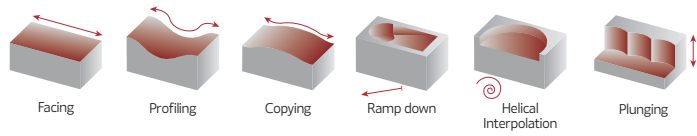


The best solution for High productivity milling



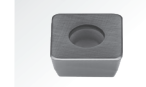
HIFEED
06410 | 06690 | 06815



INSERT SIZE
08 SO...
0803



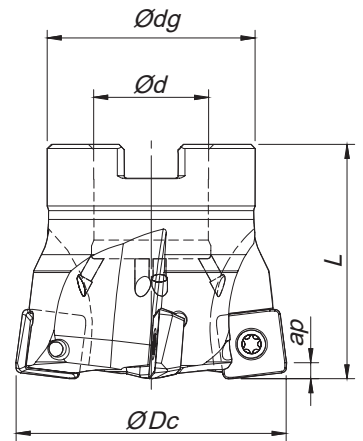
INSERT SIZE
13 SO...
13M5



INSERT SIZE
16 SO...
1605



SINCE 1916



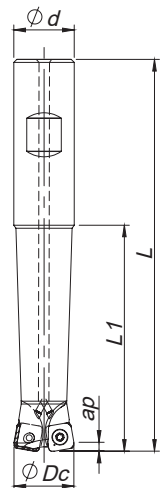
Arbor Mounting

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

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

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta | Disponible bajo consulta



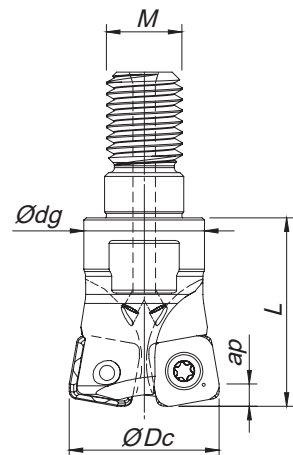
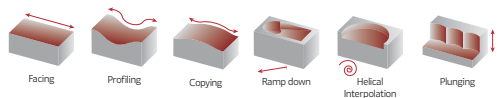
Weldon Shank

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

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

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta | Disponible bajo consulta



Threaded Coupling

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

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

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta | Disponible bajo consulta

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

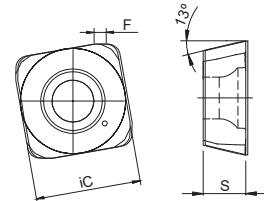
SOEW



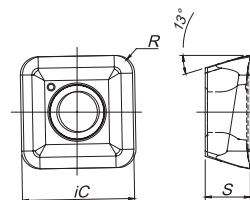
SOET



SOEW



SOET



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

First choice | Primeira opção | 1ª opción

Stock item | Produto de stock | Itens de stock

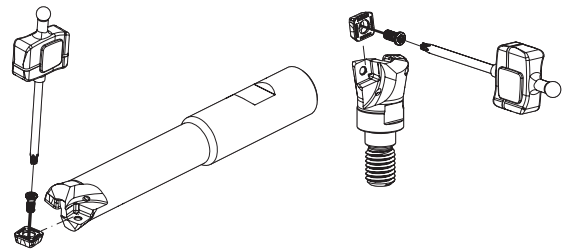
Available under request | Disponível sobre consulta | Disponible bajo consulta

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

HIFEED 06410

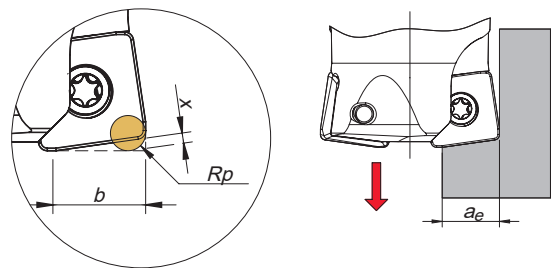
SPARE PARTS | Acessórios | Repuestos

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



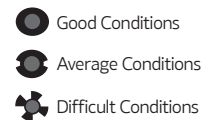
PROGRAMMING DATA | Dados para programação | Datos para la programación

