF VIDEO

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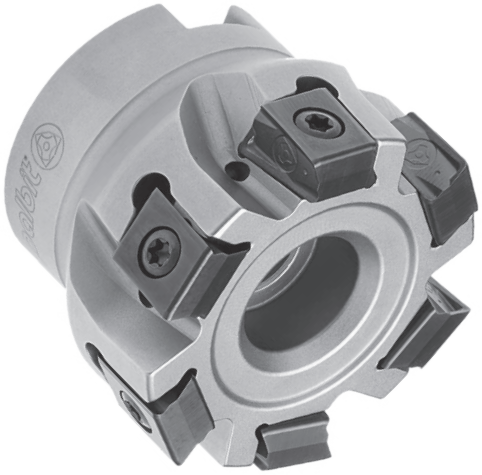
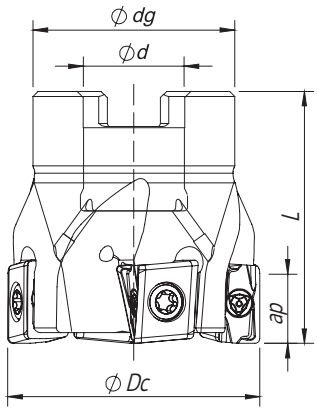
palbit SINCE 1916

TGPLUS 90190





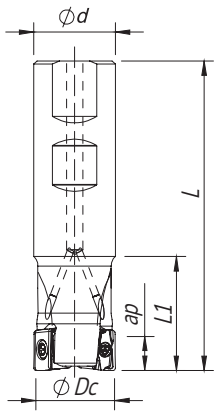
Arbor Mounting

K_r=90° | γ_p=-4°

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications		Insert	Stock
			ØDc	Ød	Ødg	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° | γ_p = -4°

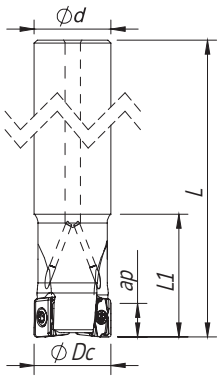
Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications	Insert	Stock
			ØDc	Ød	L	L1		Ap max (mm)		
181118300	025W90190-02-04-025095	2	25	25	95	45	0,29	11	LNXT 1306...	
181109800	032W90190-03-04-032110	3	32	32	110	50	0,55	11	LNXT 1306...	
181118400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

$K_r = 90°$ | $\gamma_p = -4°$



Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications	Insert	Stock
			ØDc	Ød	L	L1		Ap max (mm)		
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

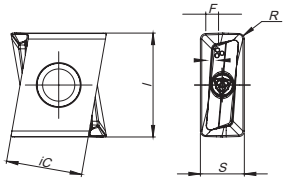
◯ Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

LNXT 1306... | Inserts | Pastilhas | Plaquitas

LNXT-MP

PHP
NEW
GRADE

LNXT-MP



		P			M	K			Dimensions Dimensões Dimensiones (mm)				
		CVD	PVD		PVD	CVD	PVD						
	(2) Grade code	T9	T1	G6	G6	L6	T1	G6					
(1) Geometry code	ISO Reference	PHS740	PHP920	PH7740	PH7740	PH5320	PHP920	PH7740	iC	S	l	R	F
1112242	LNXT 130604 PNER-MP	◬	◬	◬	◬	◬	◬	◬	9,80	6,80	13,00	0,40	0,90
1112243	LNXT 130608 PNER-MP	◬	◬	◬	◬	◬	◬	◬	9,80	6,80	13,00	0,80	0,90

◬ 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

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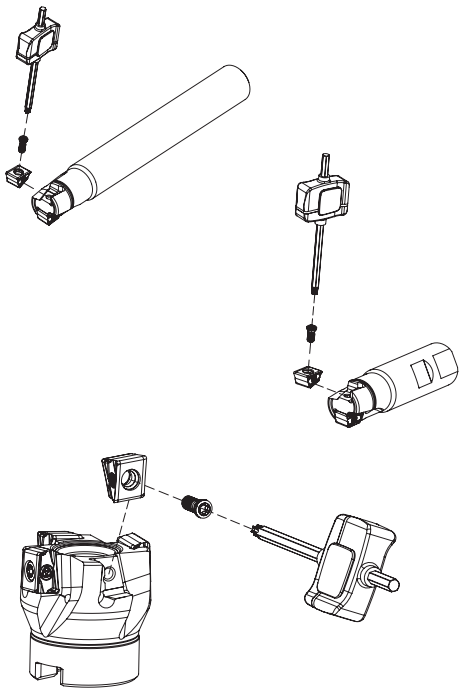
palbit TOOLING SOLUTIONS EXPERTS SINCE 1916

TGPLUS 90190

SPARE PARTS | Acessórios | Repuestos

Cutter ØDc	Insert Screw	Key (Torx)	Key (Torx - Nm) (Order separately)	Torque Value	Screw (Order separately)	DIN 6368 Wrench
E90190 - 25	P0400900	XT15	DT1530	3,0	-	-
E90190 - 32-40	P0401200	XT15	DT1530	3,0	-	-
W90190 - 25	P0400900	XT15	DT1530	3,0	-	-
W90190 - 32-40	P0401200	XT15	DT1530	3,0	-	-
A90190 - 40-63	P0401200	XT15	DT1530	3,0	-	-
A90190 - 80	P0401200	XT15	DT1530	3,0	J0123510	SD6368-12
A90190 - 100	P0401200	XT15	DT1530	3,0	J0164110	SD6368-16
A90190 -125	P0401200	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 selecção 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	✓	✓		✓

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 →	Feed fz (mm/t)
				PH5320	PHP920	PHS740	PH7740	LNXT 13... MP
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 $a_e/Dc=70\%$.

(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.

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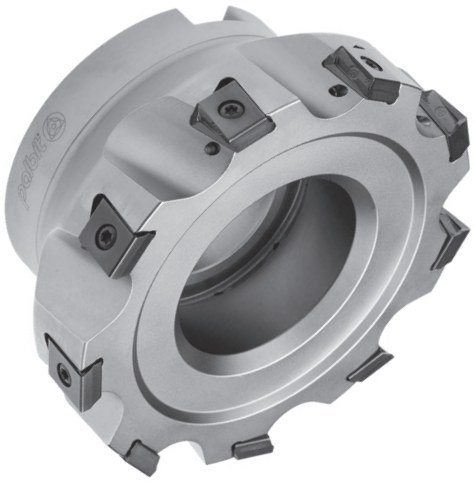
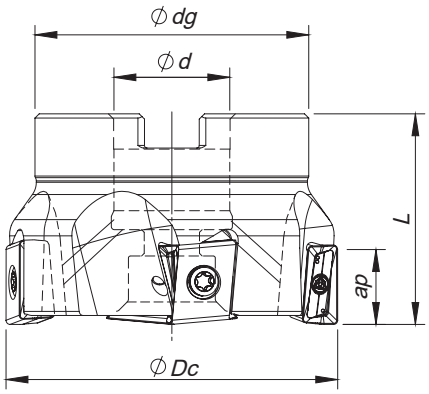
TGPLUS 90390





Arbor Mounting

K_r=90° | γ_p=-5°

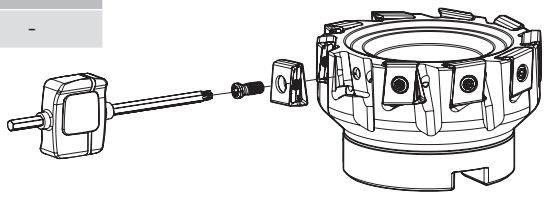
Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	Ød	Ødg	L		Arbor Type	Ap max (mm)		
181069200	050A90390-05-05-022040	5	50	22	42	40	0,315	A	14,0	LNXT 1506...	◈
181066400	063A90390-05-05-022040	5	63	22	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 | Acessórios | Repuestos

Cutter ØDc	Insert Screw	Key (Torx)	Order separately Key (Torx - Nm)	Torque Value	Order separately 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.



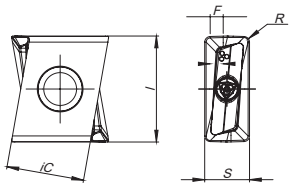
LNXT 1506... | Inserts | Pastilhas | Plaquitas

LNXT-HP

LNXT-MP
(PHP grade)

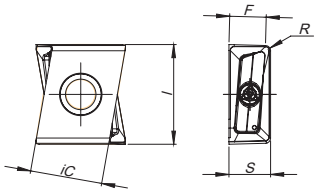
PHP
NEW
GRADE

LNXT - MP | HP



LNXT-W

LNXT-W



		P					K						Dimensions Dimensões Dimensiones (mm)				
		CVD	PVD				CVD		PVD								
	(2) Grade code	T9	G1	G4	T1	G6	L5	L9	G1	G4	T1	G6					
(1) Geometry code	ISO Reference	PH5740	PH7910	PH7920	PHP920	PH7740	PH5705	PH5740	PH7910	PH7920	PHP920	PH7740	iC	S	l	R	F
1111313	LNXT 150608 PNER-MP	◉	◉	◉	○	◉	◉	◉	◉	◉	○	◉	11,00	6,35	15,00	0,80	1,80
1111590	LNXT 150612 PNER-MP			◉	○	◉	◉	◉		◉	○	◉	11,00	6,35	15,00	1,20	1,80
1111591	LNXT 150608 PNSR-HP			○		◉				○		◉	11,00	6,35	15,00	0,80	1,80
1111524	LNXT 150608 PNER-W		◉				○		◉				11,00	6,35	15,20	0,80	5,50

○ 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

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

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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	125-220	0,10-0,30	0,10-0,30	0,10-0,35
	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/Dc=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

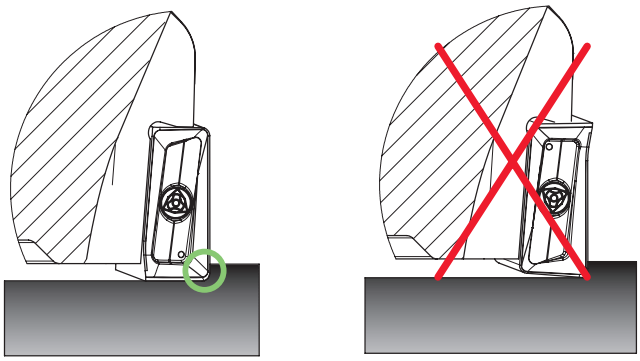
ISO	PSM	Material	HB (Brinell)	Chip-Breaker Application	
				1st choise	Dificult Operations
P	1	Unalloyed Steel	125-220	LNXT 15... MP	LNXT 15... HP
	2	Low-Alloyed Steel	220-280	LNXT 15... MP	LNXT 15... HP
	3	High-Alloyed Steel	280-380	LNXT 15... MP	LNXT 15... HP
K	7	Malleable Cast Iron	130-230	LNXT 15... 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

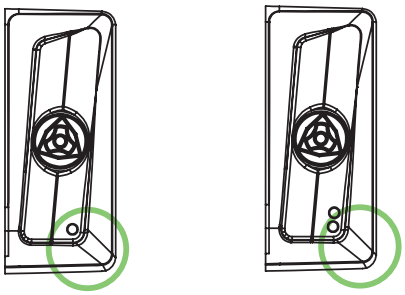
Rec. Cutting Conditions
- F_W at least 40% larger than f_n (f_n-f_2xZ);
- Axial depth of cut is 0,5 - 0,8mm.

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.

PDF

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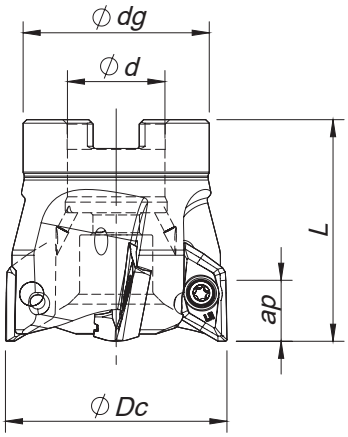


Arbor Mounting

K_r=90° | γ_p=+11°

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications			Insert radius Raio da pastilha Rayo del Inserto	Stock
			ØDc	Ød	Ødg	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	◈

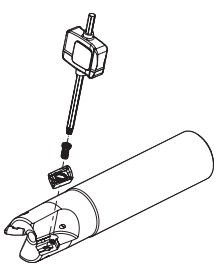
◈ Stock item | Produto de stock | Itens de stock ○ Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

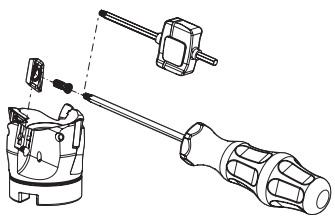
Note: Type A cutters can only assemble inserts with a radius between 0,4 and 3,2. Type B cutters can only assemble inserts with a radius between 4,0 and 5,0.

SPARE PARTS | Acessórios | Repuestos

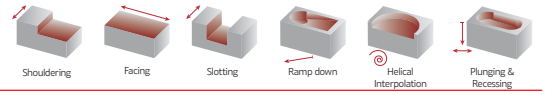
Order separately

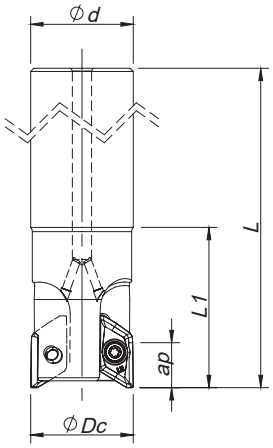
Cutter ØDc	Insert Screw	Key (Torx)	Key (Torx - Nm)	Torque Value
A76090- 40-80	P0400900	XT15	DT1530	3,0
A76090 - 100	P0400900	PT15	DT1530	3,0
E76090 - 20-25	P0400803	XT15	DT1530	3,0
E76090 - 32-40	P0400900	XT15	DT1530	3,0





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

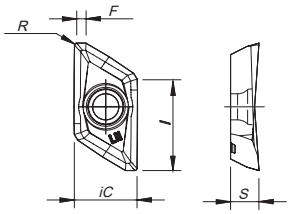
κ_r=90° | γ_p=+6° ~+11°

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	1	20	20	150	60	0,2	A	15,0	40 000	0,4~3,2	◈
181095100	025E76090-02-09-025180-A	2	25	25	180	90	0,4	A	15,0	38 000	0,4~3,2	◈
181095200	032E76090-02-09-032200-A	2	32	32	200	120	0,7	A	15,0	33 000	0,4~3,2	◈
181095300	040E76090-03-11-032250-A	3	40	32	250	65	1,4	A	15,0	29 000	0,4~3,2	◈
181095400	020E76090-01-06-020150-B	1	20	20	150	60	0,2	B	15,0	40 000	4,0~5,0	◈
181095500	025E76090-02-09-025180-B	2	25	25	180	90	0,4	B	15,0	38 000	4,0~5,0	◈
181095600	032E76090-02-09-032200-B	2	32	32	200	120	0,7	B	15,0	33 000	4,0~5,0	○
181095700	040E76090-03-11-032250-B	3	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 | Plaquitas



(1) Geometry code	ISO Reference	N / UNC / (2) Grade code 10 / PH0910	Dimensions Dimensões Dimensiones (mm) iC	S	I	R	F	Cutter Type
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

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

SHOULDERING

ISO	PSM	Material	HB (Brinell)	Vc (m/min) PH0910	Width of Cut ae (mm)	Depth of Cut ap (mm)	Feed fz(mm/t)
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

SLOTTING

ISO	PSM	Material	HB (Brinell)	Vc (m/min) PH0910	Width of Cut ae (mm)	Depth of Cut ap (mm)	Feed fz(mm/t)
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/Dc=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:

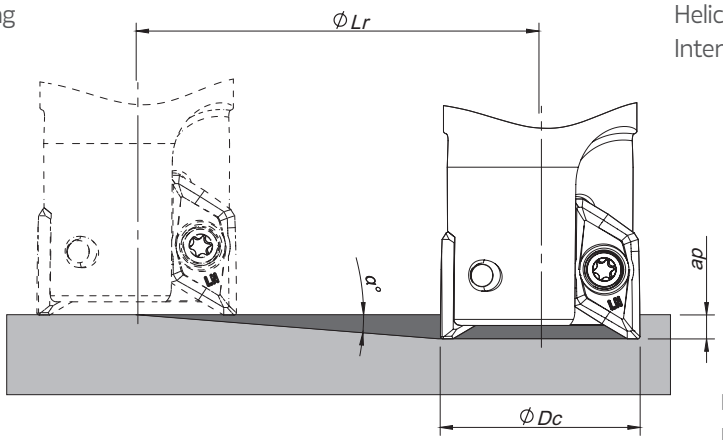
ØDc	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
RPM (min^{-1})	15000	12000	9500	8500	7600	6800	6000	5400

- 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.

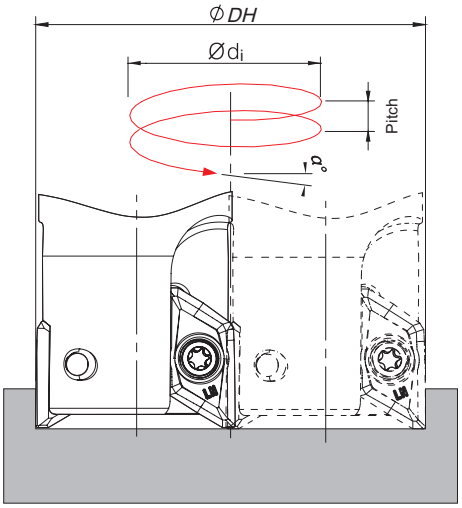
RAMPING AND HELICAL INTERPOLATION

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

Ramping



Helical Interpolation



Blind hole
Flat bottom

Ødi = ØDH - ØDc

Cutter Type	ØDc	Ramping			Helical Interpolation		
					Diameter for Blind Hole, Flat Bottom Face (1)		Max Pitch/Rev.
		Max Ramp a°	Max a_p	Min Lr	ØDHmin	ØDHmax	
A	20	23	15,0	35,3	36,2 -	- 38,4	21,6 24,5
	25	21	15,0	39,1	46,2 -	- 48,4	25,6 28,2
	32	15	15,0	56,0	60,2 -	- 62,4	23,7 25,6
	40	10	15,0	85,1	76,2 -	- 78,4	20,0 21,3
	50	8	15,0	106,7	96,2 -	- 98,4	20,4 21,4
	63	6	15,0	142,7	122,2 -	- 124,4	19,5 20,3
	80	4	15,0	214,5	156,2 -	- 158,4	16,7 17,2
	100	2,5	15,0	343,6	196,2 -	- 198,4	13,2 13,5
B	20	20	13,5	37,1	36,2 -	- 38,4	18,5 21,0
	25	18,5	13,5	40,3	46,2 -	- 48,4	22,3 24,6
	32	13,5	13,5	56,2	60,2 -	- 62,4	21,3 22,9
	40	8,5	13,5	90,3	76,2 -	- 78,4	17,0 18,0
	50	7	13,5	109,9	96,2 -	- 98,4	17,8 18,7
	63	5,5	13,5	140,2	122,2 -	- 124,4	17,9 18,6
	80	3,5	13,5	220,7	156,2 -	- 158,4	14,6 15,1
	100	2,5	13,5	309,2	196,2 -	- 198,4	13,2 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: ØDHmin = 2 x (ØDc - (R corner radius + F width of edge wiper)
- Maximum Diameter: ØDHmax = 2 x (ØDc - R corner radius)

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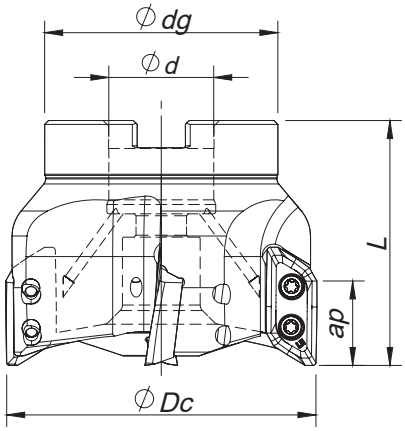


Arbor Mounting

K_r=90° | γ_p=+7°

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications			Insert radius Raio da pastilha Rayo del Inserto	Stock
			ØDc	Ød	Ødg	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	◉

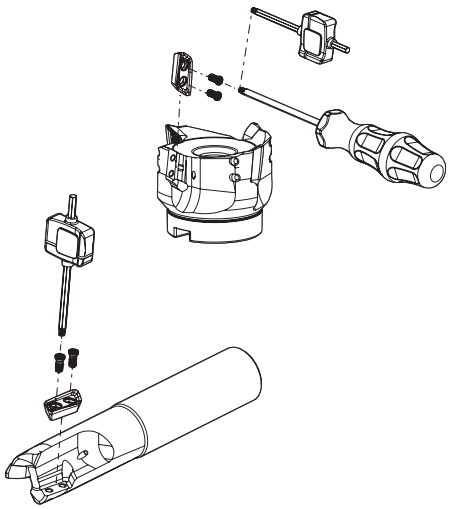
◉ Stock item | Produto de stock | Itens de stock ○ Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

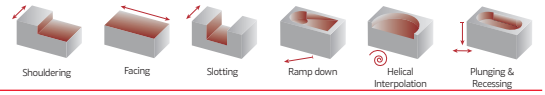
Note: Type A cutters can only assemble inserts with a radius between 0,4 and 3,2. Type B cutters can only assemble inserts with a radius between 4,0 and 5,0.

SPARE PARTS | Acessórios | Repuestos

Cutter ØDc	Insert Screw	Key (Torx)	Order separately Key (Torx - Nm)	Torque Value	Order separately 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	-	-

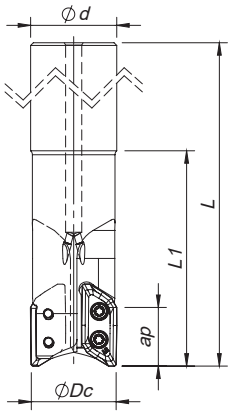
Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
Check the procedures for the clamping screws on the page A-241.





Cylindrical Shank

K_r=90° | γ_p=+6°

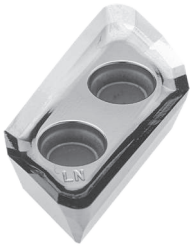


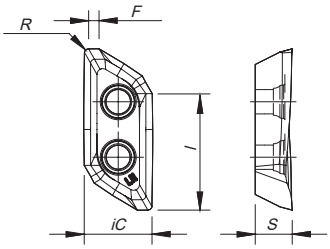
Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications			Insert radius Raio da pastilha Rayo del Inserto	Stock
			ØDc	Ød	L	L1		Cutter Type	Max ap (mm)	rpm max		
181069800	032E77090-02-06-032170-A	2	32	32	170	80	0,8	A	21.5	41 000	0,8~3,2	◉
181093900	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	(2) Grade code	N / UNC / 10 / PH0910	Dimensions Dimensões Dimensiones (mm)					Cutter Type
	ISO Reference		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

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ALUPRO 77090

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

SHOULDERING

ISO	PSM	Material	HB (Brinell)	Vc (m/min) PH0910	Width of Cut ae (mm)	Depth of Cut ap (mm)	Feed fz(mm/t)
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

SLOTTING

ISO	PSM	Material	HB (Brinell)	Vc (m/min) PH0910	Width of Cut ae (mm)	Depth of Cut ap (mm)	Feed fz(mm/t)
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/Dc=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).

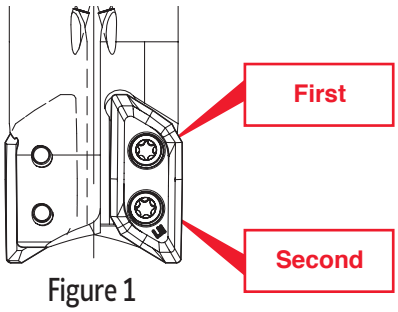


Figure 1

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:

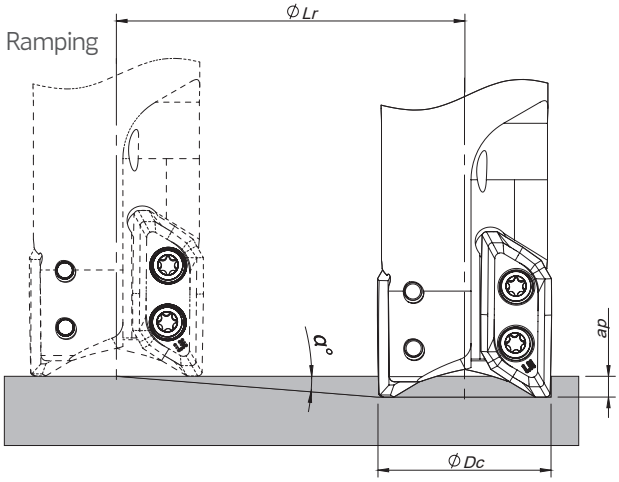
ØDc	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100	Ø125
RPM (min^{-1})	9500	7600	6000	4800	3800	3000	2400

- 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.

