

Products compilation & main applications



ALUMINUM
& non ferrous materials

N



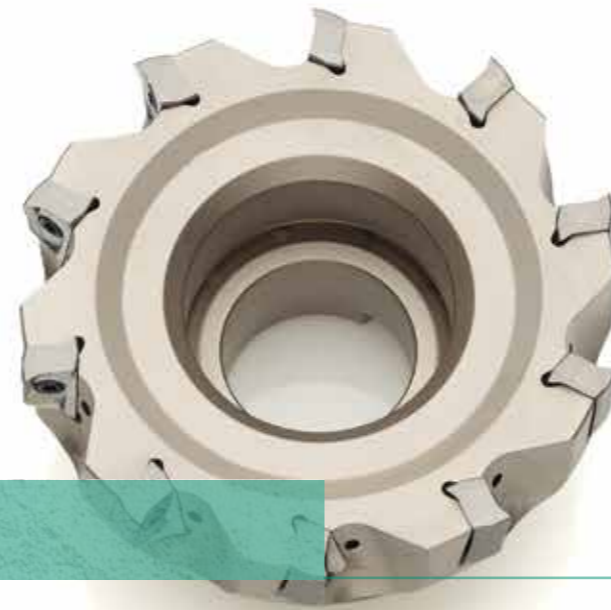
100
YEARS
SINCE 1916



Pag. 2



MILLING



Pag. 52



TURNING



Pag. 64



GROOVING &
PARTING OFF


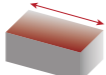




MILLING












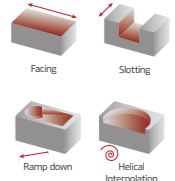


MILLING

FACE MILLING CUTTERS

Program	PLUS SN88-12
	<p>Proprietary milling line</p> 
Material	P M K N S
Main Operation	 <p>Facing</p>
Kr°	45°
Insert	<p>SNHX 1206...</p> 
Couplings	Arbor mounting
Other Operations	 <p>Slanted Shoulder & Chamfer</p>
Page	12
Features	<p>Economical because double sided inserts applied</p> <p>Variety of insert geometries is available for all applications materials</p> <p>Excellent surface finishing</p> <p>Available in regular and fine pitch cutters</p>

SHOULDER MILLING CUTTERS

Program	PLUS AN90-10	PLUS AN90-16	LINEPRO XP90-10
	<p>Proprietary milling line</p> 	<p>Proprietary milling line</p> 	<p>Proprietary milling line</p> 
Material	P M K N S	P K N	P M K N S H
Main Operation	 <p>Shouldering</p>	 <p>Shouldering</p>	 <p>Shouldering</p>
Kr°	90°	90°	90°
Insert	<p>ANHX 1004...</p> 	<p>ANHX 1607...</p> 	<p>XPET 1003...</p> 
Couplings	Arbor mounting Weldon shank	Arbor mounting Weldon shank Threaded coupling	Arbor mounting Weldon shank Threaded coupling
Other Operations	 <p>Facing Slotting Plunging</p>	 <p>Facing Slotting Plunging</p>	 <p>Facing Slotting Ramp down Helical Interpolation</p>
Page	14	18	22
Features	<p>4 corners insert with positive cutting edge</p> <p>Variety of insert geometries is available for all applications</p> <p>Helical cutting edge</p> <p>Available in regular and fine pitch cutters</p>	<p>Excellent solution for square shoulder milling;</p> <p>Offers longer tool life, better tolerances and better productivity parameters;</p> <p>Low power requirement & smooth cutting possible due to positive helical angle;</p> <p>Very flexible and suitable for most milling operations</p> <p>High positive cutting rake geometry.</p>	

MILLING

Overview

News

Face milling

Shoulder milling

Hardmill

Technica Data

MILLING

Overview




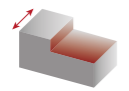
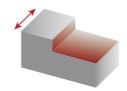
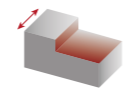



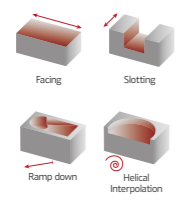
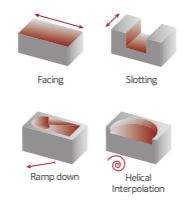
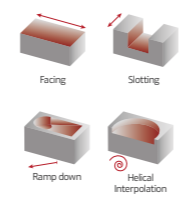
News



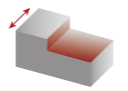
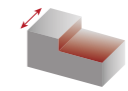


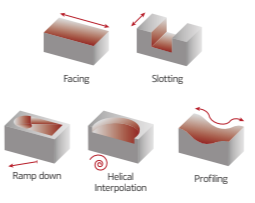
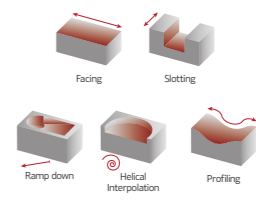
Face milling


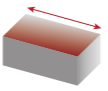

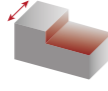
Shoulder milling


Hardmill




Technica Data




SHOULDER MILLING CUTTERS			
Program	LINEPRO XP90-17	LINEPRO AP90-10	LINEPRO AP90-16
	Proprietary milling line 		
Material	P M K N S	P M K N	P M K N
Main Operation	 Shouldering	 Shouldering	 Shouldering
Kr°	90°	90°	90°
Insert	XPET 1706...	APET 1003...	AP...1604...
			
Couplings	Arbor mounting Weldon shank	Arbor mounting Weldon shank Threaded coupling	Arbor mounting Weldon shank
Other Operations			
Page	26	30	34
Features	Excellent solution for square shoulder milling; Offers longer tool life, better tolerances and better productivity parameters; Low power requirement & smooth cutting possible due to positive helical angle; Very flexible and suitable for most milling operations High positive cutting rake geometry.	Strong insert and low cutting force Helical cutting edge Good chip evacuation	


SHOULDER MILLING CUTTERS		
Program	ALUPRO XD90-15	ALUPRO XD90-22
	Proprietary milling line 	Proprietary milling line 
Material	N	N
Main Operation	 Shouldering	 Shouldering
Kr°	90°	90°
Insert	XDGX 15M5...	XDGX 22M7...
		
Couplings	Arbor mounting Cylindrical shank	Arbor mounting Cylindrical shank
Other Operations		
Page	38	42
Features	Solution for multi functional milling operations on aluminum alloys High speed conditions with high metal removal rate Stable clamping conditions (Anti-fly) High rake angle geometry that provides a good surface finish and low cutting forces	

HARDMILL	
Program	HARDMILL XN90-12 NEW
	
Material	K N
Main Operation	 Facing
Kr°	90°
Insert	XNHW 1205... 
Couplings	Arbor mounting
Other Operations	 Shouldering
Page	46
Features	Excellent solution for aluminum PCD tip

FACE MILLING INSERTS	
Reference	SNHX Proprietary milling insert 
Size	12
Page	13

SHOULDER MILLING INSERTS			
Reference	ANHX Proprietary milling insert 	XPET Proprietary milling insert 	APET 
Size	10 16	10 17	10
Page	15 18	23 27	31

SHOULDER MILLING INSERTS			
Reference	APKT 	APHT 	XDGX Proprietary milling insert 
Size	16	16	15 22
Page	35	35	39 43

HARDMILL MILLING INSERTS	
Reference	XNHW NEW 
Size	12
Page	49

OTHER MILLING INSERTS OVERVIEW

Visão genérica de outras pastilhas para fresagem | Visión general de otras plaquitas para fresado

OTHER INSERTS												
Inserts Pastilhas Plaquitas	(1) Geometry code	(2) Grade code ISO Reference	CVD	UNC	PCD	Dimensions (in) Dimensões (in) Dimensiones (in)					Drawing	
			P2	10	D6	ic	S	I	R	a		F
	1111569	OFKR 070408 FN-LN	⊗	⊗	⊗	0.709	0.187	0.291	0.024	-	0.087	
	1112283	SEHT 1204 AFFN-LN	⊗	⊗	⊗	0.500	0.188	0.500	-	-	0.079	
	1111586	SEHT 13T3 AGFN-LN	⊗	⊗	⊗	0.526	0.156	0.394	-	-	0.091	
	1121907	VCGX 220530 LN	⊗	⊗	⊗	0.500	0.220	0.500	0.118	-	-	
	1110905	XDHW 040105	⊗	⊗	⊗	0.157	0.063	0.157	0.020	-	-	
	1110573	XDHW 040110	⊗	⊗	⊗	0.157	0.063	0.157	0.039	-	-	
	1110532	XDHW 060210	⊗	⊗	⊗	0.256	0.094	0.244	0.039	-	-	
	1110565	XDHW 10T310	○	⊗	⊗	0.394	0.156	0.390	0.039	-	-	
	1112316	XDHW 040110 FN	⊗	⊗	⊗	0.157	0.063	0.157	0.039	-	-	
	1112318	XDHW 060210 FN	⊗	⊗	⊗	0.256	0.094	0.244	0.039	-	-	
	1112320	XDHW 10T310 FN	⊗	⊗	⊗	0.394	0.156	0.390	0.039	-	-	

⊗ Stock item | Produto de stock | Itens de stock

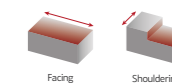
○ Available under request | Disponível sobre consulta | Disponible bajo consulta

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

NEW MILLING PROGRAMS OVERVIEW

Vista genérica dos novos programas | Vista general de los nuevos programas

HARDMILL XN90-12



High performance, cutting with PCD inserts!

- Smooth cutting (high rake angle)
- High productivity (minimum cycle times)
- Economical (high quantities per cutting edge applying PCD)



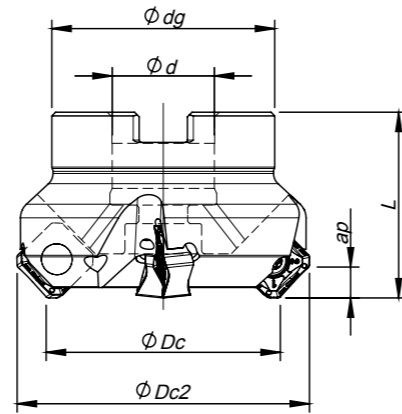
*see more on page 46

Optimized insert geometries

- Available as corner tipped variant
- Available with full length tipping
- Long consistent tool life



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

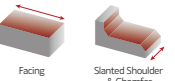
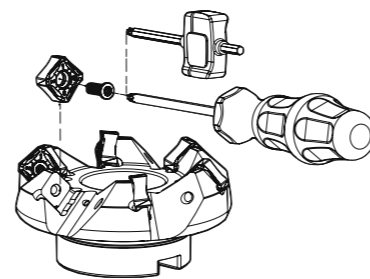


Order code Código	Reference Referência Referencia	Z	Dimensions Dimensões Dimensiones (in)					lbs	Specifications		Insert Pastilha Inserto	Stock
			ϕDc	$\phi Dc2$	ϕd	ϕdg	L		Arbor Type	A_p max (in)		
181072800	SN45 D1.50-A.500/1.50-03-12	3	1.500	2.006	0.500	1.417	1.500	1.03	A	0.236	SN... 1206	⊗
181048800	SN45 D2.00-A.750/1.75-04-12	4	2.000	2.513	0.750	1.772	1.750	1.05	A	0.236	SN... 1206	⊗
181062700	SN45 D2.00-A.750/1.75-06-12	6	2.000	2.513	0.750	1.772	1.750	1.03	A	0.236	SN... 1206	⊗
181048900	SN45 D2.50-A1.00/1.75-06-12	6	2.500	3.013	1.000	2.205	1.750	1.51	A	0.236	SN... 1206	⊗
181062800	SN45 D2.50-A1.00/1.75-08-12	8	2.500	3.013	1.000	2.205	1.750	1.52	A	0.236	SN... 1206	⊗
181049000	SN45 D3.00-A1.00/2.00-07-12	7	3.000	3.513	1.000	2.205	2.000	2.23	A	0.236	SN... 1206	⊗
181062900	SN45 D3.00-A1.00/2.00-10-12	10	3.000	3.513	1.000	2.205	2.000	2.16	A	0.236	SN... 1206	⊗
181136600	SN45 D4.00-A1.50/2.50-08-12	8	4.000	4.513	1.500	2.874	2.500	3.91	A	0.236	SN... 1206	⊗
181136700	SN45 D4.00-A1.50/2.50-12-12	12	4.000	4.513	1.500	2.874	2.500	3.80	A	0.236	SN... 1206	⊗
181049100	SN45 D4.00-A1.25/2.00-08-12	8	4.000	4.513	1.250	2.874	2.000	3.91	A	0.236	SN... 1206	⊗
181063000	SN45 D4.00-A1.25/2.00-12-12	12	4.000	4.513	1.250	2.874	2.000	3.80	A	0.236	SN... 1206	⊗
181049200	SN45 D5.00-A1.50/2.50-10-12	10	5.000	5.513	1.500	3.386	2.500	7.36	A	0.236	SN... 1206	⊗
181049300	SN45 D6.00-A2.00/2.50U-12-12	12	6.000	6.513	2.000	4.882	2.500	9.51	B	0.236	SN... 1206	⊗
181054400	SN45 D8.00-A2.50/2.50U-14-12	14	8.000	8.513	2.500	5.512	2.500	13.51	C	0.236	SN... 1206	⊗
181054500	SN45 D10.0-A2.50/2.50U-16-12	16	10.000	10.513	2.500	7.087	2.500	24.58	C	0.236	SN... 1206	⊗

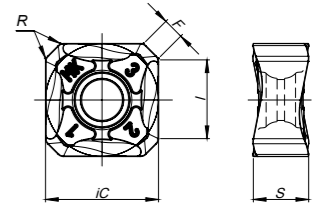
⊗ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta ⊕ Inventory maintained. To be replaced by new item. | Iten em stock. Será substituído por novo item | Iten en stock. Será reemplazado por nuevo ítem.

SPARE PARTS | Complementos | Complementos

Cutter ϕDc	Insert Screw	Key (Torx)	Torque Value
SN45-A-12 - 1.50-3.00	P0401200	XT15	26.6
SN45-A-12 - 4.00-10.00	P0401200	PT15	26.6



SNHX 1206 | Inserts | Pastilhas | Plaquetas



		N		Dimensions (in)				
⁽¹⁾ Geometry code	⁽²⁾ Grade code	UNC	PCD	iC	S	I	R	F
		10	D6					
1111504	SNHX 1206 ANFN-LN	⊗	⊗	1/2	3/16	0.366	0.031	0.079

⊗ 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

GRADES SELECTION GUIDE

ISO	PSM	Material	HB (Brinell)	Grades		Good Conditions	Average Conditions	Difficult Conditions
				← Wear Resistance	Toughness →			
N	10	Aluminum and Non Ferrous	30-130	●	●	●	●	●

RECOMMENDED CUTTING CONDITIONS

ISO	PSM	Material	HB (Brinell)	Vc (sfm)		Feed fz (in/t)
				← Wear Resistance	Toughness →	
N	10	Aluminum and Non Ferrous	30-130	1 148-3936	PH0910	SNHX 1206 0.004-0.014

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

CHIP-BREAKER SELECTION GUIDE

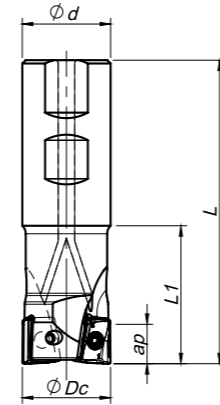
ISO	PSM	Material	HB (Brinell)	Chip-Breaker Application	
				1st choice	Difficult Operations
N	10	Aluminum and Non Ferrous	30-130	LN	-

PLUS AN90-10

Proprietary milling line



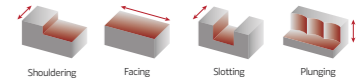
Weldon Shank
 $K_r = 90^\circ$ | $\gamma_p = -7^\circ$ (-6°*)



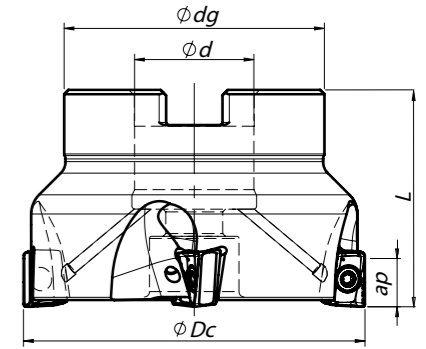
Order code Código	Reference Referência Referencia	⊕	Dimensions Dimensões Dimensiones (in)				lbs	Specifications Ap max (in)	Insert Pastilha Inserto	Stock
			ØDc	Ød/M	L	L1				
181071200	AN90 D.750-W.750/3.94-02-10*	2	0.750	0.750	3.937	1.181	0.46	0.354	ANHX 1004...	⊕
181071300	AN90 D.750-W.750/3.94-03-10*	3	0.750	0.750	3.937	1.181	0.44	0.354	ANHX 1004...	⊕
181077000	AN90 D1.00-W1.00/4.53-02-10*	2	1.000	1.000	4.528	1.378	0.86	0.354	ANHX 1004...	⊕
181064300	AN90 D1.00-W1.00/4.53-03-10*	3	1.000	1.000	4.528	1.378	0.85	0.354	ANHX 1004...	⊕
181077100	AN90 D1.25-W1.25/4.92-03-10*	3	1.250	1.250	4.921	1.575	1.54	0.354	ANHX 1004...	⊕
181077200	AN90 D1.25-W1.25/4.92-04-10*	4	1.250	1.250	4.921	1.575	1.53	0.354	ANHX 1004...	⊕
181138200	AN90 D1.50-W1.25/5.00-04-10	4	1.500	1.250	5.000	1.500	1.69	0.354	ANHX 1004...	⊕
181138300	AN90 D1.50-W1.25/5.00-05-10	5	1.500	1.250	5.000	1.500	1.69	0.354	ANHX 1004...	○
181077300	AN90 D1.50-W1.50/5.12-04-10	4	1.500	1.500	5.118	1.654	1.69	0.354	ANHX 1004...	△
181077500	AN90 D2.00-W1.50/5.32-05-10	5	2.000	1.500	5.315	1.772	1.72	0.354	ANHX 1004...	△

⊕ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta △ Inventory maintained. To be replaced by new item. | Item em stock. Será substituído por novo item | Item en stock. Será reemplazado por nuevo item.