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



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

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



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

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

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

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

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

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

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

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

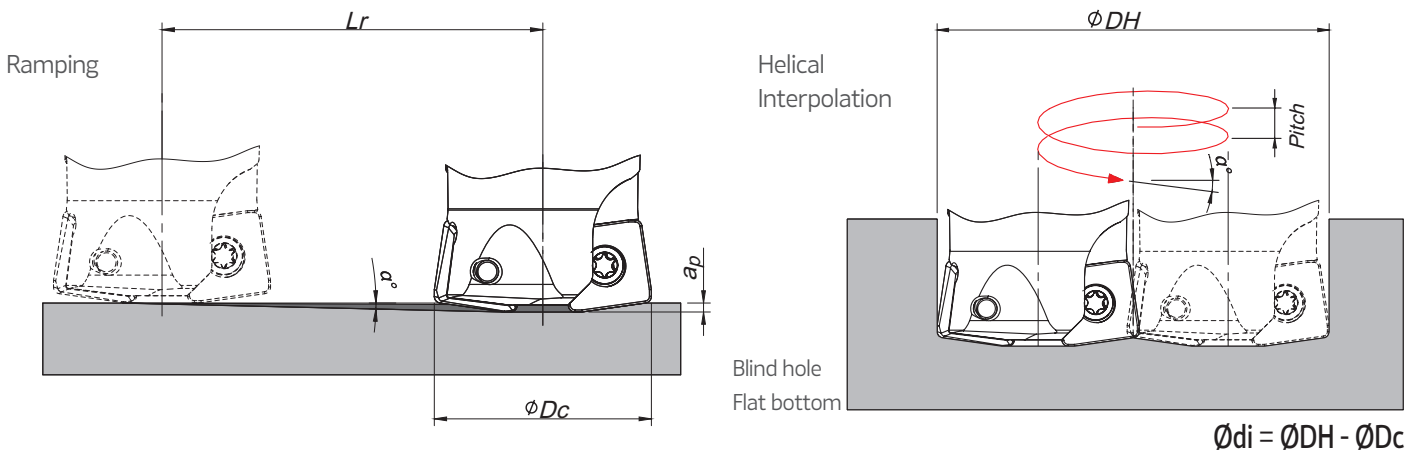
CHIP-BREAKER SELECTION GUIDE | Guia para aplicações do quebra- aparas | Guía para aplicación del rompevirutas

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

HIFEED 06410

RAMPING AND HELICAL INTERPOLATION

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

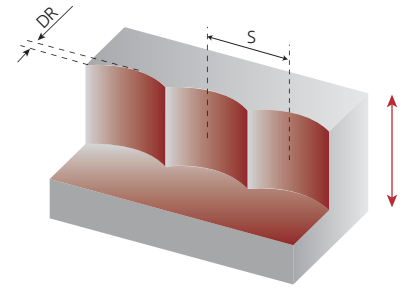


ϕDc	Ramping			Helical Interpolation		
	Max Ramp a°	Max a_p	Min L_r	ϕDH_{min}	ϕDH_{max}	Theoretical value Max Pitch/Rev.
20	15	1,0	3,2	26,4 -	- 38,0	6 17
25	9,5	1,0	6,0	36,4 -	- 48,0	5 12
32	5,5	1,0	10,4	50,4 -	- 62,0	5 9
35	4,5	1,0	12,7	56,4 -	- 68,0	5 8
40	3,5	1,0	16,3	66,4 -	- 80,0	5 7
42	3,5	1,0	16,3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