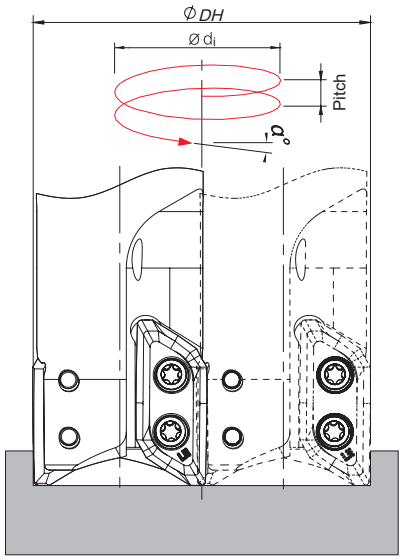
RAMPING AND HELICAL INTERPOLATION

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

Ramping



Helical Interpolation



Blind hole
Flat bottom

Ødi = ØDH - ØDc

Cutter Type	ØDc	Ramping			Helical Interpolation		
					Diameter for Blind Hole, Flat Bottom Face (1)		Max Pitch/Rev.
		Max Ramp a°	Max a_p	Min Lr	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: ØDHmin = 2 x (ØDc - (R corner radius + F width of edge wiper)
- Maximum Diameter: ØDHmax = 2 x (ØDc - R corner radius)

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Technical Data page A - 242

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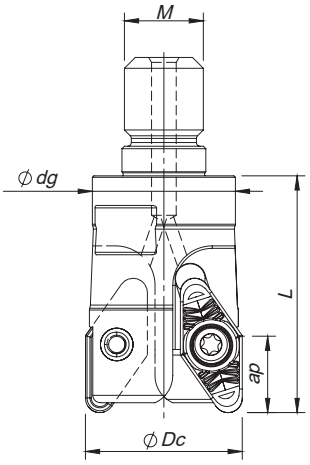


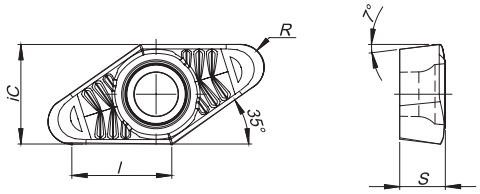
Threaded Coupling

K_r=90° | γ_p=0°

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications	Insert Pastilha Inserto	Stock
			ØDc	Ød/M	Ødg	L		Ap 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 pagina A-8)

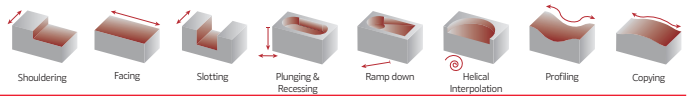
VCGX 220530 ‖ Inserts | Pastilhas | Plaquitas



		N	Dimensions Dimensões Dimensiones (mm)			
		UNC				
	(2) Grade code	10				
(1) Geometry code	ISO Reference	PH0910	iC	S	l	R
1121907	VCGX 220530 LN	◈	12,70	5,60	12,70	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 pagina A-8)

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

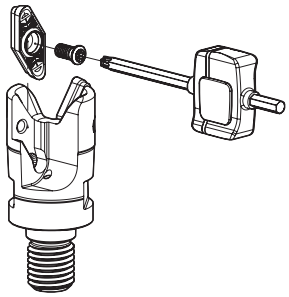


SPARE PARTS | Acessórios | Repuestos

Order separately

Cutter ØDc	Insert Screw	Key (Torx)	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

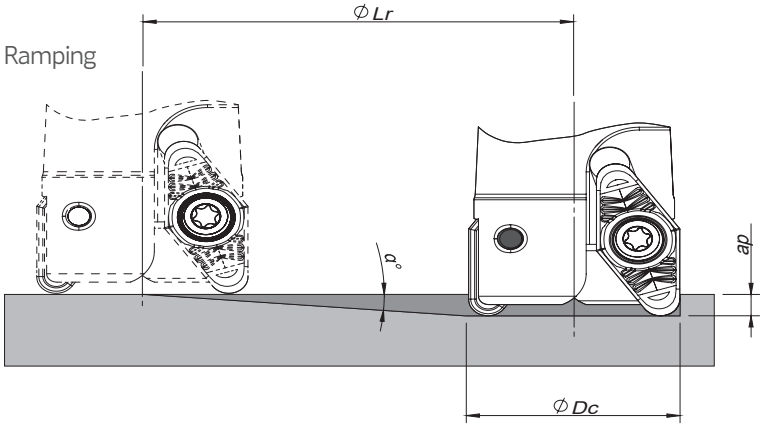
(Note 1) Cutting conditions a_e/Dc=70%.
(Note 2) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:
- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

(Note 3) Use internal coolant supply

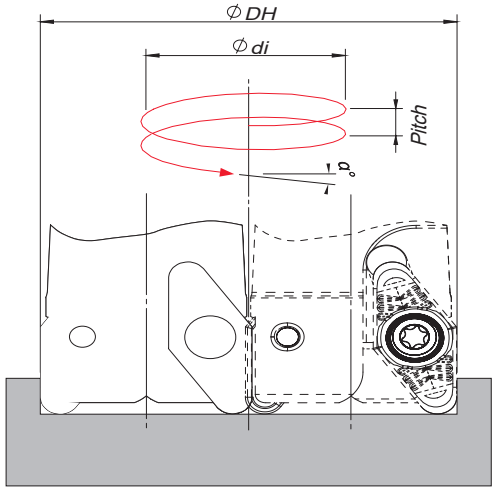
RAMPING AND HELICAL INTERPOLATION

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

Ramping



Helical Interpolation



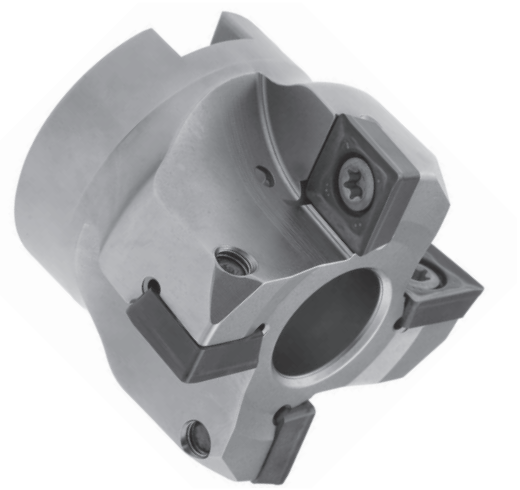
Blind hole
Flat bottom

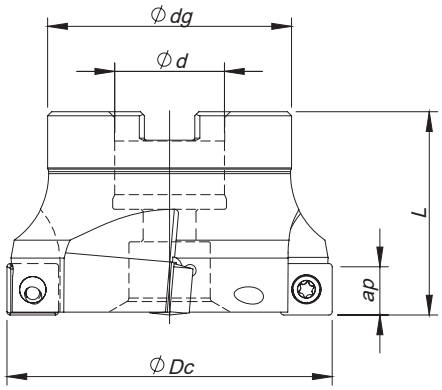
Ødi = ØDH - ØDc

ØDc	Ramping			Helical Interpolation		
	Max Ramp a°	Max a_p	Min Lr	ØDHmin	ØDHmax	Max Pitch/Rev.
32	6,8	15,0	25,4	53,0 -	- 62,0	7,0 11,0

Note: During helical interpolation do not exceed max a_p.

LINEPRO 06290 NEW





Arbor Mounting

κ_r=90° | γ_p=+6°

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	Ød	Ødg	L		Arbor Type	Ap max (mm)		
181167700	040A06290-03-06-016040	3	40	16	39	40	0,2	A	11	SP... 1204	◈
181167800	050A06290-04-06-022040	4	50	22	49	40	0,35	A	11	SP... 1204	◈
181167900	063A06290-05-06-027050	5	63	27	60	50	0,7	A	11	SP... 1204	◈
181168000	080A06290-06-06-027050	6	80	27	60	50	1,15	A	11	SP... 1204	◈
181168100	100A06290-08-06-032050	8	100	32	80	50	1,75	A	11	SP... 1204	◈
181168200	125A06290-08-06-040063	8	125	40	96	63	3,05	B	11	SP... 1204	◈
181065600	160A06290-10-06-U040063	10	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

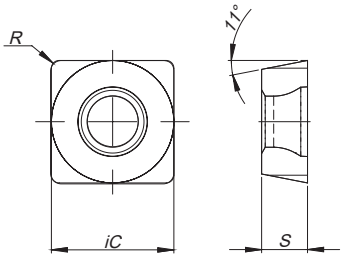
SPG(M)X-MP NEW

SPG(M)X-MS NEW

PHH NEW GRADE

PHP NEW GRADE

SPG(M)X-MP | MS



(1) Geometry code	ISO Reference	P PVD (2) Grade code T1 PHP920	M PVD X9 PHH930	K PVD T1 PHP920	S PVD X9 PHH930	Dimensions Dimensões Dimensiones (mm) iC	S	R
1113002	SPGX 120408 PDSR-MP	◈		◈		12,70	4,76	0,80
1113003	SPGX 120408 PDSR-MS		◈		◈	12,70	4,76	0,80
1112916	SPMX 120408 PDSR-MP	◈		◈		12,70	4,76	0,80
1112999	SPMX 120408 PDSR-MS		◈		◈	12,70	4,76	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

Note: It is possible to use other inserts - Page A - 50

SPMT 120408-MP	SPMW 120408
	

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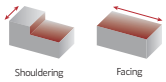
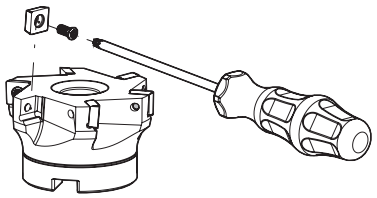


SPARE PARTS | Acessórios | Repuestos

Order separately

Cutter ØDc	Insert Screw	Key (Torx)	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

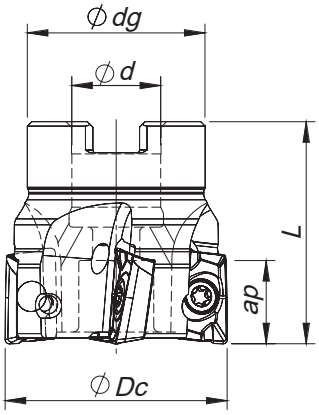
ISO	PSM	Material	HB (Brinell)	Vc (m/min) ← Wear Resistance	Vc (m/min) Toughness →	Feed fz (mm/t)	
				PHP920	PHH930	SPG(M)X... MP	SPM(M)X ...MS
P	1	Unalloyed Steel	125-220	180-250	-	0,08-0,20	-
	2	Low-Alloyed Steel	220-280	170-210	-	0,08-0,20	-
	3	High-Alloyed Steel	280-380	160-200	-	0,08-0,20	-
M	4	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 ajusted 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 choise	Dificult 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



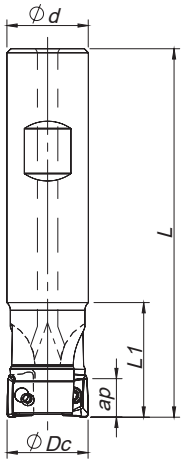
Arbor Mounting

K_r=90° | γ_p=+9°

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	Ød	Ødg	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° | γ_p=+7° ~+9°

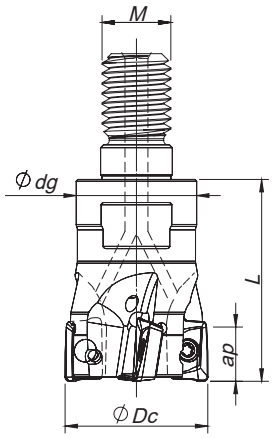
Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications	Insert Pastilha Inserto	Stock
			ØDc	Ød	L	L1		Ap max (mm)		
181041300	016W17090-02-07-016085	2	16	16	85	26	0,110	9,0	AP... 1003...	◎
181031700	016W17090-02-07-016150	2	16	16	150	26	0,210	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

κ_r=90° | γ_p=+7° ~+9°



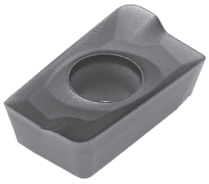
Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications	Insert Pastilha Inserto	Stock
			ØDc	ØM	Ødg	L		Ap max (mm)		
181015100	016R17090-02-07-M08025	2	16	M8	13	25	0,030	9,0	AP... 1003...	◈
181015200	020R17090-03-09-M10030	3	20	M10	18	30	0,058	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)

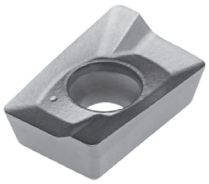
AP... 1003... | Inserts | Pastilhas | Plaquitas

APET - LN

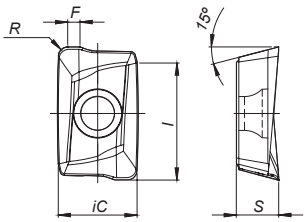
APKT - X



APKT - X1



APET-LN | APKT-X | APKT-X1



		P		M	K		N	Dimensions Dimensões Dimensiones (mm)				
		PVD		PVD	PVD		UNC					
	(2) Grade code	68	66	66	68	66	10					
(1) Geometry code	ISO Reference	PH6920	PH6930	PH6930	PH6920	PH6930	PH0910	iC	S	l	R	F
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

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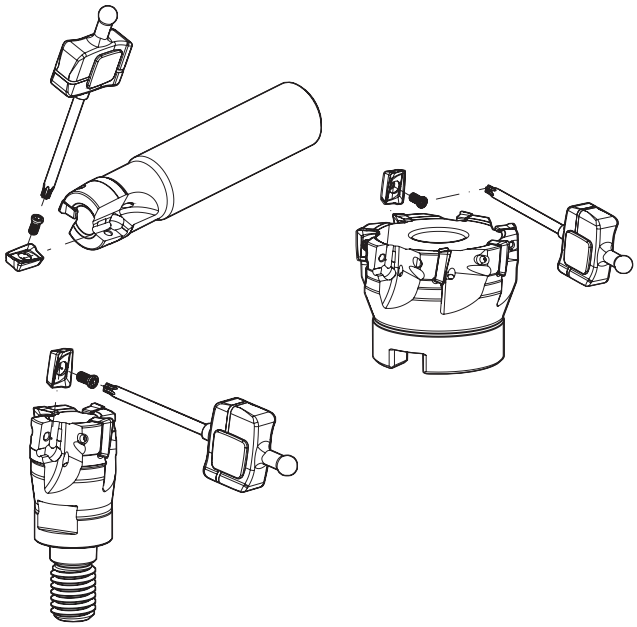
palbit TOOLING SOLUTIONS EXPERTS SINCE 1916

LINEPRO 17090

SPARE PARTS | Acessórios | Repuestos

Cutter ØDc	Insert Screw	Key (Torx)	Key (Torx - Nm) (Order separately)	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 selecção 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

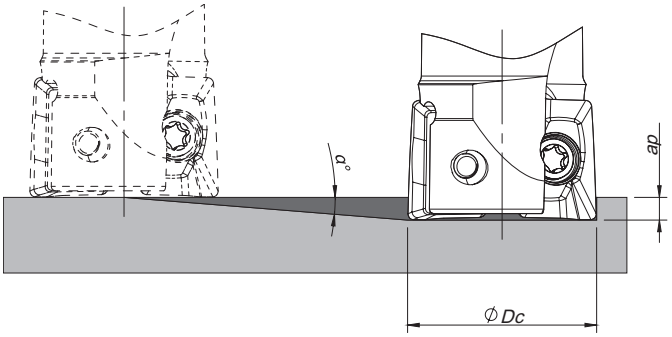
CHIP-BREAKER SELECTION GUIDE | Guia para aplicações do quebra-aparas | Guía para aplicación del rompevirutas

ISO	PSM	Material	HB (Brinell)	Chip-Breaker Application	
				1st choise	Dificult 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	-

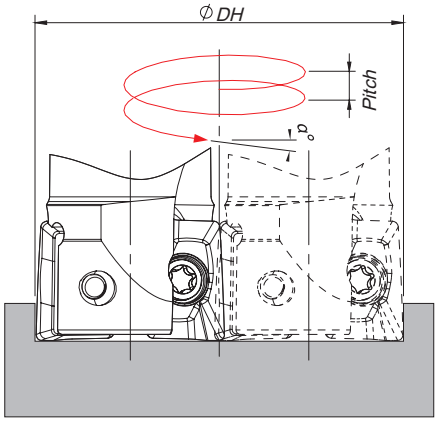
RAMPING AND HELICAL INTERPOLATION

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

Ramping



Helical Interpolation



Ødi = ØDH - ØDc

ØDc	Ramping			Helical Interpolation		
				Diameter for Blind Hole, Flat Bottom Face (1)		Max Pitch/Rev.
	Max Ramp a°	Max a_p	Min Lr	ØDHmin	ØDHmax	
16	1,3	9,0	396,6	29,2 -	- 31,0	0,9 1,1
20	0,9	9,0	572,9	37,2 -	- 39,0	0,8 0,9
25	0,6	9,0	859,4	47,2 -	- 49,0	0,7 0,8
40	0,4	9,0	1289,1	77,2 -	- 79,0	0,8 0,9
50	0,25	9,0	2062,6	97,2 -	- 99,0	0,6 0,7
63	0,2	9,0	2578,3	123,2 -	- 125,0	0,7 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: ØDHmin = 2 x (ØDc - (R corner radius + F width of edge wiper))
- Maximum Diameter: ØDHmax = 2 x (ØDc - R corner radius)

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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/Dc=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
Shouldering	<50%	>8%	5,0-6,0
	≤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 ap 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

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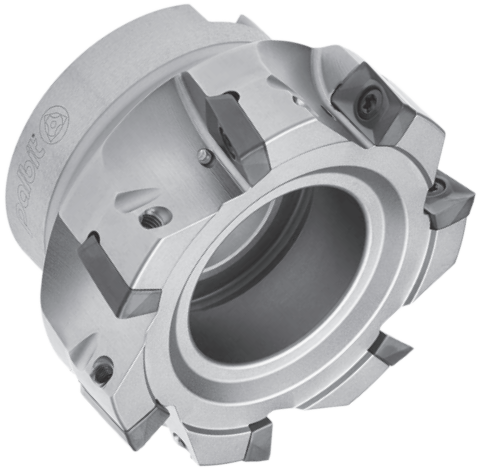
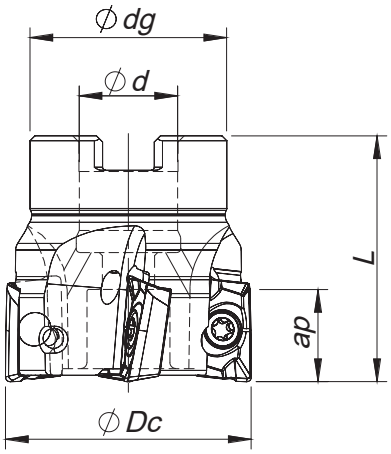
LINEPRO 18090





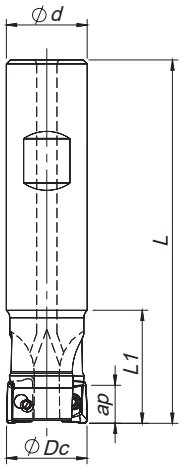
Arbor Mounting

K_r=90° | γ_p=+8° ~+10°

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	Ød	Ødg	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 pagina A-8)



Weldon Shank

K_r=90° | γ_p=+6° ~+8°

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications	Insert Pastilha Inserto	Stock
			ØDc	Ød	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	

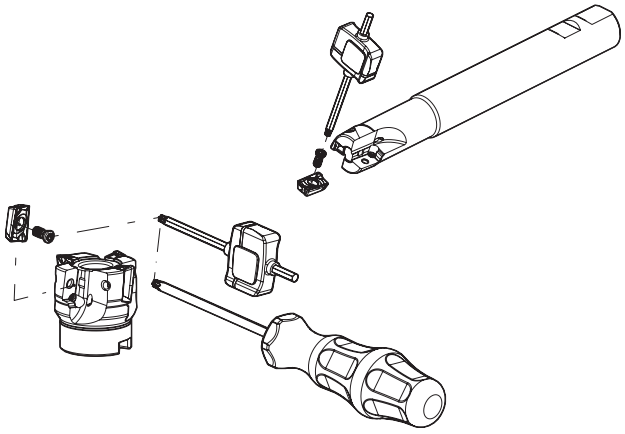
Stock item | Produto de stock | Itens de stock

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

SPARE PARTS | Acessórios | Repuestos

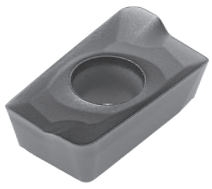
Cutter ØDc	Insert Screw	Key (Torx)	Order separately Key (Torx - Nm)	Torque Value
				Nm
W18090 - 25-40	P0400900	XT15	DT1530	3,0
A18090 - 40-80	P0400900	XT15	DT1530	3,0
A18090 - 100-125	P0400900	PT15	DT1530	3,0

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 | Plaquitas

APKT - X

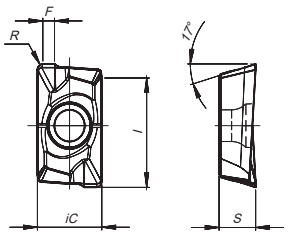


APKT - X1

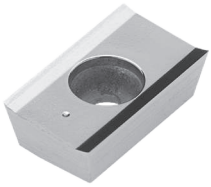
APKT - X2

APKT - LN

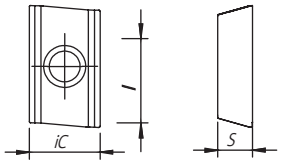
APKT-X | X1 | X2 | LN



APHT - LN



APHT-LN



		P				M		K				N	Dimensions Dimensões Dimensiones (mm)				
		PVD				PVD		PVD				UNC					
	(2) Grade code	68	G4	66	P3	66	P3	68	G4	66	P3	10					
(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 pagina A-9)

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

*For inserts with radius above 2.0 mm, the cutter must be adjusted

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palbit TOOLING SOLUTIONS EXPERTS SINCE 1916

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	✓		

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	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	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/Dc=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.

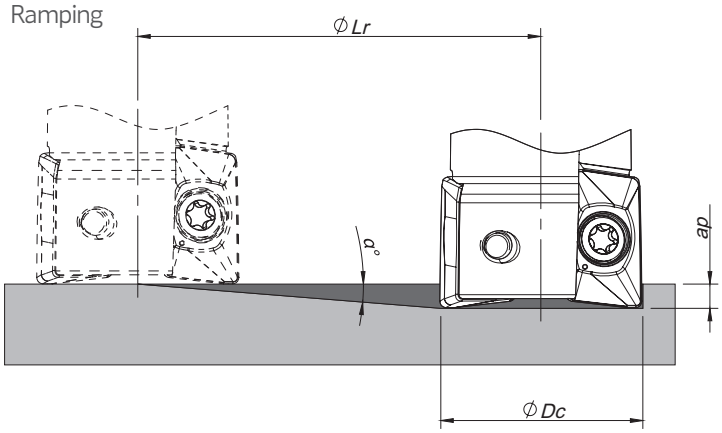
CHIP-BREAKER SELECTION GUIDE | Guia para aplicações do quebra-aparas | Guía para aplicación del rompevirutas

ISO	PSM	Material	HB (Brinell)	Chip-Breaker Application	
				1st choise	Dificult 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

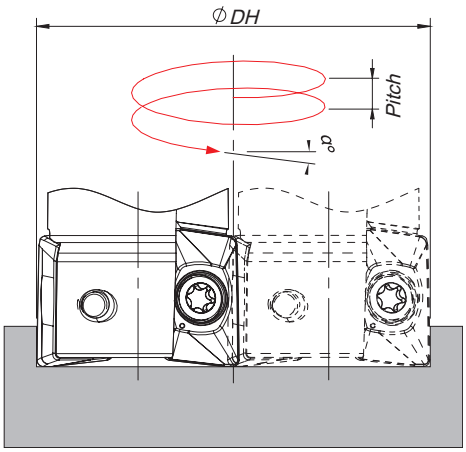
RAMPING AND HELICAL INTERPOLATION

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

Ramping



Helical Interpolation



Blind hole
Flat bottom

Ødi = ØDH - ØDc

ØDc	Ramping			Helical Interpolation		
				Diameter for Blind Hole, Flat Bottom Face (1)		Max Pitch/Rev.
	Max Ramp a°	Max a_p	Min Lr	ØDHmin	ØDHmax	
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 ØDHmin and ØDHmax use the equation below:
- Minimum Diameter: ØDHmin = 2 x (ØDc - (R corner radius + F width of edge wiper))
- Maximum Diameter: ØDHmax = 2 x (ØDc - R corner radius)

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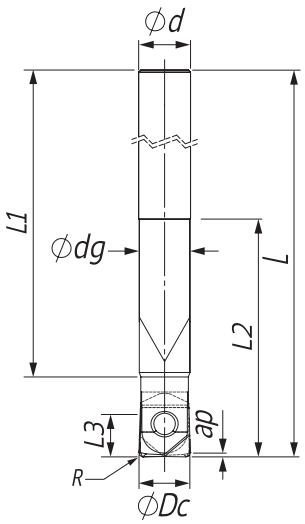
W-PRO 62090

NEW



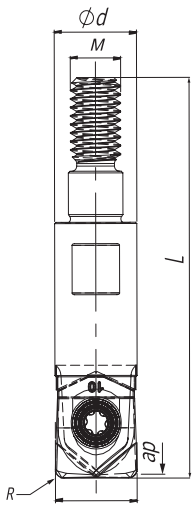
Cylindrical Carbide Shank

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	2	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	2	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	2	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	2	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	2	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	2	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	2	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	2	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	2	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	2	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)



Threaded Steel Shank

Tolerance R	Runout Tolerance
± 0,015	R 0,05

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	2	10	5	6,5	30	M6	0,011	5	3,0	1,0	1,0	WCR 10.../WCL 10...	◎
181167100	012R62090-02-UM06030	2	12	6	6,5	30	M6	0,016	6	4,0	1,2	1,2	WCR 12.../WCL 12...	◎
181167200	016R62090-02-UM08030	2	16	8	8,5	30	M8	0,028	8	5,0	1,6	1,6	WCR 16.../WCL 16...	◎
181167300	020R62090-02-UM10035	2	20	10	10,5	35	M10	0,058	10	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)

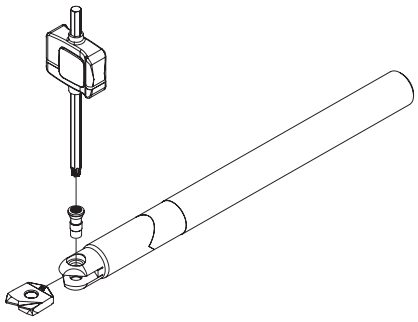
NEW

Profiling Copying Shouldering Facing

SPARE PARTS Acessórios | Repuestos

Order separately

Cutter ØDc	Insert Screw	Key (Torx)	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

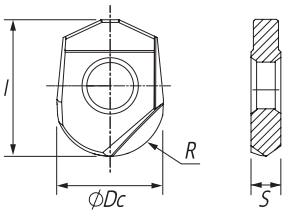


WCR | Inserts | Pastilhas | Plaquitas

WCR NEW

PHH NEW GRADE

WCR



(1) Geometry code	ISO Reference	P PVD X4 PHH603	P PVD X6 PHH910	M PVD X4 PHH603	M PVD X6 PHH910	K PVD X4 PHH603	K PVD X6 PHH910	H PVD X4 PHH603	H PVD X6 PHH910	Dimensions Dimensões Dimensiones (mm) l	R	S	Dc
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

PDF VIDEO

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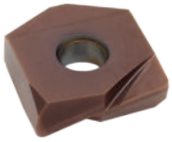
palbit TOOLING SOLUTIONS EXPERTS SINCE 1916

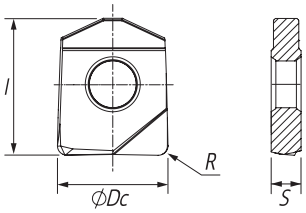
WCL | Inserts | Pastilhas | Plaquitas

WCL NEW



PHH NEW GRADE

WCL

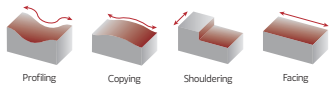


(1) Geometry code	ISO Reference	P PVD (2) Grade code X4 PHH603	P PVD X6 PHH910	M PVD X4 PHH603	M PVD X6 PHH910	K PVD X4 PHH603	K PVD X6 PHH910	H PVD X4 PHH603	H PVD X6 PHH910	Dimensions Dimensões Dimensiones (mm) l	R	S	Dc
1112879	WCL-08 R0.3	●	○	●	○	●	○	○	●	9,7	0,3	2,1	8
1112880	WCL-08 R0.5	●	○	●	○	●	○	○	●	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 pagina A-9)

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

NEW



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) ← Wear Resistance Toughness → PHH603	PHH910	Feed fz (mm/t) 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

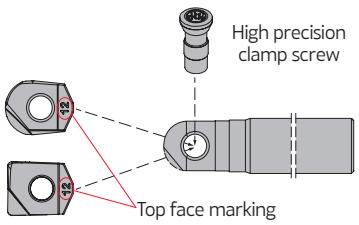
PROCEDURES FOR CLAMPING SCREWS | Procedimentos para parafusos de aperto | Procedimientos para sujetar tornillos

1. Check the insert seat.
Before assembly cutter it is important to ensure that the insert seat has not been damaged during machining or handling.

2. Clean the insert seat.
Make sure that the insert seat is free from dust or chips from previous machining. If necessary, clean the insert seat with pressurised air.

3. Position the insert.
Position the insert with the top face marking in the direction of screw placement and couple the insert into the cutter.

4. Lubricate the insert screw.
Apply sufficient screw lubrication to prevent seizure. Lubricant should be applied in small quantity to the screw threads.



5. Always use a torque wrench to ensure that screws are correctly tightened (please confirm torque data). Excessive torque will negatively affect the performance of the tool and can cause screw and insert breakage. Unsufficient torque leads to insert movement, vibration and degrade the cutting result. Dedicated adjustable torque wrench can be ordered separately. Please do not press down the insert during tightening process.

Note: Always replace worn or damaged screws.

CAUTION	To avoid affecting tolerances do not tighten the screw without assembling the insert in the toolholder.

