

Products compilation & main applications



ALUMINIUM
& non ferrous materials

N



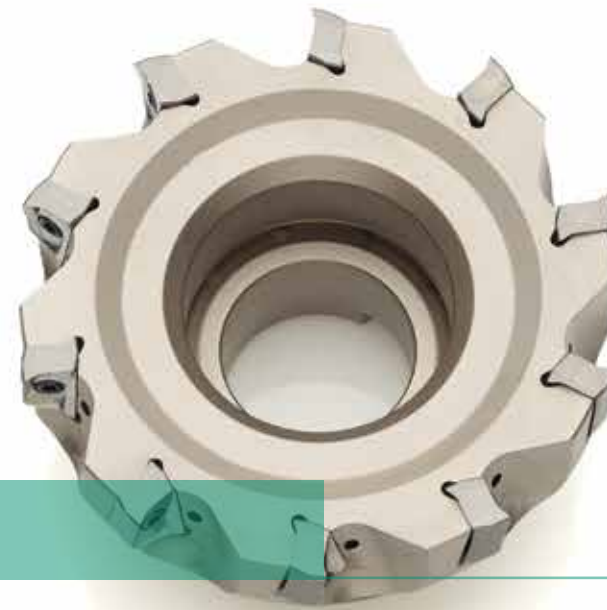
Pag. 2



MILLING



Pag. 64



TURNING



Pag. 76



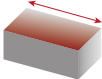
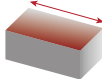
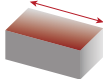
GROOVING &
PARTING OFF

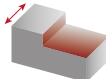
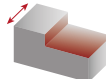
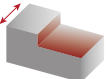
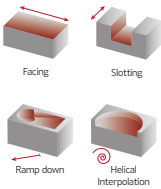


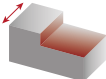
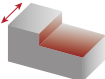
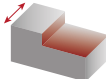
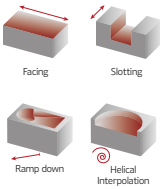
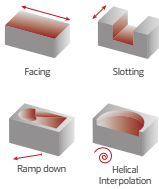
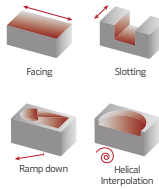
MILLING

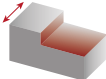
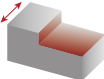
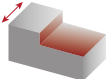
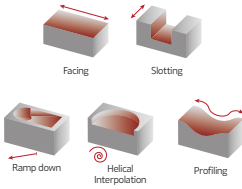
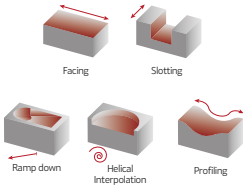
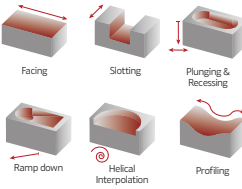


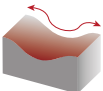
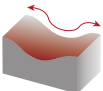
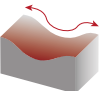
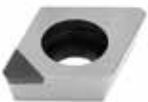
MILLING

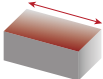
MILLING	FACE MILLING CUTTERS			
	Program	PLUS 90945	LINEPRO 06045	LINEPRO 09945
		Proprietary milling line 		
	Material	P M K N S	P M K N	P M K N
	Main Operation	 Facing	 Facing	 Facing
	Kr°	45°	45°	45°
	Insert	SNHX 1206...	SEHT 1204...	SEHT 13T3...
				
	Couplings	Arbor mounting	Arbor mounting	Arbor mounting
	Other Operations	 Slanted Shoulder & Chamfer	 Slanted Shoulder & Chamfer	 Slanted Shoulder & Chamfer
Overview	Page	12	14	16
News	Features	Economical because double sided inserts applied Variety of insert geometries is available for all applications materials Excellent surface finishing Available in regular and fine pitch cutters	Low cutting forces Good chip flow	Low cutting forces Suitable for high-speed machining Excellent chip flow High rigidity due to carbide shim

MILLING	SHOULDER MILLING CUTTERS			
	Program	PLUS 17190	PLUS 18190	LINEPRO 20190
		Proprietary milling line 	Proprietary milling line 	Proprietary milling line 
	Material	P M K N S	P K N	P M K N S H
	Main Operation	 Shouldering	 Shouldering	 Shouldering
	Kr°	90°	90°	90°
	Insert	ANHX 1004...	ANHX 1607...	XPET 1003...
				