PLUS AN90-10 ANHX



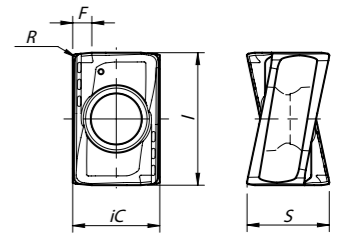
Arbor Mounting
 $K_r = 90^\circ$ | $\gamma_p = -7^\circ$



Order code Código	Reference Referência Referencia	⊕	Dimensions Dimensões Dimensiones (in)				lbs	Specifications		Insert Pastilha Inserto	Stock
			ØDc	Ød/M	ØDg	L		Arbor Type	Ap max (in)		
181077700	AN90 D1.50-A.500/1.50-04-10	4	1.500	0.500	1.417	1.500	0.45	A	0.354	ANHX 1004...	⊕
181077800	AN90 D1.50-A.500/1.50-05-10	5	1.500	0.500	1.417	1.500	0.44	A	0.354	ANHX 1004...	○
181077900	AN90 D2.00-A.750/1.75-05-10	5	2.000	0.750	1.772	1.750	0.72	A	0.354	ANHX 1004...	⊕
181078000	AN90 D2.00-A.750/1.75-07-10	7	2.000	0.750	1.772	1.750	0.70	A	0.354	ANHX 1004...	○
181078100	AN90 D2.50-A1.00/1.75-07-10	7	2.500	1.000	2.205	1.750	1.19	A	0.354	ANHX 1004...	⊕
181078200	AN90 D2.50-A1.00/1.75-09-10	9	2.500	1.000	2.205	1.750	1.16	A	0.354	ANHX 1004...	○
181078300	AN90 D3.00-A1.00/2.00-08-10	8	3.000	1.000	2.205	2.000	2.18	A	0.354	ANHX 1004...	⊕
181078400	AN90 D3.00-A1.00/2.00-10-10	10	3.000	1.000	2.205	2.000	2.13	A	0.354	ANHX 1004...	○
181078500	AN90 D4.00-A1.25/2.00-09-10	9	4.000	1.250	2.874	2.000	3.97	A	0.354	ANHX 1004...	△
181138000	AN90 D4.00-A1.50/2.50-09-10	9	4.000	1.500	2.874	2.500	3.88	A	0.354	ANHX 1004...	⊕
181138100	AN90 D4.00-A1.50/2.50-12-10	12	4.000	1.500	2.874	2.500	3.88	A	0.354	ANHX 1004...	○

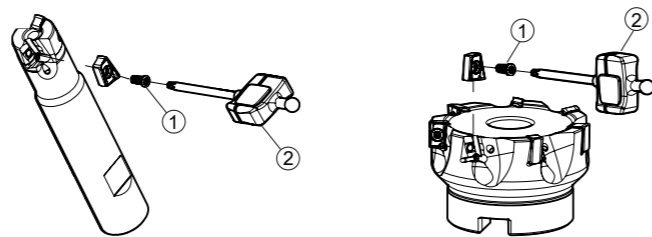
⊕ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta △ Inventory maintained. To be replaced by new item. | Item em stock. Será substituído por novo item | Item en stock. Será reemplazado por nuevo item.

ANHX 1004... | Inserts | Pastilhas | Plaquetas



SPARE PARTS | Complementos | Repuestos

Cutter ØDc	Insert Screw	Key (Torx)	Torque Value lbf/in
AN90-W-10 - 0.75-2.00	P0300800	XT09	26.6
AN90-A-10 - 1.50-4.00	P0300800	XT09	26.6



		N		Dimensions (in)				
		UNC	PCD					
		10	D6					
⁽¹⁾ Geometry code	⁽²⁾ Grade code ISO Reference	PH0910	PDP410	iC	S	I	R	F
1111997	ANHX 100405 PNFR-LN	⊕		0.260	0.244	0.394	0.020	0.039
1112102	ANHX 100412 PNR-LN	⊕		0.260	0.244	0.394	0.047	0.039

⊕ 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

PLUS AN90-10

GRADES SELECTION GUIDE

ISO	PSM	Material	HB (Brinell)	Grades		
				← Wear Resistance	Toughness →	
				PH0910		● Good Conditions
N	10	Aluminum and Non Ferrous	30-130			● Average Conditions
						⚙️ Difficult Conditions

RECOMMENDED CUTTING CONDITIONS

ISO	PSM	Material	HB (Brinell)	Vc (sfm)		Feed fz (in/t)
				← Wear Resistance	Toughness →	
				PH0910		ANHX 1004... LN
N	10	Aluminum and Non Ferrous	30-130	1148-4560		0.004-0.008

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

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

(Note 3):

Operation	a_e	Vc & fz	a_p (in)
Slotting	100%	<20%	0.079-0.138
Shouldering	<50%	>8%	0.118-0.236
	≤25%	>12%	0.236-0.335

(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.

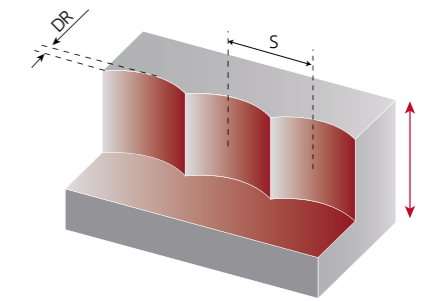
CHIP-BREAKER SELECTION GUIDE

ISO	PSM	Material	HB (Brinell)	Chip-Breaker Application	
				1st choice	Difficult Operations
N	10	Aluminum and Non Ferrous	30-130	ANHX 1004... LN	-

PLUS AN90-10 ANHX

PLUNGING | Mergulho | Plunge

$L \leq 3D_c$	$L > 3D_c$	S max.
f_z (in/t)		
0.004-0.008	0.004-0.006	$S_{max} = \sqrt{D_c \cdot D_r - D_r^2}$



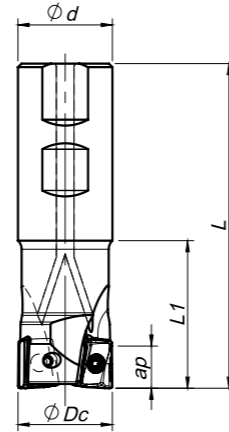
DR (in)	S max and DR corresponding cutting diameter Dc (in)							
	Dc (in)							
	0.750	1.000	1.250	1.500	2.000	2.500	3.000	4.000
0.039	0.167	0.194	0.217	0.239	0.277	0.310	0.340	0.393
0.079	0.230	0.270	0.304	0.335	0.390	0.437	0.480	0.557
0.118	0.273	0.323	0.365	0.404	0.471	0.530	0.583	0.677

PLUS AN90-16

Proprietary milling line



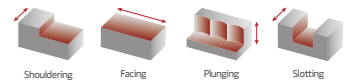
Weldon Shank
K_r = 90° | γ_p = -4°



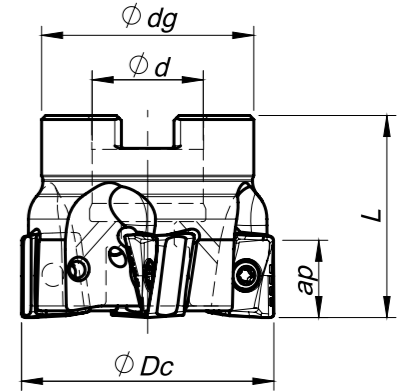
Order code Código	Reference Referência Referencia	⌀	Dimensions Dimensões Dimensiones (in)				lbs	Specifications Ap max (in)	Insert Pastilha Inserto	Stock
			ØDc	Ød/M	L	L1				
181060100	AN90 D1.25-W1.25/4.92-02-16	2	1.250	1.250	4.921	1.575	1.41	0.591	ANHX 1607...	⊗
181060200	AN90 D1.50-W1.25/5.12-03-16	3	1.500	1.250	5.118	1.654	1.54	0.591	ANHX 1607...	⊗
181060300	AN90 D2.00-W1.25/5.32-04-16	4	2.000	1.250	5.315	1.772	1.90	0.591	ANHX 1607...	⊗

⊗ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta △ Inventory maintained. To be replaced by new item. | Item em stock. Será substituído por novo item | Item en stock. Será reemplazado por nuevo item.

PLUS AN90-16 ANHX



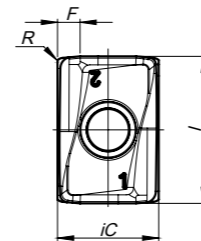
Arbor Mounting
K_r = 90° | γ_p = -4°



Order code Código	Reference Referência Referencia	⌀	Dimensions Dimensões Dimensiones (in)				lbs	Specifications Arbor Type Ap max	Insert Pastilha Inserto	Stock
			ØDc	Ød/M	ØDg	L				
181058900	AN90 D2.00-A.750/1.75-03-16	3	2.000	0.750	1.772	1.750	0.77	A 0.591	ANHX 1607...	⊗
181059000	AN90 D2.00-A.750/1.75-04-16	4	2.000	0.750	1.772	1.750	0.79	A 0.591	ANHX 1607...	⊗
181059100	AN90 D2.50-A1.00/1.75-04-16	4	2.500	1.000	2.205	1.750	1.25	A 0.591	ANHX 1607...	⊗
181059200	AN90 D2.50-A1.00/1.75-06-16	6	2.500	1.000	2.205	1.750	1.23	A 0.591	ANHX 1607...	⊗
181059300	AN90 D3.00-A1.00/2.00-05-16	5	3.000	1.000	2.205	2.000	1.93	A 0.591	ANHX 1607...	⊗
181059400	AN90 D3.00-A1.00/2.00-06-16	6	3.000	1.000	2.205	2.000	2.00	A 0.591	ANHX 1607...	⊗
181136400	AN90 D4.00-A1.50/2.50-05-16	5	4.000	1.500	3.386	2.500	3.66	A 0.591	ANHX 1607...	⊗
181136500	AN90 D4.00-A1.50/2.50-08-16	8	4.000	1.500	3.386	2.500	3.75	A 0.591	ANHX 1607...	⊗
181059500	AN90 D4.00-A1.25/2.00-05-16	5	4.000	1.250	2.874	2.000	3.66	A 0.591	ANHX 1607...	△
181059600	AN90 D4.00-A1.25/2.00-08-16	8	4.000	1.250	2.874	2.000	3.75	A 0.591	ANHX 1607...	△
181059700	AN90 D5.00-A1.50/2.50-07-16	7	5.000	1.500	3.386	2.500	7.38	A 0.591	ANHX 1607...	⊗
181059800	AN90 D5.00-A1.50/2.50-10-16	10	5.000	1.500	3.386	2.500	7.49	A 0.591	ANHX 1607...	⊗
181059900	AN90 D6.00-A2.00/2.50U-08-16	8	6.000	2.000	4.882	2.500	8.83	B 0.591	ANHX 1607...	⊗
181060000	AN90 D6.00-A2.00/2.50U-11-16	11	6.000	2.000	4.882	2.500	8.91	B 0.591	ANHX 1607...	⊗

⊗ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta △ Inventory maintained. To be replaced by new item. | Item em stock. Será substituído por novo item | Item en stock. Será reemplazado por nuevo item.

ANHX 1607... | Inserts | Pastilhas | Plaquetas

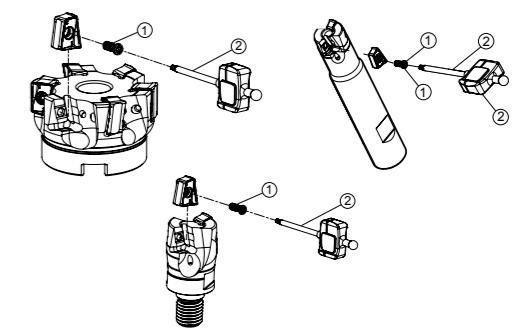


N								
(1) Geometry code	ISO Reference	UNC	PCD	Dimensions (in)				
		10	D6	iC	S	I	R	F
1111659	ANHX 160708 PNFR-LN	⊗		0.441	0.425	0.630	0.031	0.055
1111597	ANHX 160712 PNFR-LN	⊗		0.441	0.413	0.630	0.047	0.047

⊗ 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 | Complementos | Repuestos

Cutter ØDc	Insert Screw	Key (Torx)	Torque Value
			lbf/in
AN90-W-16 - 1.25-2.00	PO401200	XT15	26.6
AN90-A-16 - 2.00-3.00	PO401200	XT15	26.6
AN90-A-16 - 4.00-6.00	PO401200	PT15	26.6



PLUS AN90-16

GRADES SELECTION GUIDE

ISO	PSM	Material	HB (Brinell)	Grades		● Good Conditions ● Average Conditions ● Difficult Conditions
				← Wear Resistance	Toughness →	
N	10	Aluminum and Non Ferrous	30-130	PH0910		●

RECOMMENDED CUTTING CONDITIONS

ISO	PSM	Material	HB (Brinell)	Vc (sfm)		Feed fz (in/t)
				← Wear Resistance	Toughness →	
N	10	Aluminum and Non Ferrous	30-130	PH0910	ANHX 1607... LN	0.004-0.016

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

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

(Note 3):

Operation	a_e	Vc & fz	a_p (in)
Slotting	100%	<20%	0.079-0.177
Shouldering	<50%	>8%	0.236-0.315
	<25%	>12%	0.315-0.531

(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.

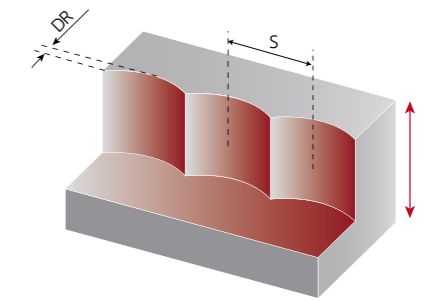
CHIP-BREAKER SELECTION GUIDE

ISO	PSM	Material	HB (Brinell)	Chip-Breaker Application	
				1st choice	Difficult Operations
N	10	Aluminum and Non Ferrous	30-130	ANHX 1607... LN	-

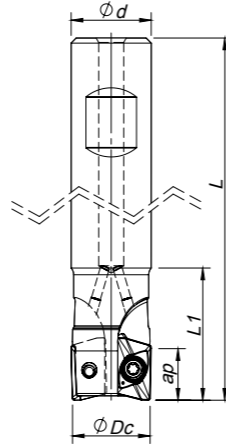
PLUS AN90-16 ANHX

PLUNGING | Mergulho | Plunge

$L \leq 3D_c$	$L > 3D_c$	S max.
f_z (in/t)		
0.004-0.008	0.004-0.005	$S_{max} = \sqrt{D_c \cdot D_r - D_r^2}$



DR (in)	S max and DR corresponding cutting diameter Dc (in)							
	Dc (in)							
	1.250	1.500	2.000	2.500	3.000	4.000	5.000	6.000
0.039	0.217	0.239	0.277	0.310	0.340	0.393	0.440	0.482
0.079	0.304	0.335	0.390	0.437	0.480	0.557	0.624	0.684
0.118	0.365	0.404	0.471	0.530	0.583	0.677	0.759	0.833
0.157	0.414	0.459	0.538	0.607	0.668	0.777	0.872	0.958
0.197	0.455	0.507	0.596	0.674	0.743	0.866	0.973	1.069



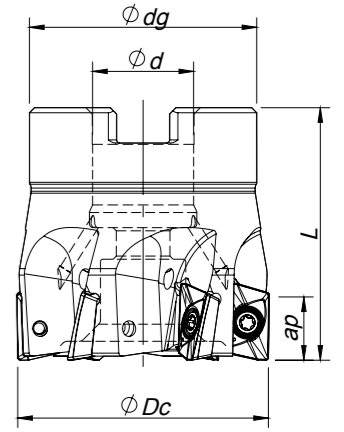
Weldon Shank
 $\kappa_r=90^\circ$ | $\gamma_p=+5^\circ$

Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (in)					Max ap (in)		Insert Pastilha Inserto	Stock
			ϕDc	$\phi d/M$	L	L1		LP/MP	HF		
181106300	XP90 D.625-W.625/3.25-02-10	2	0.625	0.625	3.252	1.083	0.23	0.394	0.031	XP... 1003...	
181106400	XP90 D.750-W.750/3.39-02-10	2	0.750	0.750	3.390	1.189	0.34	0.394	0.031	XP... 1003...	
181106500	XP90 D1.00-W1.00/3.78-03-10	3	1.000	1.000	3.780	1.280	0.68	0.394	0.031	XP... 1003...	

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta | Disponible bajo consulta

Inventory maintained. To be replaced by new item. | Iten em stock. Será substituído por novo item | Iten in stock. Será reemplazado por nuevo item.