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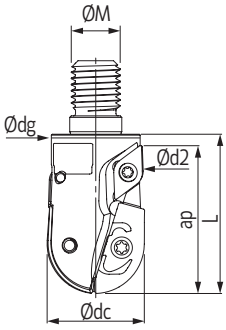
BALLPRO 93090

NEW



Threaded Coupling

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)					Specifications	Kg	Insert	Insert 2	Stock
			ØDc	ØDc2	Ød/M	Ødg	L	Ap max (mm)				
181125000	032R63090-02-M16052	2	32	31,9	M16	29	52	48	0,168	XPGT 3206	DCMW 11T3	◈

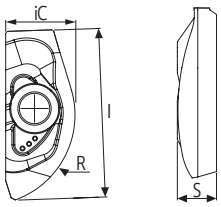
◈ Stock item | Produto de stock | Itens de stock

◯ 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



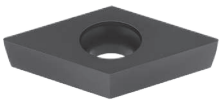
		P		M	K	S	Dimensions (mm)			
	(2) Grade code	G4	G6	G6	G4	G6				
(1) Geometry code	ISO Reference	PH7920	PH7740	PH7740	PH7920	PH7740	iC	S	l	R
1112485	XPGT 3206-MP	◈	◈	◈	◈	◈	12,576	7	30,6	16

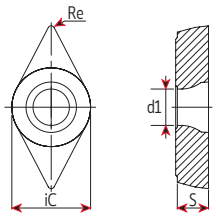
◈ First choice | Primeira opção | 1ª opción ◈ Stock item | Produto de stock | Itens de stock ◯ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

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

DCMW 11T3

DCMW





	(2) Grade code	L5	Dimensions (mm)			
(1) Geometry code	ISO Reference	PH5705	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

NEW

Profiling Copying

SPARE PARTS | Acessórios | Repuestos

Order separately

Insert	Insert Screw	Key (Torx)	Key (Torx - Nm)	Torque Value
XPGT	P0501302	PT20	DT2050	5.0 Nm
DCMW	P0400900	XT15	DT1530	3.0 Nm

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	✓	✓
P	2	Low-Alloyed Steel	220-280	✓	✓
P	3	High-Alloyed Steel	280-380	✓	✓
M	4	SS - Ferritic / Martensitic	200-330		✓
M	5	SS - Austenitic	200-330		✓
M	6	SS - Austenitic-ferritic (Duplex)	230-260		✓
K	7	Malleable Cast Iron	130-230	✓	
K	8	Grey Cast Iron	180-245	✓	
K	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 recomendadas

ISO	PSM	Material	HB (Brinell)	Vc (m/min) ← Wear Resistance Toughness → PH7920	PH7740	Feed f_z (mm/t)
P	1	Unalloyed Steel	125-220	190-350	140-300	0,10-0,90
P	2	Low-Alloyed Steel	220-280	180-280	130-230	0,10-0,85
P	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
M	5	SS - Austenitic	200-330	-	100-200	0,05-0,80
M	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
K	8	Grey Cast Iron	180-245	220-320	-	0,15-0,90
K	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

PDF

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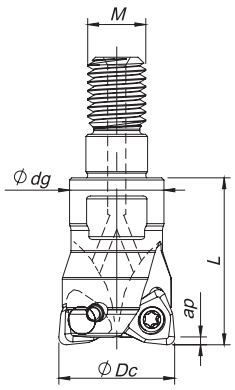
palbit TOOLING SOLUTIONS EXPERTS SINCE 1916

PLUS 49095

Threaded Coupling

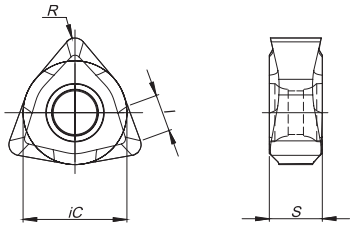
$K_r = 95°$ | $\gamma_p = -7°$



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 | Plaquitas



		P			K		H		Dimensions Dimensões Dimensiones (mm)			
		PVD			PVD		PVD					
	(2) Grade code	X5	T1	P4	X5	T1	X4	X5				
(1) Geometry code	ISO Reference	PHP910	PHP920	PHP930	PHP910	PHP920	PHH603	PHP910	iC	S	l	R
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)

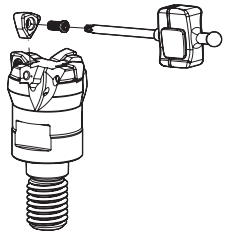
Insert order code = (1) Geometry Code + (2) Grade Code

SPARE PARTS | Acessórios | Repuestos

Order separately

Cutter ØDc	Insert Screw	Key (Torx)	Key (Torx - Nm)	Torque Value
			Nm	Nm
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	-	-

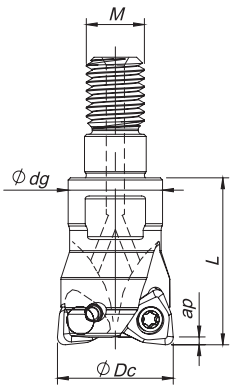
(Note 1) Grade PHH603 must be used only on finishing operations.

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.

PLUS 45095

Proprietary milling line



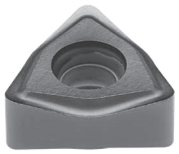
Threaded Coupling

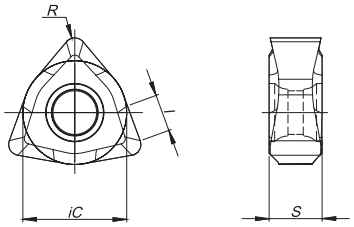
$\kappa_r = 95°$ | $\gamma_p = -6°$

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications	Insert Pastilha Inserto	Stock
			ØDc	M	Ødg	L		Ap 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 | Plaquitas





		P	K	H		Dimensions Dimensões Dimensiones (mm)			
		PVD	PVD	PVD					
	(2) Grade code	X5	X5	X4	X5				
(1) Geometry code	ISO Reference	PHP910	PHP910	PHH603	PHP910	iC	S	I	R
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)

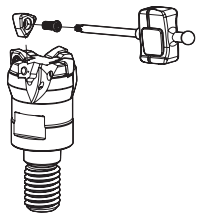
Insert order code = (1) Geometry Code + (2) Grade Code

SPARE PARTS | Acessórios | Repuestos

Order separately

Cutter ØDc	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 PH6103 must be used only on finishing operations.

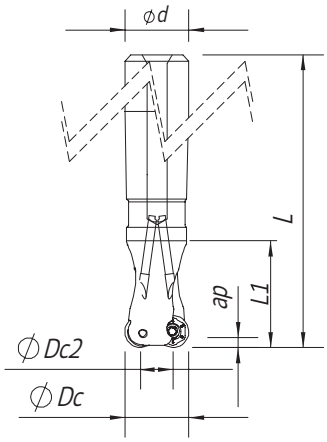
RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

ISO	PSM	Material	HB (Brinell)	Vc (m/min) ← Wear Resistance	Toughness →
				PHH603	PHP910
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.



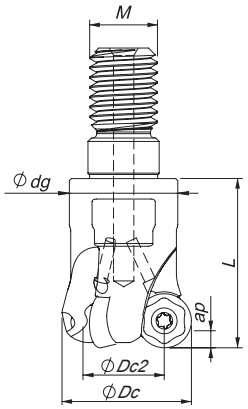
Cylindrical Shank

γ_p= +5°

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm) ØDc	ØDc2	Ød	L	L1	Kg	Specifications Ap max (mm)	Insert Pastilha Inserto	Stock
					33590						
181122500	016E33590-02-04-016160	2	16	8	16	160	59	0,23	4,0	RD...0802 M0E	⛭
181122600	020E33590-03-05-020180	3	20	12	20	180	59	0,36	4,0	RD...0802 M0E	⛭
181122700	025E33590-04-05-025200	4	25	17	25	200	59	0,65	4,0	RD...0802 M0E	⛭
					33690						
181123400	020E33690-02-05-020180	2	20	10	20	180	50	0,40	5,0	RP...10T3 M0E	⛭
181123500	025E33690-03-05-025200	3	25	15	25	200	60	0,76	5,0	RP...10T3 M0E	⛭
181123600	032E33690-04-05-032200	4	32	22	32	200	60	0,98	5,0	RP...10T3 M0E	⛭

⛭ 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)

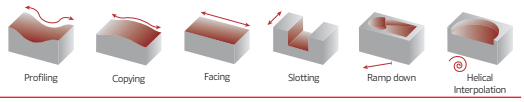


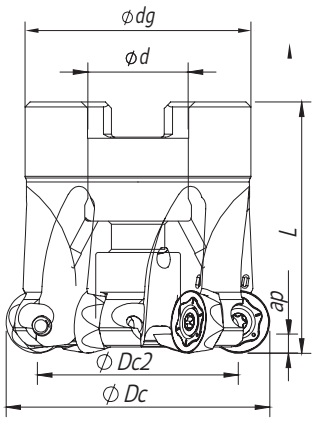
Threaded Coupling

γ_p= +5°

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm) ØDc	ØDc2	ØM	Ødg	L	Kg	Specifications Ap max (mm)	Insert Pastilha Inserto	Stock
					33590						
181098600	016R33590-02-04-M08020	2	16	8	M8	13	20	0,03	4,0	RD...0802 M0E	⛭
181122800	020R33590-03-05-M10025	3	20	12	M10	16	25	0,07	4,0	RD...0802 M0E	⛭
181122900	025R33590-04-05-M12030	4	25	17	M12	21	30	0,14	4,0	RD...0802 M0E	⛭
181123000	032R33590-05-05-M16043	5	32	24	M16	29	43	0,25	4,0	RD...0802 M0E	◯
					33690						
181110600	020R33690-02-05-M10032	2	20	10	M10	16	32	0,10	5,0	RP...10T3 M0E	◯
181110700	025R33690-03-05-M12035	3	25	15	M12	21	35	0,19	5,0	RP...10T3 M0E	⛭
181110800	032R33690-04-05-M16035	4	32	22	M16	29	35	0,31	5,0	RP...10T3 M0E	⛭
181120700	035R33690-05-05-M16045	5	35	25	M16	29	45	0,40	5,0	RP...10T3 M0E	⛭

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





Arbor Mounting

γ_p = +5°

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)					Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	ØDc2	Ød/M	Ødg	L		Arbor Type	Ap max (mm)		
						33690						
181123700	042A33690-06-05-016040	6	42	32	16	36	40	0,16	A	5,0	RP...10T3 M0E	◈
181123800	050A33690-06-05-022040	6	50	40	22	42	40	0,26	A	5,0	RP...10T3 M0E	◈
181123900	052A33690-07-05-022040	7	52	42	22	42	40	0,30	A	5,0	RP...10T3 M0E	○
						33790						
181098700	040A33790-04-05-016040	4	40	28	16	36	40	0,15	A	6,0	RP...1204 M0E	◈
181111500	050A33790-04-05-022040	4	50	38	22	42	40	0,20	A	6,0	RP...1204 M0E	◈
181124200	052A33790-05-05-022040	5	52	40	22	42	40	0,25	A	6,0	RP...1204 M0E	◈
181122100	063A33790-06-05-022040	6	63	51	22	48	40	0,36	A	6,0	RP...1204 M0E	◈
181124300	066A33790-06-05-027050	6	66	54	27	48	50	0,40	A	6,0	RP...1204 M0E	○
181124400	080A33790-07-05-027050	7	80	68	27	60	50	0,68	A	6,0	RP...1204 M0E	○

◈ 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)

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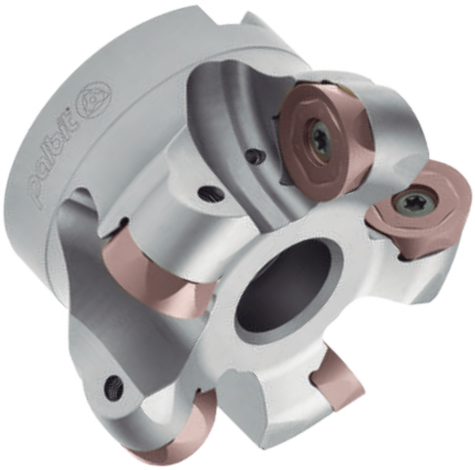
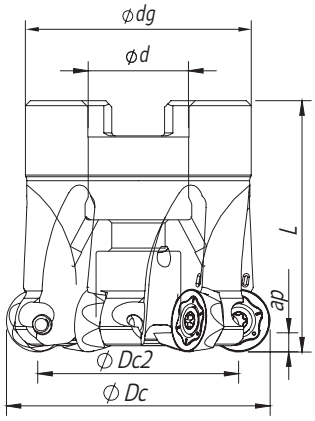
Technical Data page A - 242

TOROMILL 33590 | 33690 | 33790 | 33890 | 33990

Proprietary milling line





Arbor Mounting

γ_p = 5°

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)					Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	ØDc2	Ød	Ødg	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 M0E	◉
181124600	052A33890-04-05-022040	4	52	36	22	42	40	0,25	A	8,0	RP...1605 M0E	○
181114900	063A33890-05-05-022040	5	63	47	22	48	40	0,37	A	8,0	RP...1605 M0E	◉
181124700	066A33890-05-05-027050	5	66	54	27	48	50	0,46	A	8,0	RP...1605 M0E	◉
181124800	080A33890-06-05-027052	6	80	64	27	60	52	0,85	A	8,0	RP...1605 M0E	◉
181124900	100A33890-07-05-032052	7	100	84	32	80	52	1,57	A	8,0	RP...1605 M0E	◉
181122200	125A33890-08-05-040052	8	125	109	40	90	52	2,12	A	8,0	RP...1605 M0E	◉
					33990							
181112200	080A33990-05-05-027050	5	80	60	27	60	50	0,73	A	10,0	RP...2006 M0E	◉
181099800	100A33990-06-05-032063	6	100	80	32	80	63	1,62	A	10,0	RP...2006 M0E	◉
181099900	125A33990-06-05-040063	6	125	105	40	90	63	2,53	A	10,0	RP...2006 M0E	◉

◉ Stock item | Produto de stock | Itens de stock

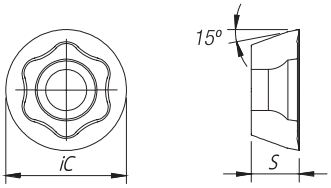
○ Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

RDHT | RPHT | Inserts | Pastilhas | Plaquitas

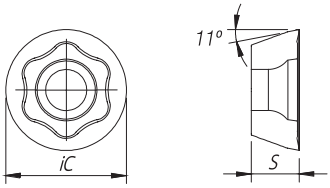
RDHT

RPHT

RDHT



RPHT



		P				M				S			Dimensions Dimensões Dimensiones (mm)	
		CVD	PVD			PVD				PVD				
	(2) Grade code	T9	T1	Z1	Z2	X9	Y2	Z2	Z3	X9	Y2	Z3		
(1) Geometry code	ISO Reference	PHS740	PHP920	PHP808	PHP530	PHH930	PHH808	PHP530	PHH530	PHH930	PHH808	PHH530	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 pagina A-9)

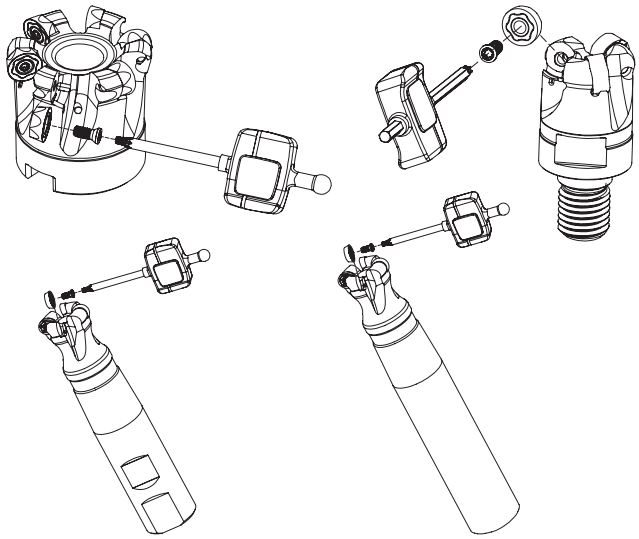
Insert order code = (1) Geometry Code + (2) Grade Code

SPARE PARTS | Acessórios | Repuestos

Order separately

Cutter ØDc	Insert Screw	Key (Torx)	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.



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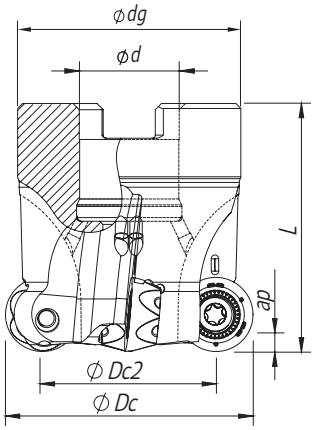
palbit TOOLING SOLUTIONS EXPERTS SINCE 1916

TURBOMILL 34190

NEW

Proprietary milling line



Arbor Mounting

$\gamma_p = 5°$

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)					Kg	Specifications		Insert	Stock
			ØDc	ØDc2	Ød	Ødg	L		Arbor Type	Ap max (mm)		
181160100	042A34190-06-05-016040	6	42	32	16	36	40	0,16	A	5	RPHT 10T3M0E-LS(4)	◈
181160200	050A34190-06-05-022039	6	50	40	22	42	40	0,26	A	5	RPHT 10T3M0E-LS(4)	◈
181160700	052A34190-07-05-022040	7	52	42	22	42	40	0,30	A	5	RPHT 10T3M0E-LS(4)	◈

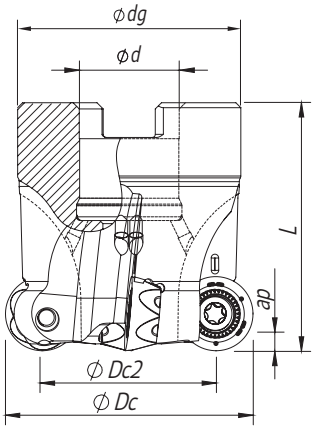
◈ Stock item | Produto de stock | Itens de stock

◯ 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

$\gamma_p = 5°$

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)					Kg	Specifications		Insert	Stock
			ØDc	ØDc2	Ød	Ødg	L		Arbor Type	Ap max (mm)		
181159600	040A34290-04-05-016040	4	40	28	16	36	40	0,15	A	6	RPHT 1204 M0E-LS(4)	◈
181186300	050A34290-05-05-022040	5	50	38	22	42	40	0,24	A	6	RPHT 1204 M0E-LS(4)	◈
181159500	052A34290-05-05-022040	5	52	40	22	42	40	0,25	A	6	RPHT 1204 M0E-LS(4)	◈
181160400	063A34290-06-05-022040	6	63	51	22	48	40	0,36	A	6	RPHT 1204 M0E-LS(4)	◈
181160500	066A34290-06-05-027050	6	66	54	27	48	50	0,40	A	6	RPHT 1204 M0E-LS(4)	◈
181160600	080A34290-07-05-027050	7	80	68	27	60	50	0,68	A	6	RPHT 1204 M0E-LS(4)	◈

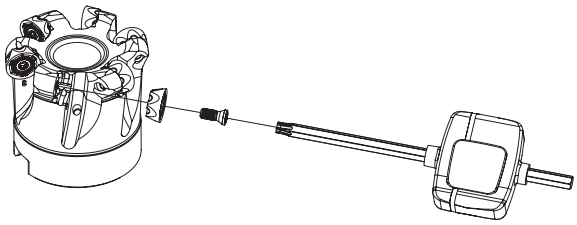
◈ Stock item | Produto de stock | Itens de stock

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

SPARE PARTS Acessórios | Repuestos

Order separately

Cutter ØDc	Insert Screw	Key (Torx)	Key (Torx - Nm)	Torque Value
A34190	P0300800	XT09	DT0914	1,40
A34290 - 40	P0350800	XT15	DT1530	3,00
A34290 - 50	P0351000	XT15	DT1530	3,00
A34290 - 52-80	P0350800	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.

RPHT-LS | Inserts | Pastilhas | Plaquitas

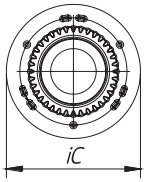
RPHT-LS4

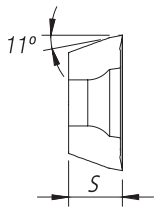
RPHT-LS

PHH NEW GRADE

PHP NEW GRADE

RPHT-LS | LS4





(1) Geometry code	ISO Reference	P CVD T9 PHS740	P PVD Z1 PHP808	P PVD Z2 PHP530	M PVD Y2 PHH808	M PVD Z2 PHP530	M PVD Z3 PHH530	S PVD Y2 PHH808	S PVD Z3 PHH530	Dimensions Dimensões Dimensiones (mm) iC	S
	(2) Grade code	T9	Z1	Z2	Y2	Z2	Z3	Y2	Z3		
1112772	RPHT 10T3M0E-LS	●	●	●	●	●	●	●	●	10,00	3,97
1113021	RPHT 10T3 M0E-LS4			●		●	●		●	10,00	3,97
1112766	RPHT 1204 M0E-LS	●	●	●	●	●	●	●	●	12,00	4,76
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 pagina A-9)

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

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palbit TOOLING SOLUTIONS EXPERTS SINCE 1916

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		✓		✓		✓	

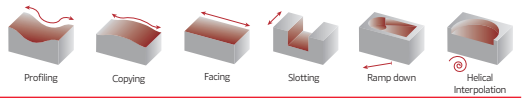
Good Conditions Average Conditions Difficult Conditions

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

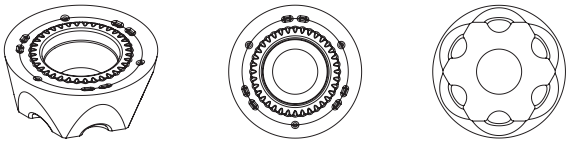
(Note 1) Cutting conditions $a_e/Dc=70\%$.



INSERT INFORMATION | Informação de pastilha | Información del inserto

RPHT-LS

RPHT-LS



P M S

RPHT 10 | 12 16

NEW

RPHT-LS

6 cutting edges insert

- Insert with 6 cutting edges for a higher productivity.

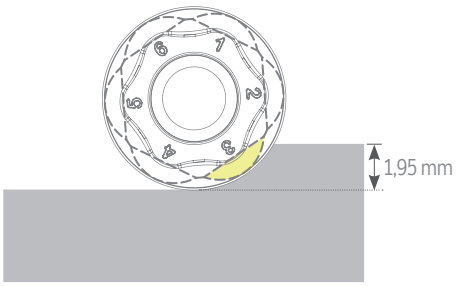
Insert Geometry

- 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)

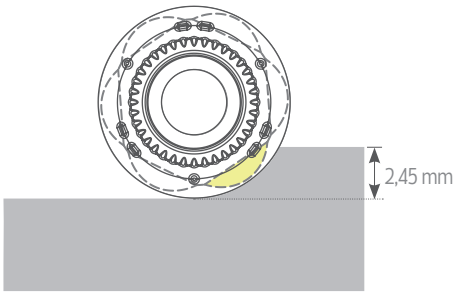
TOROMILL 33590

RDHT 0802...



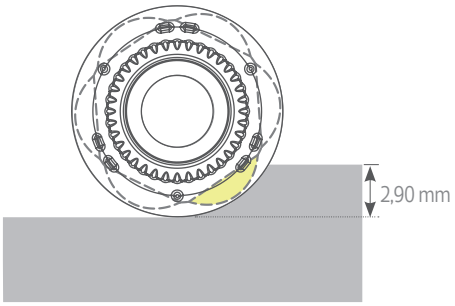
TURBOMILL 34190

RPHT 10T3M0E-LS



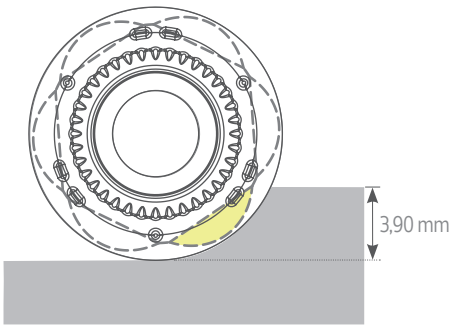
TURBOMILL 34290

RPHT 1204 M0E-LS



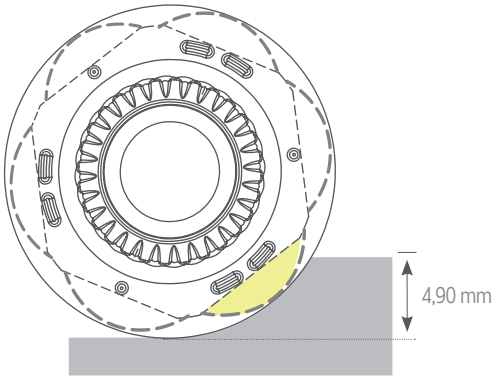
TOROMILL 33890

RPHT 1605 M0E-LS



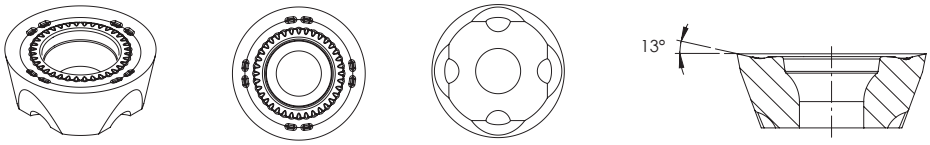
TOROMILL 33990

RPHT 2006...



RPHT-LS4

RPHT-LS4



P M S

RPHT 10 | 12

NEW

RPHT-LS

4 cutting edges insert

- Insert with 4 cutting edges for higher depth of cut.

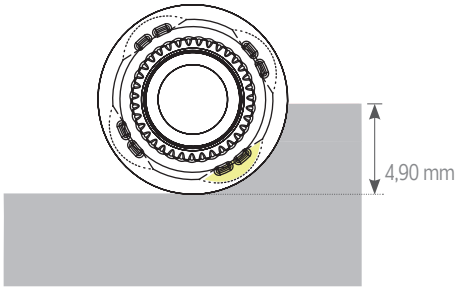
Insert Geometry

- Improved geometry for low cutting force;
- Positive insert with a brand new edge positioning system.

The maximum depth of cut using 4 cutting edges

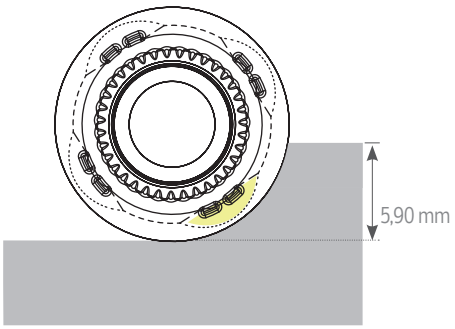
TURBOMILL 34190

RPHT 10T3M0E-LS4



TURBOMILL 34290

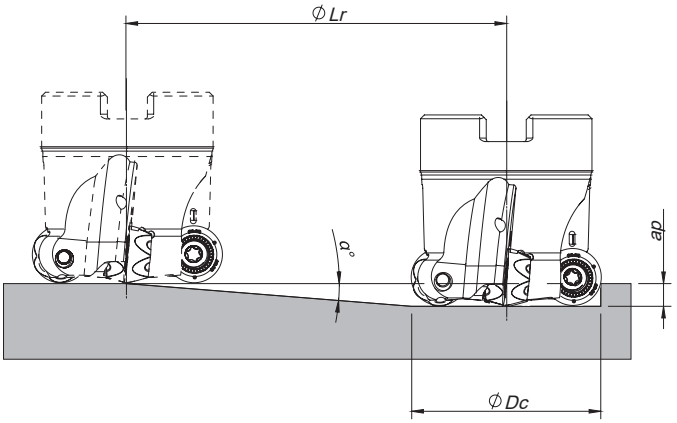
RPHT 1204 M0E-LS4

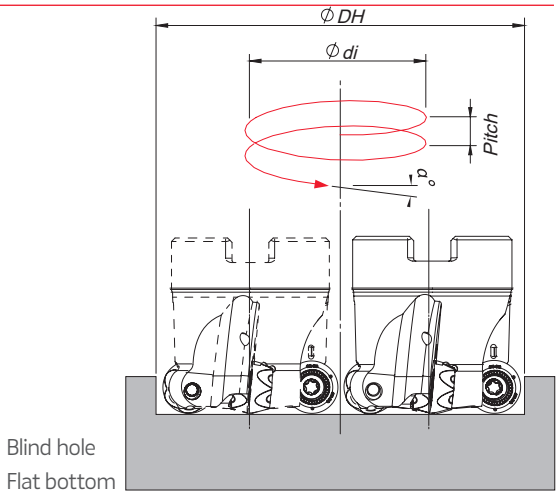


GEOMETRY FEATURES | Características geométricas | Características geométricas

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





Blind hole
Flat bottom

Ødi = ØDH - ØDc

Insert	ØDc	Ramping			Helical Interpolation		
		Max Ramp a°	Max a_p	Min Lr	ØDHmin	ØDHmax	Max Pitch/Rev.
33590							
RD... 08	16	10,0	4,0	22,7	24 - 32		4 8
	20	8,0	4,0	28,5	32 - 40		5 8
	25	10,0	4,0	22,7	42 - 50		9 13
	32	8,0	4,0	28,5	56 - 64		10 14
33690 | 34190							
RP... 10	20	7,0	5,0	40,7	30 - 40		3 7
	25	6,0	5,0	47,6	40 - 50		4 8
	32	6,0	5,0	47,6	54 - 64		7 10
	35	5,0	5,0	57,2	60 - 70		6 9
	42	5,0	5,0	57,2	74 - 84		8 11
	50	4,0	5,0	71,5	90 - 100		8 10
	52	3,0	5,0	95,4	94 - 104		6 8
33790 | 34290							
RP... 12	40	8,0	6,0	42,7	68 - 80		12 17
	50	3,5	6,0	98,1	88 - 100		7 9
	52	3,0	6,0	114,5	92 - 104		6 8
	63	2,5	6,0	137,4	114 - 126		6 8
	66	2,5	6,0	137,4	120 - 132		7 9
	80	2,0	6,0	171,8	148 - 160		7 8
33890							
RP... 16	50	7,0	8,0	65,2	84 - 100		13 19
	52	7,0	8,0	65,2	88 - 104		13 20
	63	7,0	8,0	65,2	110 - 126		18 24
	66	3,0	8,0	152,6	116 - 132		8 10
	80	3,0	8,0	152,6	144 - 160		10 13
	100	3,0	8,0	152,6	184 - 200		13 16
	125	2,5	8,0	183,2	234 - 250		14 17
33990							
RP... 20	80	4,0	10,0	143,0	140 - 160		13 17
	100	3,0	10,0	190,8	180 - 200		13 16
	125	2,5	10,0	229,0	230 - 250		14 17

Note: During helical interpolation do not exceed max a_p.