	Couplings	Arbor mounting Weldon shank	Arbor mounting Weldon shank Threaded coupling	Arbor mounting Weldon shank Threaded coupling
	Other Operations	 Facing Slotting Plunging	 Facing Slotting Plunging	 Facing Slotting Plunging Ramp down Helical Interpolation
Overview	Page	18	22	26
News	Features	4 corners insert with positive cutting edge Variety of insert geometries is available for all applications Helical cutting edge Available in regular and fine pitch cutters		Excellent solution for square shoulder milling; Offers longer tool life, better tolerances and better productivity parameters; Low power requirement & smooth cutting possible due to positive helical angle; Very flexible and suitable for most milling operations High positive cutting rake geometry.

SHOULDER MILLING CUTTERS			
Program	LINEPRO 20290	LINEPRO 17090	LINEPRO 18090
	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	30	34	38
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	

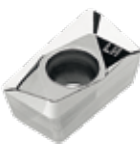
SHOULDER MILLING CUTTERS			
Program	ALUPRO 76090	ALUPRO 77090	ALUPRO 08390
	Proprietary milling line 	Proprietary milling line 	
Material	N	N	N
Main Operation	 Shouldering	 Shouldering	 Shouldering
Kr°	90°	90°	90°
Insert	XDGX 15M5...	XDGX 22M7...	VCGX 2205...
			
Couplings	Arbor mounting Cylindrical shank	Arbor mounting Cylindrical shank	Threaded coupling
Other Operations			
Page	42	46	50
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		Excellent chip flow

PROFILE MILLING CUTTERS			
Program	LINEPRO 40095	LINEPRO 40595	LINEPRO 41095
			
Material	P K N H	P K N H	P K N H
Main Operation	 Profiling	 Profiling	 Profiling
Kr°	95°	95°	95°
Insert	XD...0602...	XD...10T3...	XD...0401...
			
Couplings	Arbor mounting Threaded coupling	Arbor mounting Threaded coupling	Arbor mounting Threaded coupling
Other Operations	 Facing  Slotting  Ramp down  Helical Interpolation	 Facing  Slotting  Ramp down  Helical Interpolation	 Facing  Slotting  Ramp down  Helical Interpolation
Page	52	52	52
Features	Designed for finishing and profile milling Low energy consumption		

HARDMILL	
Program	HARDMILL 72090 NEW
	
Material	K N
Main Operation	 Facing
Kr°	90°
Insert	XNHW 1205...
	
Couplings	Arbor mounting
Other Operations	 Shouldering
Page	56
Features	Excellent solution for aluminium PCD tip

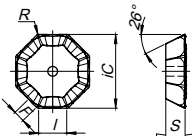
	FACE MILLING INSERTS	
Reference	SNHX	SEHT
	Proprietary milling insert	
		
Size	12	12
Page	13	15 17

	SHOULDER MILLING INSERTS
Reference	ANHX
	Proprietary milling insert
	
Size	10 16
Page	19 23

	SHOULDER MILLING INSERTS				
Reference	XPET	APET	APKT	XDGX	VCGX
	Proprietary milling insert			Proprietary milling insert	
					
Size	10 17	10	16	15 22	22
Page	27 31	35	39	43 47	50

	PROFILE MILLING INSERTS
Reference	XDHW
	
Size	04 06 10
Page	53

	HARDMILL MILLING INSERTS	
Reference	XDHW	XNHW
		
Size	04 06 10	12
Page	53	59

	OTHER INSERTS
Reference	OFKR 070408 FN-LN
Order code	111156910
	 
Dimensions	iC = 18,00 / S = 4,76 / l = 7,40 / R = 0,60 / F = 2,20 mm

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

HARDMILL 72090

High performance, cutting with PCD inserts!