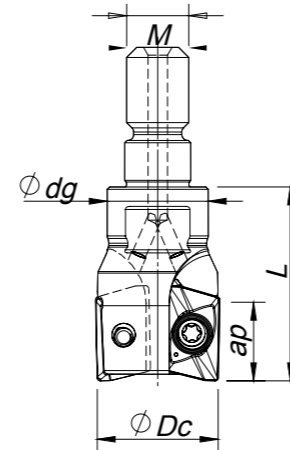
Arbor Mounting
 $\kappa_r=90^\circ$ | $\gamma_p=+7^\circ \sim +8^\circ$

Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (in)					Max ap (in)		Arbor Style	Insert Pastilha Inserto	Stock
			ϕDc	$\phi d/M$	ϕdg	L		LP/MP	HF			
181107000	XP90 D1.50-A.500/1.57-06-10	6	1.500	0.500	1.417	1.575	0.22	0.394	0.031	A	XP... 1003...	
181107100	XP90 D2.00-A.750/1.57-07-10	7	2.000	0.750	1.772	1.575	0.31	0.394	0.031	A	XP... 1003...	
181107200	XP90 D2.50-A.750/1.57-08-10	8	2.500	0.750	2.205	1.575	0.43	0.394	0.031	A	XP... 1003...	

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta | Disponible bajo consulta

Inventory maintained. To be replaced by new item. | Iten em stock. Será substituído por novo item | Iten in stock. Será reemplazado por nuevo item.



Threaded Coupling
 $\kappa_r=90^\circ$ | $\gamma_p=+5^\circ \sim +6^\circ$

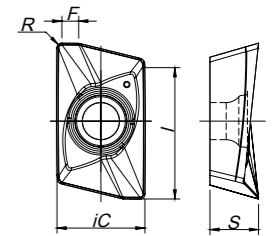
Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (in)					Max ap (in)		Insert Pastilha Inserto	Stock
			ϕDc	$\phi d/M$	ϕdg	L		LP/MP	HF		
181106600	XP90 D.625-R-08/1.00-02-10	2	0.625	M8	0.531	1.000	0.05	0.394	0.031	XP... 1003...	
181106700	XP90 D.750-R-10/1.37-03-10	3	0.750	M10	0.728	1.378	0.23	0.394	0.031	XP... 1003...	
181106800	XP90 D1.00-R-12/1.57-04-10	4	1.000	M12	0.906	1.575	0.27	0.394	0.031	XP... 1003...	
181106900	XP90 D1.25-R-16/1.57-05-10	5	1.250	M16	1.181	1.575	0.47	0.394	0.031	XP... 1003...	

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta | Disponible bajo consulta

Inventory maintained. To be replaced by new item. | Iten em stock. Será substituído por novo item | Iten in stock. Será reemplazado por nuevo item.

XPET 1003... || Inserts | Pastilhas | Plaquetas



		N							
		UNC	PCD	Dimensions (in)					
		⁽²⁾ Grade code	10	D6					
⁽¹⁾ Geometry code	ISO Reference	PH0910	PDP410	iC	S	I	R	F	
1111984	XPET 100304 PDFR-LN			0.274	0.156	0.413	0.016	0.047	
1111985	XPET 100312 PDFR-LN			0.274	0.156	0.413	0.047	0.047	

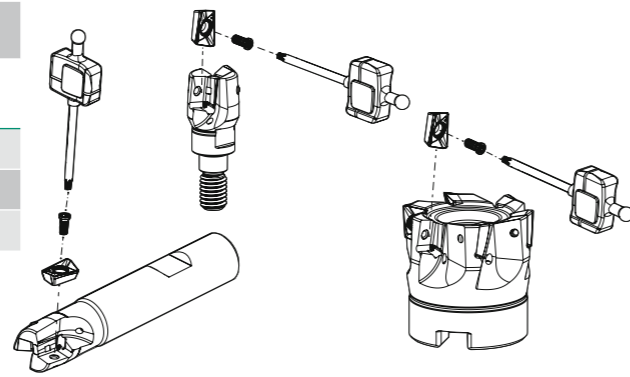
Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta | Disponible bajo consulta

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

SPARE PARTS | Complementos | Complementos

Cutter ØDc	Insert Screw	Key (Torx)	Torque Value lbf/in
XP90-W-10 - 0.625-1.00	P0250704	XT08	10.6
XP90-R-10 - 0.625-1.25	P0250704	XT08	10.6
XP90-A-10 - 1.50-2.50	P0250704	XT08	10.6



GRADES SELECTION GUIDE

ISO	PSM	Material	HB (Brinell)	Grades		<ul style="list-style-type: none"> ● Good Conditions ● Average Conditions ● Difficult Conditions
				← Wear Resistance	Toughness →	
				PH0910		
N	10	Aluminum and Non Ferrous	30-130			●

RECOMMENDED CUTTING CONDITIONS

ISO	PSM	Material	HB (Brinell)	Vc (sfm)		Feed fz (in/t)
				← Wear Resistance	Toughness →	
				PH0910		XPET 1003... LN
N	10	Aluminum and Non Ferrous	30-130	1148-4592		0.003-0.010

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

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

(Note 3):

Operation	a_e	Vc & fz	a_p (in)
Slotting	100%	<20%	0.079-0.157
Shouldering	<50%	>8%	0.118-0.236
	<25%	>12%	0.276-0.354

(Note 4):

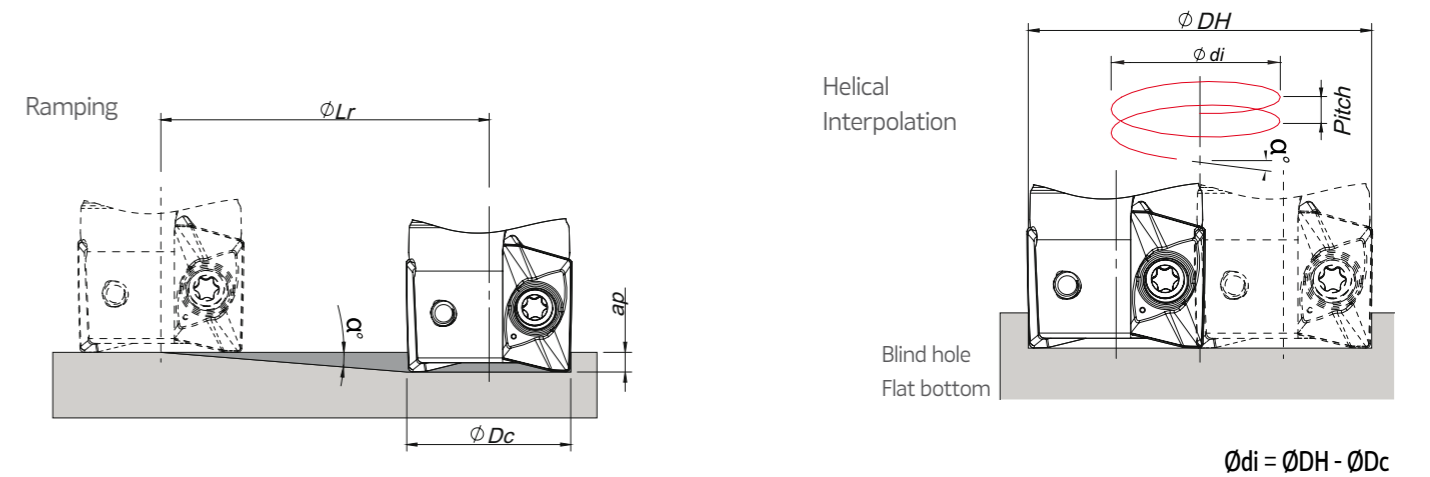
It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

- 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

ISO	PSM	Material	HB (Brinell)	Chip-Breaker Application	
				1st choice	Difficult Operations
N	10	Aluminum and Non Ferrous	30-130	XPET 1003... LN	-

RAMPING AND HELICAL INTERPOLATION



ØDc	Ramping			Helical Interpolation		
	Max Ramp a°	Max a_p	Min Lr	Diameter for Blind Hole. Flat Bottom Face (1)		Max Pitch/Rev.
				ØDHmin	ØDHmax	
0.625	7.5	0.394	2.993	0.978	-	0.140
				-	1.171	0.220
0.750	5.0	0.394	4.503	1.228	-	0.130
				-	1.421	0.180
1.000	3.5	0.394	6.442	1.728	-	0.130
				-	1.921	0.170
1.250	2.5	0.394	9.024	2.228	-	0.130
				-	2.421	0.160
1.500	1.7	0.394	13.275	2.728	-	0.110
				-	2.921	0.130
2.000	1.3	0.394	17.362	3.728	-	0.120
				-	3.921	0.130
2.500	1.0	0.394	22.572	4.728	-	0.120
				-	4.921	0.130

(1) using LP insert with radius 0.031 in

Note: During helical interpolation do not exceed maximum pitch

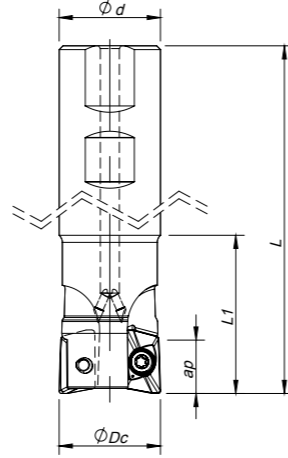
When using HF insert or other different insert radius to calculate the ØDHmin and ØDHmax use the below equation:

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

- Maximum Diameter: $\text{ØDHmax} = 2 \times (\text{ØDc} - \text{R corner radius})$



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



Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (in)					Specifications		Insert Pastilha Inserto	Stock
			ϕDc	$\phi d/M$	L	L1		lbs	Ap max (in)		
181107300	XP90 D1.25-W1.25/4.33-02-17	2	1.250	1.250	4.330	1.570	1.00	0.669	XPET 1706...		
181107400	XP90 D1.25-W1.25/4.33-03-17	3	1.250	1.250	4.330	1.570	1.00	0.669	XPET 1706...		
181107500	XP90 D1.50-W1.25/4.72-03-17	3	1.500	1.250	4.720	1.570	1.70	0.669	XPET 1706...		
181107600	XP90 D1.50-W1.25/4.72-04-17	4	1.500	1.250	4.720	1.570	1.70	0.669	XPET 1706...		

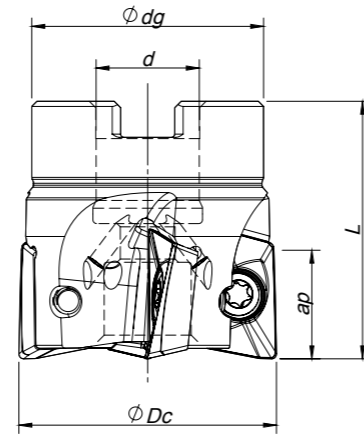
Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta | Disponible bajo consulta

Inventory maintained. To be replaced by new item. | Iten em stock. Será substituído por novo item | Iten en stock. Será reemplazado por nuevo item.



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



Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (in)					Specifications		Insert Pastilha Inserto	Stock
			ϕDc	$\phi d/M$	ϕdg	L		lbs	Arbor Type		
181107700	XP90 D1.50-A.500/1.57-04-17	4	1.500	0.500	1.417	1.575	0.50	A	0.669	XPET 1706...	
181107800	XP90 D2.00-A.750/1.57-05-17	5	2.000	0.750	1.772	1.575	0.70	A	0.669	XPET 1706...	
181107900	XP90 D2.50-A.750/1.57-06-17	6	2.500	0.750	2.205	1.575	1.10	A	0.669	XPET 1706...	
181108000	XP90 D3.00-A1.00/1.97-07-17	7	3.000	1.000	2.205	1.970	2.20	A	0.669	XPET 1706...	
181108100	XP90 D4.00-A1.25/1.97-08-17	8	4.000	1.250	2.874	1.970	3.74	A	0.669	XPET 1706...	
181108200	XP90 D5.00-A1.25/2.48-09-17	9	5.000	1.500	3.386	2.480	6.83	A	0.669	XPET 1706...	

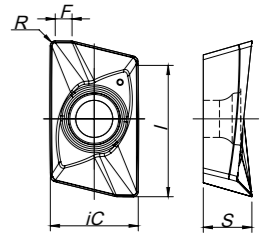
Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta | Disponible bajo consulta

Inventory maintained. To be replaced by new item. | Iten em stock. Será substituído por novo item | Iten en stock. Será reemplazado por nuevo item.



XPET 1706... | Inserts | Pastilhas | Plaquetas



		N						
		UNC	PCD	Dimensions (in)				
		10	D6					
⁽¹⁾ Geometry code	⁽²⁾ Grade code	PH0910	PDP410	iC	S	I	R	F
	1111990	XPET 170608 PDFR-LN			0.445	1/4	0.689	0.031
1111991	XPET 170620 PDFR-LN			0.445	1/4	0.689	0.079	0.039
1111992	XPET 170632 PDFR-LN			0.445	1/4	0.689	0.126	0.031

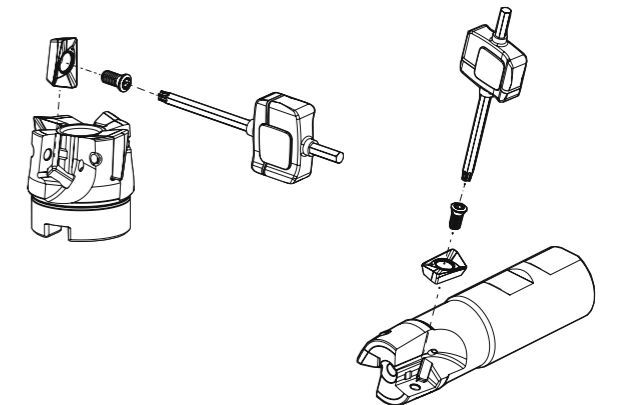
Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta | Disponible bajo consulta

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

SPARE PARTS | Complementos | Complementos

Cutter ϕDc	Insert Screw	Key (Torx)	Torque Value
XP-90-W-17 - 1.25-1.50	P0451001	XT20	44.3
XP90-A-17 - 1.50-3.00	P0451001	XT20	44.3
XP90-A-17 - 4.00-5.00	P0451001	PT20	44.3



GRADES SELECTION GUIDE

ISO	PSM	Material	HB (Brinell)	Grades		● Good Conditions ● Average Conditions ● Difficult Conditions
				← Wear Resistance	Toughness →	
N	10	Aluminum and Non Ferrous	30-130	PH0910		●

RECOMMENDED CUTTING CONDITIONS

ISO	PSM	Material	HB (Brinell)	Vc (sfm)		Feed fz (in/t)
				← Wear Resistance	Toughness →	
N	10	Aluminum and Non Ferrous	30-130	1148-4592		XPET 1706... LN 0.004-0.014

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

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

(Note 3):

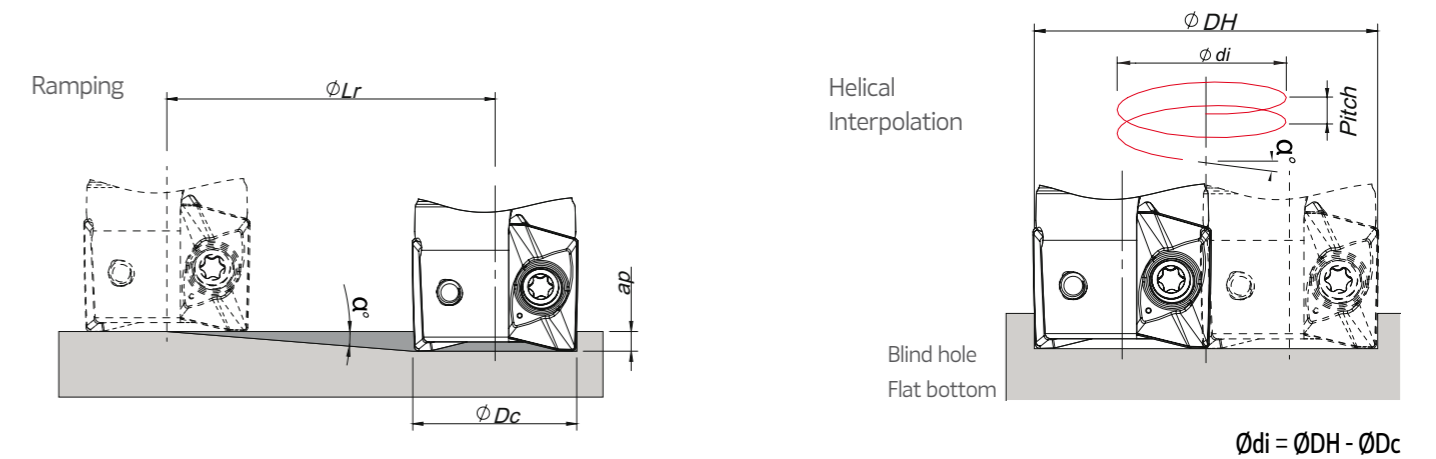
Operation	a_e	Vc & fz	a_p (in)
Slotting	100%	<20%	0.079-0.236
Shouldering	<50%	>8%	0.276-0.512
	≤25%	>12%	0.512-0.630

(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

ISO	PSM	Material	HB (Brinell)	Chip-Breaker Application	
				1st choice	Difficult Operations
N	10	Aluminum and Non Ferrous	30-130	XPET 1706... LN	-

RAMPING AND HELICAL INTERPOLATION



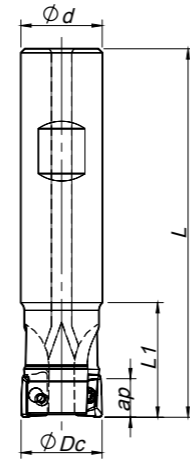
ϕ_{Dc}	Ramping			Helical Interpolation		
	Max Ramp α°	Max a_p	Min Lr	Diameter for Blind Hole. Flat Bottom Face (1)		Max Pitch/Rev.
1.250	3.8	0.669	10.072	ϕ_{DHmin} 2.228	ϕ_{DHmax} 2.421	0.200 0.240
1.500	2.7	0.669	14.186	2.728	2.921	0.180 0.210
2.000	2.0	0.669	19.158	3.728	3.921	0.180 0.210
2.500	1.5	0.669	25.548	4.728	4.921	0.180 0.190
3.000	1.0	0.669	38.327	5.728	5.921	0.140 0.160
4.000	0.8	0.669	47.910	7.728	7.921	0.160 0.170
5.000	0.7	0.669	54.756	9.728	9.921	0.180 0.180