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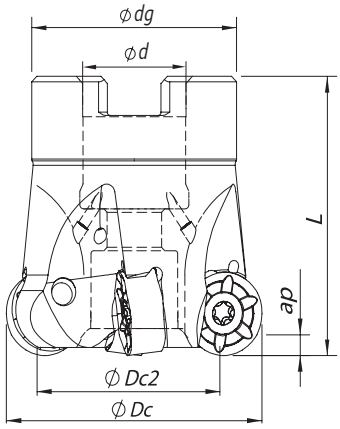
TOROMILL X2 35190



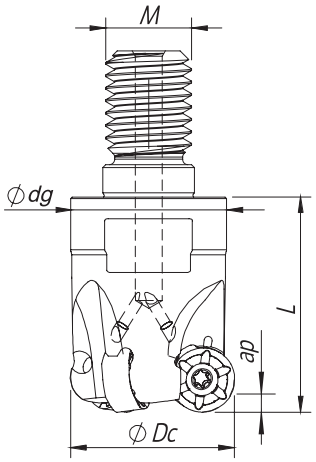
Arbor Mounting

γ_p=-7°

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)					Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	ØDc2	Ød	Ødg	L		Arbor Type	Ap max (mm)		
181111600	040A35190-04-07-016040	4	40	28	16	32	40	0,20	A	3,0	RNHX 1204 M0E...	◈
181100200	050A35190-05-07-022040	5	50	38	22	40	40	0,24	A	3,0	RNHX 1204 M0E...	◈
181128800	063A35190-06-07-022050	6	63	51	22	48	50	0,55	A	3,0	RNHX 1204 M0E...	◈
181128900	080A35190-07-07-027050	7	80	68	27	60	50	0,78	A	3,0	RNHX 1204 M0E...	◈
181175600	100A35190-09-07-032050	9	100	82	32	70	50	1,00	B	3,0	RNHX 1204 M0E...	◈

◈ 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)



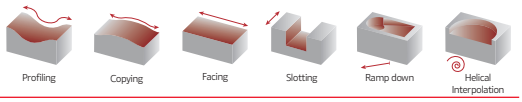
Threaded Coupling

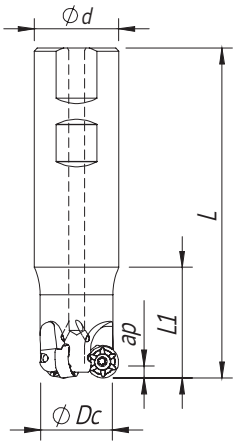
γ_p=-7°

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications	Insert Pastilha Inserto	Stock
			ØDc	ØM	Ødg	L		Ap max (mm)		
181128500	032R35190-03-07-M16040	3	32	M16	29	40	0,16	3,0	RNHX 1204 M0E...	◈
181128700	042R35190-04-07-M16040	4	42	M16	29	40	0,20	3,0	RNHX 1204 M0E...	◯

◈ 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

γ_p=-7°

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications	Insert Pastilha Inserto	Stock
			ØDc	Ød/M	L	L1		Ap max (mm)		
181087000	032W35190-03-07-032125	3	32	32	125	42	0,98	3,0	RNHX 1204 M0E...	◈

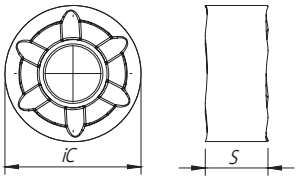
◈ Stock item | Produto de stock | Itens de stock ◯ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

RNHX 1204... | Inserts | Pastilhas | Plaquitas

RNHX-LP

RNHX-MP

RNHX-LP | MP



		P			M			K		S		Dimensions Dimensões Dimensiones (mm)	
		PVD			PVD			PVD		PVD			
	(2) Grade code	T1	P4	Z2	X9	Z2	Z3	T1	P4	X9	Z3		
(1) Geometry code	ISO Reference	PHP920	PHP930	PHP530	PHH930	PHP530	PHH530	PHP920	PHP930	PHH930	PHH530	IC	S
1112030	RNHX 1204 M0E-LP	◈		◈	◈	◈	◈			◈	◈	12,00	4,76
1112052	RNHX 1204 M0E-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

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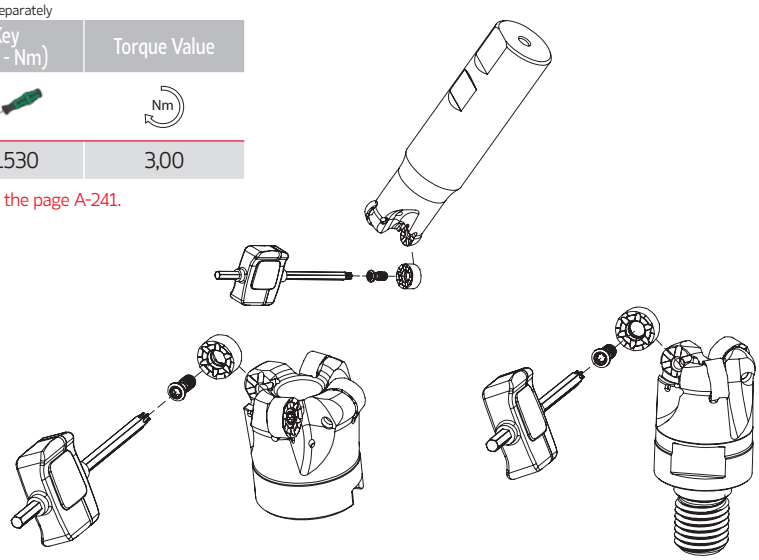
TOROMILL X2 35190

SPARE PARTS | Acessórios | Repuestos

Order separately

Cutter ØDc	Insert Screw	Key (Torx)	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

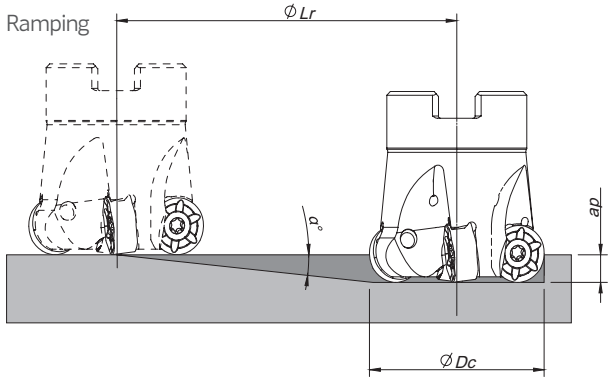
RECOMMENDED CUTTING CONDITIONS | Condições de corte recomendadas | Condiciones de corte recomendables

ISO	PSM	Material	HB (Brinell)	Vc (m/min) ← Wear Resistance				Toughness →	Feed fz (mm/t)	
				PHP920	PHP930	PHH930	PHP530	PHH530	RNHX 12... LP	RNHX 12... MP
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-aparas | Guía para aplicación del rompevirutas

ISO	PSM	Material	HB (Brinell)	Chip-Breaker Application	
				1st choise	Dificult 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	ØDc	Ramping		
		Max Ramp a°	Max a_p	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

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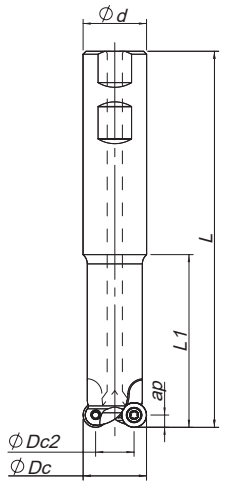
palbit TOOLING SOLUTIONS EXPERTS SINCE 1916

TOROMILL 24590 | 25090 | 25190

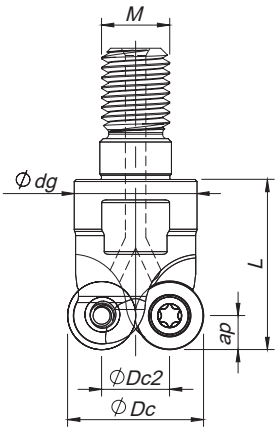


Weldon Shank

γ_p=0°

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)							Kg	Specifications	Insert Pastilha Inserto	Stock
			ØDc	ØDc2	Ød	Ødg	L	L1	L2		Ap max (mm)		
						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 pagina A-8)

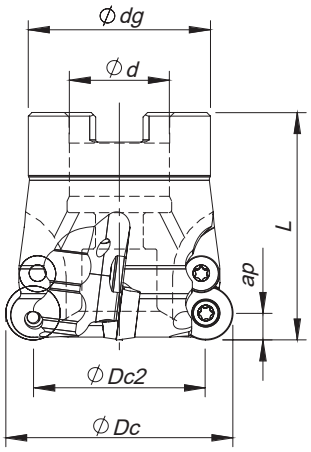


Threaded Coupling

γ_p=0°

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)					Kg	Specifications	Insert Pastilha Inserto	Stock
			ØDc	ØDc2	ØM	Ødg	L		Ap max (mm)		
					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 pagina A-8)



Arbor Mounting

γ_p=0° (*+7°)

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)					Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	ØDc2	Ød	Ødg	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...	♻

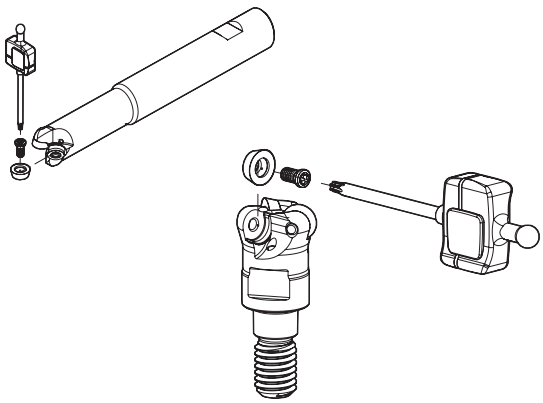
♻ Stock item | Produto de stock | Itens de stock

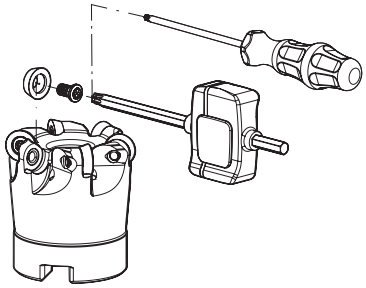
○ Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

SPARE PARTS | Acessórios | Repuestos

Cutter ØDc	Insert Screw	Key (Torx)	Order separately Key (Torx - Nm)	Torque Value	Order separately Screw Clamp
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.





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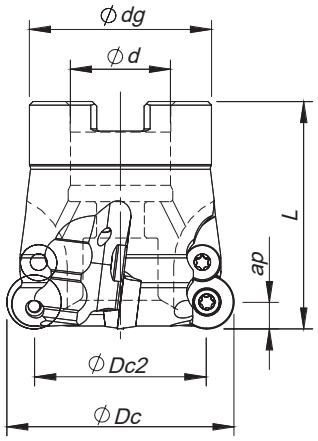
TOROMILL 25290 | 25390

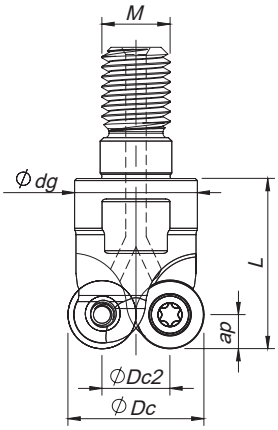


Arbor Mounting

γ_p=0° (*+7°)

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)					Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	ØDc2	Ød	Ødg	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

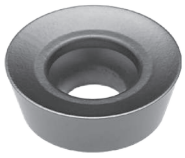
γ_p=0°

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)					Kg	Specifications	Insert Pastilha Inserto	Stock
			ØDc	ØDc2	ØM	Ødg	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)

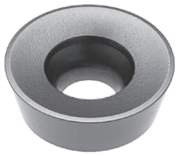
RD... | Inserts | Pastilhas | Plaquitas

RDHT

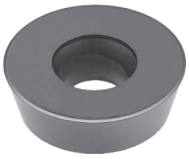


RDHW

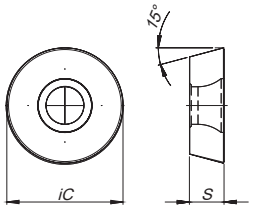
RDMT



RDMW



RDHT | RDHW | RDMT | RDMW



		P						K			H	Dimensions Dimensões Dimensiones (mm)	
		PVD						PVD			PVD		
	(2) Grade code	M6	54	68	78	86	I5	54	68	I5	M6		
(1) Geometry code	ISO Reference	PH6103	PH6910	PH6920	PH6125	PH6135	PH6740	PH6910	PH6920	PH6740	PH6103	iC	S
1110548	RDHW 0702 M0T	●	●	●				●	●		●	7,00	2,38
1110087	RDHW 1003 M0T	●	●	●		●		●	●		●	10,00	3,18
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	●	●	●		●		●	●		●	12,00	3,97
1112040	RDHT 12T3 M0S-MP			●			●		●	●		12,00	3,97
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	●	●	●		●		●	●		●	16,00	4,76
1112039	RDHT 1604 M0S-MP			●			●		●	●		16,00	4,76
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 | 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 (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

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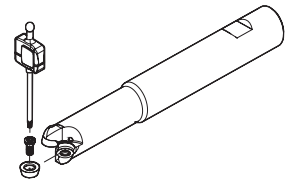
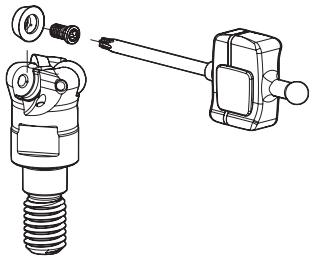
palbit TOOLING SOLUTIONS EXPERTS SINCE 1916

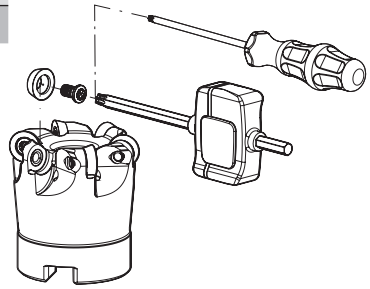
SPARE PARTS | Acessórios | Repuestos

Cutter ØDc	Order separately: Insert Screw	Key (Torx)	Key (Torx - Nm)	Torque Value	Order separately: 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 selecção 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 ...	-

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Technical Data page A - 242

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

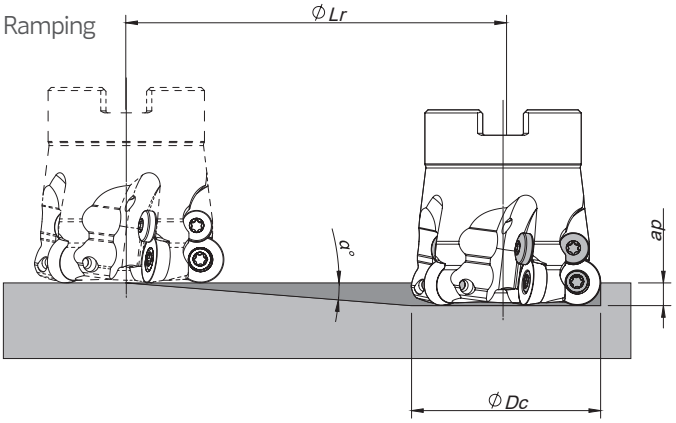
ISO	PSM	Material	HB (Brinell)	RD... 16		RD... 20	
				fz (mm/t)	ap (mm)	fz (mm/t)	ap (mm)
P	1	Unalloyed Steel	125-220	≤0,33	≤3,50	≤0,33	≤5,00
	2	Low-Alloyed Steel	220-280	≤0,33	≤3,50	≤0,33	≤5,00
	3	High-Alloyed Steel	280-380	≤0,27	≤3,50	≤0,27	≤5,00
K	7	Malleable Cast Iron	130-230	≤0,35	≤3,50	≤0,35	≤5,00
	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/Dc=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.

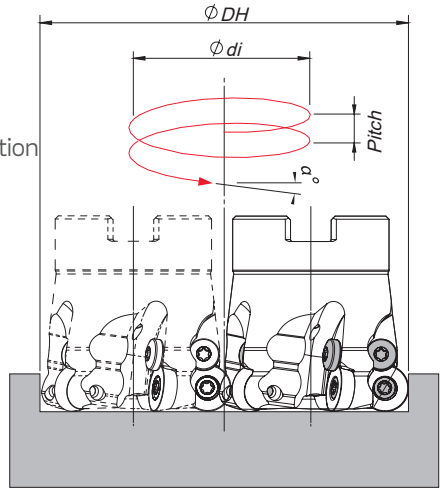
RAMPING AND HELICAL INTERPOLATION

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

Ramping



Helical Interpolation



Ødi = ØDH - ØDc

Insert	ØDc	Ramping			Helical Interpolation		
		Max Ramp a°	Max a_p	Min Lr	ØDHmin	ØDHmax	Max Pitch/Rev.
RD... 07	15	9,4	3,5	21,1	23,0 -	- 30,0	4,0 7,0
	16	8	3,5	24,9	25,0 -	- 32,0	3,0 7,0
	20	6	3,5	33,3	33,0 -	- 40,0	4,0 6,0
RD... 10	20	25,0	5,0	10,7	30,0 -	- 40,0	14,0 29,0
	25	22,0	5,0	12,4	40,0 -	- 50,0	19,0 31,0
	30	13,5	5,0	20,8	50,0 -	- 60,0	15,0 22,0
	35	12,0	5,0	23,5	60,0 -	- 70,0	16,0 23,0
	42	10,0	5,0	28,4	74,0 -	- 84,0	17,0 23,0
	52	7,0	5,0	40,7	94,0 -	- 104,0	16,0 20,0
RD... 12	24	17,0	6,0	19,6	36,0 -	- 48,0	11,1 23,0
	25	16,2	6,0	20,7	38,0 -	- 50,0	11,0 22,0
	35	12,0	6,0	28,2	58,0 -	- 70,0	15,0 23,0
	42	10,3	6,0	33,0	72,0 -	- 84,0	17,0 23,0
	50	6,4	6,0	53,5	88,0 -	- 100,0	13,0 17,0
	52	6,0	6,0	57,1	92,0 -	- 104,0	13,0 17,0
	66	3,5	6,0	79,8	120,0 -	- 132,0	12,0 15,0
	80	2,5	6,0	104,1	148,0 -	- 160,0	12,0 14,0
RD... 16	32	20,0	8,0	22,0	48,0 -	- 64,0	18,0 36,0
	35	18,0	8,0	24,6	54,0 -	- 70,0	19,0 35,0
	52	13,0	8,0	34,7	88,0 -	- 104,0	26,0 37,0
	66	8,5	8,0	53,5	116,0 -	- 132,0	23,0 30,0
	80	6,0	8,0	76,1	144,0 -	- 160,0	21,0 26,0
	125	3,5	8,0	130,8	234,0 -	- 250,0	20,0 24,0
	160	2,5	8,0	183,2	304,0 -	- 320,0	19,0 21,0
RD... 20	80	6,0	10,0	76,1	140,0 -	- 160,0	19,0 26,0
	100	5,0	10,0	91,4	180,0 -	- 200,0	21,0 27,0
	125	4,5	10,0	101,6	230,0 -	- 250,0	25,0 30,0
	160	3,0	10,0	152,6	300,0 -	- 320,0	23,0 26,0

Note: During helical interpolation do not exceed max a_p.

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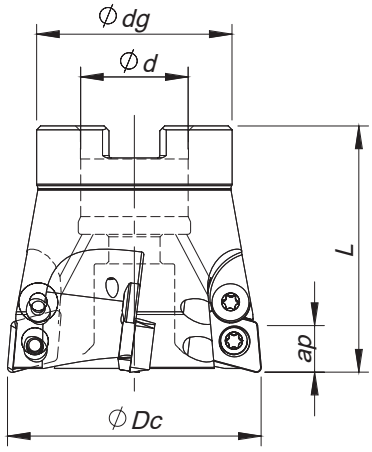
LINEPRO 40095 | 40595 | 41095

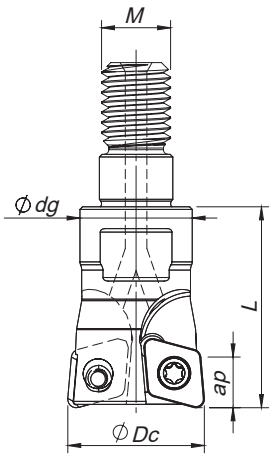


Arbor Mouting

K_r=95° | γ_p=+7°

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	Ød	Ødg	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)

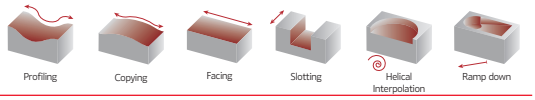


Threaded Coupling

K_r=95° | γ_p=+7° (*+9)

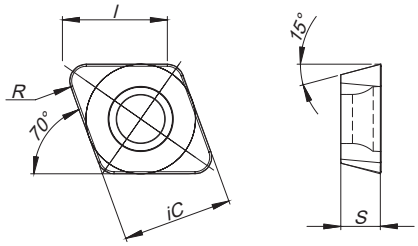
Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications	Insert Pastilha Inserto	Stock
			ØDc	ØM	Ødg	L		Ap max (mm)		
41095										
181012400	010R41095-02-09-M06020*	2	10	M6	9,8	20	0,010	0,8	XD... 0401...	◈
181016300	012R41095-02-09-M06020*	2	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)

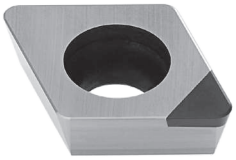


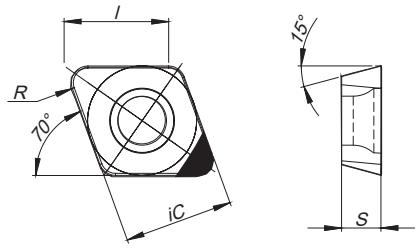
XDHW | Inserts | Pastilhas | Plaquitas

XDHW



XDHW - PCD & PCBN
(HARDMILL)





		P				K		N		H		Dimensions Dimensões Dimensiones (mm)			
		PVD				PVD		CVD	PCD	PVD	PCBN				
	(2) Grade code	M6	54	78	86	54	78	P2	D6	M6	S4				
(1) Geometry code	ISO Reference	PH6103	PH6910	PH6125	PH6135	PH6910	PH6125	PHD103	PDP410	PH6103	PBH920	iC	S	l	R
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 pagina A-9)

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

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Technical Data page A - 242

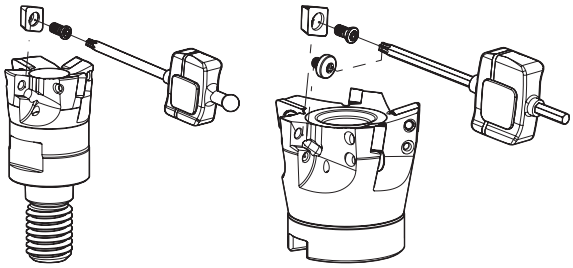
palbit TOOLING SOLUTIONS EXPERTS SINCE 1916

LINEPRO 40095 | 40595 | 41095

SPARE PARTS | Acessórios | Repuestos

Cutter ØDc	Insert Screw	Key (Torx)	Key (Torx - Nm) (Order separately)	Torque Value	Screw Clamp (Order separately)
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 selecção de graus | Tabla para selección de calidades

ISO	PSM	Material	HB (Brinell)	Grades ← Wear Resistance Toughness → PHD103	PH6103	PH6910	PH6125	PH6135	PCD PDP410	PCBN PBH920
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		✓					✓

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 → PHD103	PH6103	PH6910	PH6125	PH6135	PCD PDP410	PCBN PBH920
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

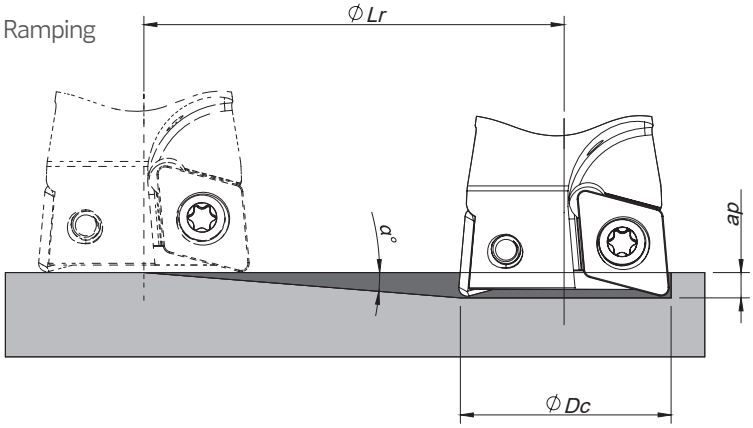
Insert	Feed f_z (mm/t) Roughing	Finishing	a_p Rec.
XD... 04	0,10-0,20	0,10-0,15	0,1-0,5
XD... 06	0,15-0,30	0,10-0,25	0,2-0,8
XD... 10	0,15-0,35	0,10-0,30	0,2-0,8

(Note 1) Cutting conditions should be ajusted 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.

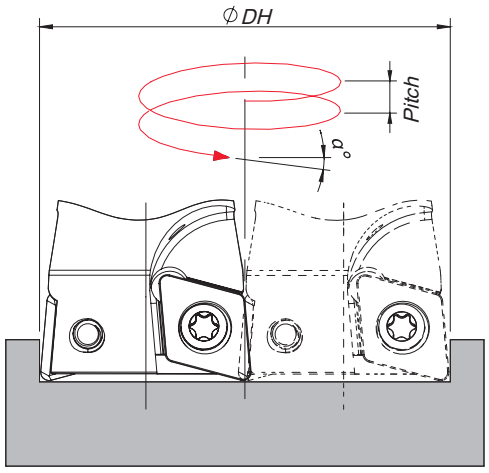
RAMPING AND HELICAL INTERPOLATION

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

Ramping



Helical Interpolation



Blind hole
Flat bottom

Ødi = ØDH - ØDc

Insert	ØDc	Ramping			Helical Interpolation		
		Max Ramp a°	Max a_p	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 a_p.