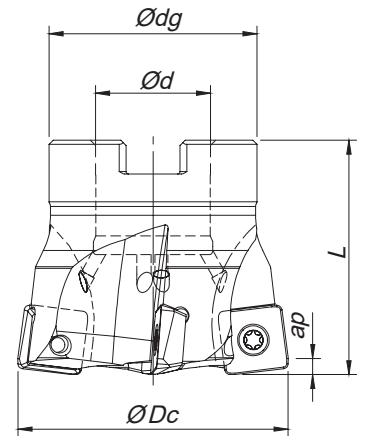
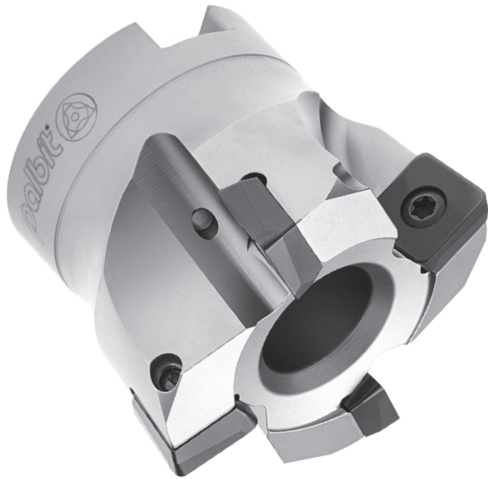
PLUNGING || Mergulho | Plunge

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



S max and DR corresponding cutting diameter Dc (mm)								
DR (mm)	Dc (mm)							
	20	25	32	35	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.



Arbor Mounting

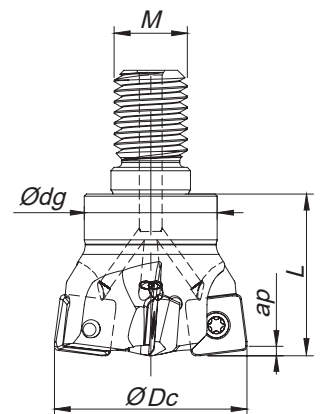
$K_r=10^\circ$ | $\gamma_p=+5^\circ$ | $R_p=2,5$

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

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta | Disponible bajo consulta

* For shank assembly a DIN 6912 screw is needed.



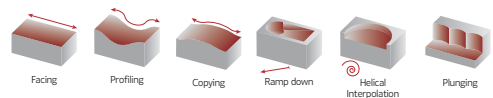
Threaded Coupling

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

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

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta | Disponible bajo consulta



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

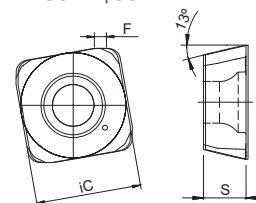
SOEW



SOEW-MD **NEW**



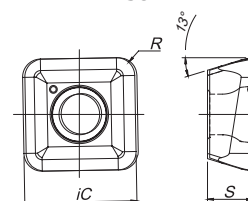
SOEW | SOEW-MD



SOET



SOET



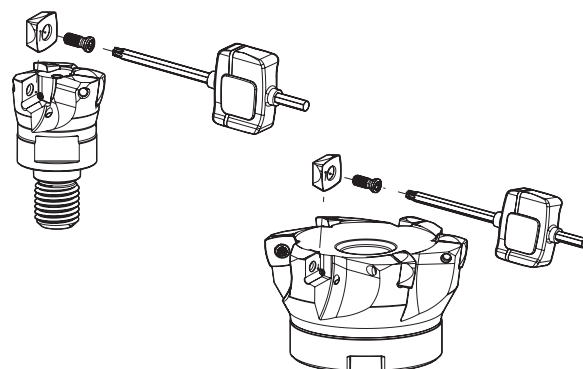
(i) Geometry code	(2) Grade code	P			M		K			S		Dimensions Dimensões Dimensiones (mm)			
		PVD			PVD		PVD			PVD					
		X5	T1	G6	X9	G6	X5	T1	G6	X9	G6	iC	S	R	F
1111906	SOEW 13M510 S	⊗	⊗	⊗			⊗	⊗	⊗			12,43	5,00	1,20	1,0
1112813	SOEW 13M510-MD		⊗					⊗				12,43	5,00	1,20	1,0
1112147	SOET 13M520-MS	○		⊗	⊗	⊗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