(1) using LP insert with radius 0.031 in
 Note: During helical interpolation do not exceed maximum pitch
 When using HF insert or other different insert radius to calculate the ϕ_{DHmin} and ϕ_{DHmax} use the below equation:
 - Minimum Diameter: $\phi_{DHmin} = 2x(\phi_{Dc} - (R \text{ corner radius} + F \text{ width of edge wiper}))$
 - Maximum Diameter: $\phi_{DHmax} = 2 \times (\phi_{Dc} - R \text{ corner radius})$

LINEPRO AP90-10



Weldon Shank
 $K_r=90^\circ \mid \gamma_p=+7^\circ \sim +9^\circ$

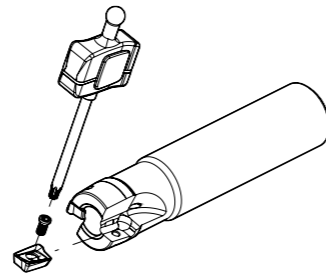


Order code Código	Reference Referência Referencia	Flutes	Dimensions Dimensões Dimensiones (in)				Weight lbs	Specifications Ap max (in)	Insert Pastilha Inserto	Stock
			ØDc	Ød/M	L	L1				
181060400	AP90 D.500-W.500/3.94-01-10	1	0.500	0.500	3.937	0.850	0.40	0.354	AP... 1003...	○
181060500	AP90 D.625-W.625/3.94-02-10	2	0.625	0.625	3.937	1.024	0.28	0.354	AP... 1003...	⊗
181060700	AP90 D.750-W.750/3.94-02-10	2	0.750	0.750	3.937	1.181	0.40	0.354	AP... 1003...	⊗
181060800	AP90 D.750-W.750/7.87-02-10	2	0.750	0.750	7.874	1.575	0.85	0.354	AP... 1003...	⊗
181068800	AP90 D1.00-W1.00/4.53-03-10	3	1.000	1.000	4.528	1.378	0.84	0.354	AP... 1003...	⊗
181061000	AP90 D1.00-W1.00/9.84-03-10	3	1.000	1.000	9.843	1.575	1.95	0.354	AP... 1003...	⊗
181069000	AP90 D1.25-W1.25/4.92-04-10	4	1.250	1.250	4.921	1.575	1.46	0.354	AP... 1003...	○
181061200	AP90 D1.25-W1.25/9.84-04-10	4	1.250	1.250	9.843	1.575	3.11	0.354	AP... 1003...	○
181061300	AP90 D1.50-W1.25/7.87-03-10	3	1.500	1.250	7.874	1.575	2.57	0.354	AP... 1003...	○
181061400	AP90 D1.50-W1.25/9.84-05-10	5	1.500	1.250	9.843	1.575	3.20	0.354	AP... 1003...	○

⊗ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta ⊗ Inventory maintained. To be replaced by new item. | Item em stock. Será substituído por novo item | Item en stock. Será reemplazado por nuevo item.

SPARE PARTS | Complementos | Complementos

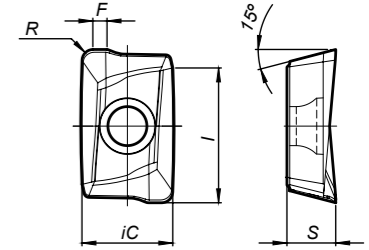
Cutter ØDc	Insert Screw	Key (Torx)	Torque Value
AP90-W-10 - 0.50-1.50	P0250503	XT08	10.6



LINEPRO AP90-10 APET



APET 1003... | Inserts | Pastilhas | Plaquetas



		N						
(1) Geometry code	ISO Reference	UNC	PCD	Dimensions (in)				
		(2) Grade code	D6	iC	S	I	R	F
1112043	APET 100305 PDFR-LN	⊗		0.264	0.138	0.394	0.020	0.047

⊗ 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

GRADES SELECTION GUIDE

ISO	PSM	Material	HB (Brinell)	Grades		Conditions
				← Wear Resistance	Toughness →	
N	10	Aluminum and Non Ferrous	30-130	PH0910	●	Good Conditions
					●	Average Conditions
					⊗	Difficult Conditions

RECOMMENDED CUTTING CONDITIONS

ISO	PSM	Material	HB (Brinell)	Vc (sfm)		Feed fz (in/t)
				← Wear Resistance	Toughness →	
				PH0910		APET 1003... LN
N	10	Aluminum and Non Ferrous	30-130	1148-4592		0.003-0.008

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

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

(Note 3):

Operation	a_e	Vc & fz	a_p (in)
Slotting	100%	<20%	0.118-0.157
Shouldering	<50%	>8%	0.197-0.236
	≤25%	>12%	0.276-0.315

(Note 4):

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

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

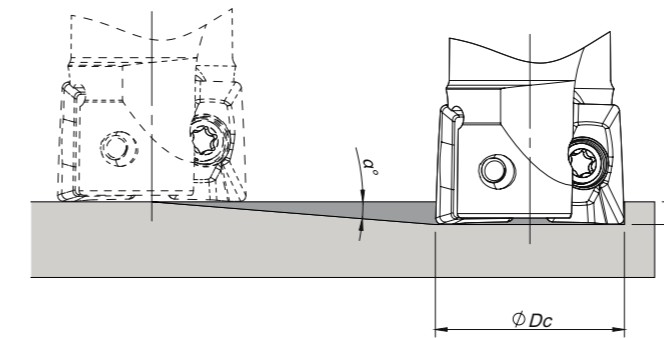
(Note 5): If chattering occurs, reduce a_p and Vc by 30% and keep the same fz per tooth.

CHIP-BREAKER SELECTION GUIDE

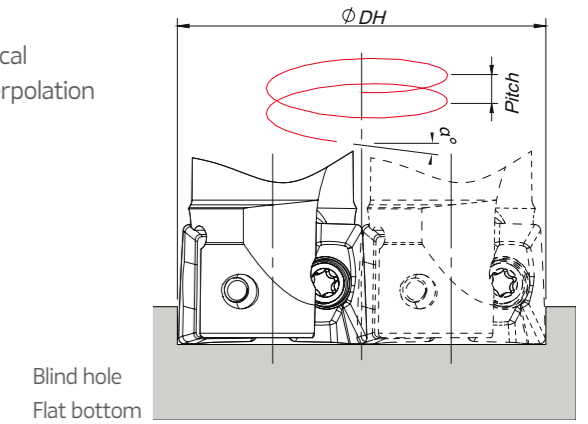
ISO	PSM	Material	HB (Brinell)	Chip-Breaker Application	
				1st choice	Difficult Operations
N	10	Aluminum and Non Ferrous	30-130	APET 1003... LN	-

RAMPING AND HELICAL INTERPOLATION

Ramping



Helical Interpolation



$$\varnothing di = \varnothing DH - \varnothing Dc$$

$\varnothing Dc$	Ramping		Helical Interpolation			
	Max Ramp a°	Max a_p	Min Lr	Diameter for Blind Hole. Flat Bottom Face (1)		Max Pitch/Rev.
				$\varnothing DH_{min}$	$\varnothing DH_{max}$	
0.500	1.5	0.354	13.519	0.866	-	0.030
				-	0.921	0.034
0.625	1.4	0.354	14.485	1.116	-	0.037
				-	1.171	0.041
0.750	1.0	0.354	20.281	1.366	-	0.033
				-	1.421	0.036
1.000	0.7	0.354	28.974	1.866	-	0.033
				-	1.921	0.035
1.250	0.6	0.354	33.803	2.366	-	0.036
				-	2.421	0.038
1.500	0.5	0.354	40.564	2.866	-	0.037
				-	2.921	0.038

(1) using LP insert with radius 0.020 in

Note: During helical interpolation do not exceed maximum pitch

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

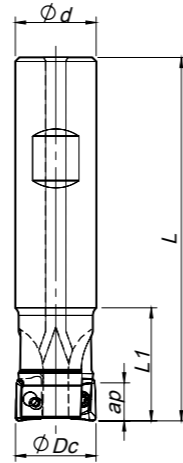
- Minimum Diameter: $\varnothing DH_{min} = 2x(\varnothing Dc - (R \text{ corner radius} + F \text{ width of edge wiper}))$

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

LINEPRO AP90-16



Weldon Shank
 $K_r=90^\circ \mid \gamma_p=+6^\circ \sim 8^\circ$

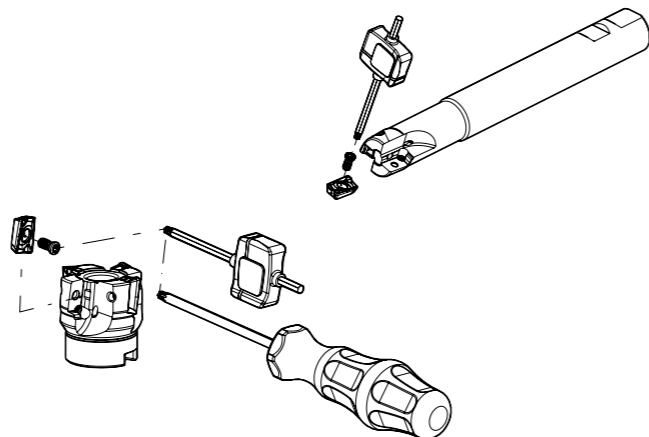


Order code Código	Reference Referência Referencia	Flutes	Dimensions Dimensões Dimensiones (in)				Weight lbs	Specifications Ap max (in)	Insert Pastilha Inserto	Stock
			ϕDc	ϕd	L	L1				
181061500	AP90 D.875-W.750/3.94-02-16	2	0.875	0.750	3.937	1.378	0.39	0.571	AP... 1604	⊗
181136800	AP90 D1.00-W1.00/4.00-02-16	2	1.000	1.000	4.000	1.750	0.67	0.571	AP... 1604	⊗
181136900	AP90 D1.00-W1.00/6.00-02-16	2	1.000	1.000	6.000	3.750	1.02	0.571	AP... 1604	⊗
181137000	AP90 D1.00-W1.00/8.00-02-16	2	1.000	1.000	8.000	5.750	1.48	0.571	AP... 1604	⊗
181061600	AP90 D1.00-W1.00/3.94-02-16	2	1.000	1.000	3.937	1.575	0.67	0.571	AP... 1604	⊗
181062000	AP90 D1.00-W1.00/5.91-02-16	2	1.000	1.000	5.906	3.150	1.02	0.571	AP... 1604	⊗
181061900	AP90 D1.00-W1.00/7.87-02-16	2	1.000	1.000	7.874	1.968	1.48	0.571	AP... 1604	⊗
181061800	AP90 D1.25-W1.00/4.92-03-16	3	1.250	1.000	4.921	1.575	0.93	0.571	AP... 1604	⊗
181061700	AP90 D1.25-W1.25/4.92-03-16	3	1.250	1.250	4.921	1.968	1.37	0.571	AP... 1604	⊗
181062200	AP90 D1.25-W1.25/6.30-03-16	3	1.250	1.250	6.300	3.937	1.74	0.571	AP... 1604	⊗
181062100	AP90 D1.25-W1.25/9.84-03-16	3	1.250	1.250	9.843	1.968	3.02	0.571	AP... 1604	⊗
181062300	AP90 D1.50-W1.25/7.87-03-16	3	1.500	1.250	7.874	1.575	2.51	0.571	AP... 1604	⊗
181062400	AP90 D1.50-W1.25/9.84-03-16	3	1.500	1.250	9.843	1.575	3.16	0.571	AP... 1604	⊗

⊗ Stock item | Produto de stock | Itens de stock ⊕ Available under request | Disponível sobre consulta | Disponible bajo consulta ⊗ Inventory maintained. To be replaced by new item. | Iten em stock. Será substituído por novo item | Iten en stock. Será reemplazado por nuevo item.

SPARE PARTS | Complementos | Complementos

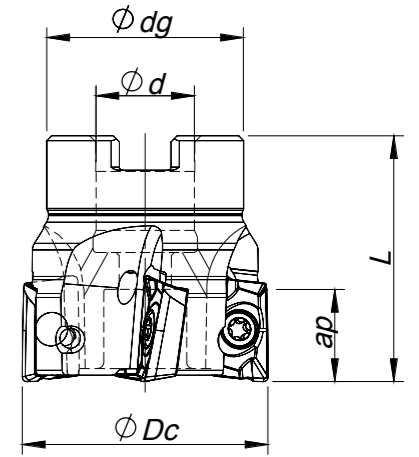
Cutter ϕDc	Insert Screw	Key (Torx)	Torque Value lbf/in
AP90-W-16 - 0.875-1.50	P0400900	XT15	26.6
AP90-A-16 - 1.50-3.00	P0400900	XT15	26.6
AP90-A-16 - 4.00-6.00	P0400900	PT15	26.6



LINEPRO AP90-16 APKT | APHT



Arbor Mounting
 $K_r=90^\circ \mid \gamma_p=+8^\circ \sim 10^\circ$

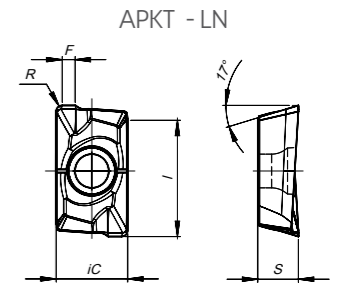


Order code Código	Reference Referência Referencia	Flutes	Dimensions Dimensões Dimensiones (in)				Weight lbs	Specifications		Insert Pastilha Inserto	Stock
			ϕDc	ϕd	ϕdg	L		Arbor Type	Ap max (in)		
181137100	AP90 D1.50-A.500/1.50-04-16	4	1.500	0.500	1.417	1.500	0.37	A	0.571	AP... 1604	⊗
181137200	AP90 D2.00-A.750/1.75-05-16	5	2.000	0.750	1.772	1.750	0.66	A	0.571	AP... 1604	⊗
181137300	AP90 D2.50-A.750/1.75-06-16	6	2.500	0.750	1.772	1.750	1.17	A	0.571	AP... 1604	⊗
181137400	AP90 D3.00-A1.00/2.00-07-16	7	3.000	1.000	2.205	2.000	1.87	A	0.571	AP... 1604	⊗
181137500	AP90 D4.00-A1.25/2.00-08-16	8	4.000	1.250	2.874	2.000	3.75	A	0.571	AP... 1604	⊗
181137600	AP90 D5.00-A1.50/2.50-09-16	9	5.000	1.500	3.386	2.500	6.94	A	0.571	AP... 1604	⊗
181137700	AP90 D6.00-A2.00/2.50-10-16	10	6.000	2.000	4.882	2.500	9.37	A	0.571	AP... 1604	⊗

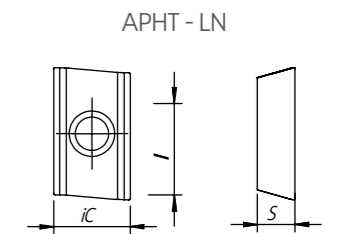
⊗ Stock item | Produto de stock | Itens de stock ⊕ Available under request | Disponível sobre consulta | Disponible bajo consulta ⊗ Inventory maintained. To be replaced by new item. | Iten em stock. Será substituído por novo item | Iten en stock. Será reemplazado por nuevo item.