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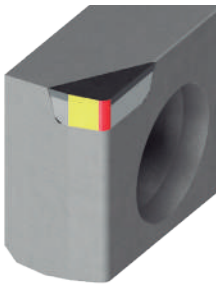
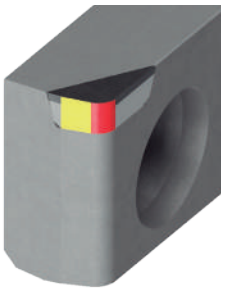
INSERTS CODIFICATION SYSTEM | Sistema de codificação de pastilhas | Sistema de codificación de insertos

ISO CODE	Insert size	Insert thickness	Insert radius	Cutting edge position angle	Cutting edge relief angle	Cutting edge conditions	Cut direction		Wiper edge lenght	Máx. Ap
XNHW	12	05	04	P	Z	F	R	-	015	030



XNHW 120504 PZFR-0150045

XNHW 120504 PZFR-000080



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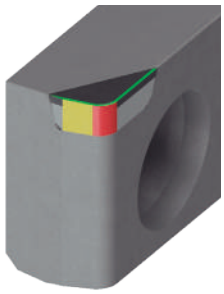

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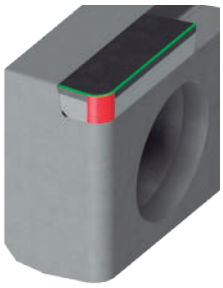
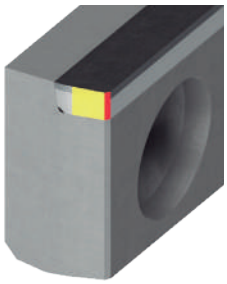
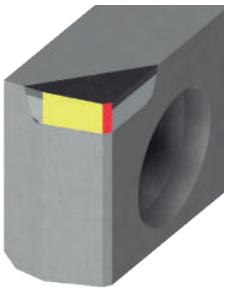


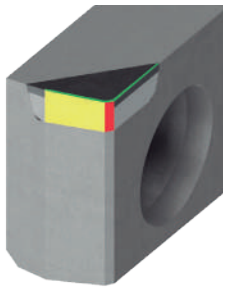
XNHW 120508 PZTR-000080



XNHW 1205 PZFR-020120



XNHW 1205 PZFR-030045



XNHW 1205 PZTR-030045

Cutting edge Type (radius, chamfer)

Wiper cutting edge

Edge Preparation (F, T)

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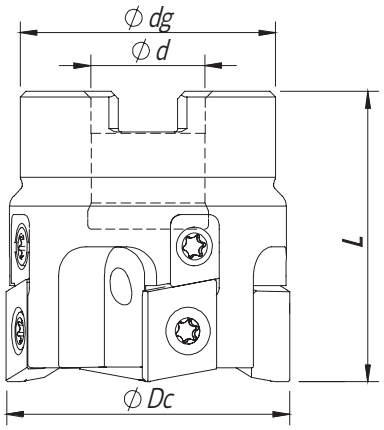
HARDMILL 72090



Arbor Mounting

K_r=90° | γ_p=0°

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	Ød	Ødg	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

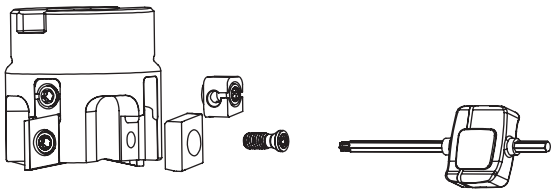
○ Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

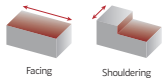
SPARE PARTS | Acessórios | Repuestos

Order separately

Cutter ØDc	Insert Screw	Key (Torx)	Key (Torx - Nm)	Torque Value	Wedge
					
A72090 - 40-160	P0401100	XT15	DT1530	3,00	SETDEV AS 04 00

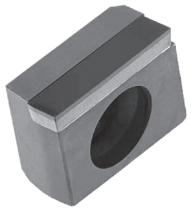
Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-241.
Check the procedures for the clamping screws on the page A-241.



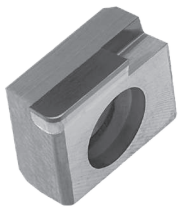


XNHW 1205... | Inserts | Pastilhas | Plaquitas

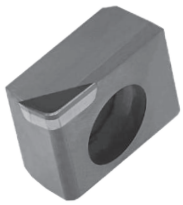
XNHW 1205 PZFR-020120



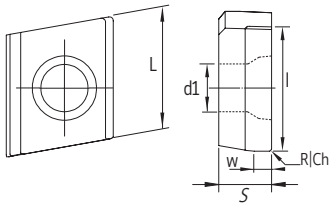
XNHW 120508 PZTR-000080



XNHW 120508 PZTR-015045



XNHW



		N		Dimensions Dimensões Dimensiones (mm)					
		PCD							
	(2) Grade code	I3	D6						
(1) Geometry code	ISO Reference	PDP403	PDP410	L	S	l	d1	r	W
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 pagina 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	
		brass, red bronze	100	100 - 700	
		bronze	-	100 - 1500	
		lead-free copper and electrolytic copper	-	300 - 3000	
	Non-metallic materials	thermosetting plastics	-	80 - 300	
		fibre-reinforced plastics	200-320	80 - 300	
		hard rubber		80 - 300	

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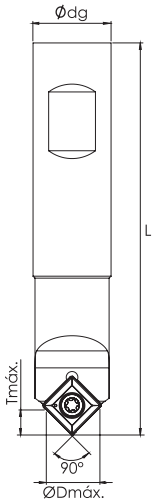
palbit SINCE 1916

CENTER & CHAMFER



Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)						Kg	Insert Pastilha Inserto	Stock
			ØDmax.	Tmax.	Tmix.	Ødg	L	Angle º			
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	◈
1410317G4	PK SOGT 11T303 CHTS16M	1	CHT S16H N11-45	10	SOGT 11T303	◈
1410318G4	PK SOGT 11T303 CHTS16H	1	CHT S16M N11-45	10	SOGT 11T303	◈

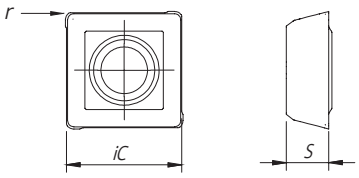
◈ Stock item | Produto de stock | Itens de stock ◯ Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

SO...T 11T3.. | Inserts | Pastilhas | Plaquitas

SOMT

SOGT NEW

SOMT | SOGT

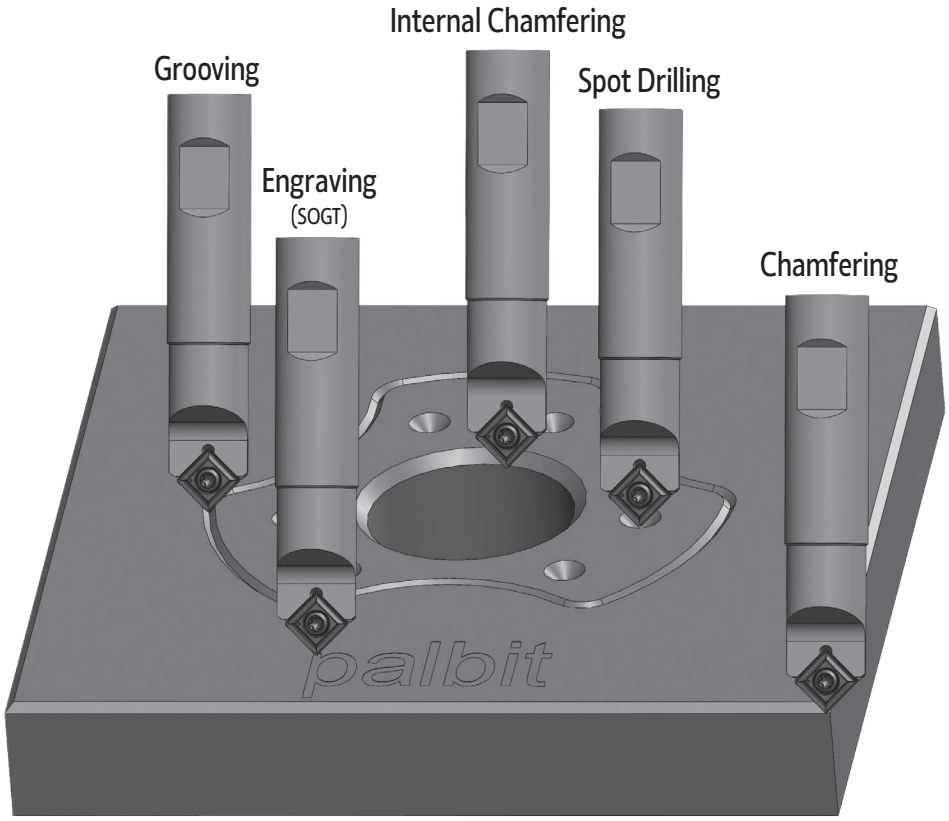


		P	M	K	Dimensions Dimensões Dimensiones (mm)			
		PVD	PVD	PVD				
	(2) Grade code	G4	G4	G4				
(1) Geometry code	ISO Reference	PH7920	PH7920	PH7920	iC	S	l	r
1112425	SOMT 11T308	◈	◈	◈	10,87	3,97	11,00	0,80
1112973	SOGT 11T303	◈	◈	◈	10,87	3,97	11,00	(0,30)

◈ 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

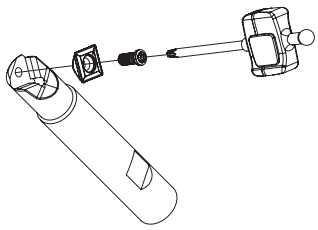
TOOL SELECTION | Selecção de ferramenta | Selección de herramienta



SPARE PARTS | Acessórios | Repuestos

Order separately

Cutter ØDc	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)	Vc (m/min)	Feed fz (mm/t)	
				PH7920	SOMT 11T308	SOGT 11T303
P	1	Unalloyed Steel	125-220	120-150	0,04-0,08	0,05-0,10
	2	Low-Alloyed Steel	220-280	100-120	0,03-0,07	0,05-0,10
	3	High-Alloyed Steel	280-380	60-100	0,03-0,06	0,04-0,08
M	4	SS - Ferritic / Martensitic	200-330	100-150	0,04-0,07	0,03-0,06
	5	SS - Austenitic	200-330	80-120	0,03-0,06	0,03-0,06
	6	SS - Austenitic-ferritic (Duplex)	230-260	50-90	0,03-0,06	0,03-0,08
K	7	Malleable Cast Iron	130-230	90-150	0,05-0,10	0,05-0,10
	8	Grey Cast Iron	180-245	80-120	0,05-0,08	0,05-0,08
	9	Nodular Cast iron	160-250	70-110	0,04-0,08	0,04-0,08

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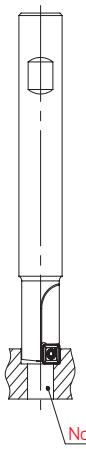
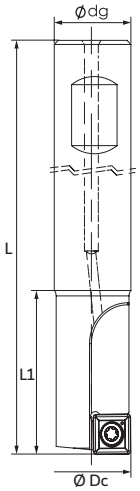
SPOT FACE





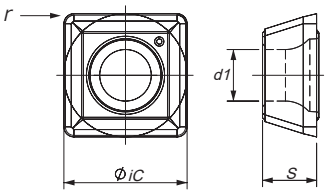
Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Insert Pastilha Inserto	Stock
			ØDc	Ødg	L	L1			
181150100	SP91 D10-W10/100-01-05	1	10	10	100	30	0,048	SPKX 05T104	◈
181150200	SP91 D11-W12/100-01-05	1	11	12	100	30	0,070	SPKX 05T104	◈
181150300	SP91 D13-W16/100-01-06	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 | PHL grade)

SPKX



		P				M				K				S				Dimensions Dimensões Dimensiones (mm)			
		PVD				PVD				PVD				PVD							
	(2) Grade code	68	66	J3	3B	68	66	J3	3B	68	66	J3	3B	68	66	J3	3B				
(1) Geometry code	ISO Reference	PH6920	PH6930	PHC930	PHL930	PH6920	PH6930	PHC930	PHL930	PH6920	PH6930	PHC930	PHL930	PH6920	PH6930	PHC930	PHL930	IC	S	d1	r
1111635	SPKX 05T104	◈				◈				◈				◈				5,00	1,98	2,20	0,40
1111282	SPKX 060204	◈	◈	◇	◈	◈	◈	◇	◈	◈	◈	◇	◈	◈	◈	◇	◈	6,00	2,38	2,55	0,40
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)

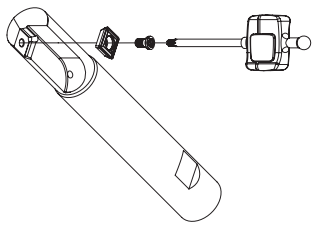
◇ Stock available until sold out | Stock disponível até acabar o stock | Stock disponible hasta acabar el stock

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

SPARE PARTS | Acessórios | 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	PHL930
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	✓	✓	✓	✓
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 → PH6920	PH6930	PHC930	PHC930
P	1	Unalloyed Steel	125-220	180-250	160-240	160-240	160-240
	2	Low-Alloyed Steel	220-280	160-220	140-200	140-200	140-200
	3	High-Alloyed Steel	280-380	130-180	110-160	110-160	110-160
M	4	SS - Ferritic / Martensitic	200-330	170-230	140-210	140-210	140-210
	5	SS - Austenitic	200-330	160-200	130-200	130-200	130-200
	6	SS - Austenitic-ferritic (Duplex)	230-260	140-180	120-190	120-190	120-190
K	8	Grey Cast Iron	180-245	180-250	150-220	150-220	150-220
	9	Nodular Cast iron	160-250	130-200	110-180	110-180	110-180
S	11	Heat Resistant Super Alloys	200-320	40-120	30-100	30-100	30-100

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	0,06-0,10	0,06-0,12	0,07-0,13	0,08-0,15
	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
S	11	Heat Resistant Super Alloys	200-320	0,04-0,08	0,05-0,10	0,06-0,12	0,07-0,13	0,08-0,18

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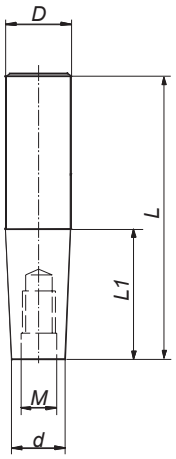
palbit TOOLING SOLUTIONS EXPERTS SINCE 1916

MULTIFIT DENSIMET ANTI-VIBRATION | Shank | Adaptador | Fijación

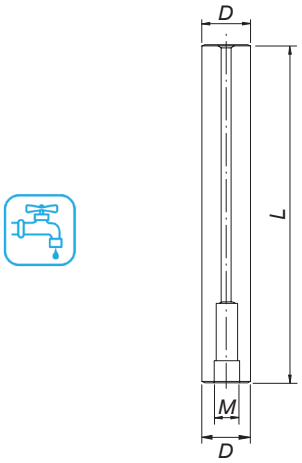


order code	Reference	Dimensions (mm)					Stock
		D	L1	L	d	M	
1191008A0	AC-RI-D12-M06-L040-AV	12	40	90	9,8	M6	◈
1191009A0	AC-RI-D12-M06-L060-AV	12	60	110	9,8	M6	◈
1191021A0	AC-RI-D12-M06-L080-AV	12	80	130	9,8	M6	◈
1191010A0	AC-RI-D16-M08-L040-AV	16	40	95	12,8	M8	◈
1191011A0	AC-RI-D16-M08-L060-AV	16	60	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



Standard Version

Customized Version

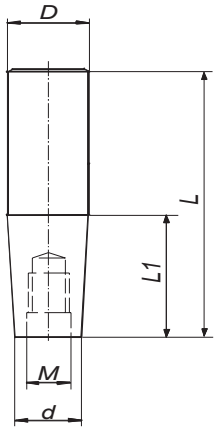
order code	Reference	Dimensions (mm)					Stock
		D	L	M	d*	L1*	
219102600	AC-RI-D12-M06-L100-HW	12	100	M6	-	-	⛭
219102700	AC-RI-D12-M06-L150-HW	12	150	M6	-	-	⛭
219102800	AC-RI-D16-M08-L100-HW	16	100	M8	-	-	⛭
219102900	AC-RI-D16-M08-L150-HW	16	150	M8	-	-	⛭
219103000	AC-RI-D20-M10-L150-HW	20	150	M10	-	-	⛭
219103100	AC-RI-D20-M10-L200-HW	20	200	M10	-	-	⛭
219103200	AC-RI-D25-M12-L150-HW	25	150	M12	-	-	⛭
219103300	AC-RI-D25-M12-L200-HW	25	200	M12	-	-	⛭
219103400	AC-RI-D32-M16-L250-HW	32	250	M16	-	-	⛭

⛭ Stock item | Produto de stock | Itens de stock

◯ Available under request | Disponível sobre consulta | Disponible bajo consulta

* Costumized versions under request

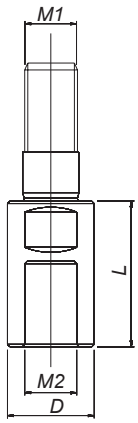
MULTIFIT CYLINDRICAL IN STEEL | Shank | Adaptador | Fijación



order code	Reference	Dimensions (mm)					Stock
		D	L1	L	d	M	
181179000	AC-RI-D12-M06-L020	12	20	65	9,8	M6	⊛
181179100	AC-RI-D16-M08-L040	16	40	88	12,8	M8	⊛
181179200	AC-RI-D20-M10-L045	20	45	95	17,8	M10	⊛
181179300	AC-RI-D25-M12-L050	25	50	106	20,8	M12	⊛
181179400	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

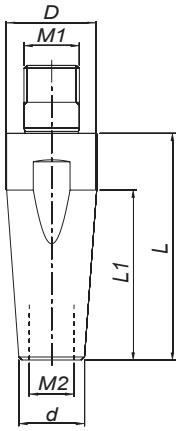
MULTIFIT EXTENSIONS FOR THREADED TYPE CUTTER | Shank | Adaptador | Fijación



order code	Reference	Dimensions (mm)				Stock
		D	M1	M2	L	
181186100	AL-M08-L040-M08	13,8	M8	M8	40	⊛
181182900	AL-M10-L060-M10	18,0	M10	M10	60	⊛
181191000	AL-M12-L060-M12	21,0	M12	M12	60	⊛
181191100	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



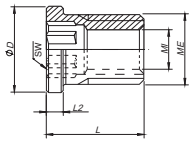
order code	Reference	Dimensions (mm)						Stock
		M1	M2	D	d	L	L1	
181186200	AL-M08-L040-M06	M8	M6	13,8	10,0	40	25	⊛
181190700	AL-M10-L040-M08	M10	M8	18,0	13,8	40	25	⊛
181190800	AL-M12-L040-M10	M12	M10	21,0	18,0	40	15	⊛
181190900	AL-M16-L040-M12	M16	M12	29,0	21,0	40	19	⊛

⊛ Stock item | Produto de stock | Itens de stock

◯ Available under request | Disponível sobre consulta | Disponible bajo consulta

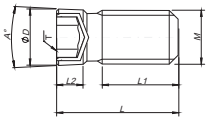
SPARE PARTS

SHIM SCREW



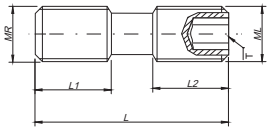
order code	Screw	Dimensions (mm)					
		SW	MI	ME	ØD	L	L2
290030400	T0503509	3,5	M3,5 x 0,6	M5,0 x 0,5	6,3	7	1,2

ADJUSTMENT SCREW



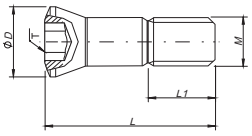
order code	Screw	T (torx)	Dimensions (mm)					
			M	ØD	A°	L	L1	L2
290051500	F0601441	T-20	M6 x 1,0	6,3	5°	13,6	8,5	3,2

DIFFERENTIAL SCREW



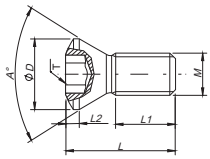
order code	Screw	T (torx)	Dimensions (mm)				
			MR	ML	L	L1	L2
290016300	F0701800	T-20	M7 x 0,75	M7 x 0,75	18	7,5	7,5

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

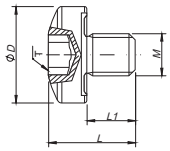
INSERT SCREW



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
290084200	P0300726	T-8	M3 x 0,35	4,40	60°	6,7	1,7	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
290084300	P0350825	T-10	M3,5 x 0,35	5,70	54°	8,4	2,8	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-10	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 0,7	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
290084400	P0501025	T-20	M5 x 0,5	7,00	60°	9,9	2,6	0,9
290084500	P0501326	T-20	M5 x 0,5	6,70	42°	13,3	3,8	1,15
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 0,8	7	60°	13	8,2	0,8
290048300	P0601402	T-20	M6 x 1,0	8,4	60°	14	9	0,9
290084600	P0601725	T-25	M6 x 0,75	7,96	44°	16,8	5,7	1,15

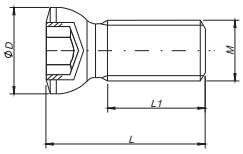
SPARE PARTS

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

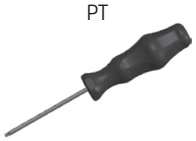
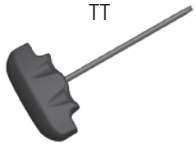


order code	Screw	Dimensions (mm)			
		M	ØD	L	L1
290075600	P0401065	M4 x 0,7	5,7	10,0	6,0
290018500	P0601265	M6 x 1,0	9,00	12,4	6,5
290011000	P0601765	M6 x 1,0	9,00	17,0	11,0
290028400	P0802265	M8 x 1,25	11,0	22,0	15,0

OTHERS

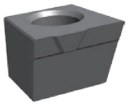
Washer	Order Code	Reference
	290012100	HC01200
	290060200	HC01400
	290002900	HC01800

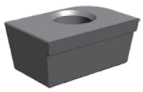
Cartridge Screw	Order Code	Reference
	119169600	D0602096

Torx Keys	Order Code	Reference
XT 	290058600	XT 06IP
	290011400	XT 06
	290012900	XT07
PT 	290011700	XT 08
	290025700	XT 09
	290013100	XT 10
TT 	290012400	XT 15
	290013200	XT 20
	290014800	PT 15
LT 	290014900	PT 20
	290056000	TT 20
	290059500	LT 30

Shim	Order Code	Reference
	160022218	CS130300
	290060400	CT160300
	290060300	CT220300

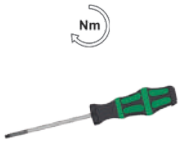
Spring Pin	Order Code	Reference
	290060600	BE02500
	290060500	BE04000

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 	290021200	SS40
TS 	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

Dynamometric Torque Key	Order Code	Reference	Torx	Nm
 (Predefined torque)	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

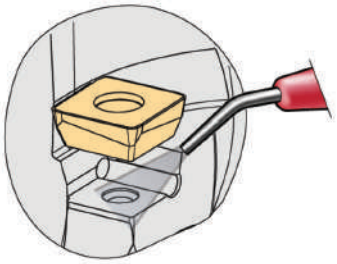
DIN 6368 Wrench	Order Code	Reference
	290058000	SD6368-12
	290058100	SD6368-16
	290058200	SD6368-20

Retaining Screw	Order Code	Reference
	290087700	D1603500
	290087800	D2004000

PROCEDURES FOR CLAMPING SCREWS

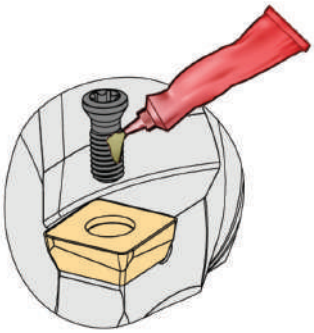
1. Always use a torque wrench to ensure that screws are correctly tightened (please confirm torques data on catalogue). Torque that is too high will negatively affect the performance of the tool and can cause screw and insert breakage. Torque that is too low will cause insert movement, vibration and 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.



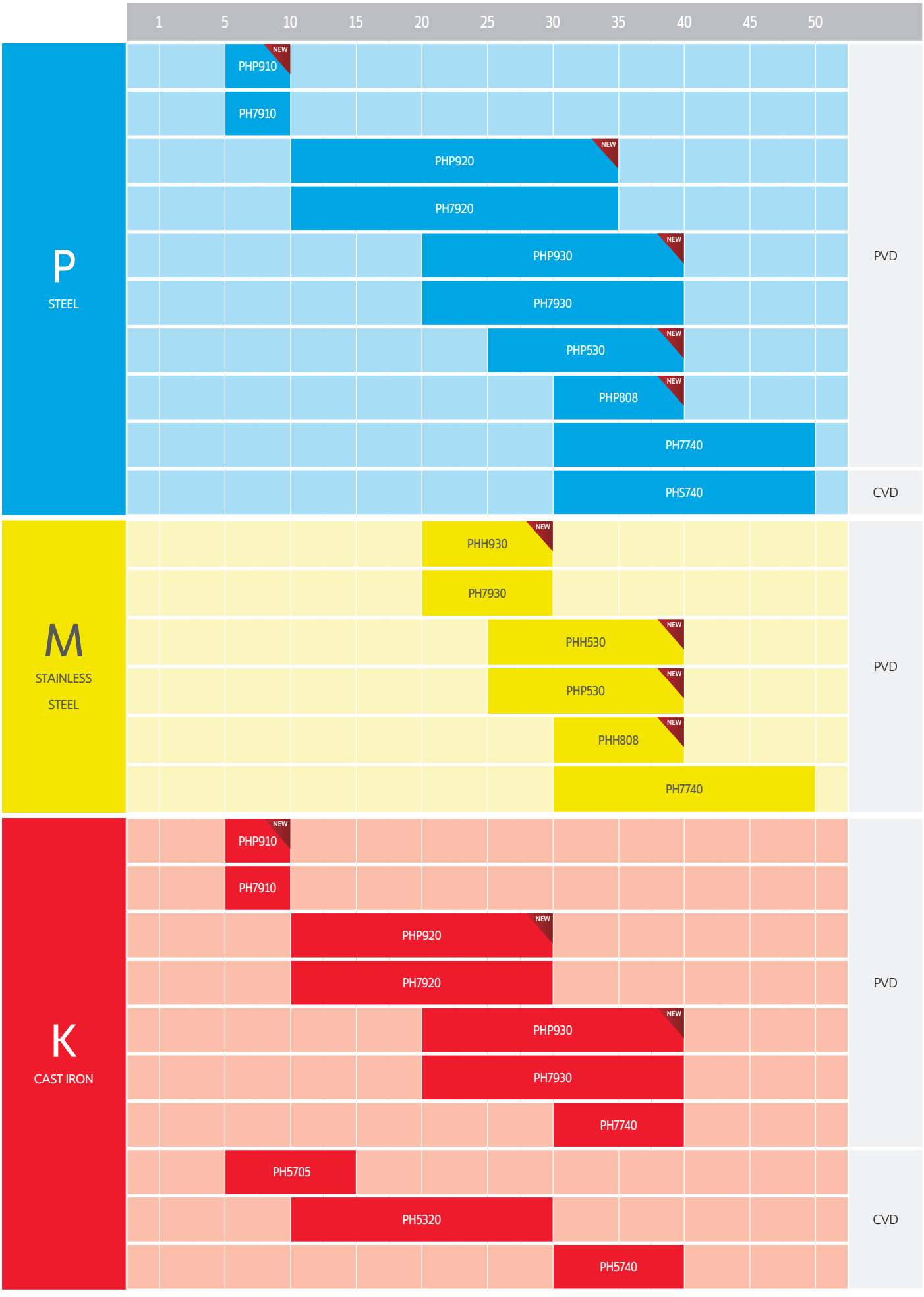
3. Check the insert seat.
Before assembly cutter it is important to ensure that the insert seat has not been damaged during machining or handling.

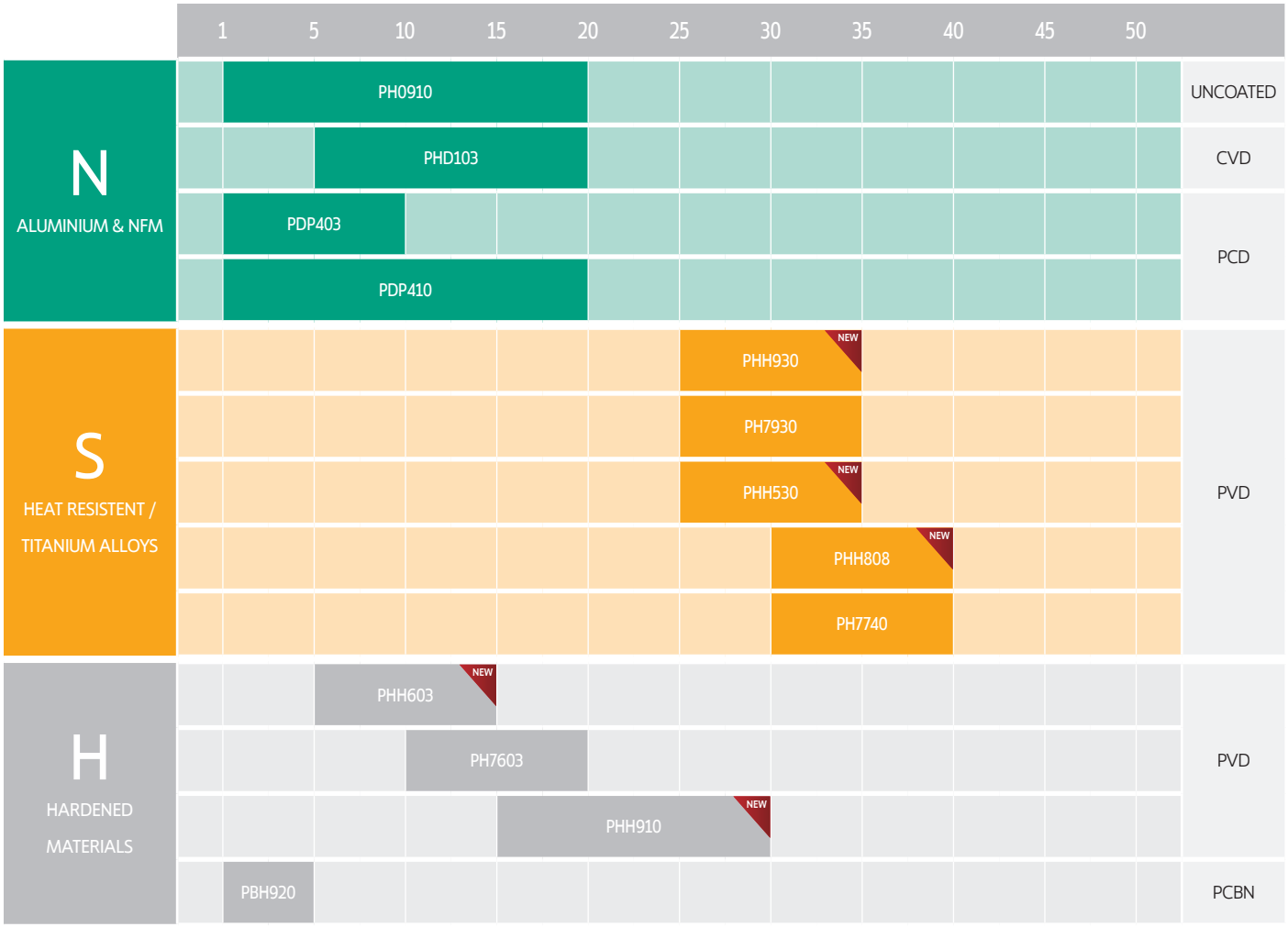
4. Apply sufficient screw lubrication to prevent seizure. Lubricant should be applied to the screw threads as well as to the screw head face.