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



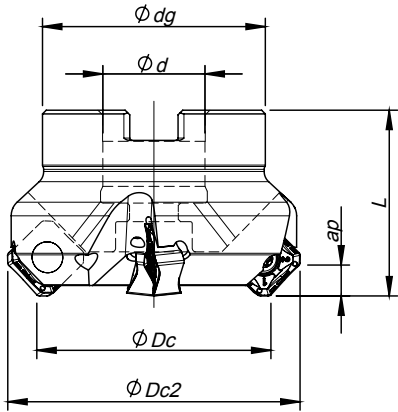
*see more on page 56

Optimized insert geometries

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



Arbor Mounting
K_r=45° | γ_p=-6°

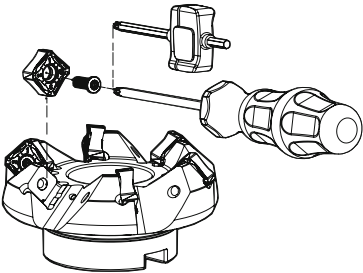


Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (mm)						Specifications		Insert Pastilha Inserto	Stock
			ØDc	ØDc2	Ød	Ødg	L		Arbor Type	Ap max (mm)		
181048200	050A90945-04-06-022040	4	50	63	22	48	40	0,424	A	6,0	SNHX 1206	
181067000	050A90945-06-06-022040	6	50	63	22	48	40	0,415	A	6,0	SNHX 1206	
181048300	063A90945-06-06-022040	6	63	76	22	52	40	0,575	A	6,0	SNHX 1206	
181067100	063A90945-08-06-022040	8	63	76	22	52	40	0,577	A	6,0	SNHX 1206	
181048400	080A90945-07-06-027050	7	80	93	27	60	50	0,966	B	6,0	SNHX 1206	
181067200	080A90945-10-06-027050	10	80	93	27	60	50	0,950	B	6,0	SNHX 1206	
181048500	100A90945-08-06-032050	8	100	113	32	80	50	1,667	B	6,0	SNHX 1206	
181067300	100A90945-12-06-032050	12	100	113	32	80	50	1,650	B	6,0	SNHX 1206	
181048600	125A90945-10-06-040063	10	125	138	40	90	63	2,890	B	6,0	SNHX 1206	
181048700	160A90945-12-06-U040063	12	160	173	40	110	63	4,360	C	6,0	SNHX 1206	
181052800	200A90945-14-06-U060063	14	200	213	60	172	63	8,890	C	6,0	SNHX 1206	
181064700	250A90945-16-06-U060063	16	250	263	60	172	63	11,490	C	6,0	SNHX 1206	

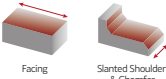
Stock item | Produto de stock | Itens de stock Available under request | Disponível sobre consulta | Disponible bajo consulta

SPARE PARTS | Complementos | Complementos

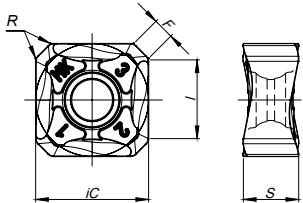
Cutter ØDc	Insert Screw	Key (Torx)	Torque Value	Screw	DIN 6368 Wrench
A90945 – 50 - 63	P0401200	XT15	3,0	-	-
A90945 – 80	P0401200	XT15	3,0	J0123510	SD6368-12
A90945 – 100	P0401200	PT15	3,0	J0164110	SD6368-16
A90945 – 125	P0401200	PT15	3,0	J0204610	SD6368-20
A90945 – 160 - 250	P0401200	PT15	3,0	-	-



PLUS 90945
SNHX



SNHX 1206 | Inserts | Pastilhas | Plaquetas



N								
	⁽²⁾ Grade code	UNC	PCD	Dimensions (mm)				
		10	D6					
⁽¹⁾ Geometry code	ISO Reference	PH0910	PDP410	iC	S	I	R	F
1111504	SNHX 1206 ANFN-LN			12,70	6,35	9,30	0,80	2,00

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 → PH0910	
N	10	Aluminium and Non Ferrous	30-130		

RECOMMENDED CUTTING CONDITIONS

ISO	PSM	Material	HB (Brinell)	Vc (m/min)	Feed fz (mm/t)
				← Wear Resistance Toughness → PH0910	SNHX 1206
N	10	Aluminium and Non Ferrous	30-130	350-1200	0,10-0,35