AP..T 1604... | Inserts | Pastilhas | Plaquetas

APKT - LN



APHT - LN



	N							
	UNC	PCD	Dimensions (in)					
(2) Grade code	10	D6						
(1) Geometry code	ISO Reference	PH0910	PDP410	iC	S	I	R	F
1111924	APHT 1604 PDFR-LN	⊗		0.372	0.211	0.630	-	0.069
1111923	APKT 160408 PDFR-LN	⊗		0.372	0.211	0.630	0.031	0.069

⊗ 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

GRADES SELECTION GUIDE

ISO	PSM	Material	HB (Brinell)	Grades		Good Conditions Average Conditions Difficult Conditions
				← Wear Resistance	Toughness →	
N	10	Aluminum and Non Ferrous	30-130	PH0910		

RECOMMENDED CUTTING CONDITIONS

ISO	PSM	Material	HB (Brinell)	Vc (sfm)		Feed fz (in/t)
				← Wear Resistance	Toughness →	
N	10	Aluminum and Non Ferrous	30-130	PH0910		AP...T 1604... LN
				1148-4592		0.003-0.008

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

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

(Note 3):

Operation	a_e	Vc & fz	a_p (in)
Slotting	100%	<20%	0.197-0.236
Shouldering	<50%	>8%	0.236-0.354
	≤25%	>12%	0.394-0.492

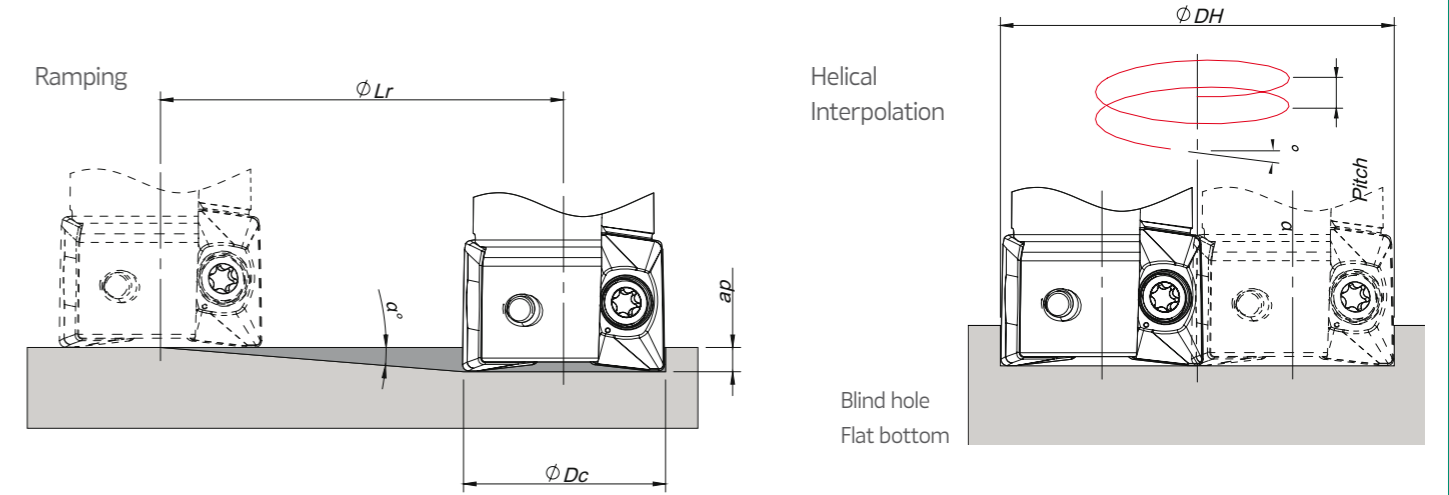
(Note 4): It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

- 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

ISO	PSM	Material	HB (Brinell)	Chip-Breaker Application	
				1st choice	Difficult Operations
N	10	Aluminum and Non Ferrous	30-130	AP...T 16... PDFR-LN	APHT 16... PDFR-LN

RAMPING AND HELICAL INTERPOLATION



$$\phi_{di} = \phi_{DH} - \phi_{Dc}$$

ϕ_{Dc}	Ramping			Helical Interpolation		
	Max Ramp a°	Max a_p	Min L_r	Diameter for Blind Hole, Flat Bottom Face (1)		Max Pitch/Rev.
				ϕ_{DHmin}	ϕ_{DHmax}	
0.875	3.4	0.571	9.611	1.596	-	0.134
				-	1.671	0.148
1.000	3.0	0.571	10.895	1.846	-	0.139
				-	1.921	0.151
1.250	2.1	0.571	15.572	2.346	-	0.126
				-	2.421	0.134
1.500	1.6	0.571	20.442	2.846	-	0.118
				-	2.921	0.124
2.000	1.1	0.571	29.738	3.846	-	0.111
				-	3.921	0.115
2.500	0.85	0.571	38.486	4.846	-	0.109
				-	4.921	0.112
3.000	0.70	0.571	46.735	5.846	-	0.100
				-	5.921	0.110
4.000	0.50	0.571	65.430	7.846	-	0.100
				-	7.921	0.100
5.000	0.35	0.571	93.473	9.846	-	0.093
				-	9.921	0.094

(1) Using insert radius 0.031 in

Note: During helical interpolation do not exceed maximum pitch

When using different insert radius to calculate the ϕ_{DHmin} and ϕ_{DHmax} use the below equation:

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

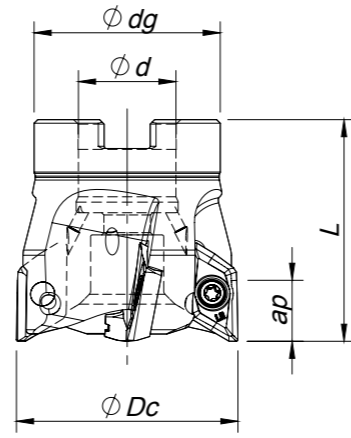
- Maximum Diameter: $\phi_{DHmax} = 2 \times (\phi_{Dc} - R \text{ corner radius})$

ALUPRO XD90-15

Proprietary milling line



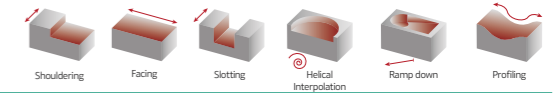
Arbor Mounting
 $K_r=90^\circ$ | $\gamma_p=+11^\circ$



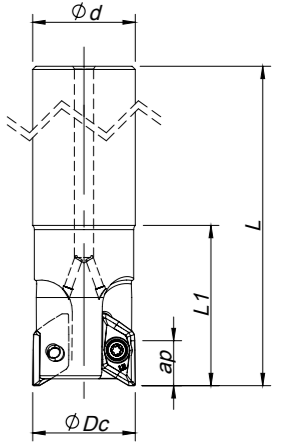
Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (in)				lbs	Specifications			Insert radius Raio da pastilha Rayo del Inserto	Stock
			ϕDc	ϕd	ϕdg	L		Arbor Type	Max ap (in)	rpm max		
181104600	XD90 D1.50-A.500/2.00-03-15		1.500	0.500	1.440	2.000	0.66	A	0.551	29 000	0.016~0.126	
181104700	XD90 D2.00-A.750/2.00-04-15		2.000	0.750	1.772	2.000	0.88	A	0.551	24 000	0.016~0.126	
181104800	XD90 D2.50-A.750/2.50-05-15		2.500	0.750	2.205	2.500	1.54	A	0.551	21 000	0.016~0.126	
181104900	XD90 D3.00-A1.00/2.50-05-15		3.000	1.000	2.874	2.500	2.42	A	0.551	19 000	0.016~0.126	
181105000	XD90 D4.00-A1.50/2.50-06-15		4.000	1.500	3.180	2.500	4.41	A	0.551	16 000	0.016~0.126	

Stock item | Produto de stock | Itens de stock Available under request | Disponível sobre consulta | Disponible bajo consulta Inventory maintained. To be replaced by new item. | Item em stock. Será substituído por novo item | Item en stock. Será reemplazado por nuevo item.

ALUPRO XD90-15 XDGX



Cylindrical Shank
 $K_r=90^\circ$ | $\gamma_p=+6^\circ$ ~ $+11^\circ$

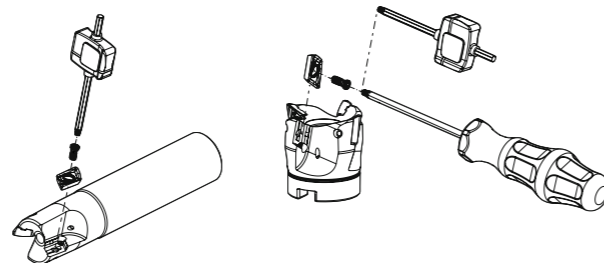


Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (in)				lbs	Specifications			Insert radius Raio da pastilha Rayo del Inserto	Stock
			ϕDc	ϕd	L	L1		Arbor Type	Max ap (in)	rpm max		
181105100	XD90 D0.75-C0.75/6.00-01-15		0.750	0.750	6.000	2.000	0.44	A	0.591	40 000	0.016~0.126	
181105200	XD90 D1.00-C1.00/6.00-02-15		1.000	1.000	6.000	2.000	0.88	A	0.591	38 000	0.016~0.126	
181105300	XD90 D1.25-C1.25/6.00-02-15		1.250	1.250	6.000	2.000	1.54	A	0.591	33 000	0.016~0.126	
181105400	XD90 D1.50-C1.50/6.00-03-15		1.500	1.500	6.000	2.000	3.08	A	0.591	29 000	0.016~0.126	
NEW 181139000	XD90 D1.50-C1.25/8.00-03-15		1.500	1.250	8.000	2.500	3.08	B	0.591	40 000	0.157~0.197	

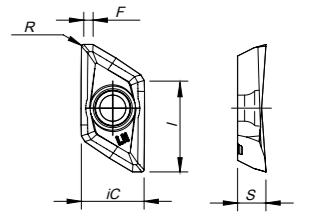
Stock item | Produto de stock | Itens de stock Available under request | Disponível sobre consulta | Disponible bajo consulta Inventory maintained. To be replaced by new item. | Item em stock. Será substituído por novo item | Item en stock. Será reemplazado por nuevo item.

SPARE PARTS | Complementos | Complementos

Cutter ϕDc	Insert Screw	Key (Torx)	Torque Value
			lbf/in
XD90-C-15 - 0.75-1.00	P0400803	XT15	26.6
XD90-C-15 - 1.25-1.50	P0400900	XT15	26.6
XD90-A-15 - 1.50-3.00	P0400900	XT15	26.6
XD90-A-15 - 4.00	P0400900	PT15	26.6



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



		N								
		UNC	PCD	Dimensions (in)						
		⁽²⁾ Grade code	10	D6						
⁽¹⁾ Geometry code	ISO Reference	PH0910	PDP410	IC	S	I	R	F	Holder Type	
1111624	XDGX 15M504 PDFR-LN			0.441	0.197	0.630	0.016	0.059	A	
1111625	XDGX 15M508 PDFR-LN			0.441	0.197	0.630	0.031	0.043	A	
1111626	XDGX 15M512 PDFR-LN			0.441	0.197	0.630	0.047	0.028	A	
1111627	XDGX 15M516 PDFR-LN			0.441	0.197	0.630	0.063	0.016	A	
1111628	XDGX 15M520 PDFR-LN			0.441	0.197	0.630	0.079	0.008	A	
1112154	XDGX 15M530 PDFR-LN			0.441	0.197	0.630	0.118	0.024	A	
1111629	XDGX 15M532 PDFR-LN			0.441	0.197	0.630	0.126	0.024	A	
1111630	XDGX 15M540 PDFR-LN			0.441	0.197	0.630	0.157	0.020	B	
1111631	XDGX 15M550 PDFR-LN			0.441	0.197	0.630	0.197	0.016	B	

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

RECOMMENDED CUTTING CONDITIONS FOR SHOULDERING

ISO	PSM	Material	HB (Brinell)	Vc (sfm)	Width of Cut a_e (in)	Depth of Cut a_p (in)	Feed f_z (mm/t)
				PH0910			
N	10	Aluminum and Non Ferrous	30-130	1148-4592	$\leq 25\% \varnothing D_c$	≤ 0.197	0.014 - 0.016
						0.197 - 0.394	0.012 - 0.014
						0.394 - 0.591	0.010 - 0.012
					$< 50\% \varnothing D_c$	≤ 0.197	0.014 - 0.016
						0.197 - 0.394	0.012 - 0.014
						0.394 - 0.591	0.010 - 0.012
					$\leq 75\% \varnothing D_c$	≤ 0.197	0.012 - 0.014
						0.197 - 0.394	0.010 - 0.012
						0.394 - 0.591	0.008 - 0.010

RECOMMENDED CUTTING CONDITIONS FOR SLOTTING

ISO	PSM	Material	HB (Brinell)	Vc (sfm)	Width of Cut a_e (in)	Depth of Cut a_p (in)	Feed f_z (mm/t)
				PH0910			
N	10	Aluminum and Non Ferrous	30-130	1148-4592	100% $\varnothing D_c$	≤ 0.197	0.010 - 0.014
						0.197 - 0.394	0.008 - 0.012
						0.394 - 0.591	0.006 - 0.010

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

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

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

(Note 3) Use internal coolant supply

OPERATIONAL GUIDE

- The maximum allowable revolutions are shown in Table 1. Ensure that the cutter operates under the maximum allowable revolutions. The maximum allowable revolutions for safety purposes are determined in accordance with ISO 15641 (Milling Cutters for high speed machining-Safety requirements).

Table 1 - Maximum allowable revolutions:

$\varnothing D_c$	$\varnothing 0.750$	$\varnothing 1.000$	$\varnothing 1.250$	$\varnothing 1.500$	$\varnothing 2.000$	$\varnothing 2.500$	$\varnothing 3.000$	$\varnothing 4.000$
RPM (min^{-1})	40 000	38 000	33 000	29 000	24 000	21 000	19 000	16 000

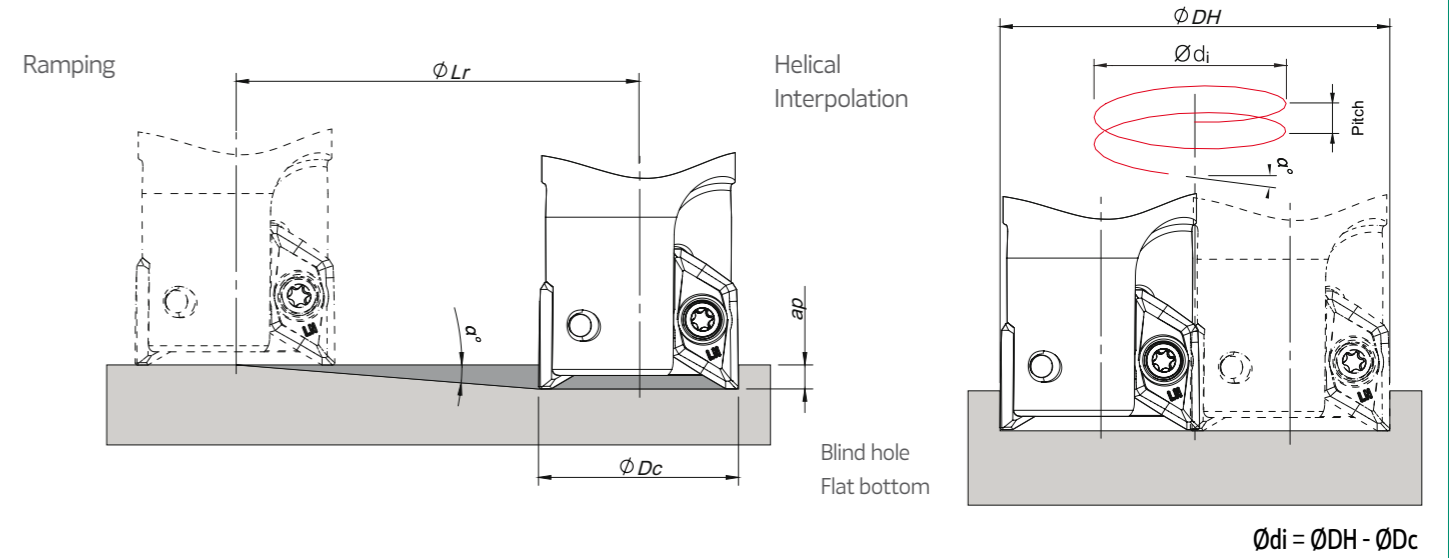
- Even when operating under the maximum allowable spindle speed, if the spindle speed is equal or higher than the values shown in Table 2., it is recommended that the balance quality (with the arbor or chuck) according ISO 1940.

Table 2 - Maximum revolutions when balancing with the arbor or chuck has not been achieved:

$\varnothing D_c$	$\varnothing 0.750$	$\varnothing 1.000$	$\varnothing 1.250$	$\varnothing 1.500$	$\varnothing 2.000$	$\varnothing 2.500$	$\varnothing 3.000$	$\varnothing 4.000$
RPM (min^{-1})	15 000	12 000	9 500	8 500	7 600	6 800	6 000	5 400

- When setting the spindle speed, take into consideration the maximum allowable revolutions of arbor or chuck.
- Use the specified set bolt when using the arbor type with internal coolant supply.

RAMPING AND HELICAL INTERPOLATION



$\varnothing D_c$	Ramping			Helical Interpolation		
	Max Ramp a°	Max a_p	Min L_r	Diameter for Blind Hole. Flat Bottom Face (1)		Max Pitch/Rev.
				$\varnothing DH_{min}$	$\varnothing DH_{max}$	
0.750	23	0.551	1.299	1.342	-	0.780
1.000	21	0.551	1.436	-	1.421	0.890
				1.842	-	1.100
1.250	15	0.551	2.057	-	1.921	1.110
				2.342	-	0.910
1.500	10	0.551	3.126	-	2.421	0.980
				2.842	-	0.740
2.000	8	0.551	3.922	-	2.921	0.780
				3.842	-	0.810
2.500	6	0.551	5.244	-	3.921	0.840
				4.842	-	0.770
3.000	4	0.551	7.883	-	4.921	0.790
				5.842	-	0.620
4.000	2.5	0.551	12.625	-	5.921	0.640
				7.842	-	0.520
				-	7.921	0.530

(1) using insert radius 0.031 in

Note: During helical interpolation do not exceed maximum pitch.