5. Replace worn or damaged screws.

MILLING GRADES



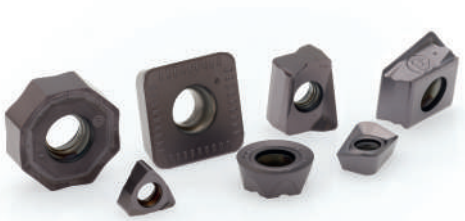


MILLING GRADES

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.



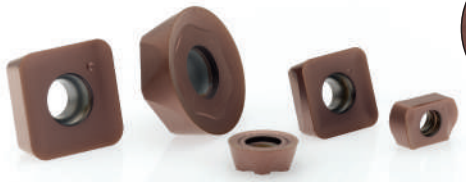
PHP NEW GRADE

WEAR RESISTANCE ⟷ TOUGHNESS

PHP910 (NEW)	PHP920 (NEW)	PHP930 (NEW)	PHP530 (NEW)	PHP808 (NEW)
P05-P10 K05-K10	P10-P35 K10-K30	P20-P40 K20-K40	P25-P40 M25-M40	P30-P40
Recommended for light operations in steels.	Recommended for General Steel & Cast Iron Milling.	Recommended for medium to roughing operations in steels and cast irons.	Extremely heat resistant grade. First choice in cold-section turbine blade milling.	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.



PHH NEW GRADE

WEAR RESISTANCE ⟷ TOUGHNESS

PHH603 (NEW)	PHH910 (NEW)	PHH930 (NEW)	PHH530 (NEW)	PHH808 (NEW)
H05-H15 P01-P05	P05-P10 H15-H30	M20-M40 S20-S30	M25-M40 S25-S35	M30-M40 S30-S40
Recommended for finishing operations in steels and hardened steels. First choice in mold and die finishing applications.	Recommended for finishing operations in steels and hardened steels in unstable conditions.	Recommended for general purpose milling of stainless steels and HRSA.	Extremely heat resistant grade. First choice in hot-section turbine blade milling.	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)	PH7910 (PH6910)	PH7920 (PH6920)	PH7930 (PH6930)	PH7740 (PH6740)
H01-H20	P05-P10 K05-K10	P10-P35 K10-K30	P20-P40 M20-M30 K20-K40 S25-S35	P30-P50 M30-M50 K30-K40 S30-S40

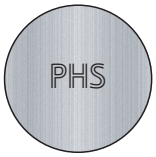
Note: PH6... grades are very similar to PH7... The difference being that PH7 is mostly used in proprietary milling lines while PH6... is used on interchangeable inserts.

CVD GRADES

PHS740...

A though substract combined with a thin CVD coating with excellent thermical 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 aplications).

PHS740
P30-P50



PH5...

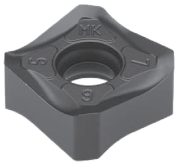
A thick CVD coating with very smooth surface. Can be used wet or dry. Ideal for machining cast irons.

WEAR RESISTANCE ◄——————————► TOUGHNESS

PH5705
K05-K10

PH5320
K10-K30

PH5740
K20-K40



PHD103

A carbide substract with high abrasion resistance coated with crystalline diamond CVD coating. Ideal for graphite machining.

PHD103
N05-N15

PH0910 - UNCOATED GRADE

Uncoated carbide micro-grain grade combining a good abrasive wear resistance and toughness. Suitable for rough to finish operations of aluminum alloys.

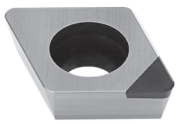
PH0910
N01-N05

PCBN GRADE

PBH920

Carbide insert with Polycrystaline Cubic Boron Nitride tip for finishing operations on hardened steels.

PBH920
H01-N05



PCD GRADE

PDP4...

Carbide insert with Polycrystaline Diamond tip for finishing operations on aluminums and non-ferrous metallic materials.

PDP403
N01-N10

PDP410
N01-N20

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
P STEEL	P01	**PH7603 PH6103**	GC1010	KC505M KC510M KC515M	IC903				ATH80D JP4105			TT2510 TT5505	JC8003	
	P10	**PH7910 PH6910 PHP910**	GC1010 GC1025	KC505M KC510M KC515M KC610M KC715M	IC903 IC907 IC950 IC908 IC910 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 PHP920**	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	**PHP808 PHP530 PH7930 PH6930 PH6135 PHP930**	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
M STAINESS STEEL	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
K CAST IRON	K01		GC1010		IC380 IC900		MP8010		ATH80D JP4105		PR1510	TT6080	JC8003	AMZ
	K10	**PH7910 PH6910 PHP910**	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	**PHP920 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 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	Ceratizit
N 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		
S 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	PTH13S 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	PTH13S 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	
H 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 JC8008 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								

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	Ceratizit
P STEEL	P40	**PHS740**				MP2500				WKP35S				
M STAINESS STEEL	M10		GC2015	KCPM20	IC9250 IC520M IC9350			ACM200					JC730U	
	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+
K CAST IRON	K01	**PH5705**		KC907M	IC8080 IC4100 IC5100 IC9150		MC5020	ACK200		WKP15	CA420M		JC605W	CTC3215
	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 WKP35S	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 WKP35S			JC610	

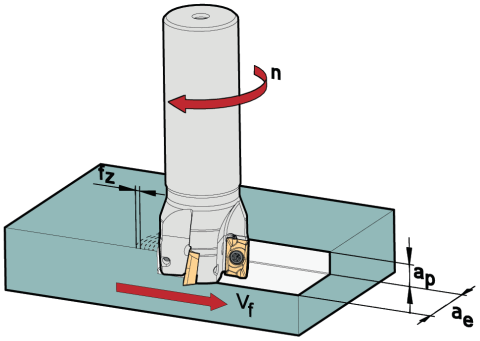
UNCOATED GRADES | GRAUS NÃO REVESTIDOS | GRADOS SÍN RECUBRIMIENTO

ISO / Material		Palbit	Sandvik	Kennametal	Iscar	Seco	Mitsubishi	Sumitomo	Hitachi	Walter	Kyocera	Taegutec	Dijet	Ceratizit
N 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

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 Revolution (mm/rev)

$$f = Z_n \cdot f_z$$

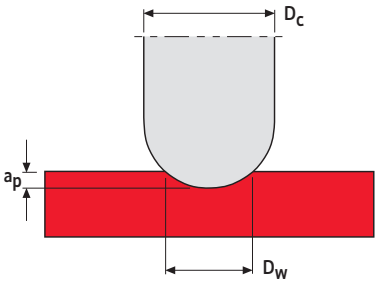
Feed per Tooth (mm/tooth)

$$f_z = \frac{v_f}{n \cdot Z_n}$$

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

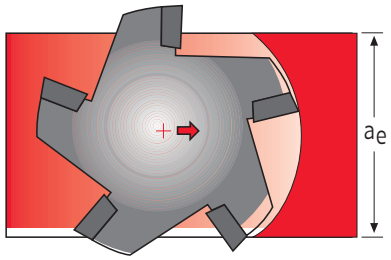
a_e	- Width of cut mm/radial depth of cut	(mm)
a_p	- Depth of cut mm/radial depth of cut	(mm)
D_c	- Cutter diameter	(mm)
D_w	- Effective diameter in cut	(mm)
f	- Feed per Revolution	(mm/rev)
f_z	- Feed per Tooth	(mm/tooth)
n	- Spindle Speed	(rev/min)
Q	- Material removal Rate	(cm³/min)
V_c	- Cutting Speed	(m/min)
V_f	- Feed Speed	(mm/min)
Z_n	- Nº of teeth	

POWER REQUIREMENT CALCULATION

Cálculo de potência requerida | Cálculo del requerimiento de potencia

Calculating the power demand

$$P_c = \frac{a_p \times a_e \times v_f}{60\,000\,000 \times \eta} \times k_c$$



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)

$$h_m = \frac{360 \times f_z \times a_e}{\pi \times Dc \times \omega_e} \times \sin k_r$$

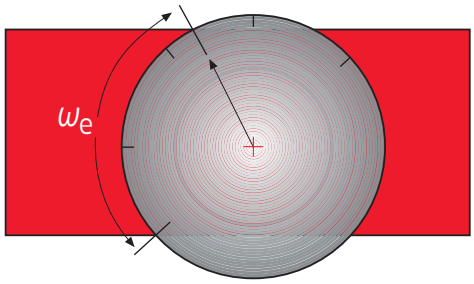
h_m - Average chip thickness (mm)
f_z - Feed per tooth (mm/tooth)
D_c - Cutter diameter (mm)
ω_e - Engagement angle
k_r - Lead angle

$$k_c = \frac{1}{h_m^{m_c}} \times k_c x$$

m_c* - Exponent
$k_c x$* - Cutting force for 1 mm chip thickness (N/mm²)

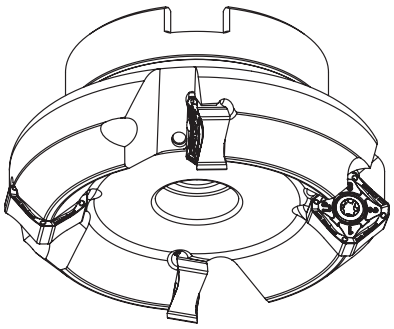
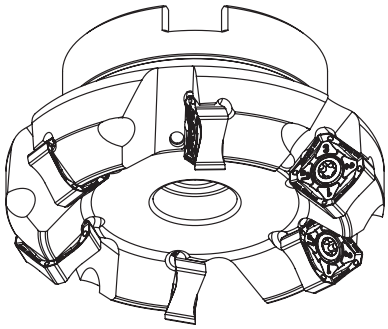
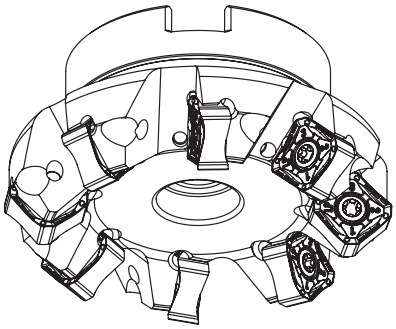
* Please see these values on page 883.

Engagement angle



Engagement a_e / D_c	Engagement angle ω_e
70%	89°
100%	180°

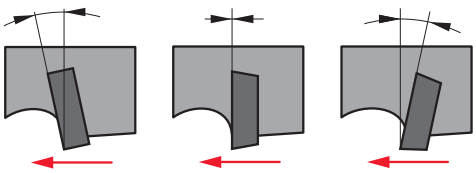
Engagement a_e / D_c	Engagement angle ω_e
5%	26°
10%	37°
75%	60°

Coarse Pitch Type	Normal Pitch Type	Fine Pitch Type
First choice for cutting aluminium (long-chipping material - ISO N). First choice for unstable operations due to lowest cutting forces. Smoth cutting allows longer overhang applications. First choice for deep cutting and high feed rates.	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.	First choice for cast iron. First choice for high productivity with low width of cut (Ae). Roughing in super alloys materials in combination with round inserts. For cutting operations where chip dischange volume is small and high table feed is desired.
		

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.



Negative (-) Rake Angle | Neutral Rake Angle | Positive Rake Angle

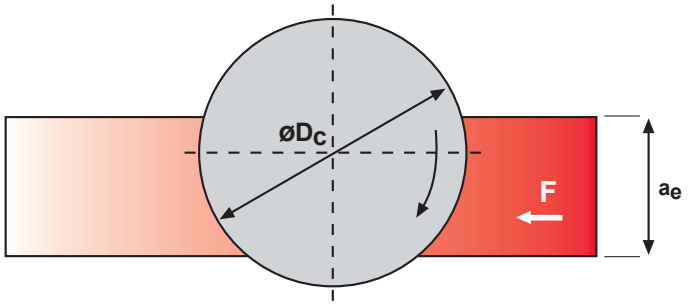
Standard Cutting Edge Shape

	Standard Cutting Edge Combinations	(+) Axial Rake Angle Radial Rake Angle (+)	(-) Axial Rake Angle Radial Rake Angle (-)	(+) Axial Rake Angle Radial 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

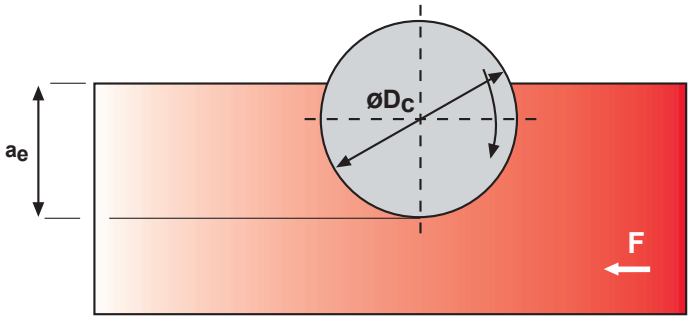
The Best Cutter Diameter (ØDc) should be selected upon the workpiece dimensions

$D_C = 1{,}3 - 1{,}5\ a_e$



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.

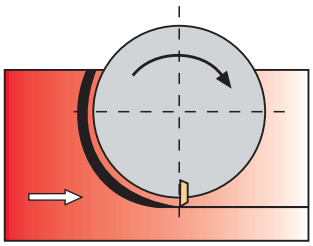
$a_e = 3/4\ D_C$



Cutter Position

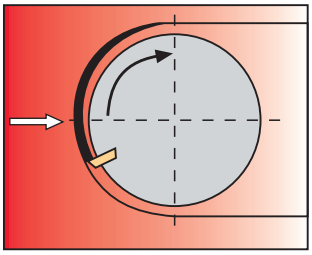
Conventional Milling (Up Milling)

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.



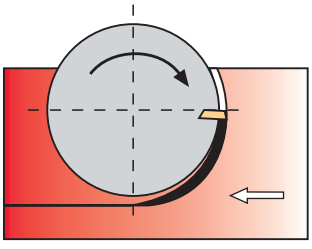
Channel Milling (Up and Down Milling)

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.



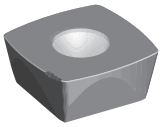
Climb Milling (Down Milling)

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.



TROUBLESHOOTING

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

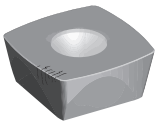
DEFORMAÇÃO ARESTA

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

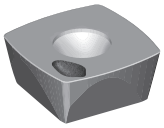
FENDAS TÉRMICAS

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

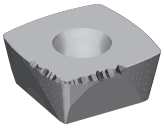
CRATERA FACE ATAQUE

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

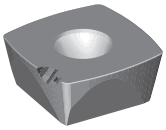
ESMILHAMENTO

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

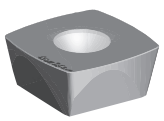
FRACTURA

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)

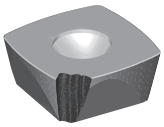
ARESTA POSTIÇA CORTE

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 geometría 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
- Selecione una geometria de rompe virutas para secciones de corte más amplias
- Reduzca en avance

PROBLEMS | PROBLEMAS | PROBLEMAS	Possible causes and areas of investigation / Causas possíveis e áreas de intervenção / Possibles causas y las áreas de intervención	cutting speed | velocidade de corte | velocidad corte	feed | avanço | avance	depth-of-cut | profundidade de corte | profundidad de corte	grade | 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 | geometría del inserto	insert finish | acabamento na pastilha | acabado del inserto	insert thickness | espessura da pastilha | espessura 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 (condiciónes)	machine condition | estado do equipamento - torno | condición de maquina	chip flow direction | direcção de fluxo da apara | dirección de la viruta	horsepower | potência | fuerza	excessive overhang | excessivo comprimento livre da ferramenta | sobreendeudamiento excessivo	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 pieça	rigidity | rigidez | estabilidad	chatter | vibração | vibraciones
• UNACCEPTABLE CHIPS • APARA DESADEQUADA • VIRUTA INACEPTABLE	• stringer / ribbons (light silver colo) • demasiado longas (cor de prata suave) • mucho larga (color plata suave)	P↑	P↑	◎		◎	◎	◎	◎		P			◎	◎			◎										
	• scorrugated / tight (dark blue or black color) • ondulado / firme (cor azul escuro ou preto) • corrugado / firme (azul / negra)	◎	P↓	◎	◎	◎	◎	◎	◎		P			◎	◎													
• WORKEPIECE CONCERNS • MATERIAL • MATERIAL	• finish / rms tolerance • tolerância e rugosidades • tolerancia y rugosidades	P	P	◎	◎	◎	◎	◎	◎	◎		◎		P				◎	◎									
	• interrupted cuts • corte interrompido • corte interrumpido	P↑	P↓	P↓	◎		◎	◎	◎		◎		◎	◎	▲			◎		◎	◎	◎			◎	◎	◎	
• MACHINE CONCERNS • MÁQUINA FERRAMENTA • MAQUINA HERRAMIENTA	• areas of investigation • áreas de intervenção • áreas de intervención	◎	◎	◎	◎	◎				◎								◎		◎	◎	◎	◎	◎	◎	P		
• INSERTS FAILURE MODES • MODOS DE RUPTURA DA PASTILHA • MODOS DE RUPTURA DE INSERTO	• edge wear • desgaste da aresta • desgaste de flanco	P	P	◎	P	◎				◎																		
	• heat deformation (upset) • deformação plástica • deformación plástic	P↓	P↓	P↓	◎	◎	◎						◎	◎														
	• thermal cracking • fendas térmicas • fissuras térmicas	◎	◎	◎	P	P	◎						◎															
	• crater • cratera na face de ataque • cráter en la pared de ataque	P↓	P↓		◎	◎	◎					◎								◎								
	• chipping • esmilhamento • filos astillados	◎	◎		P	◎	◎	P	◎	◎	◎		◎	◎	◎	◎	◎	◎	◎							◎	◎	◎
	• depth-of-cut notching • fractura • desgaste por entalla	◎	◎		◎		◎	◎	P				◎	P														
	• built-up edge • aresta postiça de corte • filos recrescidos	P↑	P↑		PVD	◎	◎	P	P	◎	◎	◎																
	• catastrophic breakage • fractura catastrófica • rotura de inserto	◎	◎	◎	◎	◎	◎	◎	◎		◎		◎	◎	◎	◎	◎			◎				◎	P	P		

↑↓ *Arrows indicate direction of adjustment | As setas indicam a direcção 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 PCD TIPPED END MILLS

Sistema de codificação para fresas de metal duro com pontas de PCD | Sistema de codificación para fresas de carburo con puntas de PCD

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

3 - Application

N - Non-ferrous materials

4 - Length of Shank

S - Short length
L - Long length
XL - Extra long length

5 - Flutes number (Z)

Example: Z = 1 ; Z = 2 ; Z = 3

6 - Cutting diameter (ØDc)

Example: 120 = 12,0 mm ; 008 = 0,8 mm

7 - Max cutting depth
(L2 - on straight flute solid carbide)

060 = 6 mm ; 080 = 8 mm

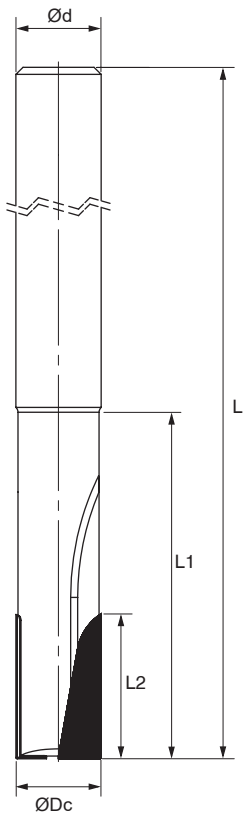
8 - Corner radius (Suppressed when it doesn't exist)

R... Example: R150 = 1,5 mm ; R015 = 0,15 mm

9 - Shank diameter (only on straight flute solid carbide)

Example: 060 = 6 mm

Straight Flute
technical drawing example

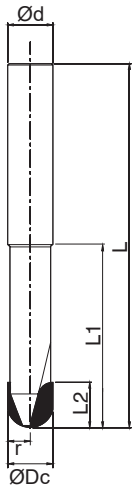


ØDc	Tool diameter
Ød	Shank diameter
L	Overall length
L1	Neck length
L2	Tip length
r	Corner form (radius or chamfer)

PCD TIPPED END MILLS

Fresas de metal duro com pontas de PCD | Fresas de carburo con puntas de PCD

HARDMILL BALL NOSE

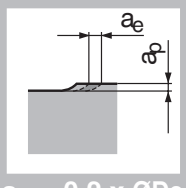
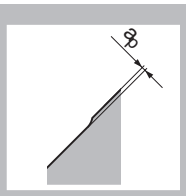


(1) Geometry code	Reference Referência Referencia		N PCD D6 PDP410	Dimensions | Dimensões | Dimensiones (mm) ØDc	Ød	L	L1	L2	r
	(2) Grade code								
1180079	DBNS 1 030 050 150 060	1	◈	3	3	60	30	5	1,50
1180080	DBNS 1 040 100 200 040	1	◈	4	4	60	30	10	2,00
1180081	DBNS 2 060 100 300 060	2	◈	6	6	80	40	10	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

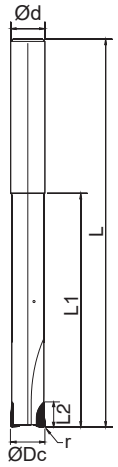
Order code = (1) Geometry Code + (2) Grade Code

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	 a_e = 0.2 x ØDc a_p = 0.1 x ØDc	 a_p = 0.05 x ØDc
	f_z (mm/t)	f_z (mm/t)
3	0,020	0,022
4	0,025	0,028
6	0,035	0,040
8	0,050	0,055
10	0,060	0,070
12	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



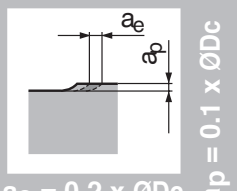
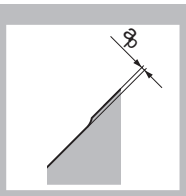
(1) Geometry code	(2) Grade code: Reference Referência Referencia		N PCD D6 PDP410	Dimensions | Dimensões | Dimensiones (mm) ØDc	Ød	L	L1	L2	r
1180073	DSNS 1 030 050 030 040	1	⚙	3	4	60	30	5	0,30
1180075	DSNL 2 040 050 030 040	2	⚙	4	4	75	45	5	0,30
1180076	DSNL 2 060 060 030 060	2	⚙	6	6	100	60	6	0,30
1180077	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	 a_e = 0.2 x ØDc a_p = 0.1 x ØDc	 a_p = 0.05 x ØDc
	f_z (mm/t)	f_z (mm/t)
3	0,020	0,022
4	0,025	0,028
6	0,035	0,040
8	0,050	0,055
10	0,060	0,070
12	0,075	0,078

Please note that the value fz from the table above must be multiplied with the corresponding correction factor.

Technical Data
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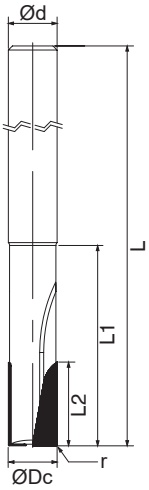
HARDMILL STRAIGHT EDGE

NEW



(1) Geometry code	(2) Grade 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) min	Vc (m/min) max	fz (mm/t) min	fz (mm/t) max	Coolant
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) min	Vc (m/min) max	fz (mm/t) min	fz (mm/t) max	Coolant
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.

