



HIGH FEED MILLING

1 TETRAFEED 16320 | 16420

- > Suitable for machining **P M K S**
- > See page A - 76

2 PENTA HIFEED 06320

- > Suitable for machining **P K**
- > See page A - 88

3 HIFEED 06410 | 06690 | 06815

- > Suitable for machining **P M K S**
- > See page A - 94

4 HIFEED 50560 | 50060

- > Suitable for machining **P M K S**
- > See page A - 112

5 LINEPRO 20090 | 20190 (with XPET-HF insert)

- > Suitable for machining **P M K S**
- > See page A - 154

16320 | 16420

TETRAFEED



TETRAFEED 16320 | 16420 are lines with a robust cutter body that provides higher fatigue and deformation resistance, ensuring a longer tool life. Thanks to its light-cutting action, combined with a robust shank design, TETRAFEED ensures secure and vibration-free machining, even with long overhangs. The progressive cutting insert edge permits a smoother cut, reducing cutting forces.

TETRAFEED 16320 | 16420 são linhas com um corpo de ferramenta robusto oferecendo maior resistência à fadiga e deformação, garantindo uma vida útil mais longa da ferramenta. Graças à sua ação de corte leve, combinada com um design de haste robusto, as TETRAFEED garantem fresagem segura e livre de vibrações, mesmo com balanços longos. A geometria curva da aresta de corte da pastilha permite um corte mais suave, reduzindo as forças de corte.

TETRAFEED 16320 | 16420 son líneas con un cuerpo de herramienta robusto que ofrece una mayor resistencia a la fatiga y deformación, asegurando una vida útil más larga de la herramienta. Gracias a su acción de corte ligera, combinada con un diseño de mango robusto, las TETRAFEED garantizan un fresado seguro y libre de vibraciones, incluso con voladizos largos. La geometría curva del filo de corte de la plaquita permite un corte más suave, reduciendo las fuerzas de corte.

TETRAFEED 16320 > page 78

- > From DC 26mm to 80mm
De DC 16mm a 80mm | Desde DC 16mm hasta 80mm
- > Available in arbor, threaded, weldon and cylindrical shank
Disponível em montagem tipo árvore, acoplamento roscado, haste weldon e cilíndrica | Disponible en fijación con tornillo central, fijación roscada, mango tipo weldon y cilíndrico
- > Robust XNKU 06 insert with 4 cutting edges
Pastilha XNKU 06 robusta com 4 arestas de corte | Plaquita XNKU 06 robusta con 4 filos de corte
- > Close pitch cutter design for high productivity
Passo fino para alta produtividade | Paso fino para alta productividad



NEW TETRAFEED 16420 > page 84

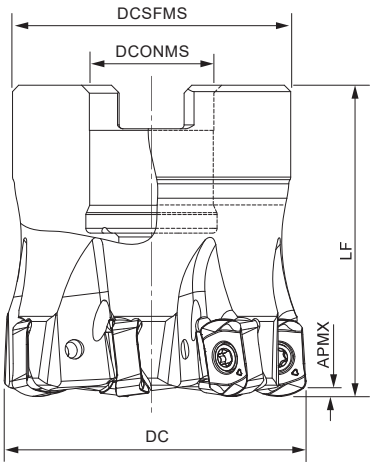
- > From DC 50mm to 100mm
De DC 50mm a 100mm | Desde DC 50mm hasta 100mm
- > Available in arbor mounting and weldon shank
Disponível em montagem tipo árvore e haste weldon | Disponible en fijación con tornillo central y mango tipo weldon
- > Ideal for rough milling of medium to large-sized components
Ideal para fresagem de desbaste de componentes de médio a grande porte | Ideal para el fresado de desbaste de componentes de tamaño mediano a grande.
- > For high removal rate materials
Para altas taxas de remoção de material | Para una alta tasa de remoción de material





Arbor Mounting

KAPR=20° | GAMP=-7° | RP=1,8



Order code Código	Reference Referência Referencia	CICT	Dimensions Dimensões Dimensiones (mm)				WT	Specifications		Insert	Stock
			DC	DCONMS	DCSFMS	LF		Arbor Type	APMX (mm)		
181206300	032A16320-05-07-016040	5	32	16	30	40	0,14	A	1,00	XNKU 06...	Ⓢ
181152300	040A16320-07-07-016040	7	40	16	36	40	0,20	A	1,00	XNKU 06...	Ⓢ
181157500	050A16320-06-07-022040	6	50	22	42	40	0,25	A	1,00	XNKU 06...	Ⓢ
181152400	050A16320-08-07-022040	8	50	22	42	40	0,29	A	1,00	XNKU 06...	Ⓢ
181152500	052A16320-08-07-022040	8	52	22	42	40	0,39	A	1,00	XNKU 06...	Ⓢ
181152600	063A16320-09-07-022040	9	63	22	48	40	0,50	A	1,00	XNKU 06...	Ⓢ
181177800	080A16320-10-07-027050	10	80	27	60	50	0,95	A	1,00	XNKU 06...	Ⓢ

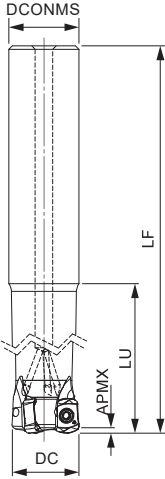
Ⓢ Stock item | Produto de stock | Itens de stock

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



Cylindrical Shank

KAPR=20° | GAMP=-7° | RP=1,8

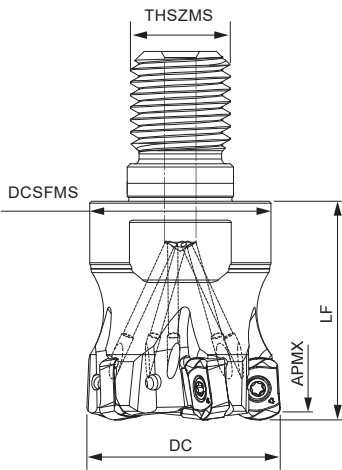
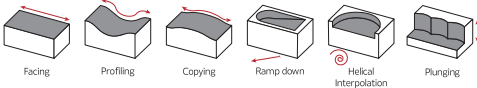


Order code Código	Reference Referência Referencia	CICT	Dimensions Dimensões Dimensiones (mm)				WT	Specifications		Insert	Stock
			DC	DCONMS	LF	LU		APMX (mm)			
181183700	016E16320-02-07-016100	2	16	16	100	50	0,19	1,00		XNKU 06...	Ⓢ
181171900	016E16320-02-07-016150	2	16	16	150	50	0,19	1,00		XNKU 06...	Ⓢ
181183800	020E16320-03-07-020130	3	20	20	130	80	0,30	1,00		XNKU 06...	Ⓢ
181183400	020E16320-03-07-020160	3	20	20	160	80	0,30	1,00		XNKU 06...	Ⓢ
181183900	025E16320-04-07-025140	4	25	25	140	100	0,54	1,00		XNKU 06...	Ⓢ
181183500	025E16320-04-07-025180	4	25	25	180	100	0,54	1,00		XNKU 06...	Ⓢ
181172200	032E16320-05-07-032150	5	32	32	150	120	1,00	1,00		XNKU 06...	Ⓢ
181183600	032E16320-05-07-032200	5	32	32	200	120	1,00	1,00		XNKU 06...	Ⓢ

Ⓢ 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

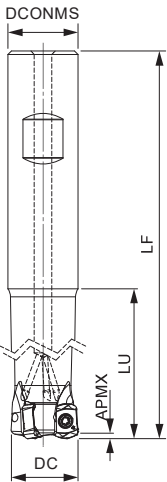
○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9)
Disponible bajo consulta (mire pagina A-9)



Threaded Coupling
KAPR=20° | GAMP=-7° | RP=1,8

Table with 11 columns: Order code, Reference, CICT, Dimensions (DC, THSZMS, DCSFMS, LF), WT, Specifications (APMX), Insert, Stock. It lists 10 different tool configurations with their respective dimensions and specifications.

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
KAPR=20° | GAMP=-7° | RP=1,8

Table with 11 columns: Order code, Reference, CICT, Dimensions (DC, DCONMS, LF, LU), WT, Specifications (APMX), Insert, Stock. It lists 5 different tool configurations with their respective dimensions and specifications.

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)

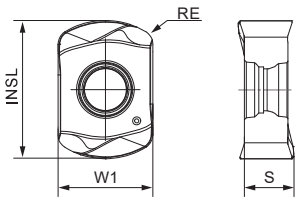
MILLING XNKU 06T3... Inserts | Pastilhas | Plaquitas



XNKU-MP



XNKU-MS



XNKU-MP | MS

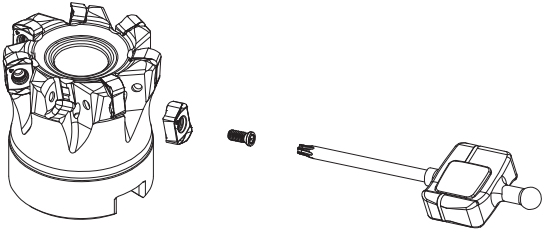
		P					M				K		S			Dimensions Dimensões Dimensiones (mm)			
		CVD	PVD				CVD	PVD			CVD	PVD	CVD	PVD	PVD				
(1)	(2) Grade code	T9	X5	T1	P4	Z2	T9	X9	Z2	Z3	T9	T1	T9	X9	Z3				
Geometry code	ISO Reference	PHS740	PHP910	PHP920	PHP930	PHP530	PHS740	PHH930	PHP530	PHH530	PHS740	PHP920	PHS740	PHH930	PHH530				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

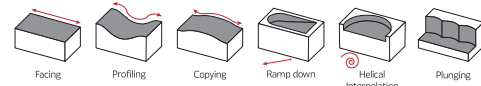
Insert order code = (1) Geometry Code + (2) Grade Code

SPARE PARTS Acessórios | Repuestos

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



Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-301.
Check the procedures for the clamping screws on the page A-301.



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

ISO	PSM	Material	HB (Brinell)	Vc (m/min)							Feed fz (mm/t)	
				← Wear Resistance				Toughness →			XNKU 06...-MP	XNKU 06...-MS
				PHP910	PHP920	PHP930	PHH930	PHS740	PHP530	PHH530		
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 $a_e/D_c=70\%$.