When using different insert radius to calculate the $\varnothing DH_{min}$ and $\varnothing DH_{max}$ use the below equation:

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

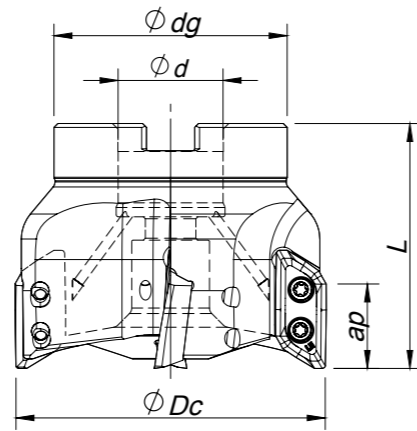
- Maximum Diameter: $\varnothing DH_{max} = 2x (\varnothing D_c - R \text{ corner radius})$

ALUPRO XD90-22

Proprietary milling line



Arbor Mounting
K_r=90° | γ_p=+7°

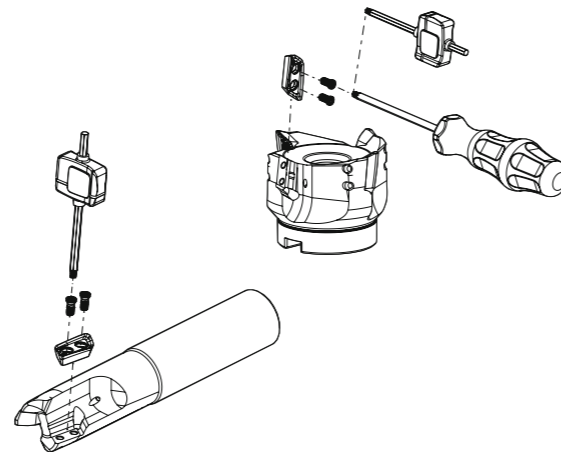


Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (in)				lbs	Specifications			Insert radius Raio da pastilha Rayo del Inserto	Stock
			ØDc	Ød	Ødg	L		Arbor Type	Max ap (in)	rpm max		
181079500	XD90 D2.00-A.750/2.00-03-22	3	2.000	0.750	1.772	2.000	0.98	A	0.846	30 000	0.031-0.126	⊗
181079600	XD90 D2.50-A1.00/2.00-03-22	3	2.500	1.000	2.205	2.000	1.41	A	0.846	25 000	0.031-0.126	⊗
181071700	XD90 D3.00-A1.00/2.50-04-22	4	3.000	1.000	2.205	2.500	2.96	A	0.846	23 000	0.031-0.126	⊗
181079700	XD90 D4.00-A1.25/2.50-05-22	5	4.000	1.250	2.874	2.500	5.43	A	0.846	19 000	0.031-0.126	⊕
NEW 181138600	XD90 D4.00-A1.50/2.50-05-22	5	4.000	1.500	3.000	2.500	5.43	A	0.846	16 000	0.031-0.126	○
181079800	XD90 D5.00-A1.50/2.50-06-22	6	5.000	1.500	3.180	2.500	6.72	A	0.846	30 000	0.031-0.126	⊗

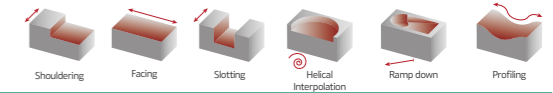
⊗ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta ⊕ Inventory maintained. To be replaced by new item. | Item em stock. Será substituído por novo item | Item in stock. Será reemplazado por nuevo item.

SPARE PARTS | Complementos | Complementos

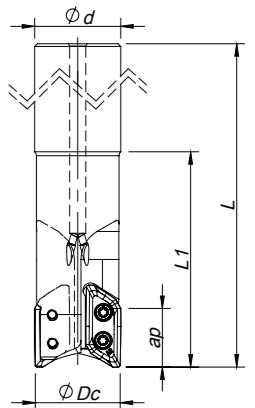
Cutter ØDc	Insert Screw	Key (Torx)	Torque Value lbf/in
XD90-A-22 - 2.00-3.00	P0401200	XT15	26.6
XD90-A-22 - 4.00-5.00	P0401200	PT15	26.6
XD90-C-22 - 1.25-1.50	P0401200	XT15	26.6



ALUPRO XD90-22 XDGX



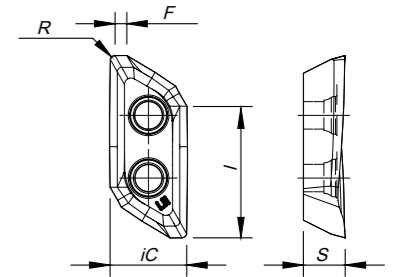
Cylindrical Shank
K_r=90° | γ_p=+6°



Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (in)				lbs	Specifications			Insert radius Raio da pastilha Rayo del Inserto	Stock
			ØDc	Ød	L	L1		Arbor Type	Max ap (in)	rpm max		
181069900	XD90 D1.25-C1.25/6.69-02-22	2	1.250	1.250	6.693	3.150	1.67	A	0.846	41 000	0.031-0.126	⊗
181079900	XD90 D1.50-C1.50/6.69-02-22	2	1.500	1.500	6.693	3.150	1.82	A	0.846	36 000	0.031-0.126	⊕
NEW 181138700	XD90 D1.50-C1.25/8.00-02-22	2	1.500	1.250	8.000	3.000	1.82	A	0.846	41 000	0.031-0.126	○

⊗ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta ⊕ Inventory maintained. To be replaced by new item. | Item em stock. Será substituído por novo item | Item in stock. Será reemplazado por nuevo item.

XDGX 22M7... | Inserts | Pastilhas | Plaquetas



⁽¹⁾ Geometry code	⁽²⁾ Grade code	N		Dimensions (in)						Holder Type
		UNC	PCD	iC	S	I	R	F		
		10	D6							
1111618	XDGX 22M708 PDFR-LN	⊗		0.512	0.276	0.866	0.031	0.079	A	
1111619	XDGX 22M716 PDFR-LN	⊗		0.512	0.276	0.866	0.063	0.047	A	
1111620	XDGX 22M720 PDFR-LN	⊗		0.512	0.276	0.866	0.079	0.031	A	
1111621	XDGX 22M732 PDFR-LN	⊗		0.512	0.276	0.866	0.126	0.024	A	

⊗ 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

RECOMMENDED CUTTING CONDITIONS FOR SHOULDERING

ISO	PSM	Material	HB (Brinell)	Vc (sfm)	Width of Cut ae (in)	Depth of Cut ap (in)	Feed fz(mm/t)
				PH0910			
N	10	Aluminum and Non Ferrous	30-130	1148-4592	≤ 25% ØDc	≤0.197	0.014-0.016
						0.197 - 0.394	0.012-0.014
						0.394 - 0.591	0.010-0.012
						0.591 - 0.787	0.008-0.010
					< 50% ØDc	≤0.197	0.014-0.016
						0.197 - 0.394	0.012-0.014
						0.394 - 0.591	0.010-0.012
						0.591 - 0.787	0.008-0.010
					≤ 75% ØDc	≤0.197	0.012-0.014
						0.197 - 0.394	0.010-0.012
						0.394 - 0.591	0.008-0.010
						0.591 - 0.787	0.006-0.008

RECOMMENDED CUTTING CONDITIONS FOR SLOTTING

ISO	PSM	Material	HB (Brinell)	Vc (sfm)	Width of Cut ae (in)	Depth of Cut ap (in)	Feed fz(mm/t)
				PH0910			
N	10	Aluminum and Non Ferrous	30-130	1148-4592	100% ØDc	≤0.197	0.010-0.014
						0.197 - 0.394	0.008-0.012
						0.394 - 0.591	0.006-0.010
						0.591 - 0.787	0.004-0.008

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

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

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

(Note 3) Use internal coolant supply.

OPERATIONAL GUIDE

- Only use the inserts and parts provided by Palbit with this tool. Use of the correct insert clamp screws is especially important to ensure overall tool safety. Do not use damaged or worn clamp screws.

- When tightening the clamp screws, follow the order in Figure 1. The recommended torque value is 30.0 lbf/in.

- The maximum allowable revolutions are shown in Table 1. Ensure that the cutter operates under the maximum allowable revolutions.

The maximum allowable revolutions for safety purposes are determined in accordance with ISO 15641 (Milling Cutters for high speed machining-Safety requirements).

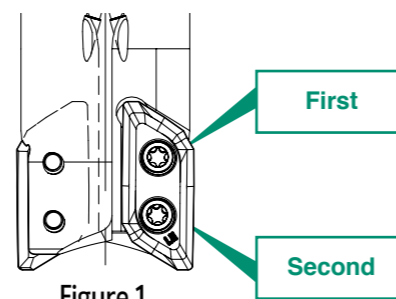


Figure 1

Table 1 - Maximum allowable revolutions:

ØDc	Ø1.250	Ø1.500	Ø2.000	Ø2.500	Ø3.000	Ø4.000	Ø5.000
RPM (min ⁻¹)	41 000	36 000	30 000	25 000	23 000	19 000	16 000

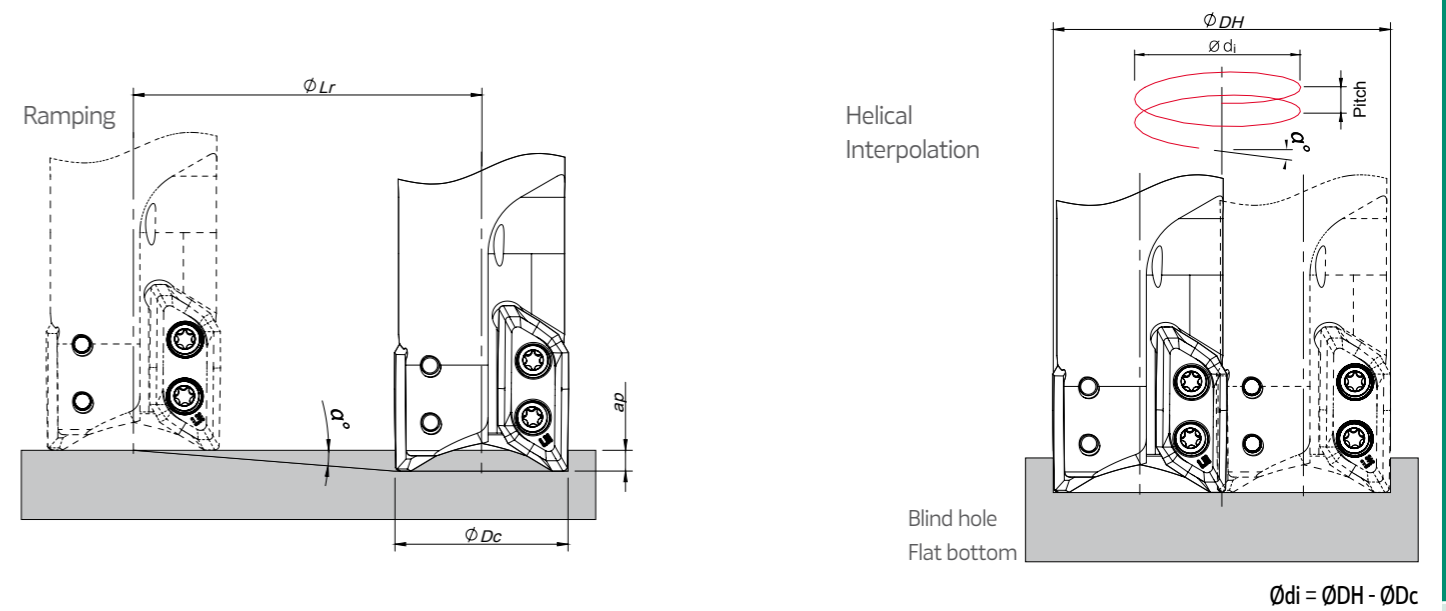
- Even when operating under the maximum allowable spindle speed, if the spindle speed is equal or higher than the values shown in Table 2., it is recommended that the balance quality (with the arbor or chuck) according ISO 1940.

Table 2 - Maximum revolutions when balancing with the arbor or chuck has not been achieved:

ØDc	Ø1.250	Ø1.500	Ø2.000	Ø2.500	Ø3.000	Ø4.000	Ø5.000
RPM (min ⁻¹)	9 500	7 600	6 000	4 800	3 800	3 000	2 400

- When setting the spindle speed, take into consideration the maximum allowable revolutions of arbor or chuck.
- Use the specified set bolt when using the arbor type with internal coolant supply.

RAMPING AND HELICAL INTERPOLATION



ØDc	Ramping			Helical Interpolation		
	Max Ramp a ^p	Max ap	Min Lr	Diameter for Blind Hole. Flat Bottom Face (1)		Max Pitch/Rev.
				ØDHmin	ØDHmax	
1.250	19.0	0.827	2.401	2.303	-	1.130
				-	2.421	1.260
1.500	13.0	0.827	3.581	2.803	-	0.940
				-	2.921	1.030
2.000	9.0	0.827	5.220	3.803	-	0.890
				-	3.921	0.950
2.500	7.0	0.827	6.734	4.803	-	0.880
				-	4.921	0.930
3.000	5.0	0.827	9.450	5.803	-	0.770
				-	5.921	0.800
4.000	4.0	0.827	11.824	7.803	-	0.830
				-	7.921	0.860
5.000	3.0	0.827	15.776	9.803	-	0.790
				-	9.921	0.810

(1) using insert radius 0.031 in

Note: During helical interpolation do not exceed maximum pitch.

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

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

- Maximum Diameter: $\text{ØDHmax} = 2 \times (\text{ØDc} - \text{R corner radius})$

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

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

PCD RANGE | Gama de produtos PCD | Rango de productos PCD

■ Cutting edge Type (radius, chamfer)
 ■ Wiper cutting edge
 ■ Edge Preparation (F, T)

XNHW 120504 PZFR-0150045 XNHW 120504 PZFR-000080 XNHW 120508 PZFR-015045 XNHW 120508 PZTR-015045
 XNHW 120508 PZTR-000080 XNHW 1205 PZFR-020120 XNHW 1205 PZFR-030045 XNHW 1205 PZTR-030045



XNHW 1205 PZFR-020120

NEW

XNHW 120508 PZTR-000080

NEW

XNHW 120508 PZTR-015045

NEW

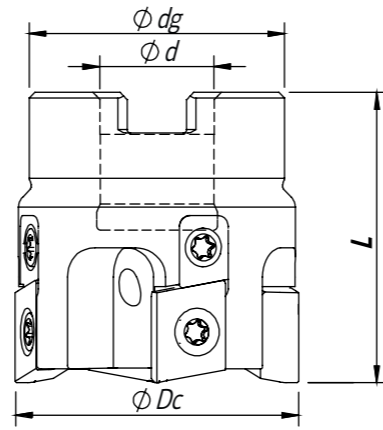
MILLING
Overview
News
Face milling
Shoulder milling
Hardmill
Technica Data

MILLING
Overview
News
Face milling
Shoulder milling
Hardmill
Technica Data



Arbor Mounting

$K_r=90^\circ \mid \gamma_p=7$

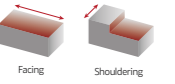


Order code Código	Reference Referência Referencia	C	Dimensions Dimensões Dimensiones (in)				lbs	Specifications		Insert Pastilha Inserto	Stock
			ϕDc	ϕd	ϕdg	L		Arbor Type	N max (in)		
181143600	XN90 D1.50-A0.50/1.57-04-12	4	1.500	0.500	1.300	1.570	0.66	A	32 000	XNHW 1205...	○
181143700	XN90 D2.00-A0.75/1.57-04-12	4	2.000	0.750	1.750	1.570	0.86	A	32 000	XNHW 1205...	○
181143800	XN90 D2.50-A0.75/1.57-05-12	5	2.500	0.750	1.750	1.570	1.39	A	29 000	XNHW 1205...	○
181143900	XN90 D3.00-A1.00/2.00-06-12	6	3.000	1.000	2.189	2.000	2.64	A	26 000	XNHW 1205...	○
181144000	XN90 D4.00-A1.25/2.00-07-12	7	4.000	1.250	2.750	2.000	4.08	A	24 000	XNHW 1205...	○

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta | Disponible bajo consulta

Inventory maintained. To be replaced by new item. | Item em stock. Será substituído por novo item | Item en stock. Será reemplazado por nuevo item.



XNHW 1205... | Inserts | Pastilhas | Plaquetas

XNHW 1205 PZFR-020120 XNHW 120508 PZTR-000080 XNHW 120508 PZTR-015045



Geometry code	N								
	Grade code	PCD		Dimensions (in)					
		ISO Reference	I3	D6	L	S	I	d1	R
1112564	XNHW 120504 PZFR-015045	○	○	0.482	0.213	0.177	0.189	0.016	0.059
1112565	XNHW 120504 PZFR-000080	○	○	0.482	0.213	0.315	0.189	0.016	-
1112566	XNHW 120508 PZFR-015045	○	○	0.482	0.213	0.177	0.189	0.031	0.059
1112551	XNHW 120508 PZTR-015045	⊗	○	0.482	0.213	0.177	0.189	0.031	0.059
1112552	XNHW 120508 PZTR-000080	⊗	○	0.482	0.213	0.315	0.189	0.031	-
1112553	XNHW 1205 PZFR-020120	⊗	○	0.482	0.213	0.472	0.189	-	0.079
1112567	XNHW 1205 PZFR-030045	○	○	0.482	0.213	0.177	0.189	-	0.118
1112568	XNHW 1205 PZTR-030045	○	○	0.482	0.213	0.177	0.189	-	0.118

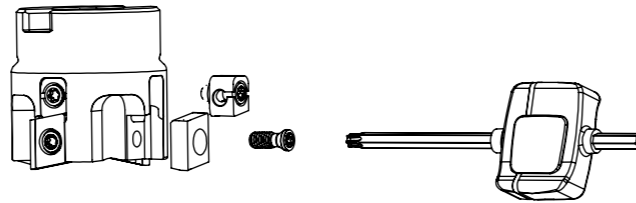
Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta | Disponible bajo consulta

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

SPARE PARTS | Complementos | Complementos

Cutter ϕDc	Insert Screw	Key (Torx)	Torque Value
XN90-12 - 1.50-4.00	P0401100	XT15	26.6
	SETDEV AS 04 00		



RECOMMENDED CUTTING CONDITIONS

ISO	Material		HB (Brinell)	Vc (sfm)	Feed fz (in/t)
	Work piece material	Type of treatment / alloy		PDP403	XNHW 12...
N	Aluminum wrought alloys		80	984 - 13120	0.002 - 0.016
			90	984 - 4920	
	Aluminum cast alloys	< 12% Si	130	984 - 16400	
		< 12% Si	90	984 - 9840	
		> 12% Si	100	984 - 3280	
	Non-metallic materials	brass, red bronze	100	328 - 2296	
		bronze	-	328 - 4920	
Non-metallic materials	lead-free copper and electrolytic copper	-	984 - 9840		
	thermosetting plastics	-	263-984		
	fibre-reinforced plastics	200-320	263-984		
	hard rubber		263-984		

ISO	Uncoated grades	CBN PCD	Coated Grades	
			PVD	CVD
N ALUMINIUM & NON FERROUS	05	PDP403 <small>NEW</small>	PDP410	PHD103
	10			
	15			
	20			
	25			
	30			
	35			

The position and shape of grade symbols indicate the suitable field of application.