ANYTIME, ANYWHERE

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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
Integral Solid Carbide example:	1	2	3	4	5	6	7	8	9		10

1 - Tool type

H - Solid carbide end mill (Hard metal)

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

3 - Helix Angle (Suppressed when it is 90°)

... - Degree of helix rounded to nearest 5 degree

4 - Application

A - Aluminium
G - General application
F - Finishing
M - Steel
S - Stainless steel
H - Hard materials
TSP - Trochoidal milling
MIN - Micro milling

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 (ØDc)

Example: 120 = 12,0 mm ; 008 = 0,8 mm

8 - Max cutting depth (ap)

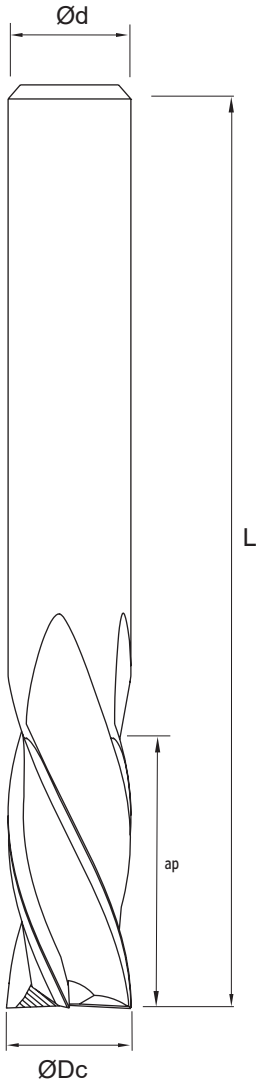
Example: 04 = 4 mm ; 06 = 6 mm

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 - α/2 = 18° , RM = 1200 mm
Example for tangential segment: RM090 - RM = 90 mm

10 - Weldon (Suppressed when it doesn't exist)

Integral Solid Carbide technical drawing example



SOLID CARBIDE END MILLS

Fresas de metal duro integral | Fresas de carburo monobloque

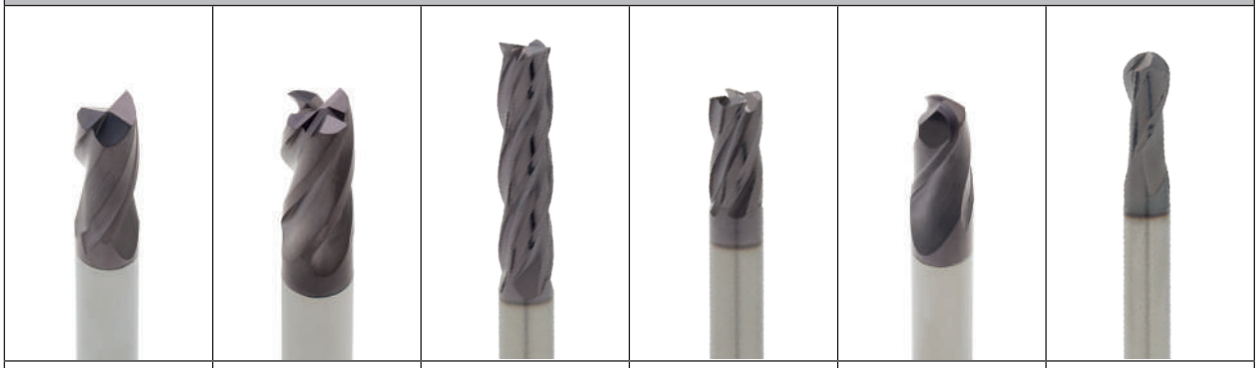
PDF

VIDEO

SELECTION GUIDE FOR SOLID CARBIDE ENDMILLS

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	●	●	●	●	●	●
M	●	●	●	●	●	●
K	●	●	●	●	●	●
N						
S						
H						
Page	A - 268	A - 269	A - 270	A - 271	A - 272	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 - 12	3 - 20	0,4 - 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	PHP603 | PHP920	PHH603	PHU920

●●●●	●●●●	●	●●●●●	●●●●●	●●●
●●	●●	●●●●●	●	●	●●●

●	●	●	●	●	●
●	●	●	●	●	●
●	●	●	●	●	●
				●	
			●	●	
A - 273	A - 273	A - 275	A - 276	A - 278	A - 281

SELECTION GUIDE FOR SOLID CARBIDE ENDMILLS

	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 - 41 - 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					
M					
K					
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
2 - 20	4 - 20	2 - 20	2 - 12	4 - 12	2 - 12
4	4	3	1	4	2
40 - 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

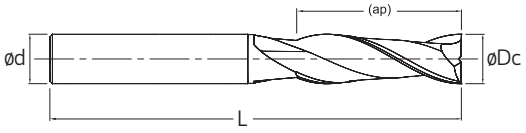
INTEG = General Purpose Endmills

NEW

HF30GS 2 Flat top endmill

PHP
NEW
GRADE

P M K



(1) Order code		(2) Grade code		T1	Dimensions | Dimensões | Dimensiones (mm)			
HA (Cylindrical)	HB (Weldon)	Reference Referência Referencia		PHP920	ØDc	Ød (h6)	ap_{max}	L
1180587	-	HF30GS 2 020 06	2	◎	2	4	6	38
1180588	-	HF30GS 2 030 12	2	◎	3	4	12	38
1180589	-	HF30GS 2 040 14	2	◎	4	4	14	50
1180590	-	HF30GS 2 050 16	2	◎	5	6	16	50
1180591	-	HF30GS 2 060 19	2	◎	6	6	19	50
1180592	1180532	HF30GS 2 080 20	2	◎	8	8	20	63
1180593	1180533	HF30GS 2 100 22	2	◎	10	10	22	75
1180594	1180534	HF30GS 2 120 25	2	◎	12	12	25	75
1180595	1180535	HF30GS 2 140 26	2	◎	14	14	26	83
1180596	1180536	HF30GS 2 160 32	2	◎	16	16	32	89
1180597	1180537	HF30GS 2 180 32	2	◎	18	18	32	92
1180598	1180538	HF30GS 2 200 38	2	◎	20	20	38	104

◎ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

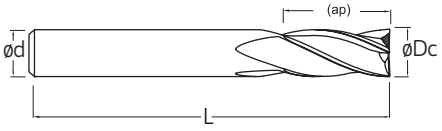
Endmill order code = (1) Geometry Code + (2) Grade Code

NEW

HF30GS 4 Flat top endmill

PHP
NEW
GRADE

P M K



(1) Order code		(2) Grade code		T1	Dimensions | Dimensões | Dimensiones (mm)			
HA (Cylindrical)	HB (Weldon)	Reference Referência Referencia		PHP920	ØDc	Ød (h6)	ap max	L
1180262	-	HF30GS 4 020 06	4	●	2	4	6	38
1180219	-	HF30GS 4 030 12	4	●	3	4	12	38
1180215	-	HF30GS 4 040 14	4	●	4	4	14	50
1180195	-	HF30GS 4 050 16	4	●	5	6	16	50
1180263	-	HF30GS 4 060 19	4	●	6	6	19	50
1180223	1180605	HF30GS 4 070 19	4	○	7	8	19	63
1180202	1180544	HF30GS 4 080 20	4	●	8	8	20	63
1180224	1180606	HF30GS 4 090 22	4	○	9	10	22	75
1180216	1180545	HF30GS 4 100 22	4	●	10	10	22	75
1180264	1180546	HF30GS 4 120 25	4	●	12	12	25	75
1180220	1180547	HF30GS 4 140 26	4	●	14	14	26	83
1180129	1180548	HF30GS 4 160 32	4	●	16	16	32	89
1180221	1180549	HF30GS 4 180 32	4	●	18	18	32	92
1180222	1180550	HF30GS 4 200 38	4	●	20	20	38	104

● Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

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

INTEG = General Purpose Endmills

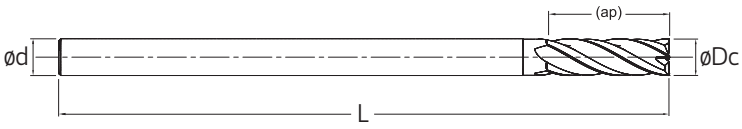
NEW

HF30GXL 4 Flat top endmill

PHP NEW GRADE

P M K

Extra long | 4 | 30° | Square | < 45 HRC



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
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 | Ítens 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 | Disponible bajo consulta

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

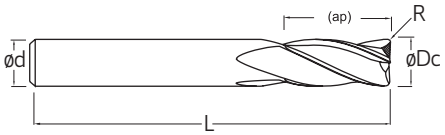
NEW

HR30GS 4 Round corner endmill

P M K

PHP NEW GRADE

Short | 4 | 30° | Corner radius | < 45 HRC



All order codes are cylindrical shank.
Weldon shank available under request.

(1) Geometry code	(2) Grade code Reference Referência Referencia		T1 PHP920	Dimensions | Dimensões | Dimensiones (mm) ØDc	Ød (h6)	ap max	R	L
1180231	HR30GS 4 030 12 R025	4	○	3	4	12	0,25	50
1180232	HR30GS 4 030 12 R050	4	○	3	4	12	0,5	50
1180233	HR30GS 4 040 14 R025	4	○	4	4	14	0,25	50
1180234	HR30GS 4 040 14 R050	4	○	4	4	14	0,5	50
1180235	HR30GS 4 050 16 R025	4	○	5	6	16	0,25	50
1180236	HR30GS 4 050 16 R050	4	○	5	6	16	0,5	50
1180237	HR30GS 4 060 19 R050	4	◈	6	6	19	0,5	50
1180238	HR30GS 4 060 19 R100	4	◈	6	6	19	1	50
1180239	HR30GS 4 070 19 R050	4	○	7	8	19	0,5	63
1180240	HR30GS 4 070 19 R100	4	○	7	8	19	1	63
1180241	HR30GS 4 080 20 R050	4	◈	8	8	20	0,5	63
1180242	HR30GS 4 080 20 R100	4	◈	8	8	20	1	63
1180243	HR30GS 4 090 22 R050	4	○	9	10	22	0,5	75
1180244	HR30GS 4 090 22 R100	4	○	9	10	22	1	75
1180245	HR30GS 4 100 22 R100	4	◈	10	10	22	1	75
1180246	HR30GS 4 100 22 R200	4	◈	10	10	22	2	75
1180247	HR30GS 4 120 25 R100	4	◈	12	12	25	1	75
1180248	HR30GS 4 120 25 R200	4	◈	12	12	25	2	75
1180249	HR30GS 4 140 26 R100	4	○	14	14	26	1	83
1180250	HR30GS 4 140 26 R200	4	○	14	14	26	2	83
1180251	HR30GS 4 160 32 R100	4	◈	16	16	32	1	89
1180252	HR30GS 4 160 32 R200	4	◈	16	16	32	2	89
1180253	HR30GS 4 180 32 R100	4	○	18	18	32	1	92
1180254	HR30GS 4 180 32 R200	4	○	18	18	32	2	92
1180255	HR30GS 4 200 38 R100	4	◈	20	20	38	1	104
1180256	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 | Disponible bajo consulta

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

Technical Data page A - 293

palbit TOOLING SOLUTIONS EXPERTS SINCE 1916

INTEG = General Purpose Endmills

NEW

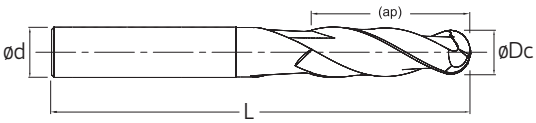
HB30GS 2 Ball nose endmill

PHP NEW GRADE

P M K

Short | 2 | 30° | Ball nose | < 45 HRC

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 disponible hasta acabar el stock

○ Available under request | Disponível sobre consulta | Disponible bajo consulta

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

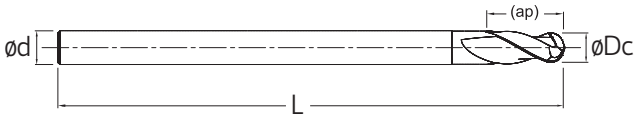
HB30GL 2 Ball nose endmill

PHP NEW GRADE

P M K

Long | 2 | 30° | Ball nose | < 45 HRC

All order codes are cylindrical shank.
Weldon shank available under request.



(1) Geometry code	(2) Grade code: Reference Referência Referencia		T1 PHP920	Dimensions | Dimensões | Dimensiones (mm): ØDc	Ød (h6)	ap max	L
1180286	HB30GL 2 040 08	2	◬	4	6	8	70
1180128	HB30GL 2 060 12	2	◬	6	6	12	75
1180029	HB30GL 2 080 14	2	◬	8	8	14	100
1180030	HB30GL 2 100 18	2	◬	10	10	18	100
1180031	HB30GL 2 120 22	2	◬	12	12	22	100

◬ 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 | Disponible bajo consulta

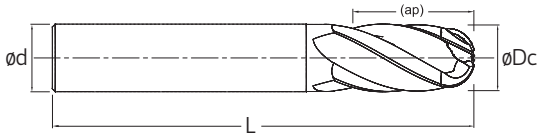
Endmill order code = (1) Geometry Code + (2) Grade Code

HB30GS 4 Ball nose endmill

P M K

PHP NEW GRADE

Short | 4 | 30° | Ball nose | < 45 HRC



All order codes are cylindrical shank.
Weldon shank available under request.

(1) Geometry code	(2) Grade code: Reference / Referência / Referencia		T1: PHP920	Dimensions | Dimensões | Dimensiones (mm): ØDc	Ød (h6)	ap max	L
1180156	HB30GS 4 020 03	4	●	2	4	3	50
1180157	HB30GS 4 030 05	4	●	3	4	5	50
1180068	HB30GS 4 040 06	4	●	4	6	6	60
1181837	HB30GS 4 050 08	4	●	5	6	8	60
1180272	HB30GS 4 060 09	4	●	6	6	9	60
1180066	HB30GS 4 080 16	4	●	8	8	16	63
1180432	HB30GS 4 100 20	4	●	10	10	20	75
1180287	HB30GS 4 120 25	4	●	12	12	25	75

● Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

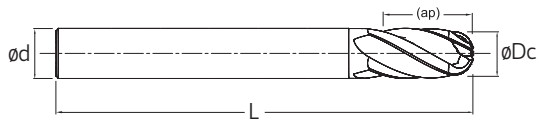
Endmill order code = (1) Geometry Code + (2) Grade Code

HB30GL 4 Ball nose endmill

P M K

PHP NEW GRADE

Long | 4 | 30° | Ball nose | < 45 HRC



All order codes are cylindrical shank.
Weldon shank available under request.

(1) Geometry code	(2) Grade code: Reference / Referência / Referencia		T1: PHP920	Dimensions | Dimensões | Dimensiones (mm): ØDc	Ød (h6)	ap max	L
1180273	HB30GL 4 020 04	4	●	2	4	4	75
1180274	HB30GL 4 030 08	4	●	3	4	8	75
1180275	HB30GL 4 040 11	4	○	4	4	11	75
1180150	HB30GL 4 050 13	4	●	5	6	13	75
1180032	HB30GL 4 060 13	4	●	6	6	13	75
1180064	HB30GL 4 080 16	4	●	8	8	16	100
1180065	HB30GL 4 100 16	4	●	10	10	16	100
1180071	HB30GL 4 120 25	4	●	12	12	25	100
1180276	HB30GL 4 160 32	4	●	16	16	32	120
1180277	HB30GL 4 200 38	4	●	20	20	38	120

● Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

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

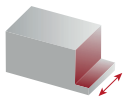
Technical Data
page A - 293

INTEG = General Purpose Endmills

NEW

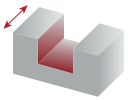
CUTTING PARAMETERS | Parâmetros de corte | Parámetros de corte

Side Milling



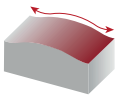
Finishing: $a_e < 0,15 \times Dc$
Semi-finishing: $0,15 \times Dc < a_e < 0,3 \times Dc$
Roughing: $a_e > 0,3 \times Dc$

Slotting



$a_e = 100\% \times Dc$

Copying



Finishing: $a_e < 0,20 \times Dc$
$a_p < 0,03 \times Dc$
Semi-finishing: $0,20 \times Dc < a_e < 0,40 \times Dc$
$0,03 \times Dc < a_p < 0,10 \times Dc$
Roughing: $a_e > 0,40 \times Dc$
$a_p > 0,10 \times Dc$

α: Surface inclination angle.

ISO	Material	fz (mm/t)					
		Side Milling			Slotting	Copying	
		$a_e = 12,5\%$	$a_e = 25\%$	$a_e = 40\%$	$a_e = 100\%$	α < 15º	α > 15º
P	Unalloyed Steel	0,009 x Dc	0,008 x Dc	0,005 x Dc	0,004 x Dc	0,012 x Dc	0,004 x Dc
	Low-Alloyed Steel	0,008 x Dc	0,007 x Dc	0,004 x Dc	0,003 x Dc	0,010 x Dc	0,003 x Dc
	High-Alloyed Steel	0,007 x Dc	0,006 x Dc	0,004 x Dc	0,003 x Dc	0,009 x Dc	0,003 x Dc
M	Stainless Steel (Ferritic / Martensitic)	0,007 x Dc	0,006 x Dc	0,004 x Dc	0,003 x Dc	0,009 x Dc	0,003 x Dc
	Stainless Steel (Austenitic)	0,005 x Dc	0,005 x Dc	0,003 x Dc	0,002 x Dc	0,007 x Dc	0,002 x Dc
	Stainless Steel (Austenitic/Ferritic/Duplex)	0,004 x Dc	0,004 x Dc	0,002 x Dc	0,002 x Dc	0,006 x Dc	0,002 x Dc
K	Malleable Cast Iron	0,009 x Dc	0,008 x Dc	0,005 x Dc	0,004 x Dc	0,012 x Dc	0,004 x Dc
	Grey Cast Iron	0,009 x Dc	0,008 x Dc	0,005 x Dc	0,004 x Dc	0,012 x Dc	0,004 x Dc
	Nodular Cast Iron	0,008 x Dc	0,008 x Dc	0,004 x Dc	0,004 x Dc	0,011 x Dc	0,004 x Dc

(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			
		$a_e = 12,5\%$	$a_e = 25\%$	$a_e = 40\%$	$a_e = 100\%$	a_p = 0,05ØDc α < 15º	a_p = 0,25ØD α < 15º	a_p = 0,05ØDc α > 15º	a_p = 0,25ØDc α > 15º
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

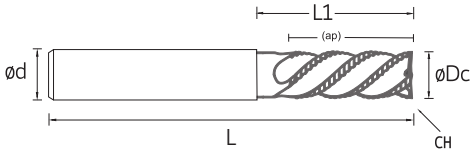
(Note 3) Table valid for PHP920 grade, for PH7920 consider reducing the cutting velocity by 10 m/min.
(Note 4) Cutting speeds selected for an economic use of the tool, for higher productivity consider increasing up to 70%.
(Note 5) For copying, spindle speed is calculated as follows: $n = \frac{Vc \times 1000}{\pi \times 2\sqrt{a_p(Dc - a_p)}}$

NEW

HRO45GS Rougher endmill

PHU
NEW
GRADE

P M K



(1) Order code		(2) Grade code		Z9	Dimensions | Dimensões | Dimensiones (mm)					
HA (Cylindrical)	HB (Weldon)	Reference Referência Referencia		PHU920	ØDc	Ød	ap_{max}	CH	L1	L
1180557	1180558	HRO45GS 3 030 08	3	○	3	6	8	0,15 x 45º	15	57
1180559	1180560	HRO45GS 4 040 11	4	○	4	6	11	0,15 x 45º	17	57
1180561	1180562	HRO45GS 4 050 13	4	○	5	6	13	0,15 x 45º	19	57
1180439	1180563	HRO45GS 4 060 13	4	◈	6	6	13	0,15 x 45º	21	57
1180440	1180564	HRO45GS 4 080 19	4	◈	8	8	19	0,15 x 45º	27	63
1180441	1180565	HRO45GS 4 100 22	4	◈	10	10	22	0,20 x 45º	32	72
1180374	1180465	HRO45GS 4 120 26	4	◈	12	12	26	0,20 x 45º	38	83
1180566	1180567	HRO45GS 5 160 32	5	◈	16	16	32	0,35 x 45º	44	92
1180568	1180569	HRO45GS 6 200 38	6	◈	20	20	38	0,60 x 45º	54	104

◈ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

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

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

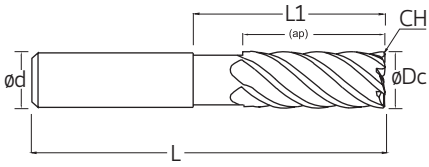
ISO	Material	fz (mm/t)			Vc (m/min)		
		ae = 25%	ae = 40%	ae = 100%	ae = 25%	ae = 40%	ae = 100%
P	Unalloyed Steel	0,008 x ØDc	0,007 x ØDc	0,005 x ØDc	170	160	140
	Low-Alloyed Steel	0,007 x ØDc	0,006 x ØDc	0,004 x ØDc	150	140	120
	High-Alloyed Steel	0,006 x ØDc	0,005 x ØDc	0,004 x ØDc	130	120	100
M	Stainless 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

PHP
NEW
GRADE

P M K H

Long | 6 | Variable Helix 43º - 45º | Reduced Neck Ø | Corner Chamfer | < 60 HRC



All order codes are cylindrical shank.
Weldon shank available under request.

(1) Geometry code	(2) Grade code: Reference Referência Referencia		T1 PHP920	X7 PHP603	Dimensions | Dimensões | Dimensiones (mm) ØDc	Ød (h6)	ap max	CH	L1	L
1180845	HC45FL 6 030 08	6	○	◈	3	6	8	0,15 x 45º	15	57
1180846	HC45FL 6 040 11	6	○	◈	4	6	11	0,15 x 45º	17	57
1180847	HC45FL 6 050 13	6	○	◈	5	6	13	0,15 x 45º	19	57
1180342	HC45FL 6 060 13	6	◈	◈	6	6	13	0,15 x 45º	21	57
1180062	HC45FL 6 080 19	6	◈	◈	8	8	19	0,15 x 45º	28	63
1180344	HC45FL 6 100 22	6	◈	◈	10	10	22	0,20 x 45º	30	72
1180343	HC45FL 6 120 26	6	◈	◈	12	12	26	0,20 x 45º	34	83
1180848	HC45FL 6 160 32	6	○	○	16	16	32	0,35 x 45º	44	92
1180849	HC45FL 6 200 38	6	○	○	20	20	38	0,60 x 45º	54	104

◈ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

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

PDF VIDEO

FIN-INTEG - Finishing Endmills

NEW

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

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

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

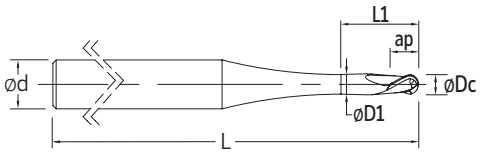
Note[1]: Feed valid for when the endmill works with its whole ap, for when the endmill is working with lower depths of cut consider increasing the feed up to 25%.
Note[2]: Cutting speeds selected for an economic use of the tool, for higher productivity consider increasing up to 70%.

NEW

HB30MINS Short neck endmills for micro machining

PHH
NEW
GRADE

P M K S H



All order codes are cylindrical shank.
Weldon shank available under request.

(1) Geometry code	(2) Grade code: Reference Referência Referencia		X4 PHH603	Dimensions | Dimensões | Dimensiones (mm) ØDc	Ød (h6)	D1	a_p	L1	L
1180769	HB30MINS 2 004 01 010	2	◉	0,4	4	0,37	0,4	1,0	50
1180297	HB30MINS 2 005 01 015	2	◉	0,5	4	0,45	0,6	1,5	50
1180288	HB30MINS 2 006 01 020	2	◉	0,6	4	0,58	0,6	2	50
1180289	HB30MINS 2 008 01 020	2	◉	0,8	4	0,78	0,8	2	50
1180298	HB30MINS 2 010 02 025	2	◉	1	4	0,95	1,3	2,5	50
1180290	HB30MINS 2 010 01 030	2	◉	1	4	0,95	1	3	50
1180291	HB30MINS 2 012 02 030	2	◉	1,2	4	1,15	1,2	3	50
1180292	HB30MINS 2 016 02 040	2	◉	1,6	4	1,55	1,6	4	50
1180293	HB30MINS 2 020 02 040	2	◉	2	4	1,94	2	4	50
1180307	HB30MINS 2 020 03 050	2	◉	2	4	1,95	2,5	5	50
1180299	HB30MINS 2 025 03 060	2	◉	2,5	6	2,45	3	6	60
1180309	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 | Disponible bajo consulta

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

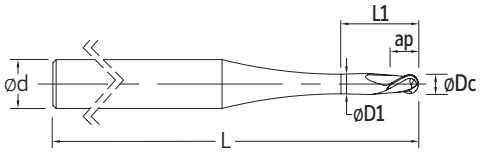
NEW

HB30MINS Medium neck endmills for micro machining

P M K S H

PHH NEW GRADE

Short | 2 | 30° | Reduced Neck Ø | Ball nose | < 70 HRC



All order codes are cylindrical shank.
Weldon shank available under request.

(1) Geometry code	(2) Grade code: Reference Referência Referencia		X4 PHH603	Dimensions | Dimensões | Dimensiones (mm) ØDc	Ød (h6)	D1	a_p	L1	L
1180305	HB30MINS 2 005 01 025	2	◈	0,5	4	0,45	0,4	2,5	50
1180308	HB30MINS 2 010 02 050	2	◈	1	4	0,95	1,3	5	50
1180336	HB30MINS 2 016 02 080	2	◈	1,6	4	1,55	1,6	8	50
1180310	HB30MINS 2 020 03 100	2	◈	2	4	1,95	2,5	10	50
1180311	HB30MINS 2 025 03 125	2	◈	2,5	6	2,45	3	12,5	60
1180301	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 | Disponible bajo consulta

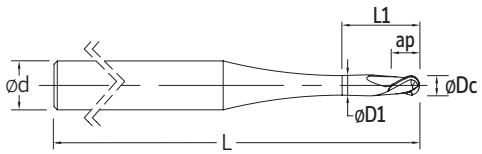
Endmill order code = (1) Geometry Code + (2) Grade Code

HB30MINS Long neck endmills for micro machining

P M K S H

PHH NEW GRADE

Short | 2 | 30° | Reduced Neck Ø | Ball nose | < 70 HRC



All order codes are cylindrical shank.
Weldon shank available under request.

(1) Geometry code	(2) Grade code: Reference Referência Referencia		X4 PHH603	Dimensions | Dimensões | Dimensiones (mm) ØDc	Ød (h6)	D1	a_p	L1	L
1180306	HB30MINS 2 005 01 040	2	◈	0,5	4	0,45	0,6	4	50
1180300	HB30MINS 2 010 02 080	2	◈	1	4	0,95	1,3	8	50
1180337	HB30MINS 2 016 02 128	2	◈	1,6	4	1,55	1,6	12,8	50
1180302	HB30MINS 2 020 03 160	2	◈	2	4	1,95	2,5	16	50
1180312	HB30MINS 2 025 03 200	2	◈	2,5	6	2,45	3	20	60
1180313	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 | Disponible bajo consulta

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

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palbit TOOLING SOLUTIONS EXPERTS SINCE 1916

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

ISO	Material	Copying					
		fz (mm/t)		Vc (m/min)			
		α < 15º	α > 15º	a_p = 0,05 ØDc α < 15º	a_p = 0,25 ØD α < 15º	a_p = 0,05 ØDc α > 15º	a_p = 0,25 ØD α > 15º
P	Unalloyed Steel	0,01 x ØDc	0,003 x ØDc	700	340	460	220
	Low-Alloyed Steel	0,009 x ØDc	0,003 x ØDc	650	320	430	210
	High-Alloyed Steel	0,008 x ØDc	0,003 x ØDc	590	290	390	190
M	Stainless Steel (Ferritic / Martensitic)	0,009 x ØDc	0,003 x ØDc	600	300	400	200
	Stainless Steel (Austenitic)	0,008 x ØDc	0,003 x ØDc	560	280	370	190
	Stainless Steel (Austenitic/Ferritic/Duplex)	0,007 x ØDc	0,002 x ØDc	540	270	360	180
K	Malleable Cast Iron	0,008 x ØDc	0,003 x ØDc	650	320	430	210
	Grey Cast Iron	0,008 x ØDc	0,003 x ØDc	640	310	420	200
	Nodular Cast Iron	0,007 x ØDc	0,002 x ØDc	600	300	400	190
S	Heat Resistant Super Alloys	0,007 x ØDc	0,002 x ØDc	230	110	150	80
H	Hardened Steels	0,008 x ØDc	0,003 x ØDc	460	230	310	150

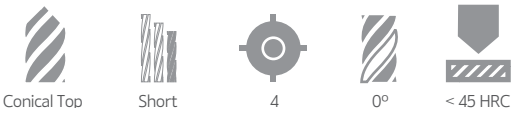
Note: Since some of the endmills have low ØDc the above Vc cannot be achieved by any conventional machining center. The endmills still work at much lower Vc.

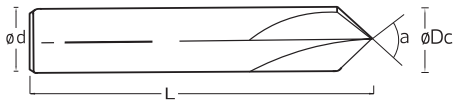
CHAMF-INTEG = Chamfering Endmill

HCHGS Chamfering endmill

PHU
NEW
GRADE

P M K





(1) Order code		(2) Grade code		Z9	Dimensions | Dimensões | Dimensiones (mm)			
HA (Cylindrical)	HB (Weldon)	Reference Referência Referencia		PHU920	ØDc	Ød (h6)	a	L
1180366	-	HCHGS 4 030 02 90	4	◎	3	3	90	38
1180367	-	HCHGS 4 040 02 90	4	◎	4	4	90	50
1180368	1180496	HCHGS 4 060 03 90	4	◎	6	6	90	57
1180369	1180497	HCHGS 4 080 04 90	4	◎	8	8	90	63
1180370	1180498	HCHGS 4 100 05 90	4	◎	10	10	90	72
1180371	1180499	HCHGS 4 120 06 90	4	◎	12	12	90	83
1180372	1180500	HCHGS 4 160 08 90	4	◎	16	16	90	92
1180373	1180553	HCHGS 4 200 10 90	4	◎	20	20	90	104

◎ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

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

Note: For HB (weldon) endmills, the reference ends with "-W "

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

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

PDF

Technical Data
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palbit TOOLING SOLUTIONS EXPERTS SINCE 1916

RAD-INTEG = Conical and Tangential Segment Endmills

NEW

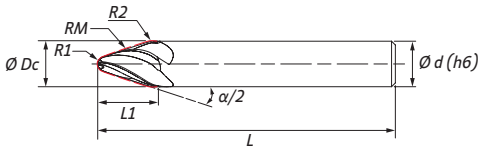
HXC30GL Conical

P M K S

PHP NEW GRADE

PHH NEW GRADE

Long | 4 | 30° | Radial Segment | < 50 HRC



All order codes are cylindrical shank.
Weldon shank available under request.

(1) Geometry code	(2) Grade code: Reference Referência Referencia		T1 PHP920	Y3 PHH920	Dimensions | Dimensões | Dimensiones (mm) ØDc	Ød (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 | Disponible bajo consulta

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

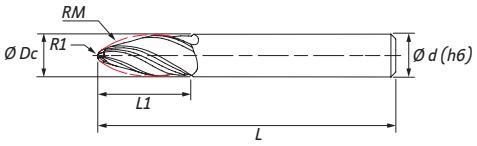
HXT30GL Tangential

P M K S

PHP NEW GRADE

PHH NEW GRADE

Long | 4 | 30° | Radial Segment | < 50 HRC



All order codes are cylindrical shank.
Weldon shank available under request.