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

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

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

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



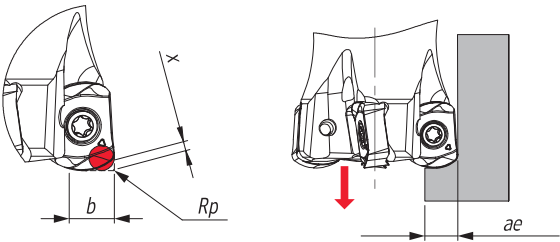
Average Conditions



Difficult Conditions

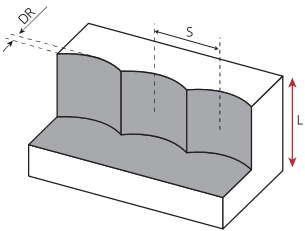
PROGRAMMING DATA Dados para programação | Datos para la programación

Insert	Programming Data			
	Rp	X	b	ae
XNKU 06T3...	1,8	0,4	3,6	3,4



PLUNGING Mergulho | Plunge

L≤3DC	L>3DC	S max.
f _z (mm/t)		
0,08-0,15	0,05 - 0,10	S _{max} = √DC·Dr-Dr²

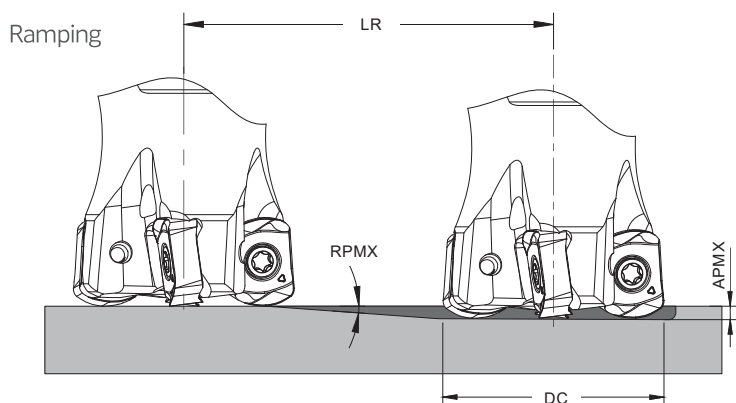


S max and DR corresponding cutting diameter DC (mm)											
DR (mm)	DC (mm) XNKU 06...										
	16	20	25	32	35	40	42	50	52	60	80
1	3,9	4,4	4,9	5,6	5,8	6,2	6,4	7,0	7,1	7,9	8,9
2	5,3	6,0	6,8	7,7	8,1	8,7	8,9	9,8	10,0	11,0	12,5
3	6,2	7,1	8,1	9,3	9,8	10,5	10,8	11,9	12,1	13,4	15,2

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

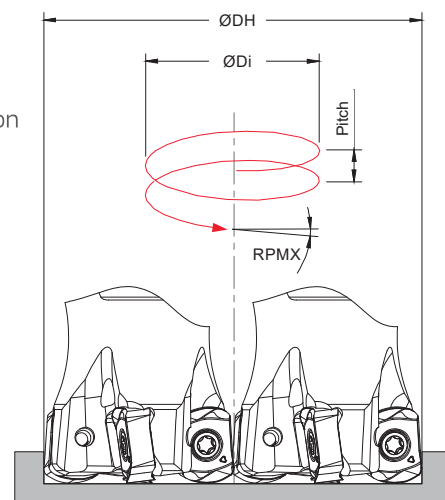
RAMPING AND HELICAL INTERPOLATION

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



Helical Interpolation

Blind hole
Flat bottom



$$\text{ØDi} = \text{ØDH} - \text{DC}$$

DC	Ramping			Helical Interpolation		
	RPMX	APMX	Min LR	ØDHmin	ØDHmax	Max Pitch/Rev.
16	2,00	1	28,6	24,8	-	0,96
20	1,30	1	44,1	32,8	-	1,00
25	0,90	1	63,7	42,8	-	0,91
32	0,65	1	88,1	56,8	-	1,00
35	0,55	1	104,2	62,8	-	0,87
40	0,50	1	114,6	72,8	-	1,00
42	0,45	1	127,3	76,8	-	0,88
50	0,35	1	163,7	92,8	-	1,00
52	0,35	1	163,7	96,8	-	0,83
63	0,30	1	191,0	118,8	-	0,92
80	0,20	1	286,5	152,8	-	0,91
						0,97
						0,79
						0,83

Note: During helical interpolation do not exceed APMX.

(*) 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.

MILLING

Face milling

High feed milling

Shoulder milling

Profile milling

Specialty

Spare Parts

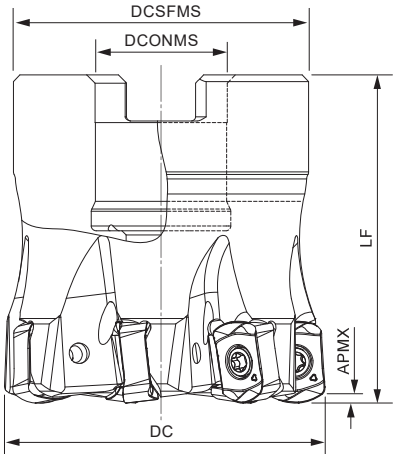
Technical Data

End Mills



Arbor Mounting

KAPR=20° | GAMP=-7° | RP=3,2

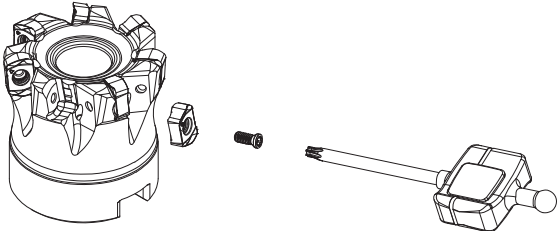


Order code Código	Reference Referência Referencia	CIC	Dimensions Dimensões Dimensiones (mm)				WT	Specifications		Insert	Stock
			DC	DCONMS	DCSFMS	LF		Arbor Type	APMX (mm)		
181169300	050A16420-04-07-022045	4	50	22	42	45	0,28	A	1,50	XNKU 12...	⊗
181180100	050A16420-05-07-022045	5	50	22	42	45	0,31	A	1,50	XNKU 12...	⊗
181178400	052A16420-04-07-022045	4	52	22	42	45	0,33	A	1,50	XNKU 12...	⊗
181180200	052A16420-05-07-022045	5	52	22	42	45	0,33	A	1,50	XNKU 12...	⊗
181180300	063A16420-05-07-027050	5	63	27	48	50	0,51	A	1,50	XNKU 12...	⊗
181180400	063A16420-06-07-027050	6	63	27	48	50	0,52	A	1,50	XNKU 12...	⊗
181180500	066A16420-05-07-027050	5	66	27	48	50	0,54	A	1,50	XNKU 12...	⊗
181180600	066A16420-06-07-027050	6	66	27	48	50	0,55	A	1,50	XNKU 12...	⊗
181177900	080A16420-06-07-027050	6	80	27	60	50	0,94	A	1,50	XNKU 12...	⊗
181180700	080A16420-08-07-027050	8	80	27	60	50	0,95	A	1,50	XNKU 12...	⊗
181180800	100A16420-06-07-032050	6	100	32	80	50	1,21	A	1,50	XNKU 12...	○
181180900	100A16420-08-07-032050	8	100	32	80	50	1,24	A	1,50	XNKU 12...	⊗

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

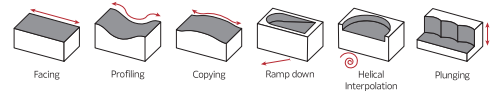
SPARE PARTS Acessórios | Repuestos

Cutter DC	Insert Screw	Key (Torx)	Order separately	
			Key (Torx - Nm)	Torque Value
A16420 - 50-80	P0451400	XT20	DT2050	5,0
A16420 - 100	P0451400	PT20	DT2050	5,0
W16420 - 32-40	P0451400	XT20	DT2050	5,0



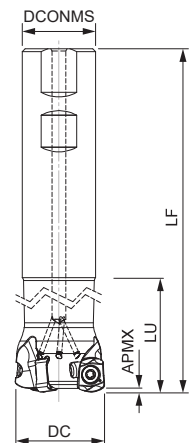
TETRAFEED 16420

XNKU 12



Weldon Shank

KAPR=20° | GAMP=-7° | RP=3,2



Order code Código	Reference Referência Referencia	CICT	Dimensions Dimensões Dimensiones (mm)				WT	Specifications	Insert	Stock
			DC	DCONMS	LF	LU		APMX (mm)		
181181000	032W16420-02-07-032150	2	32	32	150	70	0,80	1,50	XNKU 12...	⊗
181181100	032W16420-02-07-032200	2	32	32	200	120	1,10	1,50	XNKU 12...	○
181181200	035W16420-02-07-032150	2	35	32	150	45	0,90	1,50	XNKU 12...	○
181181300	035W16420-02-07-032200	2	35	32	200	45	1,20	1,50	XNKU 12...	○
181181400	040W16420-03-07-032150	3	40	32	150	45	1,10	1,50	XNKU 12...	○
181181500	040W16420-03-07-032220	3	40	32	220	45	1,40	1,50	XNKU 12...	⊗

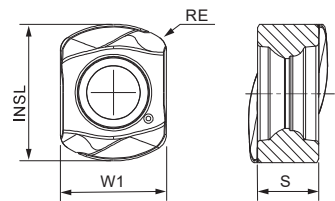
⊗ Stock item | Produto de stock | Itens de stock

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

XNKU 1205... Inserts | Pastilhas | Plaquitas



XNKU-MP



XNKU-MP | MS

		P					M				K		S			Dimensions Dimensões Dimensiones (mm)			
		CVD		PVD			CVD		PVD		CVD	PVD	CVD	PVD					
		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				
1113071	XNKU 120516-MP	⊗	⊗	⊗	○		⊗	⊗			⊗	⊗	⊗	⊗		11,70	5,90	15,00	1,60

⊗ First choice | Primeira opção | 1ª opción

⊗ Stock item | Produto de stock | Itens de stock

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

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)					Feed fz (mm/t)
				← Wear Resistance			Toughness →		
				PHP910	PHP920	PHP930	PHH930	PHS740	XNKU 12...-MP
P	1	Unalloyed Steel	125-220	180-250	180-250	160-230	-	160-230	0,50-1,50
	2	Low-Alloyed Steel	220-280	160-240	170-210	150-190	-	150-190	0,50-1,50
	3	High-Alloyed Steel	280-380	140-230	160-200	140-180	-	140-180	0,50-1,50
M	4	SS - Ferritic / Martensitic	200-330	-	-	-	130-170	120-180	0,50-1,40
	5	SS - Austenitic	200-330	-	-	-	100-160	100-150	0,50-1,40
	6	SS - Austenitic-ferritic (Duplex)	230-260	-	-	-	80-140	70-130	0,50-1,40
K	7	Malleable Cast Iron	130-230	180-300	180-320	-	-	160-300	0,50-1,50
	8	Grey Cast Iron	180-245	160-250	170-280	-	-	150-260	0,50-1,50
	9	Nodular Cast iron	160-250	150-210	100-240	-	-	80-220	0,50-1,50
S	11	Heat Resistant Super Alloys	200-320	-	-	-	30-75	30-70	0,50-1,30

(Note 1) Cutting conditions $a_e/D_c=70\%$.
(Note 2) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:
- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.
(Note 3) When using $D_c=16mm$ apply 70% or less feed (fz) from the table.

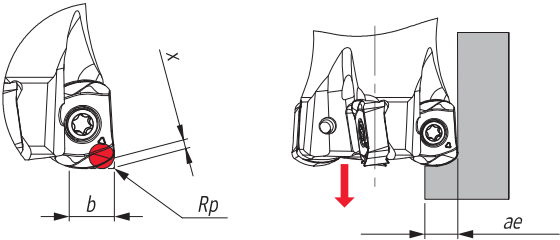
GRADES SELECTION GUIDE Guia para selecção de graus | Tabla para selección de calidades

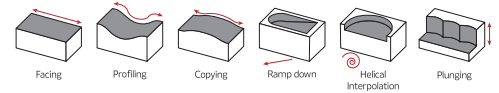
ISO	PSM	Material	HB (Brinell)	Grades				
				← Wear Resistance		Toughness →		
				PHP910	PHP920	PHP930	PHH930	PHS740
								
P	1	Unalloyed Steel	125-220	✓	✓	✓		✓
	2	Low-Alloyed Steel	220-280	✓	✓	✓		✓
	3	High-Alloyed Steel	280-380	✓	✓	✓		✓
M	4	SS - Ferritic / Martensitic	200-330				✓	✓
	5	SS - Austenitic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

 Good Conditions  Average Conditions  Difficult Conditions

PROGRAMMING DATA Dados para programação | Datos para la programación

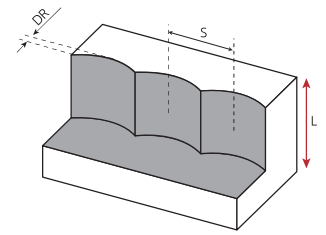
Insert	Programming Data			
	Rp	X	b	a_e
XNKU 06T3...	1,8	0,4	3,6	3,4