⊗ First choice | Primeira opção | 1ª opción ⊗ Stock item | Produto de stock | Itens de stock ○ Available under request | 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	Retaining Screw
R06690 - 32 - 42	P0401200	XT15	DT1530	3	-
A06690 - 50 - 80	P0401200	XT15	DT1530	3	-
A06690 - 100	P0401200	XT15	DT1530	3	D1603500



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:

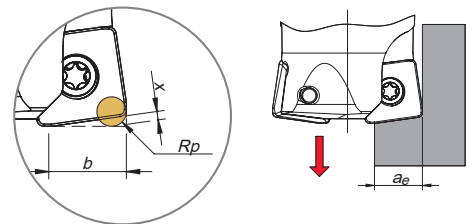
- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

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

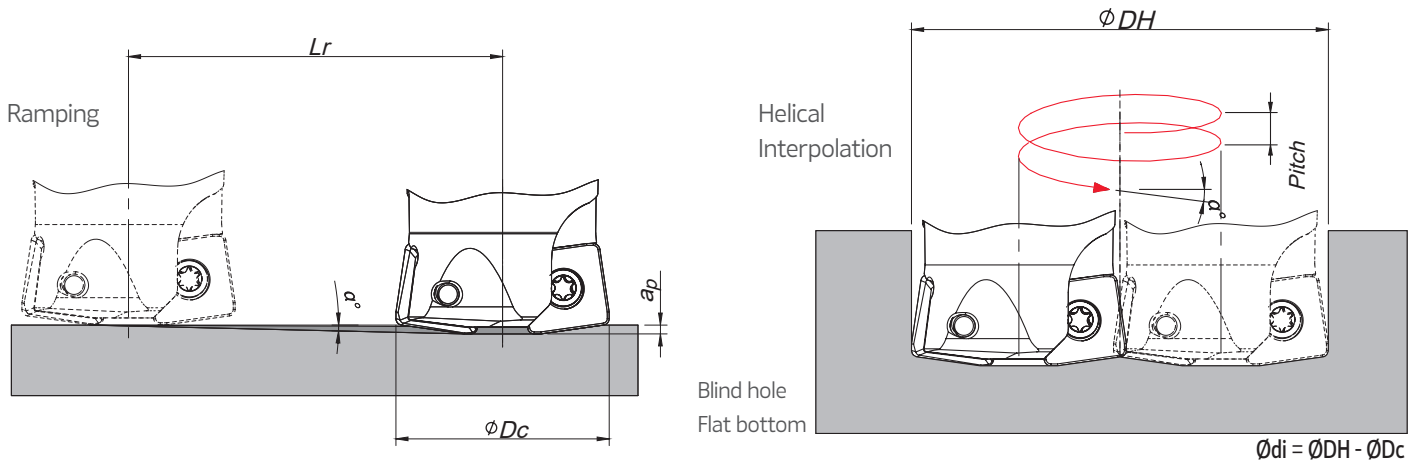
Insert	Programming Data			
	Rp	X	b	ae
SO... 13M5..	2,5	1,1	10,5	10,0