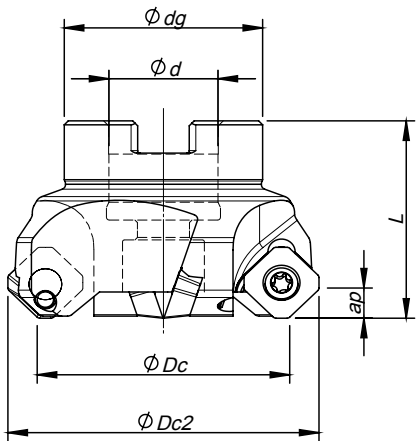
(Note 1) Cutting conditions a_e/Dc=70%.
(Note 2) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:
- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity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

CHIP-BREAKER SELECTION GUIDE

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



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

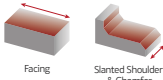
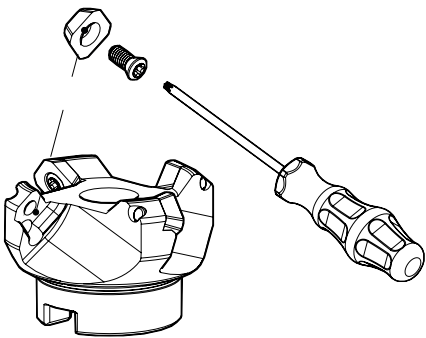


Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (mm)						Specifications		Insert Pastilha Inserto	Stock
			ØDc	ØDc2	Ød	Ødg	L		Arbor Type	Ap max (mm)		
181003500	050A06045-04-19-U022040	4	50	62	22	42	40	0,350	A	6,0	SEHT 1204	
181003600	063A06045-05-19-U022050	5	63	75	22	42	50	0,800	A	6,0	SEHT 1204	
181040100	080A06045-06-19-U027050	6	80	92	27	50	50	1,150	A	6,0	SEHT 1204	
181027500	100A06045-06-19-U032050	6	100	112	32	64	50	1,700	A	6,0	SEHT 1204	
181040200	125A06045-07-19-U040063	7	125	132	40	85	63	2,750	B	6,0	SEHT 1204	
181040300	160A06045-08-19-U040063	8	160	172	40	100	63	4,600	C	6,0	SEHT 1204	

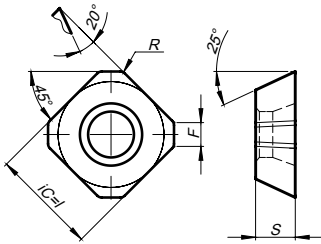
Stock item | Produto de stock | Itens de stock Available under request | Disponível sobre consulta | Disponible bajo consulta

SPARE PARTS | Complementos | Complementos

Cutter ØDc	Insert Screw	Key (Torx)	Torque Value
A06045 – 50 - 160	P0501100	PT20	5



SEHT 1204 | Inserts | Pastilhas | Plaquitas



N								
	⁽²⁾ Grade code	UNC	PCD	Dimensions (mm)				
		10	D6					
⁽¹⁾ Geometry code	ISO Reference	PH0910	PDP410	iC	S	I	R	F
1112283	SEHT 1204 AFFN-LN			12,70	4,76	12,70	0,80	2,00

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	Aluminium and Non Ferrous	30-130	PH0910		

RECOMMENDED CUTTING CONDITIONS

ISO	PSM	Material	HB (Brinell)	Vc (m/min)		Feed fz (mm/t)
				← Wear Resistance	Toughness →	
N	10	Aluminium and Non Ferrous	30-130	350-1400		0,10-0,25

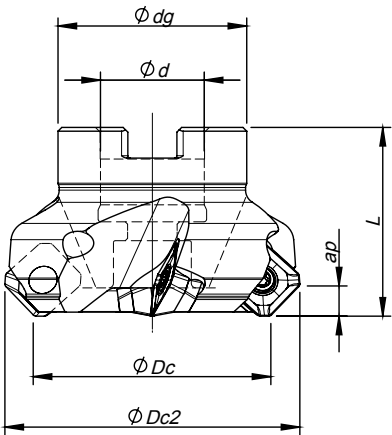
(Note 1) Cutting conditions ae/DC=70%
(Note 2) Cutting conditions should be ajusted according to the machine and work rigidity.
(Note 3) If chattering occurs, reduce ap and Vc by 30% and keep the same fz per tooth

CHIP-BREAKER SELECTION GUIDE

ISO	PSM	Material	HB (Brinell)	Chip-Breaker Application	
				1st choise	Dificult Operations
N	10	Aluminium and Non Ferrous	30-130	SEHT 1204 LN	-