PLUNGING Mergulho | Plunge

L≤3DC	L>3DC	S max.
f _z (mm/t)		
0,10-0,15	0,05 - 0,10	S _{max} = √DC·Dr·Dr ²

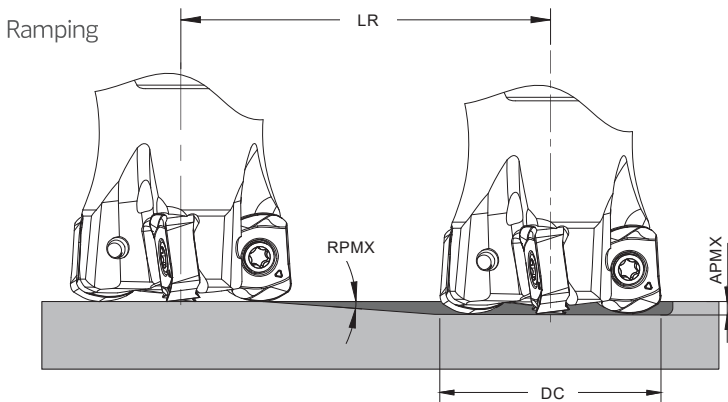


S_{max} and DR corresponding cutting diameter DC (mm)									
DR (mm)	DC (mm)								
	32	35	40	50	52	63	66	80	100
1	5,6	5,8	6,2	7,0	7,1	7,9	8,1	8,9	9,9
2	7,7	8,1	8,7	9,8	10,0	11,0	11,3	12,5	14,0
3	9,3	9,8	10,5	11,9	12,1	13,4	13,7	15,2	17,1
4	10,6	11,1	12,0	13,6	13,9	15,4	15,7	17,4	19,6
5	11,6	12,2	13,2	15,0	15,3	17,0	17,5	19,4	21,8
6	12,5	13,2	14,3	16,2	16,6	18,5	19,0	21,1	23,7
7	13,2	14,0	15,2	17,3	17,7	19,8	20,3	22,6	25,5

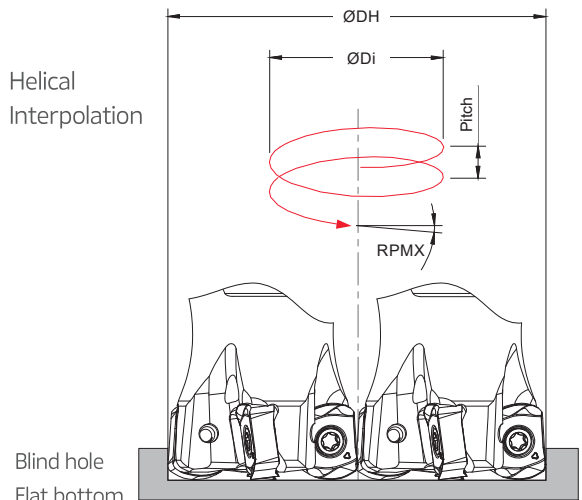
Note: Recommended for $L \leq 4 Dc$ for extra long tool this step and side cut must be reduced.

RAMPING AND HELICAL INTERPOLATION

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



Helical Interpolation



Blind hole
Flat bottom

$$\text{ØDi} = \text{ØDH} - DC$$

DC	Ramping			Helical Interpolation		
	$RPMX$	$APMX$	Min LR	ØDH_{min}	ØDH_{max}	Max Pitch/Rev.
32	1,25	1,5	68,7	49	-	1,16
				-	57,6	1,50
35	1,1	1,5	78,1	55	-	1,20
				-	63,6	1,50
40	0,85	1,5	101,1	65	-	1,16
				-	73,6	1,50
50	0,6	1,5	143,2	85	-	1,15
				-	93,6	1,43
52	0,55	1,5	156,3	89	-	1,11
				-	97,6	1,37
63	0,45	1,5	191,0	111	-	1,18
				-	119,6	1,39
66	0,4	1,5	214,9	117	-	1,11
				-	125,6	1,30
80	0,3	1,5	286,5	145	-	1,06
				-	153,6	1,21
100	0,25	1,5	343,8	185	-	1,16
				-	193,6	1,28

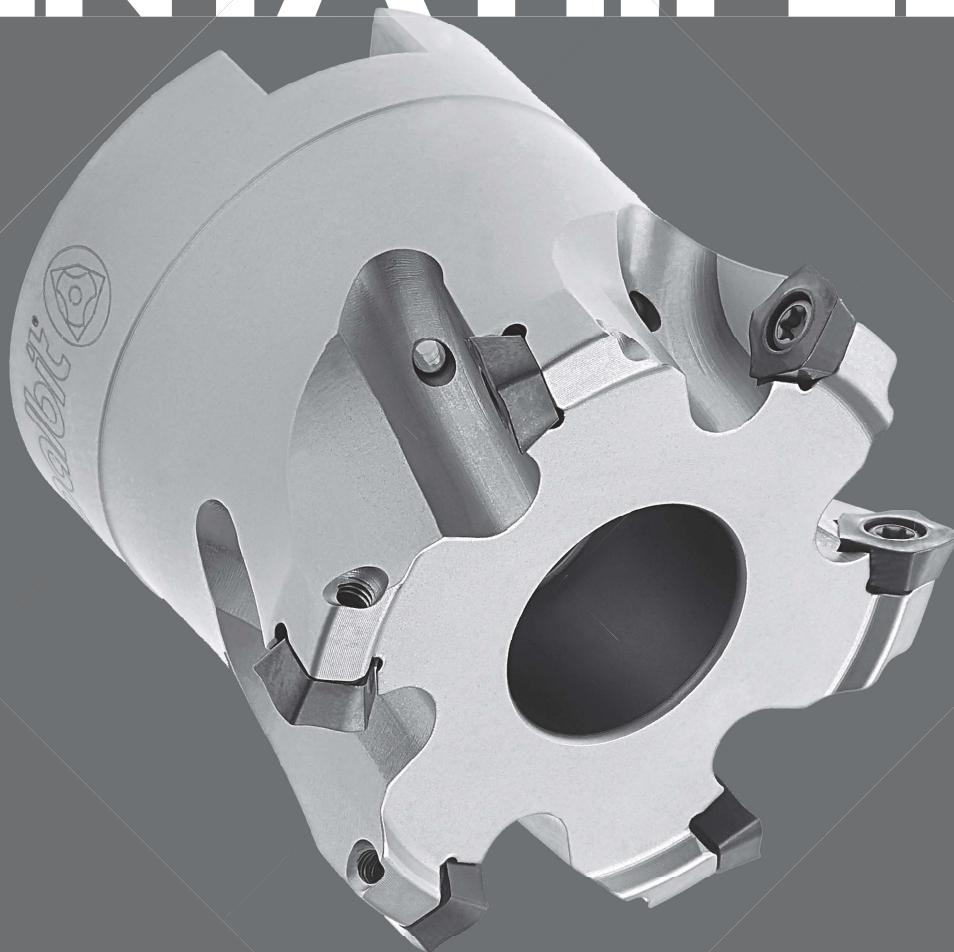
Note: During helical interpolation do not exceed $APMX$.

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

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

06320

PENTA HIFEED



PENTA HIFEED features five positive cutting edges designed for high-feed applications with low cutting forces. This optimization enhances machining efficiency while also maintaining a long tool life.

A PENTA HIFEED possui cinco arestas de corte positivas projetadas para aplicações de alto avanço com baixas forças de corte. Essa otimização melhora a eficiência da fresagem, mantendo também uma longa vida útil da ferramenta.

PENTA HIFEED cuenta con cinco filos de corte positivos diseñados para aplicaciones de alto avance con bajas fuerzas de corte. Esta optimización mejora la eficiencia del fresado, manteniendo también una larga vida útil de la herramienta.

PENTA HIFEED 06320 > page 90

- > From DC 16mm to 66mm

De DC 16mm a 66mm | Desde DC 16mm hasta 66mm

- > Available in arbor mounting, threaded coupling and cylindrical shank

Disponível em montagem tipo árvore, acoplamento roscado e haste cilíndrica | Disponible en fijación con tornillo central, fijación roscada y mango cilíndrico

- > Positive insert with 5 cutting edges

Pastilhas positivas com 5 arestas de corte | Insertos positivos con 5 filos de corte

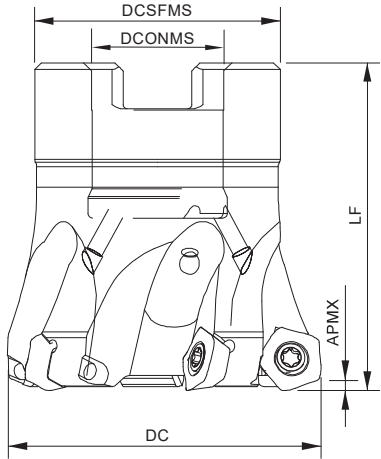
- > Low cutting forces

Baixas forças de corte | Bajas fuerzas de corte





Arbor Mounting
KAPR=20° | GAMP=14° | RP=2,5

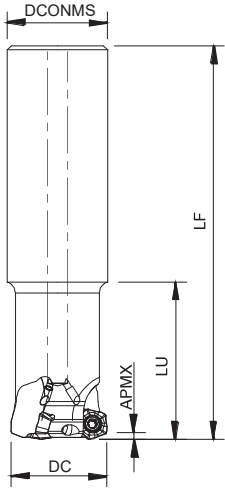


Order code Código	Reference Referência Referencia	CICT	Dimensions Dimensões Dimensiones (mm)				WT	Specifications		Insert	Stock
			DC	DCONMS	DCSFMS	LF		APMX (mm)	Arbor Type		
181129300	040A06320-05-14-016040	5	40	16	30	40	0,15	1,0	A	POKT 0403...	⊗
181129400	050A06320-06-14-022045	6	50	22	40	45	0,19	1,0	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-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)



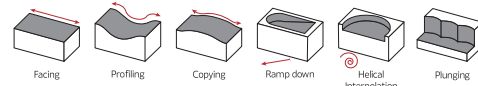
Cylindrical Shank
KAPR=20° | GAMP=14° | RP=2,5



Order code Código	Reference Referência Referencia	CICT	Dimensions Dimensões Dimensiones (mm)				WT	Specifications	Insert	Stock
			DC	DCONMS	LF	LU		APMX (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-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

PENTA HIFEED 06320 POKT 04



A

MILLING

Face milling

High feed milling

Shoulder milling

Profile milling

Specialty

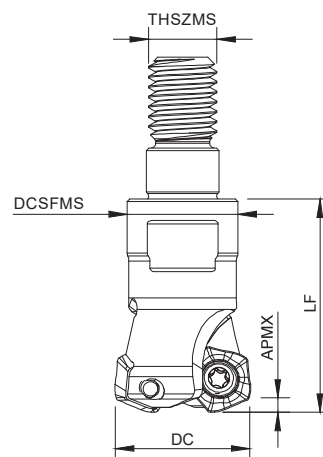
Spare Parts

Technical Data

End Mills



Threaded Coupling
KAPR=20° | GAMP=14° | RP=2,5



Order code Código	Reference Referência Referencia	CIC	Dimensions Dimensões Dimensiones (mm)				WT	Specifications	Insert	Stock
			DC	THSZMS	DCSFMS	LF		APMX (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...	⊗

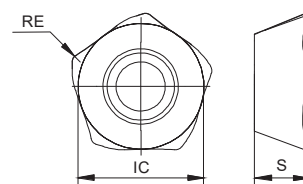
⊗ Stock item | Produto de stock | Itens de stock

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

POKT 0403... Inserts | Pastilhas | Plaquetas



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	RE
1112365	POKT 040305 ZDSR-MP							7,00	3,00	0,50

⊗ First choice | Primeira opção | 1ª opción

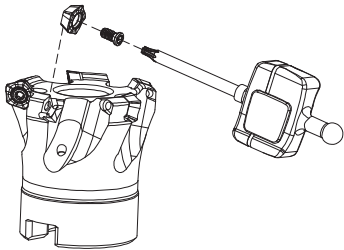
⊗ Stock item | Produto de stock | Itens de stock

○ 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

MILLING SPARE PARTS Acessórios | Repuestos

Cutter DC	Insert Screw	Key (Torx)	Order separately Key (Torx - Nm)	Torque Value
				
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-301.
Check the procedures for the clamping screws on the page A-301.