Centre of the field of application
Recommended field of application

-Wear resistance
-Resistência ao desgaste
-Resistencia al desgaste
-Toughness
-Tenacidade
-Tenacidad

PVD COATED GRADES | GRAUS REVESTIDOS A PVD | GRADOS CON RECUBRIMIENTO PVD

ISO	Material	Palbit	Sandvik	Kennametal	Iscar	Seco	Mitsubishi	Sumitomo	Hitachi	Walter	Kyocera	Taegutec	Dijet	Ceratizit
		N ALUMINIUM	N01			KC410M KC510M KC5410								TT6080
N10			GC1025 GC1030	KC410M KC510M KC5410 KC620M				DL1000	SD5010 HD7010	WXN15		TT6080 TT8020		AMZ
N20			GC1025 GC1030	KC422M KC620M		F15M	LC15TF	DL1000	SD5010 HD7010	WXN15		TT8020		

POLYCRYSTALLINE DIAMOND

PDP403
(N01-N10)



Polycrystalline diamond grade for finishing and semi finishing of non-ferrous metallic materials. It is an excellent solution for aluminium alloys with high content of Si.

CRYSTALLINE DIAMOND

PHD103
(N05-N15)



Carbide with highly abrasion-resistant diamond coating for graphite machining

UNCOATED CARBIDE GRADES

PDP410
(N01-N20)



Polycrystalline diamond grade for finishing and semi finishing of non-ferrous metallic materials. It is an excellent solution for aluminium alloys with low content of Si.

PH0910
(K01-K10)
(N01-N20)



Uncoated carbide micro-grain grade combining a good abrasive wear resistance and toughness. Suitable for rough to finish operations of HRSA, Titanium alloys, Cast irons and Aluminium alloys.

UNCOATED GRADES | GRAUS NÃO REVESTIDOS | GRADOS SÍN RECUBRIMIENTO



ISO	Material	Palbit	Sandvik	Kennametal	Iscar	Seco	Mitsubishi	Sumitomo	Hitachi	Walter	Kyocera	Taegutec	Dijet	Ceratizit
		N ALUMINIUM	N01	PH0910	H10	K115M KC313	IC20		HTi 10	H1 G10E	PCS08M CY100H		PCS08M CY100H	
N10	PH0910		H13A H10F	K115M KC313	IC08	H15	HTi 10	H1 G10E	PCS08M CY100H CY10H	WK10	PCS08M CY100H CY10H	K10 UF10		H210T
N20	PH0910		H13A H10F	K125M	IC08 IC28	HX H15 H25	HTi 10					K10		H216T





TURNING



TURNING

N	Fine finishing	Finishing	Medium	Roughing	Heavy roughing
			MS 		
	Uncoated Grades				
			PH0910 (N01-N20) 		
Continuous cut ← → Interrupted cut					

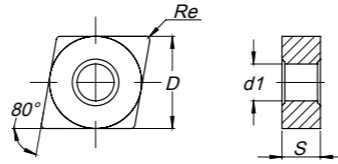
<p>CNMG-MS </p> <p>Medium to Finishing</p> <p>Page 56 Rhombic 80°</p>	<p>DNMG-MS </p> <p>Medium to Finishing</p> <p>Page 56 Rhombic 55°</p>	<p>TNMG-MS </p> <p>Medium to Finishing</p> <p>Page 57 Triangular 90°</p>
<p>VNMG-MS </p> <p>Medium to Finishing</p> <p>Page 57 Rhombic 35°</p>	<p>WNMG-MS </p> <p>Medium to Finishing</p> <p>Page 58 Trigon 80°</p>	


N 7°	Fine finishing	Finishing	Medium	Roughing	Heavy roughing
		LN 			
	Uncoated Grades				
		PH0910 (N01-N20) 			
Continuous cut ← → Interrupted cut					

<p>CCGT-LN </p> <p>Finishing to fine finishing</p> <p>Page 59 Rhombic 80°</p>	<p>DCGT-LN </p> <p>Finishing to fine finishing</p> <p>Page 59 Rhombic 55°</p>	<p>RCGT-LN </p> <p>Finishing to fine finishing</p> <p>Page 60 Round R°</p>
<p>TCGT-LN </p> <p>Finishing to fine finishing</p> <p>Page 60 Triangular 60°</p>	<p>SCGT-LN </p> <p>Finishing to fine finishing</p> <p>Page 61 Square 90°</p>	<p>VCGT-LN </p> <p>Finishing to fine finishing</p> <p>Page 61 Rhombic 35°</p>

CN = RHOMBIC 80° NEGATIVE

RÔMBICA 80° NEGATIVA | RÓMBICA 80° NEGATIVA



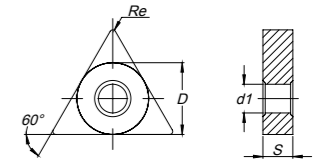
				UNC	Dimensions (in) Dimensões (in) Dimensiones (in)				Cutting Conditions Condições de Corte Condiciones de Corte					
		(2) Grade code		10										
Inserts Pastilhas Plaquitas	(1) Geometry code	ANSI Reference	ISO Reference	PH0910	D	S	Re	d1	ap (in)	Min	Max	fn (in/rev)	Min	Max
 Medium to Finishing	CNMG-MS 1121479	CNMG 431-MS	CNMG 120404-MS	⊗	1/2	3/16	1/64	0.203	0.059	0.008	0.142	0.006	0.004	0.008
	1121481	CNMG 432-MS	CNMG 120408-MS	⊗	1/2	3/16	1/32	0.203	0.079	0.012	0.142	0.010	0.004	0.016
	1121483	CNMG 433-MS	CNMG 120412-MS	⊗	1/2	3/16	3/64	0.203	0.094	0.016	0.142	0.012	0.006	0.024
	1121486	CNMG 434-MS	CNMG 120416-MS	○	1/2	3/16	1/16	0.203	0.094	0.016	0.142	0.016	0.006	0.031


⊗ Stock Items | Itens de stock ○ Available under request | Disponível sob consulta | Disponible bajo consulta

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

TN = TRIANGULAR 60° NEGATIVE

TRIANGULAR 60° NEGATIVA | TRIANGULAR 60° NEGATIVA



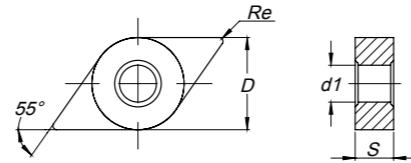
				UNC	Dimensions (in) Dimensões (in) Dimensiones (in)				Cutting Conditions Condições de Corte Condiciones de Corte					
		(2) Grade code		10										
Inserts Pastilhas Plaquitas	(1) Geometry code	ANSI Reference	ISO Reference	PH0910	D	S	Re	d1	ap (in)	Min	Max	fn (in/rev)	Min	Max
 Medium to Finishing	TNMG-MS 1121557	TNMG 331-MS	TNMG 160404-MS	⊗	3/8	3/16	1/64	0.150	0.079	0.012	0.150	0.006	0.004	0.008
	1121559	TNMG 332-MS	TNMG 160408-MS	⊗	3/8	3/16	1/32	0.150	0.079	0.012	0.150	0.010	0.004	0.016
	1121561	TNMG 333-MS	TNMG 160412-MS	⊗	3/8	3/16	3/64	0.150	0.079	0.016	0.150	0.012	0.006	0.024


⊗ Stock Items | Itens de stock ○ Available under request | Disponível sob consulta | Disponible bajo consulta

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

DN = RHOMBIC 55° NEGATIVE

RÔMBICA 55° NEGATIVA | RÓMBICA 55° NEGATIVA



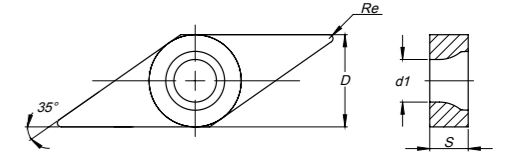
				UNC	Dimensions (in) Dimensões (in) Dimensiones (in)				Cutting Conditions Condições de Corte Condiciones de Corte					
		(2) Grade code		10										
Inserts Pastilhas Plaquitas	(1) Geometry code	ANSI Reference	ISO Reference	PH0910	D	S	Re	d1	ap (in)	Min	Max	fn (in/rev)	Min	Max
 Medium to Finishing	DNMG-MS 1121503	DNMG 431-MS	DNMG 150404-MS	⊗	1/2	3/16	1/64	0.203	0.059	0.008	0.142	0.006	0.004	0.008
	1121505	DNMG 432-MS	DNMG 150408-MS	⊗	1/2	3/16	1/32	0.203	0.079	0.012	0.150	0.010	0.004	0.016
	1121509	DNMG 433-MS	DNMG 150412-MS	⊗	1/2	3/16	3/64	0.203	0.098	0.016	0.157	0.012	0.006	0.024
	1121513	DNMG 434-MS	DNMG 150416-MS	○	1/2	3/16	1/16	0.203	0.110	0.016	0.177	0.016	0.006	0.031
	1121927	DNMG 441-MS	DNMG 150604-MS	⊗	1/2	1/4	1/64	0.203	0.059	0.008	0.142	0.006	0.004	0.008
	1121928	DNMG 442-MS	DNMG 150608-MS	⊗	1/2	1/4	1/32	0.203	0.079	0.012	0.157	0.010	0.004	0.016
	1122030	DNMG 443-MS	DNMG 150612-MS	○	1/2	1/4	3/64	0.203	0.110	0.016	0.177	0.012	0.006	0.024


⊗ Stock Items | Itens de stock ○ Available under request | Disponível sob consulta | Disponible bajo consulta

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

VN = RHOMBIC 35° NEGATIVE

RÔMBICA 35° NEGATIVA | RÓMBICA 35° NEGATIVA



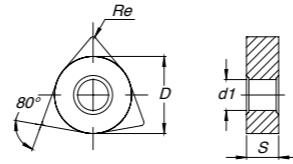
				UNC	Dimensions (in) Dimensões (in) Dimensiones (in)				Cutting Conditions Condições de Corte Condiciones de Corte					
		(2) Grade code		10										
Inserts Pastilhas Plaquitas	(1) Geometry code	ANSI Reference	ISO Reference	PH0910	D	S	Re	d1	ap (in)	Min	Max	fn (in/rev)	Min	Max
 Medium to Finishing	VNMG-MS 1121579	VNMG 331-MS	VNMG 160404-MS	⊗	3/8	3/16	1/64	0.150	0.079	0.008	0.157	0.006	0.004	0.008
	1121580	VNMG 332-MS	VNMG 160408-MS	⊗	3/8	3/16	1/32	0.150	0.098	0.008	0.157	0.010	0.006	0.016


⊗ Stock Items | Itens de stock ○ Available under request | Disponível sob consulta | Disponible bajo consulta

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

WN = TRIGON 80° NEGATIVE

TRIGONAL 80° NEGATIVA | TRIGONA 80° NEGATIVA



N														
Inserts Pastilhas Plaquetas	(1) Geometry code	(2) Grade code		UNC	Dimensions (in) Dimensões (in) Dimensiones (in)				Cutting Conditions Condições de Corte Condiciones de Corte					
		ANSI Reference	ISO Reference	10	D	S	Re	d1	ap (in)	Min	Max	fn (in/rev)	Min	Max
 Medium to Finishing	1121588	WNMG 432-MS	WNMG 080408-MS	PH0910	1/2	3/16	1/32	0.203	0.098	0.028	0.157	0.010	0.008	0.016
	1121590	WNMG 433-MS	WNMG 080412-MS	PH0910	1/2	3/16	3/64	0.203	0.098	0.039	0.157	0.012	0.010	0.022

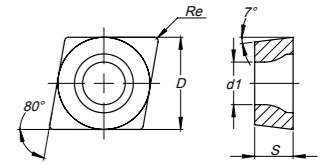
⊗ Stock Items | Itens de stock ○ Available under request | Disponível sob consulta | Disponible bajo consulta


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

CC = RHOMBIC 80° POSITIVE

RÔMBICA 80° POSITIVA | RÓMBICA 80° POSITIVA

RELIEF ANGLE 7°



N														
Inserts Pastilhas Plaquetas	(1) Geometry code	(2) Grade code		UNC	Dimensions (in) Dimensões (in) Dimensiones (in)				Cutting Conditions Condições de Corte Condiciones de Corte					
		ANSI Reference	ISO Reference	10	D	S	Re	d1	ap (in)	Min	Max	fn (in/rev)	Min	Max
	1121884	CCGT 21.50.5-LN	CCGT 060202-LN	PH0910	1/4	3/32	0.008	0.110	0.039	0.002	0.118	0.003	0.002	0.005
	1121885	CCGT 21.51-LN	CCGT 060204-LN	PH0910	1/4	3/32	1/64	0.110	0.061	0.004	0.118	0.006	0.004	0.008
Finishing to Fine Finishing	1121886	CCGT 32.50.5-LN	CCGT 09T302-LN	PH0910	3/8	5/32	0.008	0.173	0.060	0.002	0.118	0.003	0.002	0.005
	1121887	CCGT 32.51-LN	CCGT 09T304-LN	PH0910	3/8	5/32	1/64	0.173	0.100	0.004	0.197	0.006	0.004	0.009
	1121888	CCGT 32.52-LN	CCGT 09T308-LN	PH0910	3/8	5/32	1/32	0.173	0.100	0.004	0.197	0.009	0.006	0.018
	1123679	CCGT 430.5-LN	CCGT 120402-LN	PH0910	1/2	3/16	0.008	0.217	0.080	0.002	0.157	0.003	0.002	0.005
	1123681	CCGT 431-LN	CCGT 120404-LN	PH0910	1/2	3/16	1/64	0.217	0.100	0.004	0.197	0.007	0.004	0.010
	1123682	CCGT 432-LN	CCGT 120408-LN	PH0910	1/2	3/16	1/32	0.217	0.110	0.004	0.217	0.010	0.006	0.020

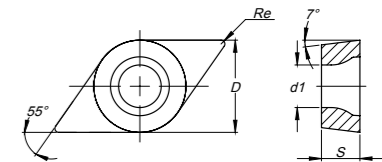
⊗ Stock Items | Itens de stock ○ Available under request | Disponível sob consulta | Disponible bajo consulta


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

DC = RHOMBIC 55° POSITIVE

RÔMBICA 55° POSITIVA | RÓMBICA 55° POSITIVA

RELIEF ANGLE 7°



N														
Inserts Pastilhas Plaquetas	(1) Geometry code	(2) Grade code		UNC	Dimensions (in) Dimensões (in) Dimensiones (in)				Cutting Conditions Condições de Corte Condiciones de Corte					
		ANSI Reference	ISO Reference	10	D	S	Re	d1	ap (in)	Min	Max	fn (in/rev)	Min	Max
	1121900	DCGT 21.50.5-LN	DCGT 070202-LN	PH0910	1/4	3/32	0.008	0.110	0.039	0.002	0.118	0.003	0.002	0.005
	1121901	DCGT 21.51-LN	DCGT 070204-LN	PH0910	1/4	3/32	1/64	0.110	0.081	0.004	0.157	0.006	0.004	0.008
Finishing to Fine Finishing	1111540	DCGT 32.50.5-LN	DCGT 11T302-LN	PH0910	3/8	5/32	0.008	0.173	0.080	0.002	0.157	0.003	0.002	0.005
	1111534	DCGT 32.51-LN	DCGT 11T304-LN	PH0910	3/8	5/32	1/64	0.173	0.100	0.004	0.197	0.006	0.004	0.009
	1121904	DCGT 32.52-LN	DCGT 11T308-LN	PH0910	3/8	5/32	1/32	0.173	0.100	0.004	0.197	0.009	0.006	0.020
	1124004	DCGT 32.53-LN	DCGT 11T312-LN	PH0910	3/8	5/32	3/64	0.173	0.106	0.006	0.197	0.014	0.006	0.028

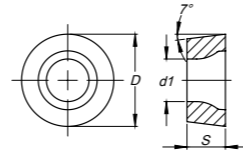
⊗ Stock Items | Itens de stock ○ Available under request | Disponível sob consulta | Disponible bajo consulta


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

RC = ROUND R° POSITIVE

REDONDA R° POSITIVA | REDONDA R° POSITIVA

RELIEF ANGLE 7°



N															
		(2) Grade code		UNC	Dimensions (in) Dimensões (in) Dimensiones (in)				Cutting Conditions Condições de Corte Condiciones de Corte						
Inserts Pastilhas Plaquitas	(1) Geometry code	ANSI Reference	ISO Reference	PH0910	D	S	Re	d1	ap (in)	Min	Max	fn (in/rev)	Min	Max	
	RCGT-LN	1124005	RCGT 0602M0-LN	RCGT 0602M0-LN	⊗	0.236	3/32	-	0.110	0.049	0.020	0.079	0.005	0.002	0.008
		1124006	RCGT 0803M0-LN	RCGT 0803M0-LN	⊗	0.315	1/8	-	0.134	0.059	0.020	0.098	0.006	0.002	0.010
		1124007	RCGT 1003M0-LN	RCGT 1003M0-LN	⊗	0.394	1/8	-	0.173	0.079	0.039	0.118	0.008	0.004	0.012
	Finishing to Fine Finishing	1123684	RCGT 1204M0-LN	RCGT 1204M0-LN	⊗	0.472	3/16	-	0.173	0.089	0.039	0.138	0.009	0.004	0.014