HIFEED 06690

RAMPING AND HELICAL INTERPOLATION

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

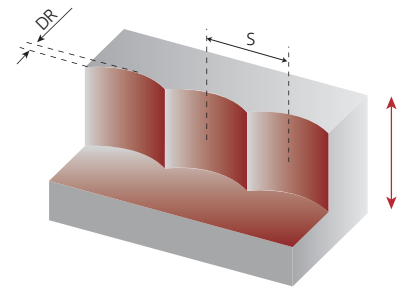


ϕD_c	Ramping			Helical Interpolation		
	Max Ramp a°	Max a_p	Min L_r	ϕDH_{min}	ϕDH_{max}	Theoretical value Max Pitch/Rev.
32	10,0	1,5	6,0	43 -	- 62,0	6 16
35	9,0	1,5	9,5	49 -	- 68,0	6 16
42	6,4	1,5	13,4	63 -	- 82,0	7 14
50	4,3	1,5	19,9	79 -	- 98,0	6 11
52	4,0	1,5	21,5	83 -	- 102,0	6 10
63	3,0	1,5	28,6	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

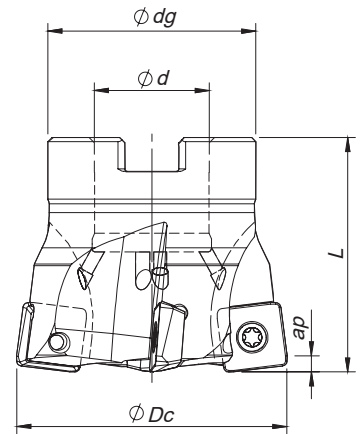
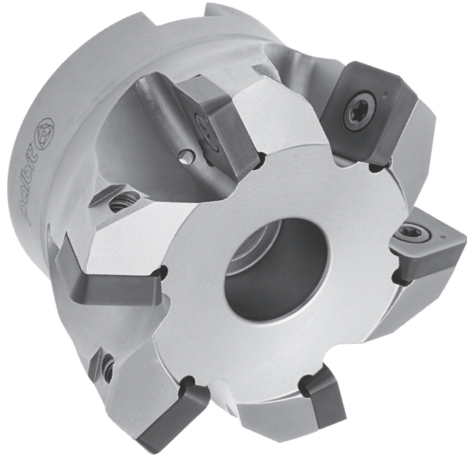
L ≤ 3Dc	L > 3Dc	S max.
f _z (mm/t)		
0,10-0,20	0,07-0,14	$S_{max} = \sqrt{D_c \cdot DR \cdot DR^2}$



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

$K_r=15^\circ$ | $\gamma_p=+2^\circ$ | $R_p=4,5$

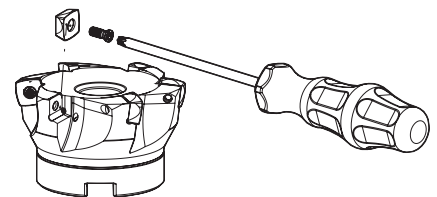
Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (mm)				Kg	Specifications		Insert Pastilha Inserto	Stock	
			ϕDc	ϕd	ϕdg	L		Ap max (mm)	Arbor Type			
181100400	063A06815-05-02-027050		5	63	27	48	50	0,460	3,50	A	SO...1605...	
181081900	066A06815-05-02-027050		5	66	27	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...	

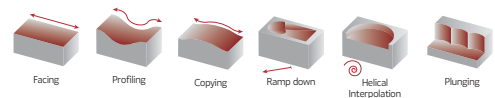
Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta | Disponible bajo consulta

SPARE PARTS | Acessórios | Repuestos

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



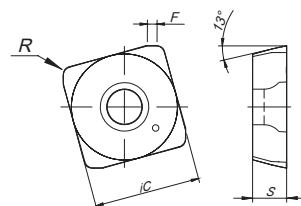


SO...1605... || Inserts | Pastilhas | Plaquetas

SOEW



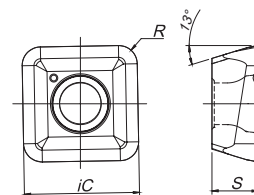
SOEW



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	R	F
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 opção