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

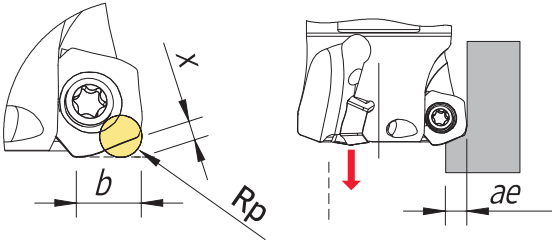
RECOMMENDED CUTTING CONDITIONS Condições de corte recomendadas | Condiciones de corte recomendables

ISO	PSM	Material	HB (Brinell)	Vc (m/min)				Feed fz (mm/t)
				← Wear Resistance		Toughness →		
				PH7910	PH7920	PH7930	PH7740	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 $a_e/D_c=70\%$.
(Note 2) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:
- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

PROGRAMMING DATA Dados para programação | Datos para la programación

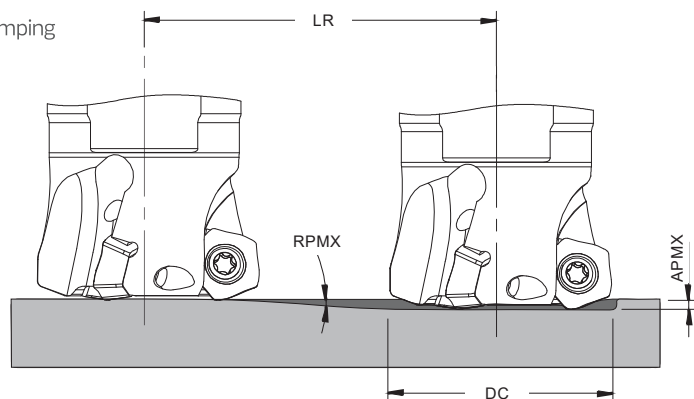
Insert	Programming Data			
	Rp	X	b	a _e
POKT 0403...	2,5	1,2	4,3	4,0



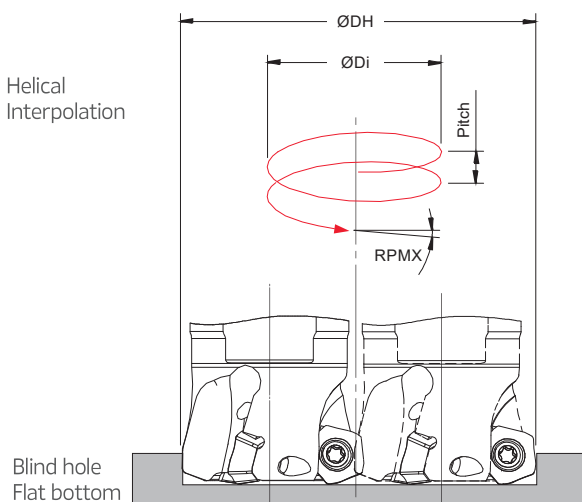
RAMPING AND HELICAL INTERPOLATION

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

Ramping



Helical Interpolation



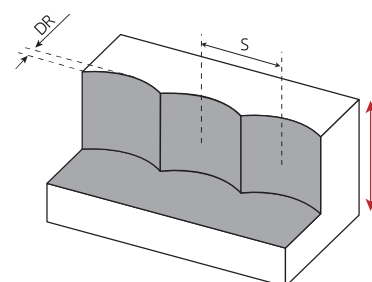
$$\text{ØDi} = \text{ØDH} - \text{DC}$$

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

Note: During helical interpolation do not exceed APMX.

PLUNGING Mergulho | Plunge

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

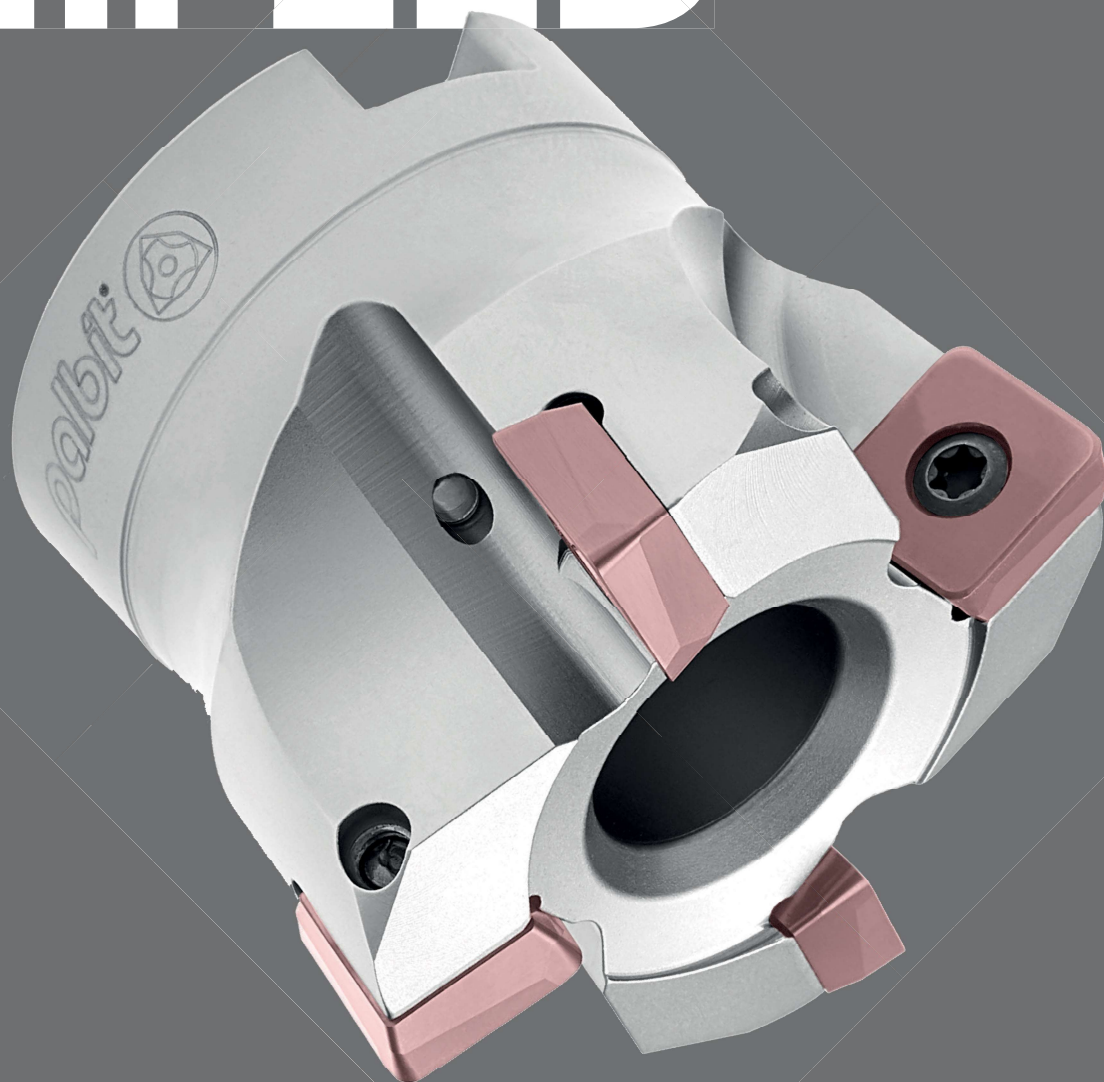


S max and DR corresponding cutting diameter DC (mm)											
DR (mm)	DC (mm)										
	16	20	25	32	35	40	42	50	52	63	66
1,0	3,9	4,4	4,9	5,7	5,8	6,2	6,4	7,0	7,1	7,9	8,1
2,0	5,3	6,0	6,8	2,7	8,1	8,7	8,9	9,8	10,0	11,0	11,3
3,0	6,2	7,1	8,1	9,3	9,8	10,5	10,8	11,9	12,1	13,4	13,7
4,0	6,9	8,0	9,2	10,6	11,1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

06410 | 06690 | 06815

HIFEED



Designed for efficient rough milling across diverse materials in industries like die & mold, aerospace and automotive, HIFEED line spans a broad spectrum of applications. These applications include milling slots and pockets, helical interpolation strategies and plunging. Presenting an effective solution for boosting productivity in rough milling operations, excellent for mold and die industry.

Projetada para fresagem de desbaste eficiente em diversos materiais em indústrias como matrizes e moldes, aeroespacial e automóvel, a linha HIFEED abrange um amplo espectro de aplicações. Essas aplicações incluem fresagem de ranhuras e caixas, estratégias de interpolação helicoidal e fresagem em mergulho. Apresentando uma solução eficaz para aumentar a produtividade em operações de fresagem de desbaste é excelente para a indústria de moldes e matrizes.

Diseñada para un fresado de desbaste eficiente en diversos materiales en industrias como matrices y moldes, aeroespacial y automotriz, la línea HIFEED abarca un amplio espectro de aplicaciones. Estas aplicaciones incluyen fresado de ranuras y cavidades, estrategias de interpolación helicoidal y fresado en rampa. Presentando una solución efectiva para aumentar la productividad en operaciones de fresado de desbaste, es excelente para la industria de matrices y moldes.

HIFEED 06410 > page 96

- > From DC 20mm to 52mm

De DC 20mm a 52mm | Desde DC 20mm hasta 52mm

- > Available in arbor mounting, threaded coupling and weldon shank

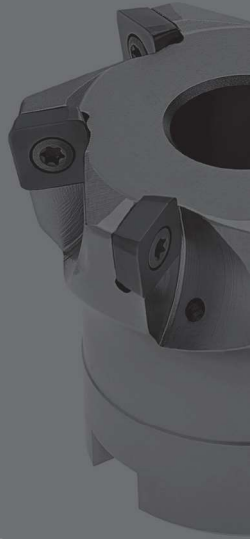
Disponível em montagem tipo árvore, acoplamento roscado e haste weldon | Disponible en fijación con tornillo central, fijación roscada y mango tipo weldon

- > Small positive insert with 4 cutting edges (SO.. 0803..)

Pequena pastilha positiva com 4 arestas de corte (SO.. 0803..) | Plaquita positiva pequena com 4 filos de corte (SO.. 0803..)

- > For high productivity in small workpieces

Para alta produtividade em pequenas peças de trabalho | Para alta productividad en piezas de trabajo pequeñas



HIFEED 06690 > page 102

- > From DC 32mm to 100mm

De DC 32mm a 100mm | Desde DC 32mm hasta 100mm

- > Available in arbor mounting and threaded coupling

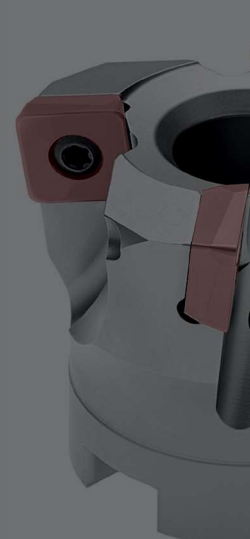
Disponível em montagem tipo árvore e acoplamento roscado | Disponible en fijación con tornillo central y roscada

- > Medium positive insert with 4 cutting edges (SO.. 13M5..)

Pastilha positiva média com 4 arestas de corte (SO.. 13M5..) | Plaquita positiva media com 4 filos de corte (SO.. 13M5..)