Arbor Mounting
 $K_r=45^\circ$ | $\gamma_p=+20^\circ \sim +21^\circ$

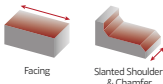
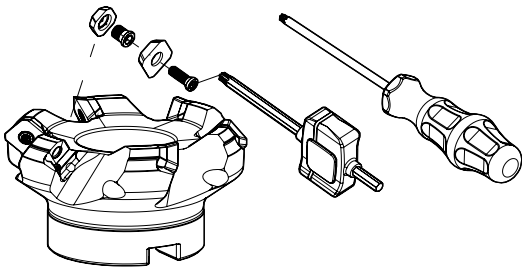


Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (mm)						Specifications		Insert Pastilha Inserto	Stock
			ØDc	ØDc2	Ød	Ødg	L		Arbor Type	Ap max (mm)		
181034700	050A09945-04-20-U022040	4	50	63	22	40	40	0,36	A	6,0	SEHT 13T3	
181024200	063A09945-05-21-U022040	5	63	76	22	48	40	0,59	A	6,0	SEHT 13T3	
181024300	080A09945-06-21-U027050	6	80	93	27	60	50	1,02	B	6,0	SEHT 13T3	
181024400	100A09945-07-21-U032050	7	100	113	32	70	50	1,52	B	6,0	SEHT 13T3	
181024500	125A09945-08-21-U040063	8	125	138	40	90	63	3,16	B	6,0	SEHT 13T3	
181024600	160A09945-10-21-U040063	10	160	173	40	110	63	4,61	C	6,0	SEHT 13T3	
181051400	250A09945-24-21-U060063L	24	250	263	60	172	63	13,89	C	6,0	SEHT 13T3	
181024800	250A09945-24-21-U060063	24	250	263	60	172	63	13,89	C	6,0	SEHT 13T3	

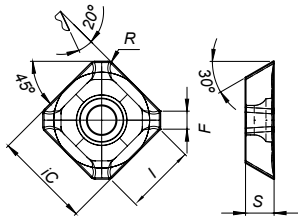
Stock item | Produto de stock | Itens de stock Available under request | Disponível sobre consulta | Disponible bajo consulta

SPARE PARTS | Complementos | Complementos

Cutter ØDc	Insert Screw	Key (Torx)	Torque Value	Shim	Shim Screw
A09945 – 50 - 80	P0351200	XT15	3	CS130300	T0503509
A09945 – 100-250	P0351200	PT15	3	CS130300	T0503509



SEHT 13T3 | Inserts | Pastilhas | Plaquitas



N								
	⁽²⁾ Grade code	UNC	PCD	Dimensions (mm)				
		10	D6					
⁽¹⁾ Geometry code	ISO Reference	PH0910	PDP410	iC	S	I	R	F
1111586	SEHT 13T3 AGTN-LN			13,35	3,97	10,0	-	2,30

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	
				← Wear Resistance	Toughness →
N	10	Aluminium and Non Ferrous	30-130	PH0910	

- Good Conditions
- Average Conditions
- Difficult Conditions

RECOMMENDED CUTTING CONDITIONS

ISO	PSM	Material	HB (Brinell)	Vc (m/min)		Feed fz (mm/t)
				← Wear Resistance	Toughness →	
N	10	Aluminium and Non Ferrous	30-130	350-1400		0,10-0,20

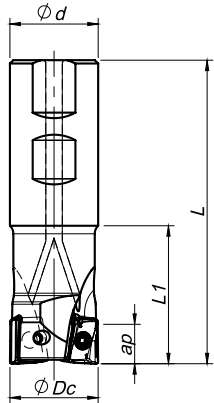
(Note 1) Cutting conditions ae/DC=70%
(Note 2) Cutting conditions should be ajusted according to the machine and work rigidity.
(Note 3) If chattering occurs, reduce ap and Vc by 30% and keep the same fz per thooth

CHIP-BREAKER SELECTION GUIDE

ISO	PSM	Material	HB (Brinell)	Chip-Breaker Application	
				1st choice	Dificult Operations
N	10	Aluminium and Non Ferrous	30-130	SEHT 13T3 AGFN-LN	-