⊗ Stock item | Produto de stock | Itens de stock

○ Available under request | Disponível sobre consulta
Disponível bajo consulta

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

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

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

 Good Conditions
 Average Conditions
 Difficult Conditions

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

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

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

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

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

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

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

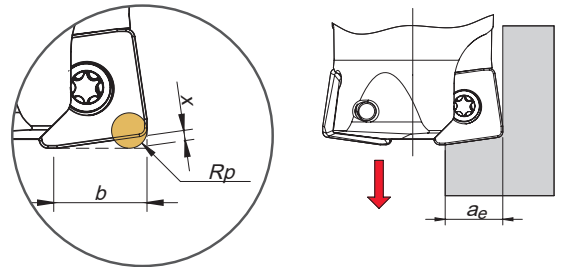
- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

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

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

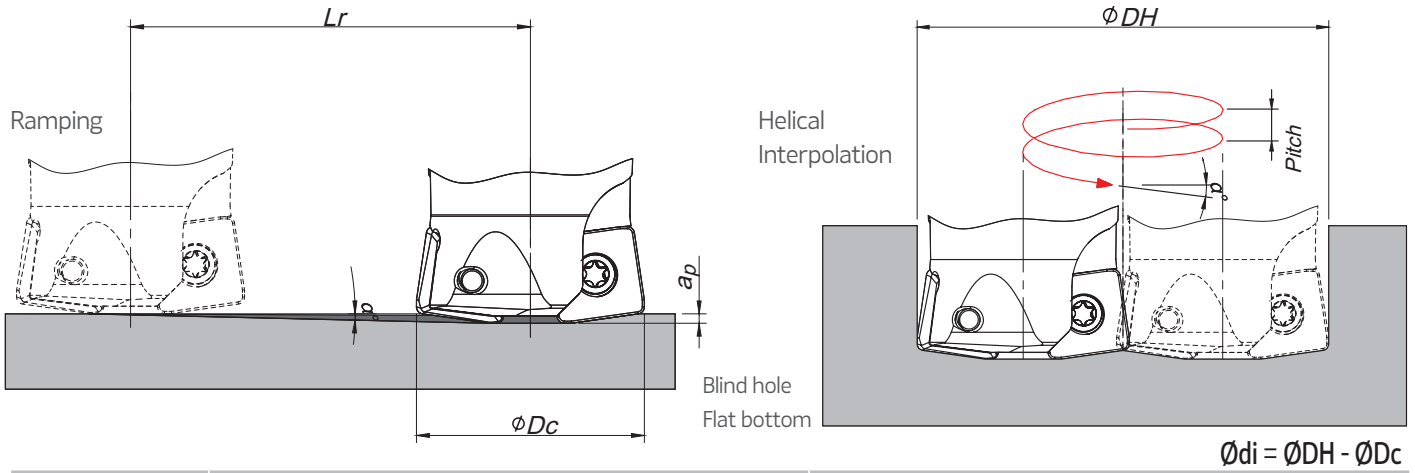
PROGRAMMING DATA | Dados para programação | Datos para la programación

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



RAMPING AND HELICAL INTERPOLATION

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

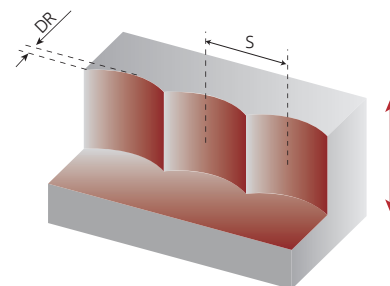


ϕD_c	Ramping			Helical Interpolation		
	Max Ramp α°	Max a_p	Min L_r	ϕDH_{min}	ϕDH_{max}	Theoretical value Max Pitch/Rev.
63	3,5	3,5	80,2	99,0 -	- 123,6	6 11
66	3,0	3,5	66,8	105 -	- 129,6	6 10
80	2,0	3,5	100,2	133 -	- 157,5	5 8
100	1,5	3,5	133,7	173 -	- 197,5	6 8
125	1,0	3,5	200,5	223 -	- 247,5	5 6
160	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	$S_{max} = \sqrt{D_c \cdot DR - DR^2}$



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

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



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