- > Strong and reliable insert

Pastilha forte e fiável | Plaquita fuerte y confiable



HIFEED 06815 > page 108

- > From DC 63mm to 160mm

De DC 63mm a 160mm | Desde DC 63mm hasta 160mm

- > Available in arbor mounting and weldon shank

Disponível em montagem tipo árvore e haste weldon | Disponible en fijación con tornillo central y mango tipo weldon

- > Large positive insert with 4 cutting edges (SO.. 1605..)

Pastilha positiva grande com 4 arestas de corte (SO.. 1605..) | Plaquita positiva grande com 4 filos de corte (SO.. 1605..)

- > For high removal rate materials

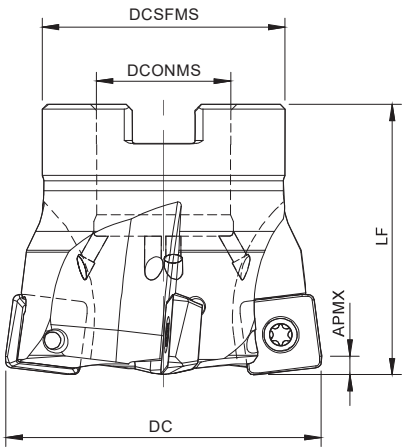
Para altas taxas de remoção de material | Para una alta tasa de remoción de material





Arbor Mounting

KAPR=10° | GAMP=+2° | GAMF =+2° | RP=2,0



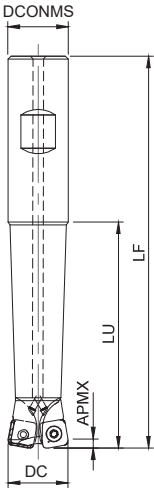
Order code Código	Reference Referência Referencia	CICT	Dimensions Dimensões Dimensiones (mm)				WT	Specifications		Insert Pastilha Inserto	Stock
			DC	DCONMS	DCSFMS	LF		Arbor Type	APMX (mm)		
181149800	040A06410-05-02-016040	5	40	16	30	40	0,157	A	1,00	SO...0803...	
181153200	050A06410-06-02-022045	6	50	22	40	45	0,312	A	1,00	SO...0803...	
181149900	052A06410-06-02-022045	6	52	22	40	45	0,331	A	1,00	SO...0803...	

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)



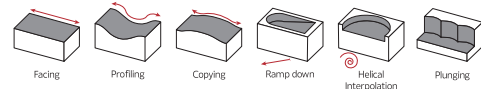
Weldon Shank

KAPR=10° | GAMP=+2° | GAMF =+2° | RP=2,0



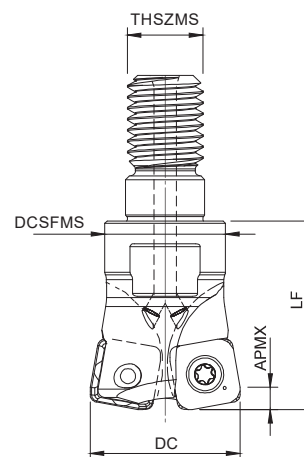
Order code Código	Reference Referência Referencia	CICT	Dimensions Dimensões Dimensiones (mm)				WT	Specifications		Insert Pastilha Inserto	Stock
			DC	DCONMS	LF	LU		APMX (mm)			
181076300	020W06410-02-02-020130	2	20	20	130	75	0,360	1,00		SO...0803...	
181080900	020W06410-02-02-020190	2	20	20	190	110	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-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)



Threaded Coupling

KAPR=10° | GAMP=+2° | GAMF =+2° | RP=2,0



Order code Código	Reference Referência Referencia	CICT	Dimensions Dimensões Dimensiones (mm)				WT	Specifications	Insert Pastilha Inserto	Stock
			DC	THSZMS	DCSFMS	LF		APMX (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...	⊗

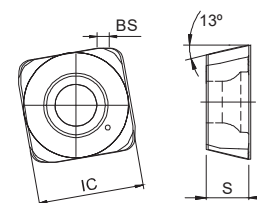
⊗ Stock item | Produto de stock | Itens de stock

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

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



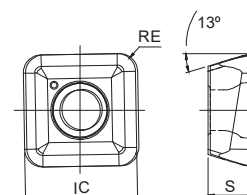
SOEW



SOEW



SOET



SOET

		P			M		K			S		Dimensions Dimensões Dimensiones (mm)			
		PVD			PVD		PVD			PVD					
		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	RE	BS
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)

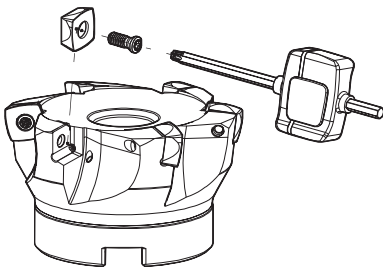
Insert order code = (1) Geometry code + (2) Grade code

SPARE PARTS

Acessórios | Repuestos

Cutter DC	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

Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-301.
Check the procedures for the clamping screws on the page A-301.



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	PH7740
P	1	Unalloyed Steel	125-220	✓	✓		✓
	2	Low-Alloyed Steel	220-280	✓	✓		✓
	3	High-Alloyed Steel	280-380	✓	✓		✓
M	4	SS - Ferritic / Martensitic	200-330			✓	✓
	5	SS - Austenitic	200-330			✓	✓
	6	SS - Austenitic-ferritic (Duplex)	230-260			✓	✓
K	7	Malleable Cast Iron	130-230	✓	✓		
	8	Grey Cast Iron	180-245	✓	✓		
	9	Nodular Cast iron	160-250	✓	✓		
S	11	Heat Resistant Super Alloys	200-320			✓	✓

● Good Conditions

● Average Conditions

● Difficult Conditions

RECOMMENDED CUTTING CONDITIONS

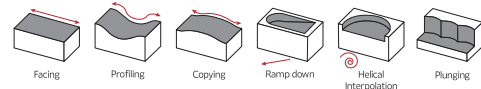
Condições de corte recomendadas | Condiciones de corte recomendables

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

(Note 1) Cutting conditions a_e/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.

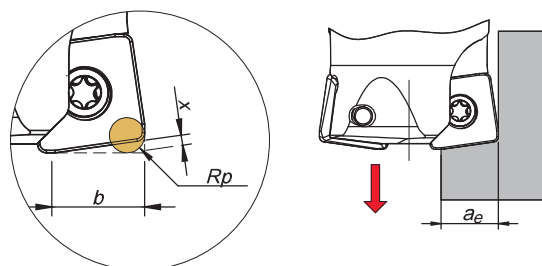


CHIP BREAKER SELECTION GUIDE Guia para aplicações do quebra-aparas | Guía para aplicación del rompevirutas

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

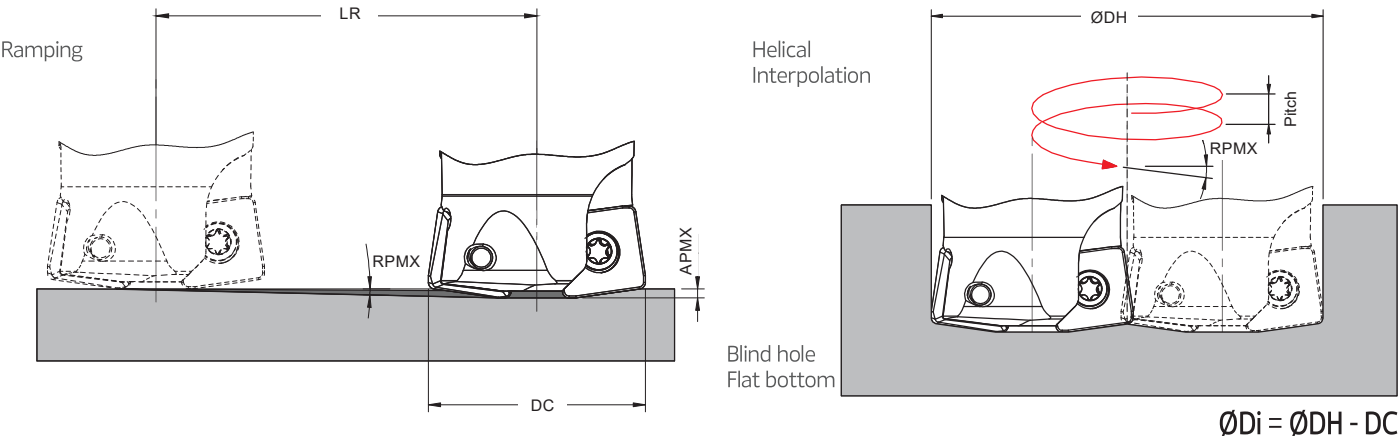
PROGRAMMING DATA Dados para programação | Datos para la programación

Insert	Programming Data			
	Rp	X	b	a _e
SO... 0803..	2,0	0,8	6,8	6,3



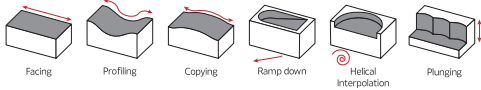
RAMPING AND HELICAL INTERPOLATION

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



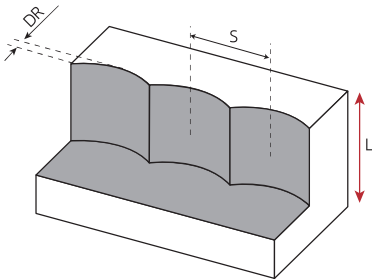
DC	Ramping			Helical Interpolation		
	RPMX	APMX	Min LR	ØDHmin	ØDHmax	Max Pitch/Rev.
20	15	1,0	3,2	26,4	-	6
				-	38,0	17
25	9,5	1,0	6,0	36,4	-	5
				-	48,0	12
32	5,5	1,0	10,4	50,4	-	5
				-	62,0	9
35	4,5	1,0	12,7	56,4	-	5
				-	68,0	8
40	3,5	1,0	16,3	66,4	-	5
				-	80,0	7
42	3,5	1,0	16,3	70,4	-	5
				-	82,0	7
50	3,5	1,0	16,3	86,4	-	6
				-	100,0	9
52	3,5	1,0	16,3	90,4	-	7
				-	104,0	9

Note: During helical interpolation do not exceed APMX.



PLUNGING Mergulho | Plunge

L≤3DC	L>3DC	S max.
f _z (mm/t)		
0,08-0,15	0,05-0,10	S _{max} = √DC.DR-DR²

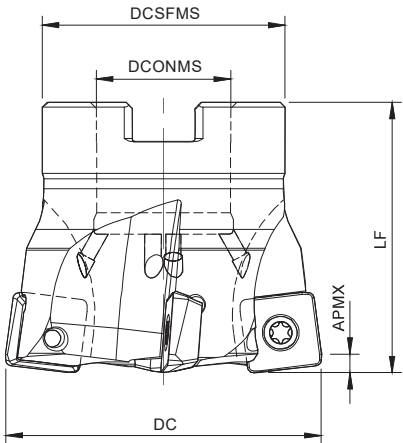


S max and DR corresponding cutting diameter DC (mm)								
DR (mm)	DC (mm)							
	20	25	32	35	40	42	50	52
1,0	4,4	4,9	5,6	5,8	6,2	6,4	7,0	7,1
2,0	6,0	6,8	7,7	8,1	8,7	8,9	9,8	10,0
3,0	7,1	8,1	9,3	9,8	10,5	10,8	11,9	12,1
4,0	8,0	9,2	10,6	11,1	12,0	12,3	13,6	13,9
5,0	8,7	10,0	11,6	12,2	13,2	13,6	15,0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

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

HIFEED 06690

Proprietary milling line

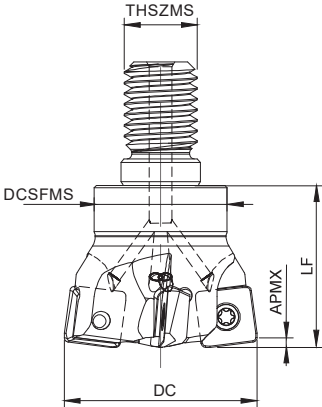


Arbor Mounting
KAPR=10° | GAMP=+5° | RP=2,5

Order code Código	Reference Referência Referencia	CICT	Dimensions Dimensões Dimensiones (mm)				WT	Specifications		Insert Pastilha Inserto	Stock
			DC	DCONMS	DCSFMS	LF		Arbor Type	APMX (mm)		
181069100	050A06690-04-05-022045	4	50	22	40	45	0,274	A	1,50	SO...13M5...	⊗
181111100	050A06690-05-05-022045	5	50	22	40	45	0,272	A	1,50	SO...13M5...	⊗
181029800	052A06690-04-05-022045	4	52	22	40	45	0,290	A	1,50	SO...13M5...	⊗
181033500	063A06690-05-05-027050	5	63	27	48	50	0,500	A	1,50	SO...13M5...	⊗
181029900	066A06690-05-05-027050	5	66	27	48	50	0,550	A	1,50	SO...13M5...	⊗
181030000	080A06690-06-05-027050	6	80	27	60	50	0,955	A	1,50	SO...13M5...	⊗
181113100	100A06690-08-05-032050*	8	100	32	70	50	1,500	A	1,50	SO...13M5...	⊗

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

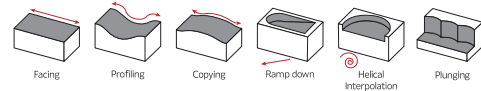
* For shank assembly a DIN 6912 screw is needed.