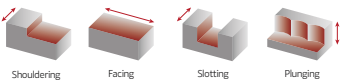


Weldon Shank
 $K_r = 90^\circ$ | $\gamma_p = -7^\circ (-6^\circ)$

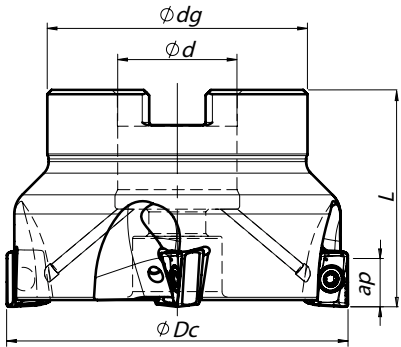


Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (mm)					Specifications		Insert Pastilha Inserto	Stock
			ØDc	Ød/M	L	L1		Arbor Type	Ap max (mm)		
181075000	014W17190-01-06-016090*	1	14	16	90	23	0,188	-	9,0	ANHX 1004...	
181101400	016W17190-02-06-016090*	2	16	16	90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

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



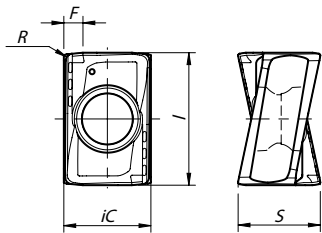
Arbor Mounting
 $K_r = 90^\circ$ | $\gamma_p = -7^\circ$



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

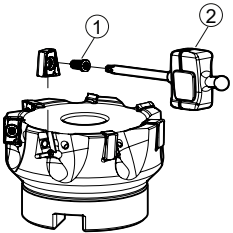
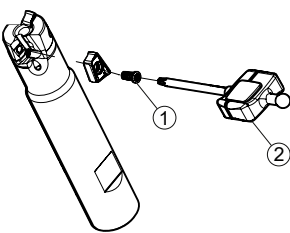
Stock item | Itens de stock Available under request | Disponível sobre consulta | Disponible bajo consulta

ANHX 1004... | Inserts | Pastilhas | Plaquitas



SPARE PARTS | Complementos | Repuestos

Cutter ØDc	Order separatly				
	1 Insert Screw 	2 Key (Torx) 	Torque Value 	Screw 	DIN 6368 Wrench
W17190 – 14 - 40	P0300800	XT09	3,0	-	-
A17190 – 40 - 63	P0300800	XT09	3,0	-	-
A17190 – 80	P0300800	XT09	3,0	J0123510	SD6368-12
A17190 – 100	P0300800	XT09	3,0	J0164110	SD6368-16



N								
	⁽²⁾ Grade code	UNC	PCD	Dimensions (mm)				
		10	D6					
⁽¹⁾ Geometry code	ISO Reference	PH0910	PDP410	iC	S	I	R	F
1111997	ANHX 100405 PNFR-LN			6,60	6,20	10,00	0,50	1,00
1112102	ANHX 100412 PNR-LN			6,60	6,20	10,00	1,20	1,00

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	Aluminium and Non Ferrous	30-130	PH0910		Good Conditions Average Conditions Difficult Conditions

RECOMMENDED CUTTING CONDITIONS

ISO	PSM	Material	HB (Brinell)	Vc (m/min)		Feed fz (mm/t)
				← Wear Resistance	Toughness →	
				PH0910		ANHx 1004... LN
N	10	Aluminium and Non Ferrous	30-130	350-1200		0,10-0,20

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

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

(Note 3):

Operation	a_e	Vc & fz	a_p (mm)
Slotting	100%	<20%	2.0-3.5
Shouldering	<50%	>8%	3.0-6.0
	≤25%	>12%	6.0-8.5

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

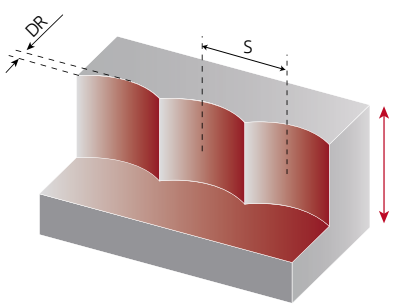
- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

CHIP-BREAKER SELECTION GUIDE

ISO	PSM	Material	HB (Brinell)	Chip-Breaker Application	
				1st choise	Dificult Operations
N	10	Aluminium and Non Ferrous	30-130	ANHx 1004... LN	-