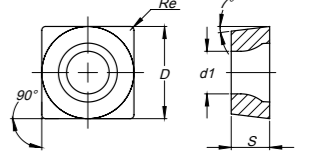
⊗ Stock Items | Itens de stock ○ Available under request | Disponível sob consulta | Disponible bajo consulta


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

SC = SQUARE 90° POSITIVE

QUADRADA 90° POSITIVA | ESCUADRA 90° POSITIVA

RELIEF ANGLE 7°



N															
		(2) Grade code		UNC	Dimensions (in) Dimensões (in) Dimensiones (in)				Cutting Conditions Condições de Corte Condiciones de Corte						
Inserts Pastilhas Plaquitas	(1) Geometry code	ANSI Reference	ISO Reference	PH0910	D	S	Re	d1	ap (in)	Min	Max	fn (in/rev)	Min	Max	
	SCGT-LN	1124008	SCGT 32.51-LN	SCGT 09T304-LN	⊗	3/8	5/32	1/64	0.173	0.081	0.004	0.157	0.006	0.004	0.010
		1124009	SCGT 32.52-LN	SCGT 09T308-LN	⊗	3/8	5/32	1/32	0.173	0.100	0.004	0.197	0.009	0.006	0.016
		1124010	SCGT 431-LN	SCGT 120404-LN	⊗	1/2	3/16	1/64	0.217	0.100	0.004	0.197	0.008	0.004	0.010
	Finishing to fine Finishing	1123685	SCGT 432-LN	SCGT 120408-LN	⊗	1/2	3/16	1/32	0.217	0.100	0.004	0.197	0.012	0.006	0.020

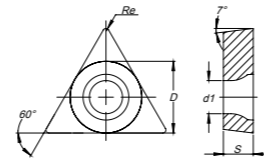
⊗ Stock Items | Itens de stock ○ Available under request | Disponível sob consulta | Disponible bajo consulta


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

TC = TRIANGULAR 60° POSITIVE

TRIANGULAR 60° POSITIVA | TRIANGULAR 60° POSITIVA

RELIEF ANGLE 7°



N															
		(2) Grade code		UNC	Dimensions (in) Dimensões (in) Dimensiones (in)				Cutting Conditions Condições de Corte Condiciones de Corte						
Inserts Pastilhas Plaquitas	(1) Geometry code	ANSI Reference	ISO Reference	PH0910	D	S	Re	d1	ap (in)	Min	Max	fn (in/rev)	Min	Max	
	TCGT-LN	1124011	TCGT 1.81.50.5-LN	TCGT 090202-LN	⊗	7/32	3/32	0.008	0.098	0.039	0.002	0.098	0.004	0.003	0.006
		1123683	TCGT 1.81.51-LN	TCGT 090204-LN	⊗	7/32	3/32	1/64	0.098	0.039	0.002	0.098	0.006	0.004	0.008
		1121895	TCGT 21.50.5-LN	TCGT 110202-LN	⊗	1/4	3/32	0.008	0.110	0.080	0.002	0.157	0.005	0.003	0.006
		1121896	TCGT 21.51-LN	TCGT 110204-LN	⊗	1/4	3/32	1/64	0.110	0.081	0.004	0.157	0.006	0.004	0.008
	Finishing to Fine Finishing	1124012	TCGT 21.52-LN	TCGT 110208-LN	⊗	1/4	3/32	1/32	0.110	0.081	0.004	0.157	0.010	0.006	0.020
		1121897	TCGT 32.50.5-LN	TCGT 16T302-LN	⊗	3/8	5/32	0.008	0.173	0.100	0.002	0.197	0.004	0.003	0.006
		1121898	TCGT 32.51-LN	TCGT 16T304-LN	⊗	3/8	5/32	1/64	0.173	0.110	0.004	0.217	0.006	0.004	0.008
		1121899	TCGT 32.52-LN	TCGT 16T308-LN	⊗	3/8	5/32	1/32	0.173	0.110	0.004	0.217	0.010	0.006	0.020
		1124013	TCGT 32.53-LN	TCGT 16T312-LN	⊗	3/8	5/32	1.20	0.173	0.118	0.006	0.217	0.018	0.006	0.028
		1124014	TCGT 32.54-LN	TCGT 16T316-LN	⊗	3/8	5/32	1.60	0.173	0.118	0.006	0.217	0.026	0.008	0.035

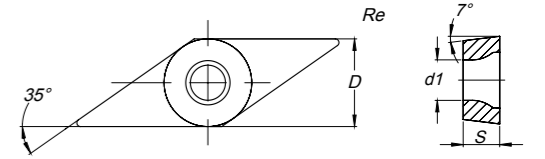
⊗ Stock Items | Itens de stock ○ Available under request | Disponível sob consulta | Disponible bajo consulta


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

VC = RHOMBIC 35° POSITIVE

RÔMBICA 35° POSITIVA | RÓMBICA 35° POSITIVA

RELIEF ANGLE 7°



N															
		(2) Grade code		UNC	Dimensions (in) Dimensões (in) Dimensiones (in)				Cutting Conditions Condições de Corte Condiciones de Corte						
Inserts Pastilhas Plaquitas	(1) Geometry code	ANSI Reference	ISO Reference	PH0910	D	S	Re	d1	ap (in)	Min	Max	fn (in/rev)	Min	Max	
	VCGT-LN	1123689	VCGT 220.2-LN	VCGT 110301-LN	⊗	1/4	1/8	0.004	0.110	0.060	0.002	0.118	0.002	0.001	0.002
		1121889	VCGT 220.5-LN	VCGT 110302-LN	⊗	1/4	1/8	0.008	0.110	0.060	0.002	0.118	0.003	0.002	0.005
		1121890	VCGT 221-LN	VCGT 110304-LN	⊗	1/4	1/8	1/64	0.110	0.060	0.002	0.118	0.006	0.004	0.010
		1121891	VCGT 222-LN	VCGT 110308-LN	⊗	1/4	1/8	1/32	0.110	0.060	0.002	0.118	0.009	0.006	0.018
	Finishing to Fine Finishing	1124015	VCGT 2.520.5-LN	VCGT 130302-LN	⊗	5/16	1/8	0.008	0.134	0.079	0.004	0.157	0.003	0.002	0.005
		1124016	VCGT 2.521-LN	VCGT 130304-LN	⊗	5/16	1/8	1/64	0.134	0.079	0.004	0.157	0.006	0.004	0.010
		1111878	VCGT 330.5-LN	VCGT 160402-LN	⊗	3/8	3/16	0.008	0.173	0.091	0.004	0.197	0.003	0.002	0.005
		1111533	VCGT 331-LN	VCGT 160404-LN	⊗	3/8	3/16	1/64	0.173	0.100	0.004	0.197	0.006	0.004	0.010
		1121893	VCGT 332-LN	VCGT 160408-LN	⊗	3/8	3/16	1/32	0.173	0.100	0.004	0.197	0.009	0.006	0.018
		1121894	VCGT 333-LN	VCGT 160412-LN	⊗	3/8	3/16	3/64	0.173	0.100	0.004	0.197	0.016	0.006	0.024
		1121929	VCGT 43.575-LN	VCGT 220530-LN	⊗	1/2	7/32	0.118	0.217	0.140	0.004	0.276	0.031	0.006	0.063

⊗ Stock Items | Itens de stock ○ Available under request | Disponível sob consulta | Disponible bajo consulta

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

ISO	Uncoated grades	Coated Grades		
		CVD	PVD	
N ALUMINUM & NON FERROUS	05	PH0910		
	10			
	15			
	20			
	25			
	30			
	35			

-Wear resistance
 -Resistência ao desgaste
 -Resistencia al desgaste
 -Toughness
 -Tenacidade
 -Tenacidad

Position and grade symbols shape indicate the suitable field of application.

TURNING GRADES DESCRIPTION | Descrição de graus para torneamento | Descripción de calidades para torneado

UNCOATED CARBIDE GRADE

PH0910

N01-N20



Uncoated carbide micrograin grade combining a good abrasive wear resistance and toughness. Suitable for rough to finish turning of HRSA, Titanium alloys, cast irons and Aluminum alloys.

CUTTING SPEED (sfm) | Velocidade de corte (sfm) | Velocidad de corte (sfm)

ISO	Material	HB (brinell)	Uncoated	
			PH0910	
			0.006	0.031
N	Aluminum alloys	60-130	1230-7872	132-788
	Copper and copper alloys	90-110	1230-2067	115-214

UNCOATED GRADES | GRAUS NÃO REVESTIDOS | CALIDADES SIN RECUBRIMIENTO

ISO	Material	Palbit	Sandvik	Kennametal	Iscar	Seco	Mitsubishi	Sumitomo	Tungaloy	Walter	Kyocera	Taegutec	Korloy	Ceratizit	
		N ALUMINUM	N01	PH0910	H10		IC20				KS05F	WK1	KW10	K10	
N10	H10 H13A		KU10 K313 K68		IC20 IC08 IC28	890 HX KX	HT110		TH10	WK1	KW10 KWK15	K10	H01		
N20	H10 H13A		KU10 K313 K68		IC08 IC28	HX KX 883		H1	KS15F	WK1	KW10 KWK15			H01	
N30					IC28										

PH7910 = Best available choice

CHIP BREAKER COMPARATIVE CHART | Tabela de equivalências de quebra- aparas | Tabla de comparación de rompevirutas

NEGATIVES | NEGATIVAS | NEGATIVAS

Application	Mat.	Operations	Palbit	Sandvik	Kennametal	Iscar	Seco	Tungaloy	Mitsubishi	Sumitomo	Walter	Kyocera	Taegutec	Korloy	Ceratizit
			N ALUMINUM	Medium	MS	MF, QM	MS, MP, MG	PP	-	P		AX		AH, A3	ML

MS = Best available choice

CHIP BREAKER COMPARATIVE CHART | Tabela de equivalências de quebra- aparas | Tabla de comparación de rompevirutas

POSITIVES | POSITIVAS | POSITIVAS - CLEARANCE ANGLE 7°

Application	Mat.	Operations	Palbit	Sandvik	Kennametal	Iscar	Seco	Tungaloy	Mitsubishi	Sumitomo	Walter	Kyocera	Taegutec	Korloy	Ceratizit
			N ALUMINUM	Medium	LN	AL	HP, GT	AF, AS	AL	AL, PP	AZ, R/L-F	AG, AX, AY	PF2, PM2	AH, A3	FL

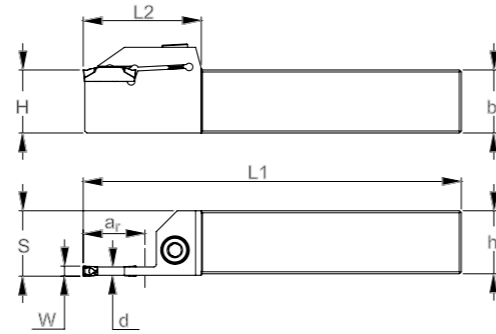


GROOVING &
PARTING OFF



GROOVING &
PARTING OFF

GPRC

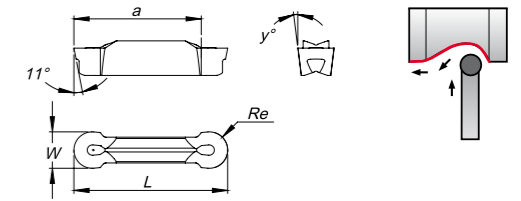


Order code Código	Reference Referência Referencia	Dimensions Dimensões Dimensiones (in)									W (mm)	Seat Size	Insert	Screw	Wrench	Stock
		ar	L1	h	b	H	L2	S	d							
213026900	GPRC-6.00.059.1.000.1.000.E.1	0.59	6.00	1.000	1.000	1.000	1.339	1.024	0.157	6	E	GP06...	D0602200	SS50	○	
213027000	GPRC-6.00.091.1.000.1.000.E.1	0.91	6.00	1.000	1.000	1.000	1.654	1.024	0.157	6	E	GP06...	D0602200	SS50	○	

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

Note: For inserts with 2 cutting edges, the ar is defined by the insert

GP..02-NP | Non-Ferrous Profiling



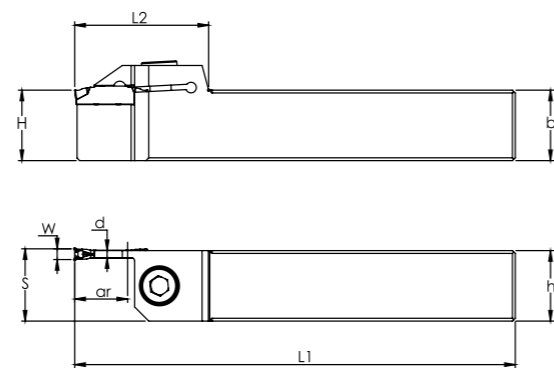
(1) Geometry code	(2) Grade code ISO/ANSI Reference	UNC PH0910	N Dimensions(in)							Cutting Conditions					
			W	Re	L	x°	a	y°	Seat Size *	Ap (in)	Min	Max	fn (in/r)	Min	Max
			1130405	GP0600E300-N02-NP	⊗	0.236	0.118	1.000	-	0.728	0.276	E	0.051	0.020	0.098
1130439	GP0800E400-N02-NP	○	0.315	0.157	1.000	-	0.728	0.276	E	0.059	0.024	0.102	0.008	0.006	0.012

⊗ 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

* - Correspond to a Specific Holder


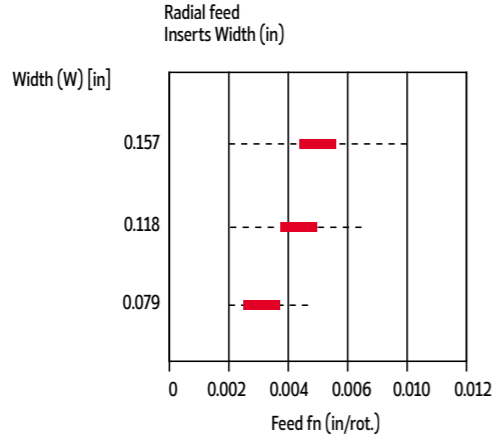
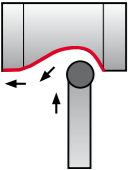
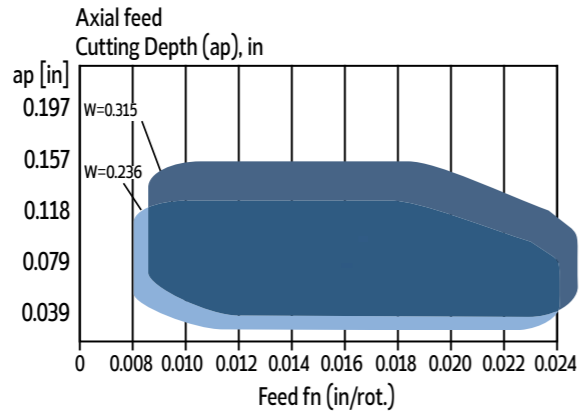
GPLC



Order code Código	Reference Referência Referencia	Dimensions Dimensões Dimensiones (in)									W (mm)	Seat Size	Insert	Screw	Wrench	Stock
		ar	L1	h	b	H	L2	S	d							
213028500	GPLC-6.00.059.1.000.1.000.E.1	0.59	6.00	1.000	1.000	1.000	1.339	1.024	0.157	6	E	GP06...	D0602200	SS50	○	
213028600	GPLC-6.00.091.1.000.1.000.E.1	0.91	6.00	1.000	1.000	1.000	1.654	1.024	0.157	6	E	GP06...	D0602200	SS50	○	

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

Note: For inserts with 2 cutting edges, the ar is defined by the insert

Feed recommendations and geometry descriptions		Grooving & Parting Off
 <p>GP..02-NP</p>	 <p>Radial feed Inserts Width (in)</p> <p>Width (W) [in]</p> <p>Feed fn (in/rot.)</p>	<p>Medium Aluminum profiling</p> <p>First choice for profiling in non-ferrous materials.</p> <p>Good chip flow provides a better surface finishing.</p> <p>Sharp cutting edge.</p>
	 <p>Axial feed Cutting Depth (ap), in</p> <p>ap [in]</p> <p>Feed fn (in/rot.)</p>	

ISO	Uncoated grades	Coated Grades		
		CVD	PVD	
N ALUMINUM & NON FERROUS	05	PH0910		- Wear resistance - Resistência ao desgaste - Resistencia al desgaste - Toughness - Tenacidade - Tenacidad
	10			
	15			
	20			
	25			
	30			
	35			

Position and grade symbols shape indicate the suitable field of application.

GROOVING & PARTING OFF GRADES DESCRIPTION

UNCOATED CARBIDE GRADE

PH0910

N01-N20



Uncoated carbide micrograin grade combining a good abrasive wear resistance and toughness. Suitable for rough to finish turning of HRSA, Titanium alloys, cast irons and Aluminum alloys.

CUTTING SPEED (sfm) | Velocidade de corte (sfm) | Velocidad de corte (sfm)

ISO	Material	HB (brinell)	Uncoated
			PH0910
			0.002 - 0.014
N	Aluminum alloys	60-130	624-5904
	Cooper and cooper alloys	90-110	132-1378

MILLING



MILLING

TURNING



TURNING

GROOVING & PARTING OFF



GROOVING &
PARTING OFF



ALUMINUM
& non ferrous materials

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