Threaded Coupling
KAPR=10° | GAMP=+5° | RP=2,5

Order code Código	Reference Referência Referencia	CICT	Dimensions Dimensões Dimensiones (mm)				WT	Specifications	Insert Pastilha Inserto	Stock
			DC	THSZMS	DCSFMS	LF		APMX (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-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)



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



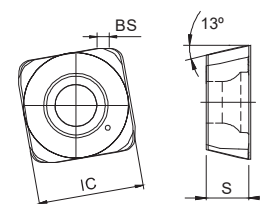
SOEW



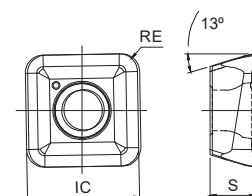
SOEW-MD



SOET



SOEW



SOET

		P			M		K			S		Dimensions Dimensões Dimensiones (mm)			
		PVD			PVD		PVD			PVD					
		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
1112813	SOEW 13M510-MD		⊗					⊗				12,43	5,00	1,20	1,0
1112147	SOET 13M520-MS	○		⊗	⊗	⊗			⊗	⊗	⊗	12,43	5,00	2,0	-

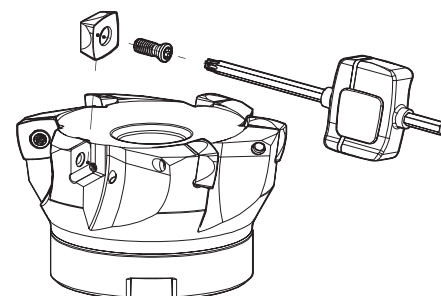
⊗ First choice | Primeira opção | 1ª opción ⊗ Stock item | Produto de stock | Itens de stock ○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire página A-9)

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

SPARE PARTS Acessórios | Repuestos

Cutter DC	Insert Screw	Key (Torx)	Order separately		Retaining Screw
			Key (Torx - Nm)	Torque Value	
R06690 - 32 - 42	P0401200	XT15	DT1530	3,0	-
A06690 - 50 - 80	P0401200	XT15	DT1530	3,0	-
A06690 - 100	P0401200	XT15	DT1530	3,0	D1603500

Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-301.
Check the procedures for the clamping screws on the page A-301.



GRADES SELECTION GUIDE

Guia para selecção de graus | Tabla para selección de calidades

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

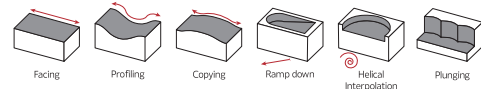
 Good Conditions Average Conditions Difficult Conditions

RECOMMENDED CUTTING CONDITIONS

Condições de corte recomendadas | Condiciones de corte recomendables

ISO	PSM	Material	HB (Brinell)	Vc (m/min)				Feed fz (mm/t)		
				← Wear Resistance	Toughness →					
				PHP910	PHP920	PHH930	PH7740	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 $a_e/D_c=70\%$.
- (Note 2) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:
- When using long shank;
 - When using long tool overhang with arbor type;
 - When application has poor clamping rigidity or when using a low rigidity machine.
- (Note 3) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:
- When using long shank;
 - When using long tool overhang with arbor type;
 - When application has poor clamping rigidity or when using a low rigidity machine.

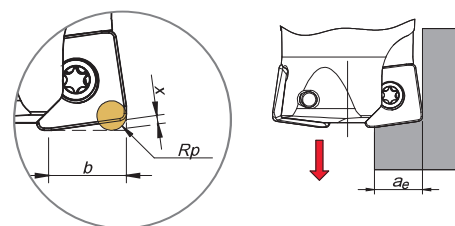


CHIP BREAKER SELECTION GUIDE Guia para aplicações do quebra-aparas | Guía para aplicación del rompevirutas

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

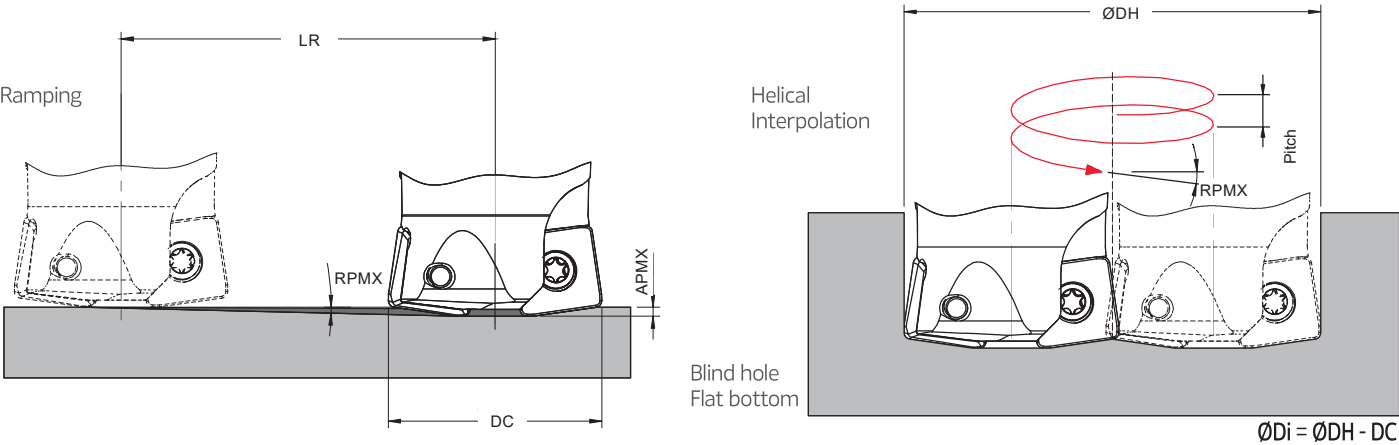
PROGRAMMING DATA Dados para programação | Datos para la programación

Insert	Programming Data			
	Rp	X	b	a _e
SO... 13M5..	2,5	1,1	10,5	10,0



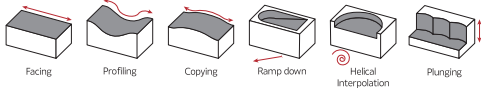
RAMPING AND HELICAL INTERPOLATION

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



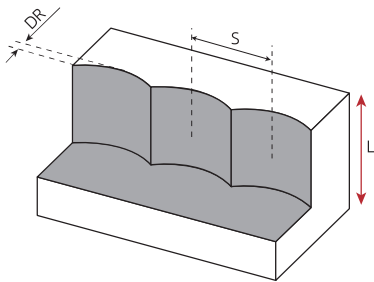
DC	Ramping			Helical Interpolation		
	RPMX	APMX	Min LR	ØDHmin	ØDHmax	Max Pitch/Rev.
32	10,0	1,5	6,0	43	-	6
				-	62,0	16
35	9,0	1,5	9,5	49	-	6
				-	68,0	16
42	6,4	1,5	13,4	63	-	7
				-	82,0	14
50	4,3	1,5	19,9	79	-	6
				-	98,0	11
52	4,0	1,5	21,5	83	-	6
				-	102,0	10
63	3,0	1,5	28,6	105	-	6
				-	124,0	10
66	2,6	1,5	33,0	111	-	6
				-	130,0	9
80	2,0	1,5	43,0	139	-	6
				-	158,0	8
100	1,0	1,5	85,9	179	-	4
				-	198,0	5

Note: During helical interpolation do not exceed APMX.



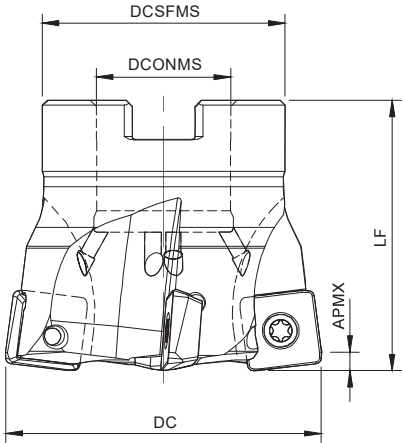
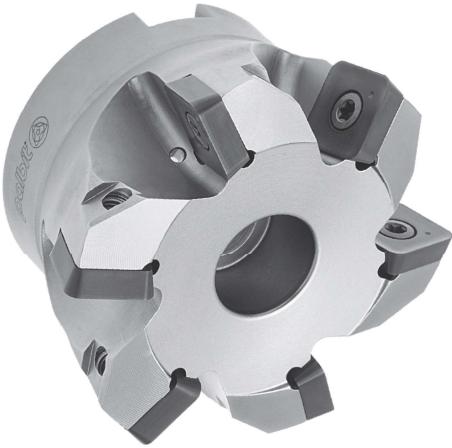
PLUNGING *Mergulho | Plunge*

L≤3DC	L>3DC	S max.
f _z (mm/t)		
0,10-0,20	0,07-0,14	S _{max} = √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.



Arbor Mounting
KAPR=15° | GAMP=+2° | RP=4,5

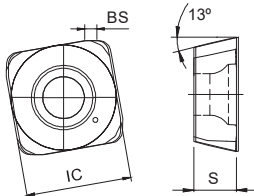
Order code Código	Reference Referência Referencia	CICT	Dimensions Dimensões Dimensiones (mm)				WT	Specifications		Insert Pastilha Inserto	Stock
			DC	DCONMS	DCSFMS	LF		Arbor Type	APMX (mm)		
181100400	063A06815-05-02-027050	5	63	27	48	50	0,460	A	3,50	SO...1605...	⊗
181081900	066A06815-05-02-027050	5	66	27	48	50	0,500	A	3,50	SO...1605...	⊗
181082000	080A06815-06-02-027050	6	80	27	60	50	0,900	A	3,50	SO...1605...	⊗
181082100	100A06815-08-02-032050	8	100	32	80	50	1,600	B	3,50	SO...1605...	⊗
181082200	125A06815-10-02-040063	10	125	40	90	63	2,900	B	3,50	SO...1605...	⊗
181082300	160A06815-12-02-U040063	12	160	40	110	63	4,400	C	3,50	SO...1605...	⊗

⊗ 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...1605... Inserts | Pastilhas | Plaquitas



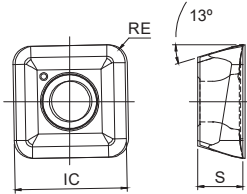
SOEW



SOEW



SOET

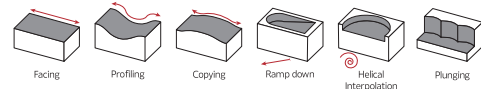


SOET

		P			M		K			S		Dimensions Dimensões Dimensiones (mm)			
		PVD			PVD		PVD			PVD					
		(2) Grade code	X5	T1	G6	X9	G6	X5	T1	G6	X9				
(1) Geometry code	ISO Reference	PHP910	PHP920	PH7740	PHH930	PH7740	PHP910	PHP920	PH7740	PHH930	PH7740	IC	S	RE	BS
1111907	SOEW 160512 S											16,40	5,26	1,20	1,50
1112221	SOET 160520-MS											16,40	5,26	2,00	-

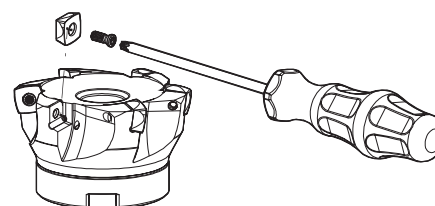
⊗ First choice | Primeira opção | 1ª opción ⊗ Stock item | Produto de stock | Itens de stock ○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

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



SPARE PARTS Acessórios | Repuestos

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



Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-301.
Check the procedures for the clamping screws on the page A-301.