(1) Geometry code	(2) Grade code: Reference Referência Referencia		T1 PHP920	Y3 PHH920	Dimensions | Dimensões | Dimensiones (mm) ØDc	Ød (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

PDF VIDEO

◈ Stock item | Produto de stock | Itens de stock

◯ Available under request | Disponível sobre consulta
Disponible bajo consulta

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

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Technical Data
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RAD-INTEG = Conical and Tangential Segment Endmills

NEW

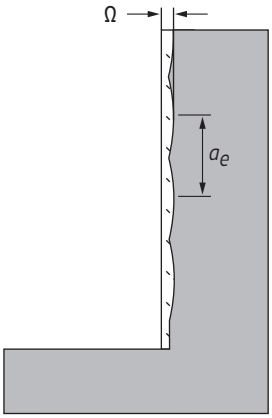
GRADES SELECTION GUIDE | Guia para selecção de graus | Tabla para selección de calidades

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

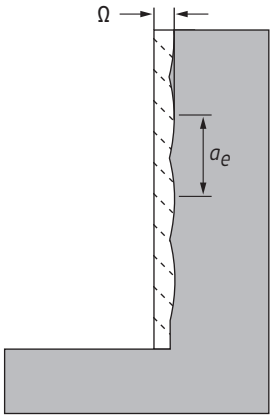
Ω - Allowance
a_e - Stepover

Ω 0,05 - 0,1 mm



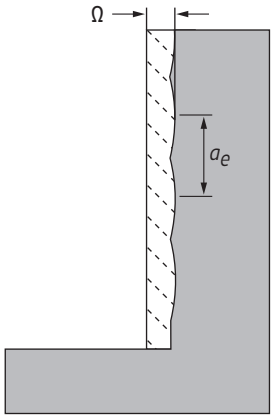
Fine Finishing

Ω 0,1 - 0,2 mm



Finishing

Ω 0,2 - 0,3 mm



Semi-Finishing

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 ØDc	0,006 x ØDc	0,007 x ØDc	0,006 x ØDc	0,005 x ØDc
	Low-Alloyed Steel	160	0,006 x ØDc	0,005 x ØDc	0,006 x ØDc	0,005 x ØDc	0,004 x ØDc
	High-Alloyed Steel	150	0,005 x ØDc	0,004 x ØDc	0,005 x ØDc	0,004 x ØDc	0,004 x ØDc
M	Stainless Steel (Ferritic / Martensitic)	120	0,005 x ØDc	0,004 x ØDc	0,005 x ØDc	0,004 x ØDc	0,004 x ØDc
	Stainless Steel (Austenitic)	120	0,004 x ØDc	0,003 x ØDc	0,004 x ØDc	0,003 x ØDc	0,003 x ØDc
	Stainless Steel (Austenitic/Ferritic/Duplex)	110	0,003 x ØDc	0,003 x ØDc	0,003 x ØDc	0,003 x ØDc	0,002 x ØDc
K	Malleable Cast Iron	220	0,007 x ØDc	0,006 x ØDc	0,007 x ØDc	0,006 x ØDc	0,005 x ØDc
	Grey Cast Iron	210	0,007 x ØDc	0,006 x ØDc	0,007 x ØDc	0,006 x ØDc	0,005 x ØDc
	Nodular Cast Iron	190	0,006 x ØDc	0,005 x ØDc	0,006 x ØDc	0,005 x ØDc	0,005 x ØDc
S	Heat Resistant Super Alloys	60	0,003 x ØDc	0,003 x ØDc	0,003 x ØDc	0,003 x ØDc	0,002 x ØDc

DYN-INTEG = Trochoidal Milling

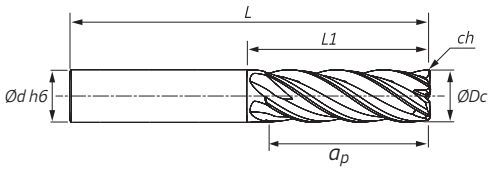
NEW

HC40TSP Corner chamfer, variable helix 40º-42º ‖ Trochoidal Speed Cutting

P K

3xD 5xD | Long Extra long | Variable Pitch 5 | Variable Helix 40º 41º 42º | Reduced Neck Ø | Chip-divider | Corner Chamfer | < 50 HRC

PHP NEW GRADE



(1) Order code		(2) Grade code		T1	Dimensions | Dimensões | Dimensiones (mm)					
HA (Cylindrical)	HB (Weldon)	Reference Referência Referencia		PHP920	ØDc	Ød (h6)	a_p max	CH	L1	L
HC40TSPL										
1180118	1180456	HC40TSPL 5 060 20	5	◈	6	6	20	0,15 x 45º	26	63
1180119	1180457	HC40TSPL 5 080 25	5	◈	8	8	25	0,15 x 45º	32	70
1180225	1180458	HC40TSPL 5 100 32	5	◈	10	10	32	0,20 x 45º	38	79
1180690	1180689	HC40TSPL 5 120 41	5	◈	12	12	41	0,20 x 45º	48	100
1180226	1180460	HC40TSPL 5 160 50	5	◈	16	16	50	0,25 x 45º	56	110
1180123	1180461	HC40TSPL 5 180 60	5	◈	18	18	60	0,30 x 45º	66	130
1180462	1180463	HC40TSPL 5 200 64	5	◈	20	20	64	0,35 x 45º	70	130
HC40TSPXL										
1180507	1180514	HC40TSPXL 5 060 30	5	◇	6	6	30	0,15 x 45º	36	75
1180508	1180515	HC40TSPXL 5 080 40	5	◇	8	8	40	0,15 x 45º	46	81
1180509	1180516	HC40TSPXL 5 100 50	5	◇	10	10	50	0,20 x 45º	59	100
1180510	1180517	HC40TSPXL 5 120 60	5	◇	12	12	60	0,20 x 45º	67	120
1180511	1180518	HC40TSPXL 5 160 80	5	◇	16	16	80	0,20 x 45º	85	136
1180512	-	HC40TSPXL 5 180 90	5	◇	18	18	90	0,30 x 45º	100	150
1180513	1180520	HC40TSPXL 5 200 100	5	◇	20	20	100	0,35 x 45º	104	162

◈ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

Endmill 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

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) ae (mm) 5,0%	fz (mm/t) ae (mm) 15%	fz (mm/t) ae (mm) 30%	Vc (m/min) ae (mm) 5,0%	Vc (m/min) ae (mm) 15%	Vc (m/min) ae (mm) 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

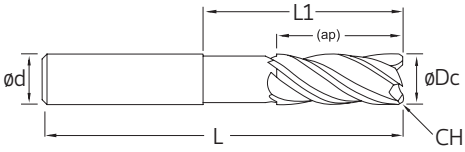
PDF

NEW

HC35ML Corner chamfer steel specialized endmills

PHP
NEW
GRADE

P K



(1) Order code		(2) Grade code		T1	Dimensions | Dimensões | Dimensiones (mm)					
HA (Cylindrical)	HB (Weldon)	Reference Referência Referencia		PHP920	ØDc	Ød (h6)	ap max	CH	L1	L
1180480	-	HF35ML 4 010 03	4	○	1	6	2,5	-	5	57
1180482	1180483	HC35ML 4 020 05	4	⊛	2	6	5	0,07 x 45°	10	57
1180466	1180467	HC35ML 4 030 08	4	⊛	3	6	8	0,15 x 45°	15	57
1180137	1180468	HC35ML 4 040 11	4	⊛	4	6	11	0,15 x 45°	17	57
1180469	1180521	HC35ML 4 050 13	4	⊛	5	6	13	0,15 x 45°	19	57
1180138	1180470	HC35ML 4 060 13	4	⊛	6	6	13	0,15 x 45°	21	57
1180052	1180471	HC35ML 4 080 19	4	⊛	8	8	19	0,15 x 45°	27	63
1180053	1180472	HC35ML 4 100 22	4	⊛	10	10	22	0,20 x 45°	32	72
1180139	1180473	HC35ML 4 120 26	4	⊛	12	12	26	0,20 x 45°	38	83
1180474	1180475	HC35ML 4 140 26	4	⊛	14	14	26	0,25 x 45°	38	83
1180153	1180476	HC35ML 4 160 32	4	⊛	16	16	32	0,35 x 45°	44	92
1180477	1180478	HC35ML 4 180 32	4	⊛	18	18	32	0,45 x 45°	44	92
1180140	1180479	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 | Disponible bajo consulta

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

Note: For HB (Weldon) endmills, the reference ends with "-W "
Example: "HC35ML 4 030 08-W"

PDF

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palbit TOOLING SOLUTIONS EXPERTS SINCE 1916

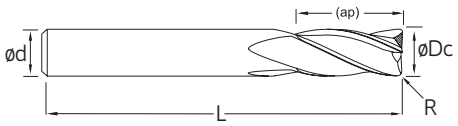
STEEL-INTEG = Steel Specialized Endmills

NEW

HR35GL Corner radius steel specialized endmills

PHP
NEW
GRADE

P K



(1) Geometry code	(2) Grade code: Reference / Referência / Referencia		T1 PHP920	Dimensions | Dimensões | Dimensiones (mm) ØDc	Ød (h6)	ap_{max}	R	L
1180042	HR35GL 4 120 26 R100	4	◎	12	12	26	1	81
1180043	HR35GL 4 120 26 R200	4	◎	12	12	26	2	81
1180044	HR35GL 4 120 26 R300	4	◎	12	12	26	3	81
1180187	HR35GL 4 160 24 R100	4	◎	16	16	24	1	100
1180188	HR35GL 4 160 24 R200	4	◎	16	16	24	2	100
1180189	HR35GL 4 200 40 R100	4	◎	20	20	40	1	100
1180190	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 | Disponible bajo consulta

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

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

ISO	Material	f_z (mm/t) a_e = 25%	a_e = 40%	a_e = 100%	Vc (m/min) a_e = 25%	a_e = 40%	a_e = 100%
P	Unalloyed Steel	0,008 x ØDc	0,005 x ØDc	0,004 x ØDc	190	180	150
P	Low-Alloyed Steel	0,007 x ØDc	0,004 x ØDc	0,003 x ØDc	180	160	130
P	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
K	Grey Cast Iron	0,008 x ØDc	0,005 x ØDc	0,004 x ØDc	230	210	170
K	Nodular Cast Iron	0,008 x ØDc	0,004 x ØDc	0,004 x ØDc	210	190	160

Note[1]: Recommended feed values for maximum a_p. For reduced a_p, consider increasing F_z up to 25%.
Note[2]: Cutting speeds selected for an economic use of the tool, for higher productivity consider increasing up to 70%.

PDF

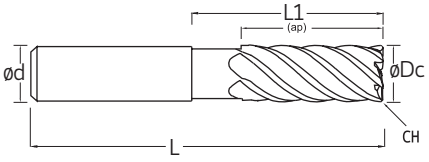
NEW

HC40SS Corner chamfer stainless steel specialized endmills

PHU
NEW
GRADE

M

Short | Variable Pitch 4 | Variable Helix 40°/41° | Reduced Neck Ø | 45° Corner chamfer | < 42 HRC



(1) Order code		(2) Grade code		Z9	Dimensions | Dimensões | Dimensiones (mm)					
HA (Cylindrical)	HB (Weldon)	Reference Referência Referencia		PHU920	ØDc	Ød (h6)	ap max	CH	L1	L
1180484	1180485	HF40SS 4 010 03	4	◎	1	6	2,5	-	5	57
1180380	1180487	HF40SS 4 020 05	4	◎	2	6	5	-	10	57
1180381	1180488	HC40SS 4 030 08	4	◎	3	6	8	0,15 x 45°	15	57
1180382	1180489	HC40SS 4 040 11	4	◎	4	6	11	0,15 x 45°	17	57
1180383	1180490	HC40SS 4 050 13	4	◎	5	6	13	0,15 x 45°	19	57
1180384	1180389	HC40SS 4 060 13	4	◎	6	6	13	0,15 x 45°	21	57
1180329	1180491	HC40SS 4 080 19	4	◎	8	8	19	0,15 x 45°	27	63
1180385	1180492	HC40SS 4 100 22	4	◎	10	10	22	0,20 x 45°	32	72
1180386	1180493	HC40SS 4 120 26	4	◎	12	12	26	0,20 x 45°	38	83
1180436	1180494	HC40SS 4 140 26	4	◎	14	14	26	0,25 x 45°	38	83
1180387	1180390	HC40SS 4 160 32	4	◎	16	16	32	0,35 x 45°	44	92
1180555	1180556	HC40SS 4 180 32	4	◎	18	18	32	0,45 x 45°	44	92
1180388	1180455	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 | Disponible bajo consulta

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

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

ISO	Material	fz (mm/t)			Vc (m/min)		
		ae			ae		
		25%	40%	100%	25%	40%	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

Note[1]: 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%.
Note[2]: Cutting speeds selected for an economic use of the tool, for higher productivity consider increasing up to 70%.

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palbit TOOLING SOLUTIONS EXPERTS SINCE 1916

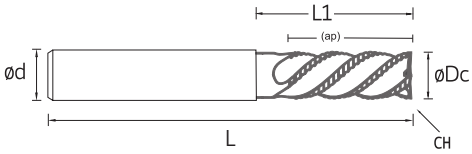
INOX-INTEG = Endmills for Stainless Steel

NEW

HRO40SS Rougher stainless steel specialized endmills

PHU
NEW GRADE

M



(1) Order code		(2) Grade code		Z9	Dimensions | Dimensões | Dimensiones (mm)					
HA (Cylindrical)	HB (Weldon)	Reference Referência Referencia		PHU920	ØDc	Ød (h6)	ap_{max}	CH	L1	L
1180701	1180702	HRO40SS 4 030 08	4	◎	3	6	8	0,15 x 45°	24	57
1180445	1180392	HRO40SS 4 040 11	4	◎	4	6	11	0,15 x 45°	17	57
1180446	1180393	HRO40SS 4 050 13	4	◎	5	6	13	0,15 x 45°	19	57
1180447	1180394	HRO40SS 4 060 13	4	◎	6	6	13	0,15 x 45°	21	57
1180448	1180395	HRO40SS 4 080 19	4	◎	8	8	19	0,15 x 45°	27	63
1180391	1180396	HRO40SS 4 100 22	4	◎	10	10	22	0,20 x 45°	32	72
1180449	1180397	HRO40SS 4 120 26	4	◎	12	12	26	0,20 x 45°	38	83
1180450	1180398	HRO40SS 4 140 26	4	◎	14	14	26	0,25 x 45°	38	83
1180451	1180399	HRO40SS 4 160 32	4	◎	16	16	32	0,35 x 45°	44	92
1180452	1180400	HRO40SS 4 180 32	4	◎	18	18	32	0,45 x 45°	44	92
1180453	1180454	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 | Disponible bajo consulta

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

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

ISO	Material	f_z (mm/t) ae			Vc (m/min) ae		
		25%	40%	100%	25%	40%	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

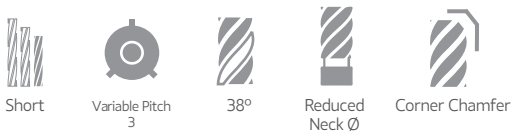
Note¹: Feed valid for when the endmill works with its whole ap, for when the endmill is working with lower depths of cut consider increasing the feed up to 25%.
Note²: Cutting speeds selected for an economic use of the tool, for higher productivity consider increasing up to 70%.

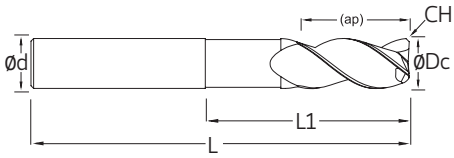
PDF

NEW

HC38AS 3 Corner chamfer aluminium specialized endmills

N





(1) Order code		(2) Grade code		12	Dimensions | Dimensões | Dimensiones (mm)					
HA (Cylindrical)	HB (Weldon)	Reference Referência Referencia		PH0920	ØDc	Ød (h6)	ap_{max}	CH	L1	L
1180401	1180410	HC38AS 3 030 07	3	◈	3	6	7	0,15 x 45°	15	57
1180402	1180411	HC38AS 3 040 08	3	◈	4	6	8	0,15 x 45°	17	57
1180403	1180412	HC38AS 3 050 10	3	◈	5	6	10	0,15 x 45°	19	57
1180404	1180413	HC38AS 3 060 10	3	◈	6	6	10	0,15 x 45°	21	57
1180405	1180414	HC38AS 3 080 16	3	◈	8	8	16	0,15 x 45°	27	63
1180406	1180415	HC38AS 3 100 19	3	◈	10	10	19	0,20 x 45°	32	72
1180407	1180416	HC38AS 3 120 22	3	◈	12	12	22	0,20 x 45°	38	83
1180408	1180417	HC38AS 3 160 26	3	◈	16	16	26	0,35 x 45°	44	92
1180409	1180418	HC38AS 3 200 32	3	◈	20	20	32	0,35 x 45°	54	104

◈ Stock item | Produto de stock | Itens de stock ◯ Available under request | Disponível sobre consulta | Disponible bajo consulta

Endmill 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"

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

ISO	Material	f_z (mm/t)			Vc (m/min)		
		a_e = 25%	a_e = 40%	a_e = 100%	a_e = 25%	a_e = 40%	a_e = 100%
N	Aluminium <6%Si	0,011 x ØDc	0,009 x ØDc	0,006 x ØDc	230	220	190
	Aluminium <12%Si	0,009 x ØDc	0,008 x ØDc	0,005 x ØDc	210	200	180
	Aluminium >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%.

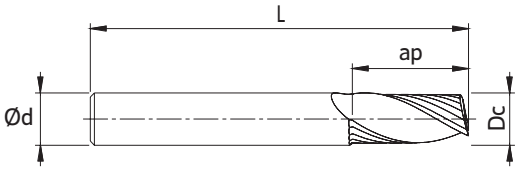
PDF

AL-INTEG - Aluminium Specialized Endmills

NEW

HF30AS Single edge aluminium endmills

N



(1) Geometry code	(2) Grade code: Reference / Referência / Referencia		12 PH0920	Dimensions | Dimensões | Dimensiones (mm) ØDc	Ød (h6)	ap max	L
1180751	HF30AS 1 020 05	1	◈	2	6	5	57
1180752	HF30AS 1 030 08	1	◈	3	6	8	57
1180753	HF30AS 1 040 11	1	◈	4	6	11	57
1180754	HF30AS 1 050 13	1	◈	5	6	13	57
1180755	HF30AS 1 060 13	1	◈	6	6	13	57
1180756	HF30AS 1 080 19	1	◈	8	8	19	63
1180757	HF30AS 1 100 25	1	◈	10	10	22	72
1180758	HF30AS 1 120 26	1	◈	12	12	26	83

◈ Stock item | Produto de stock | Itens de stock ◯ Available under request | Disponível sobre consulta | Disponible bajo consulta

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

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

ISO	Material	f_z (mm/t) a_e = 25%	a_e = 40%	a_e = 100%	Vc (m/min) a_e = 25%	a_e = 40%	a_e = 100%
N	Aluminium <6%Si	0,011 x ØDc	0,009 x ØDc	0,006 x ØDc	230	220	190
	Aluminium <12%Si	0,009 x ØDc	0,008 x ØDc	0,005 x ØDc	210	200	180
	Aluminium >12%Si	0,008 x ØDc	0,007 x ØDc	0,005 x ØDc	200	190	170

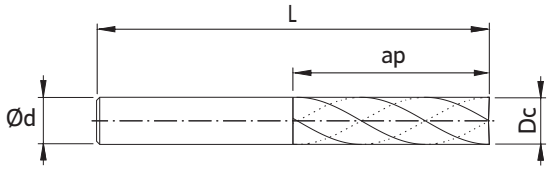
Note[1]: Recommended feed values for maximum ap. For reduced ap, consider increasing f_z up to 25%.
Note[2]: Cutting speeds selected for an economic use of the tool, for higher productivity consider increasing up to 70%.

PDF

HF30HL Flat top endmill for hard materials

PHH
NEW
GRADE

H



(1) Geometry code	(2) Grade code: Reference Referência Referencia		X4 PHH603	Dimensions | Dimensões | Dimensiones (mm) ØDc	Ød (h6)	ap max	L
1180112	HF30HL 4 040 20	4	●	4	6	20	75
1180358	HF30HL 4 050 20	4	●	5	6	20	75
1180196	HF30HL 4 060 30	4	●	6	6	30	75
1180113	HF30HL 4 080 35	4	●	8	8	35	100
1180359	HF30HL 4 100 40	4	●	10	10	40	100
1180111	HF30HL 4 120 50	4	●	12	12	50	100

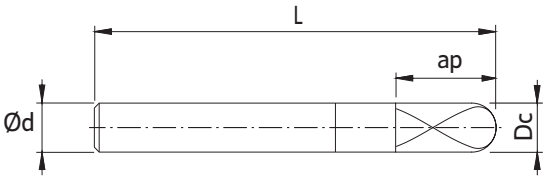
● Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

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

HB30HL Ball nose endmill for hard materials

PHH
NEW
GRADE

H



(1) Geometry code	(2) Grade code: Reference Referência Referencia		X4 PHH603	Dimensions | Dimensões | Dimensiones (mm) ØDc	Ød (h6)	ap max	L
1180356	HB30HL 2 020 04	2	◈	2	6	4	75
1180357	HB30HL 2 030 06	2	◈	3	6	6	75
1180093	HB30HL 2 040 08	2	◈	4	6	8	75
1180109	HB30HL 2 050 10	2	◈	5	6	10	75
1180130	HB30HL 2 060 12	2	◈	6	6	12	75
1180131	HB30HL 2 080 16	2	◈	8	8	16	75
1180132	HB30HL 2 100 20	2	◈	10	10	20	100
1180141	HB30HL 2 120 24	2	◈	12	12	24	100

◈ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta

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

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

ISO	Material	Vc (m/min) 10%	Vc (m/min) 30%	fz (mm/t) 10%	fz (mm/t) 30%
H	Hardened Steels	120	110	0,006 x ØDc	0,005 x ØDc

INTEG GRADES

NEW

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.

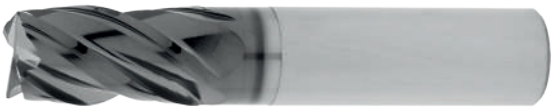
PHH

- 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

Trouble | Problema	Cause | Causa | Fuente	Possible Solution | Solução | Solución
Breaking of tool Quebra da ferramenta Ruptura de la herramienta	• At time of engaging with work material • No ínicio da maquinação • Al principio del mecanizado	• 1. Decrease feed rate. • 2. Decrease projection amount. • 3. Shorten cutting edge length to required minimum limit. • 1. Diminuir a taxa de avanço. • 2. Diminuir quantidade de projeção. • 3. Encurtar comprimento da aresta de corte para limite mínimo exigido. • 1. Diminuir a taxa de avanço. • 2. Disminuir la cantidad de proyección. • 3. Acortar la longitud de la arista de corte para el límite mínimo.
	• When ending cut • No final da maquinação • Al final del mecanizado	
	• During normal cutting • Durante o corte normal • Durante el corte normal	• 1. Decrease feed rate. • 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. • 1. Diminuir a taxa de avanço. • 2. Controlar desgaste - substituir ferramenta atempadamente. • 3. Substitua mandril ou porta-pinça. • 4. Diminuir quantidade de projeção • 5. Criar boleamento • 6. Se tiver 4 navalhas, reduzir para 2 (obstrução da apara). • 7. Se utilizou corte seco alterar para corte com utilização de fluído. No caso de utilização de fluído frontal, alterar para utilização do fornecimento do fluído pela parte traseira. • 1. Diminuir a taxa de avanço. • 2. Controlar Desgaste - substituir herramienta atempadamente. • 3. Reemplace plato o el portaherramienta. • 4. Disminuir la cantidad de proyección. • 5. Crear redondeo. • 6. Si 4 hélices, reducir a 2 hélices (obstrucción de viruta). • 7. 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.
	• When changing direction of feed • Ao mudar do direcção do avanço • Al cambiar la dirección de avance	• 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. • 1. Utilização de interpolação helicoidal (no caso de máquina CNC). • 2. Reduzir avanço antes ou depois de mudar de direcção. • 3. Substitua mandril ou porta-pinças. • 1. Utilización de interpolación helicoidal (para máquina CNC). • 2. Reducir avance antes o después de cambiar de dirección. • 3. Reemplace plato o el portaherramienta.
Fracture of cutting edge Fratura da aresta de corte Fractura de la arista de corte	• Fracture of corners • Fratura dos cantos • Fratura dos cantos	• 1. Carry out chamfering or nose with hand lapper. • 2. Down cut - Up cut. • 1. Criar chanfro. • 2. Corte inferior - Corte Superior. • 1. Criar chanfro. • 2. Corte inferior - Corte Superior.
	• Fracture at boundary of depth of cut • Fratura no limite de profundidade de corte • Fractura en el límite de profundidad de corte	• 1. Down cut - Up cut. • 2. Reduce cutting speed. • 1. Corte inferior - Corte Superior. • 2. Reduzir velocidade de corte. • 1. Corte inferior - Corte Superior. • 2. Reducir la velocidad de corte.
	• Chipping at center part or overall • Esmilhar na parte central ou global • Astillado en parte central o general	• 1. Carry out honing or enlarge. • 2. Change number of rotation (in case machine vibrates). • 3. Increase cutting speed. • 4. In ease of squeaking noise during cutting, increase feed. • 5. It dry cutting use cutting fluid or blow air. • 6. Replace chuck or collet. • 7. Reduce cutting speed. • 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 maquinar a seco, utilizar fluído de corte ou ar comprimido. • 6. Substitua mandril ou porta-pinça. • 7. Reduzir velocidade de corte. • 1. Crear 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. Reducir la velocidad de corte.
	• Large fracturing of cutting edge • Grande fratura da aresta de corte • Gran fractura de la arista de corte	• 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. • 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 fluído. No caso de utilização de fluído frontal, alterar para utilização do fornecimento do fluído pela parte traseira. Use amplo fornecimento de fluído de corte. • 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. Reducir 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		• 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. • 1. Reducir la velocidad de corte. • 2. Corte Superior - Corte Inferior. • 3. Aumentar avanço. • 4. Utilize fluído de corte ou ar comprimido. • 5. Se utilizar uma ferramenta afiada, melhora a rugosidade da superfície ou flanco. • 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	• Surface is good but rough • Superfície boa mas irregular • Buena superficie, pero irregular	• 1. Decrease feed. • 2. In case using 2 flute, increse to 4 flute. • 1. Diminuir avanço. • 2. No caso de usar 2 hélices, aumentar para 4. • 1. Reducir avance. • 2. En caso de utilizar 2 filos de corte, aumentar para 4.
	• Small chip welding • Soldadura de pequenas aparas • Soldadura de pequeñas virutas	• 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. • 1. Aumente velocidade de corte. • 2. Utilize fluído de corte e ar comprimido. • 3. Aumentar boleamento. • 4. Corte Superior - Corte Inferior. • 5. Aumento o avanço ou alargue as tolerâncias no acabamento. • 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.
	• With transverse streaks • Com as raias transversais • Con rayas transversales	• 1. Carry out fine honing. • 2. Use water insoluble cutting fluid. • 3. Down cut - Up cut. • 1. Aumentar boleamento. • 2. Utilize fluídos de corte. • 3. Corte Inferior - Corte Superior. • 1. Aumentar redondeo. • 2. Utilice fluidos de corte. • 3. Corte Inferior - Corte Superior.
	• Signs of excessive cutting • Sinais de corte excessivo • Señales de corte excesivo	• 1. Reduce finishing depth of cut. • 2. Increase cutting speed. • 3. Reduce feed. • 1. Reduzir profundidade de corte no acabamento. • 2. Aumente velocidade de corte. • 3. Diminuir avanço. • 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	• Finish dimensions are on minus side • Dimensões do acabamento estão inferiores ao previsto • Las dimensiones del acabado están terminando abajo de lo esperado	• 1. Up cut - Down cut. • 2. Reduce finishing depth of cut. • 3. Replace chuck or collet. • 4. Reduce projection amount. • 5. Increase cutting speed. • 1. Corte Superior - Corte Inferior. • 2. Reduzir profundidade de corte no acabamento. • 3. Substitua mandril ou porta-pinça. • 4. Diminuir quantidade de projeção. • 5. Aumentar velocidade de corte. • 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.
	• Poor perpendicularity • Fraca perpendicularidade • Fraca perpendicularidade	• 1. Reduce finishing depth of cut. • 2. Replace chuck or collet. • 3. Reduce projection amont. • 4. Increase cutting speed. • 5. 2 Flute - 4 Flute. • 6. Reduce feed. • 7. Check wear rate - Replace tool. • 1. Reduzir profundidade de corte no acabamento. • 2. Substitua mandril ou porta-pinça. • 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. • 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.
		• 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. • 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-pinça. • 4. Diminuir quantidade de projeção. • 5. Usar 2 hélices para desbaste e 4 para acabamento. • 6. Corte Inferior - Corte Superior. • 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 filos de corte para desbaste y 4 para acabado. • 6. Corte Inferior - Corte Superior.