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

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

Good Conditions

Average Conditions

Difficult Conditions

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

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

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

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

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

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

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

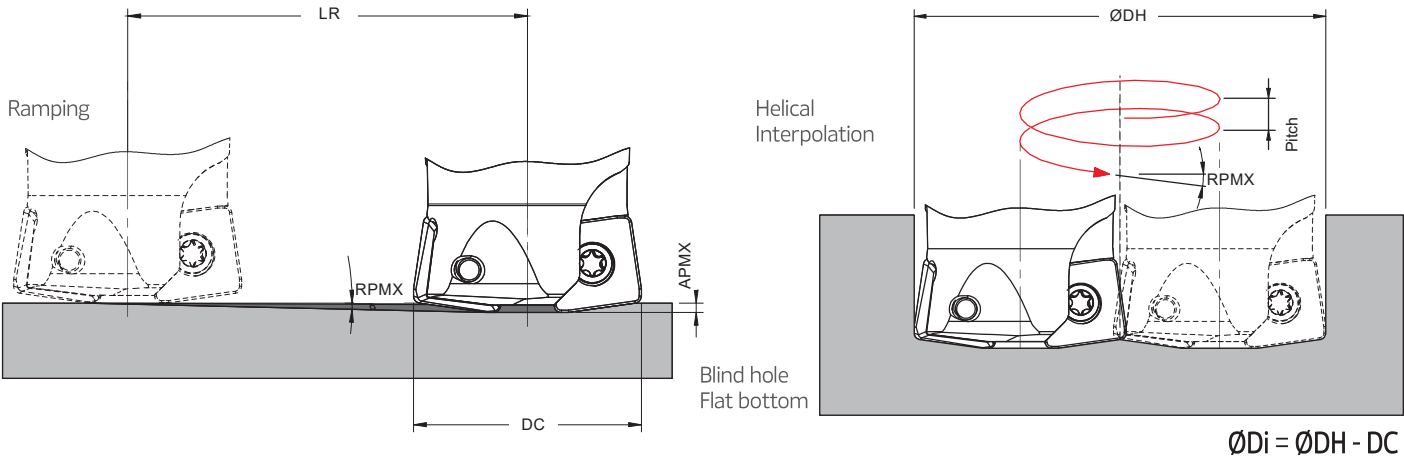
CHIP BREAKER SELECTION GUIDE

Guia para aplicações do quebra-aparas | Guía para aplicación del rompevirutas

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

RAMPING AND HELICAL INTERPOLATION

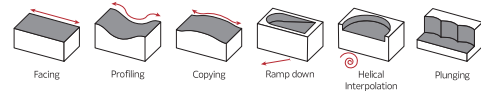
Descida em rampa e interpolação helicoidal | Bajada en rampa e interpolación circular



$\varnothing Di = \varnothing DH - DC$

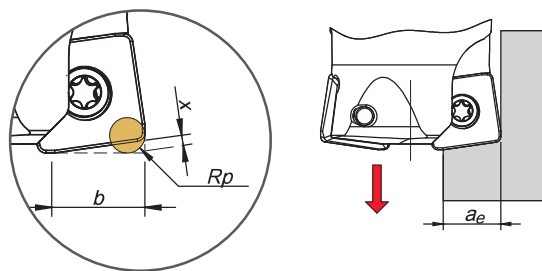
DC	Ramping			Helical Interpolation		
	RPMX	APMX	Min LR	ØDHmin	ØDHmax	Max Pitch/Rev.
63	3,5	3,5	80,2	99,0	-	6
				-	123,6	11
66	3,0	3,5	66,8	105	-	6
				-	129,6	10
80	2,0	3,5	100,2	133	-	5
				-	157,5	8
100	1,5	3,5	133,7	173	-	6
				-	197,5	8
125	1,0	3,5	200,5	223	-	5
				-	247,5	6
160	0,5	3,5	401,1	293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

Note: During helical interpolation do not exceed APMX.



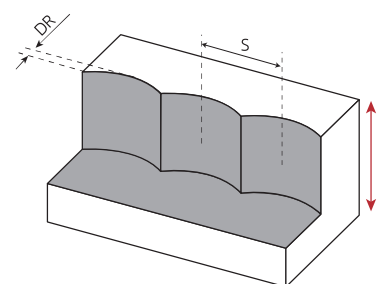
PROGRAMMING DATA Dados para programação | Datos para la programación

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



PLUNGING Mergulho | Plunge

L≤3DC	L>3DC	S max.
f _z (mm/t)		
0,10-0,20	0,07-0,14	S _{max} = √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 $L \leq 4 Dc$ for extra long tool this step and side cut must be reduced.

50560 | 50060

HIFEED



The HIFEED line featuring three cutting edges excels in high overhang applications, demonstrating exceptional stability and performance. Its curved design mitigates vibration and enhances tool longevity, making them ideal for challenging machining tasks.

A linha HIFEED, com três arestas de corte, destaca-se em aplicações de elevada profundidade, demonstrando estabilidade e desempenho excepcionais. Seu design curvo reduz a vibração e melhora a longevidade da ferramenta, tornando-as ideais para tarefas de fresagem desafiadoras.

La línea HIFEED, con tres filos de corte, sobresale en aplicaciones de alta profundidad, demostrando una estabilidad y rendimiento excepcionales. Su diseño curvado reduce la vibración y mejora la longevidad de la herramienta, haciéndolas ideales para tareas de fresado desafiantes.

HIFEED 50560 > page 114

- > From DC 52mm to 80mm
De DC 52mm a 80mm | Desde DC 52mm hasta 80mm
- > Available in arbor mounting
Disponível em montagem tipo árvore | Disponible en fijación con tornillo central
- > Screw and Washer
Parafuso e Anilha | Tornillo y Arandela



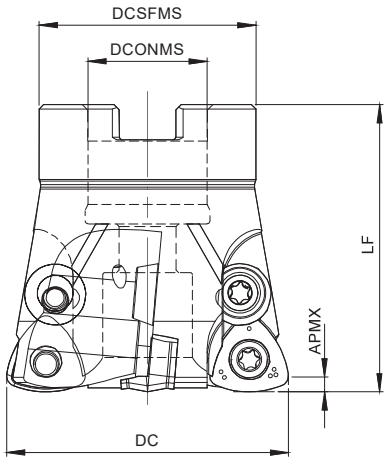
HIFEED 50060 > page 118

- > From DC 35mm to 80mm
De DC 35mm a 80mm | Desde DC 35mm hasta 80mm
- > Available in arbor mounting and threaded coupling
Disponível em montagem tipo árvore e acoplamento roscado | Disponible en fijación con tornillo central y roscada
- > Excellent in high overhang applications
Excelente em aplicações de elevada profundidade | Excelente en aplicaciones con una gran longitud





Arbor Mounting
KAPR=45° | GAMP=+20°~+21°



Order code Código	Reference Referência Referencia	CICT	Dimensions Dimensões Dimensiones (mm)				WT	Specifications		Insert Pastilha Inserto	Stock
			DC	DCONMS	DCSFMS	LF		Arbor Type	APMX (mm)		
181020800	052C50560-04-05-022053	4	52	22	40	53	0,390	A	1,5	WD... 1204...	⊗
181172400	063C50560-05-05-027053	5	63	27	48	53	0,590	A	1,5	WD... 1204...	⊗
181020200	066C50560-05-05-027053	5	66	27	48	53	0,640	A	1,5	WD... 1204...	⊗
181020300	080C50560-06-05-027053	6	80	27	60	53	1,060	A	1,5	WD... 1204...	⊗

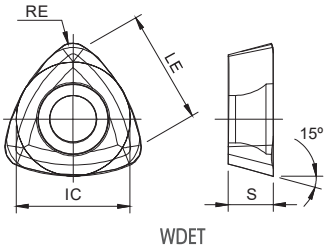
⊗ Stock item | Produto de stock | Itens de stock

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

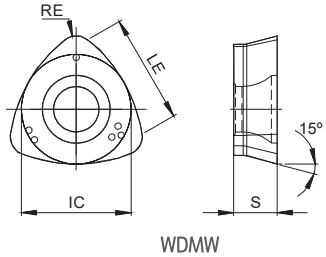
WD... 1204... Inserts | Pastilhas | Plaquetas



WDET



WDMW



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

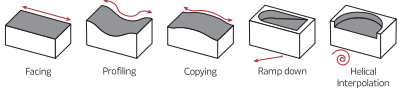
⊗ First choice | 1ª Escolha | 1ª Opción

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

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

⊗ Stock Items | Itens de stock

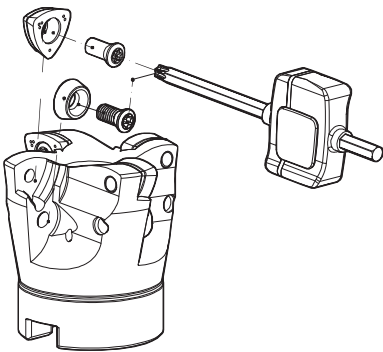
○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)



SPARE PARTS Acessórios | Repuestos

Cutter DC	Insert Screw	Key (Torx)	Key (Torx - Nm)	Torque Value	Washer	Washer Screw
A50560 – 52 – 80	P0451001	XT20	DT2050	5,0	HC01200	P0451001

Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-301.
Check the procedures for the clamping screws on the page A-301.



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

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

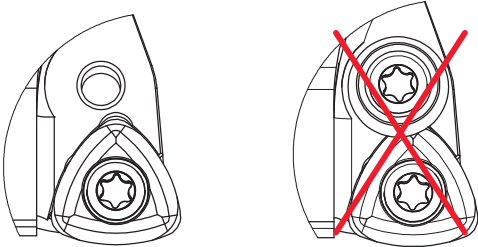
ISO	PSM	Material	HB (Brinell)	Chip breaker application	
				1st choice	Difficult Operations
P	1	Unalloyed Steel	125-220	WDET 12...	WDMW 12...
	2	Low-Alloyed Steel	220-280	WDMW 12...	-
	3	High-Alloyed Steel	280-380	WDMW 12...	-
M	4	SS - Ferritic / Martensitic	200-330	WDET 12...	-
	5	SS - Austenitic	200-330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

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

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

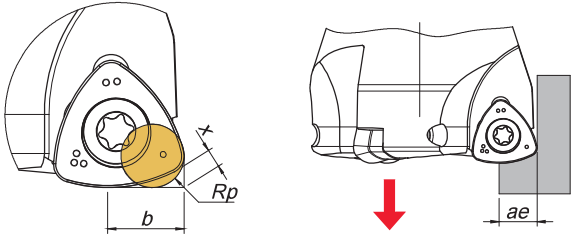
- (Note 1) Cutting conditions $a_e/D_c=70\%$.
- (Note 2) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:
- When using long shank;
 - When using long tool overhang with arbor type;
 - When application has poor clamping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

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



PROGRAMMING DATA Dados para programação | Datos para la programación

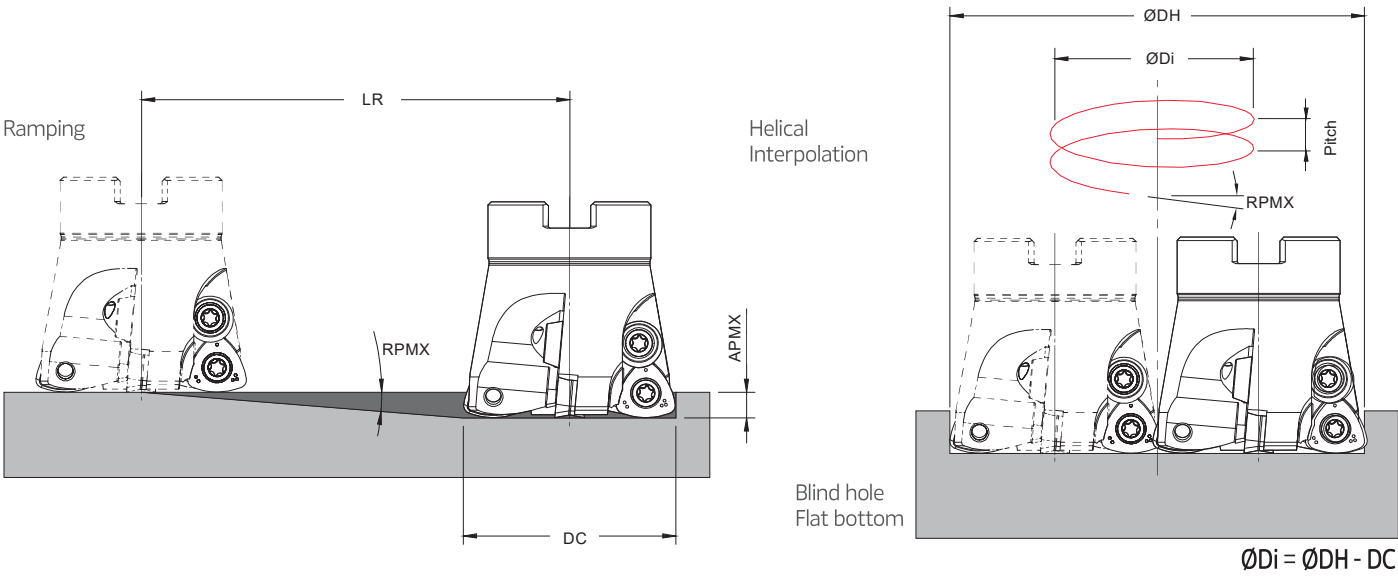
Insert	Programming Data			
	Rp	x	b	a _e
WD... 1204	3,2	0,7	7,2	7,0





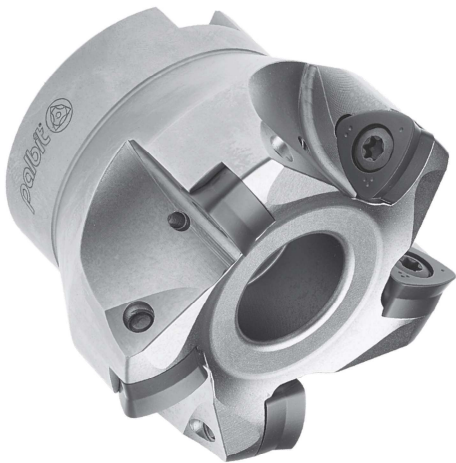
RAMPING AND HELICAL INTERPOLATION

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



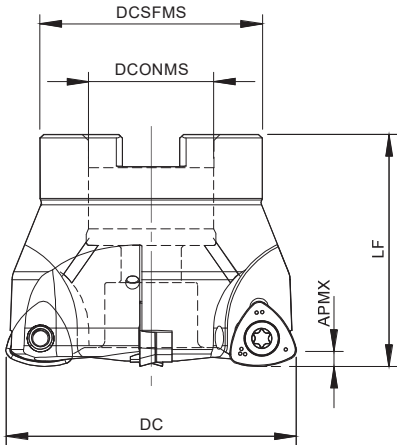
DC	Ramping			Helical Interpolation		
	RPMX	APMX	Min LR	ØDHmin	ØDHmax	Max Pitch/Rev.
52	0,8	1,5	107,4	89,6	-	1
				-	102,0	2
66	0,4	1,5	214,9	117,6	-	1
				-	130,0	1
80	0,3	1,5	286,5	145,6	-	1
				-	158,0	1

Note: During helical interpolation do not exceed APMX.



Arbor Mounting

GAMP=0° | RP=3,5



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

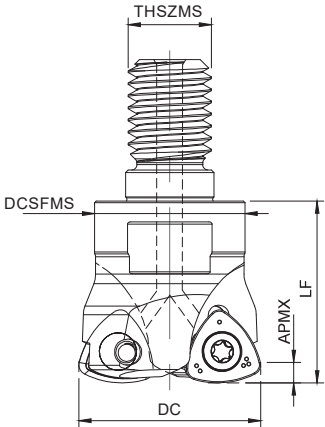
Stock item | Produto de stock | Itens de stock

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



Threaded Coupling

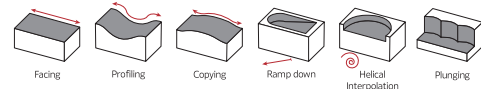
GAMP=0° | RP=3,5



Order code Código	Reference Referência Referencia	CICT	Dimensions Dimensões Dimensiones (mm)				WT	Specifications	Insert Pastilha Inserto	Stock
			DC	THSZMS	DCSFMS	LF		APMX (mm)		
181039000	035R50060-02-M16035	2	35	M16	29	35	0,166	1,8	WN... 1207	

Stock item | Produto de stock | Itens de stock

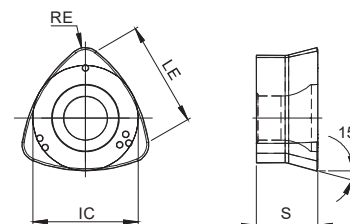
Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)



WNMW 1207 Inserts | Pastilhas | Plaquetas



WNMW



WNMW

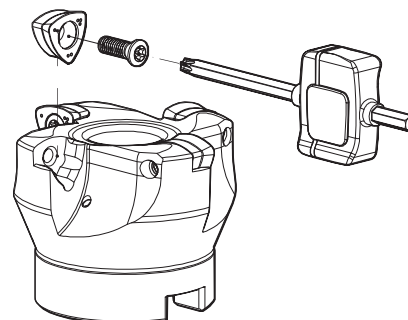
		P				K		Dimensions Dimensões Dimensiones (mm)			
		PVD				PVD					
	⁽²⁾ Grade code	G1	G4	78	86	G1	G4				
⁽¹⁾ Geometry code	ISO Reference	PH7910	PH7920	PH6125	PH6135	PH7910	PH7920	IC	S	LE	RE
1121148	WNMW 1207-SP							12,00	7,00	11,90	2,00

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

SPARE PARTS Acessórios | Repuestos

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

Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-301.
Check the procedures for the clamping screws on the page A-301.



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

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

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

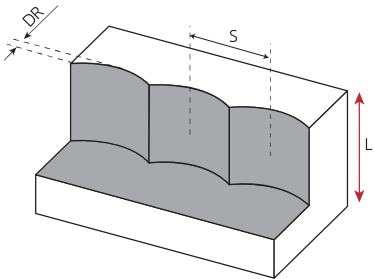
(Note 1) Cutting conditions a_e/Dc=70%.

(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.

PLUNGING Mergulho | Plunge

L≤3DC	L>3DC	S max.
f _z (mm/t)		
0,10-0,20	0,07-0,14	S _{max} = √DC.DR-DR ²

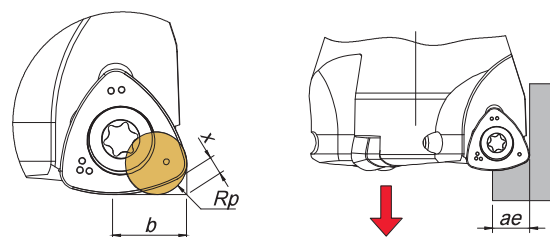


S max and DR corresponding cutting diameter DC (mm)					
DR (mm)	DC (mm)				
	35	52	63	66	80
1,0	5,8	7,1	7,9	8,1	8,9
2,0	8,1	10,0	11,0	11,3	12,5
3,0	9,8	12,1	13,4	13,7	15,2
4,0	11,1	13,9	15,4	15,7	17,4
5,0	12,2	15,3	17,0	17,5	19,4
6,0	13,2	16,6	18,5	19,0	21,1
7,0	14,0	17,7	19,8	20,3	22,6
8,0	14,7	18,8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

Note: Recommended for L ≤ 4 Dc, forL > 4DC steps must be reduced to 40%.

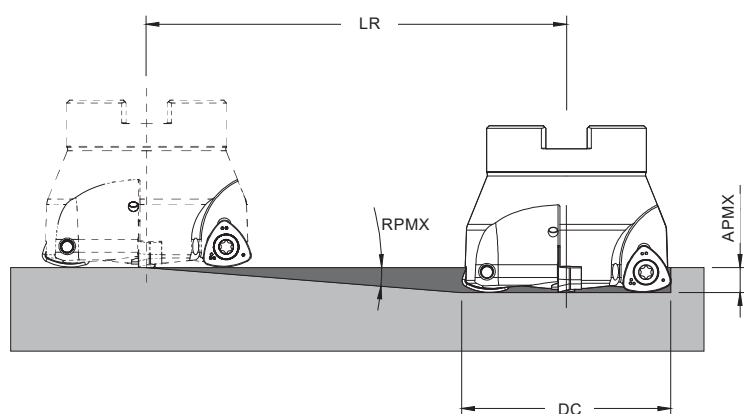
PROGRAMMING DATA Dados para programação | Datos para la programación

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



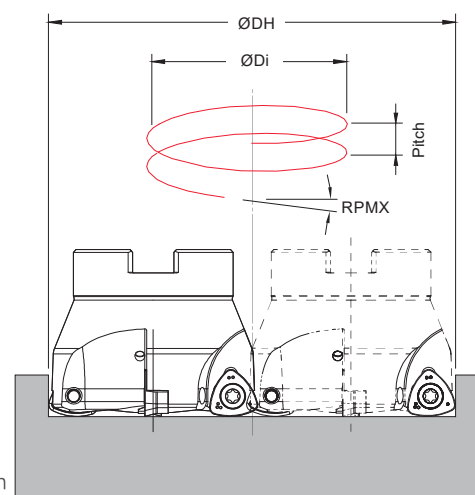
RAMPING AND HELICAL INTERPOLATION

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



Helical Interpolation

Blind hole
Flat bottom



$$\text{ØDi} = \text{ØDH} - \text{DC}$$

DC	Ramping			Helical Interpolation		
	RPMX	APMX	Min LR	ØDHmin	ØDHmax	Max Pitch/Rev.
35	3,0	1,8	34,3	53,2	-	2
				-	68,0	5
52	1,8	1,8	57,3	87,2	-	3
				-	102,0	4
63	1,2	1,8	85,9	109,2	-	3
				-	124,0	4
66	1,0	1,8	114,6	115,2	-	3
				-	130,0	3
80	0,9	1,8	114,6	143,0	-	3
				-	158,0	3

Note: During helical interpolation do not exceed APMX.