PLUNGING | Mergulho | Plunge

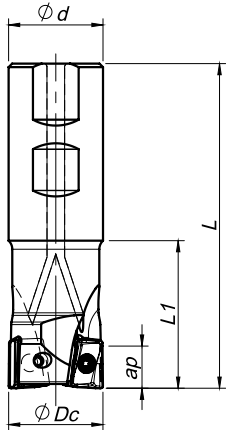
L≤3Dc	L>3Dc	S max.
fz (mm/t)		
0,10-0,20	0,10-0,14	$S_{max} = \sqrt{D_c \cdot D_r - D_r^2}$



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



Weldon Shank
K_r = 90° | γ_p = -4°

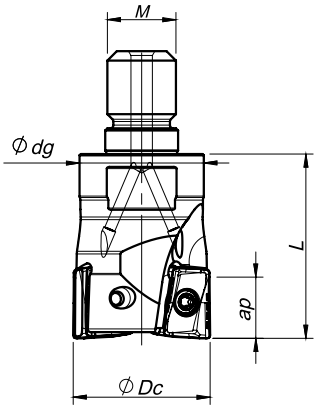


Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (mm)					Specifications		Insert Pastilha Inserto	Stock
			ØDc	Ød/M	L	L1		Arbor Type	Ap max (mm)		
181051600	032W18190-02-04-032110	2	32	32	110	50	0,66	-	15,0	ANHX 1607...	
181067500	040W18190-03-04-032115	3	40	32	115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

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



Threaded coupling
K_r = 90° | γ_p = -4°

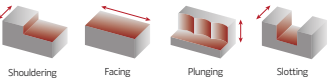
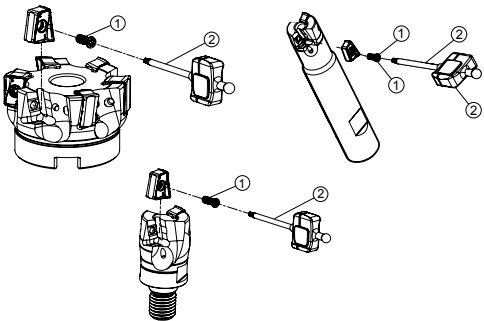


Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (mm)					Specifications		Insert Pastilha Inserto	Stock
			ØDc	Ød/M	Ødg	L		Arbor Type	Ap max (mm)		
181082800	032R18190-02-04-M16043	2	32	M16	29	43	0,20	-	15,0	ANHX 1607...	
181082900	040R18190-03-04-M16043	3	40	M16	29	43	0,24	-	15,0	ANHX 1607...	

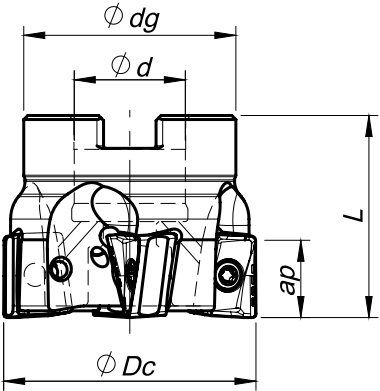
Stock item | Itens de stock Available under request | Disponível sobre consulta | Disponible bajo consulta

SPARE PARTS | Complementos | Repuestos

Cutter ØDc	1 Insert Screw	2 Key (Torx)	Torque Value	Screw	DIN 6368 Wrench
W18190 – 32 - 40	P0401200	XT15	3,0	-	-
R18190 – 32 - 40	P0401200	XT15	3,0	-	-
A18190 – 50 - 63	P0401200	XT15	3,0	-	-
A18190 – 80	P0401200	XT15	3,0	J0123510	SD6368-12
A18190 – 100	P0401200	XT15	3,0	J0164110	SD6368-16
A18190 – 125	P0401200	PT15	3,0	J0204610	SD6368-20
A18190 – 160	P0401200	PT15	3,0	-	-



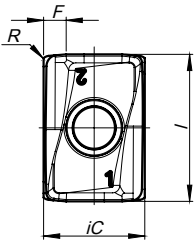
Arbor Mounting
K_r = 90° | γ_p = -4°



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

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

ANHX 1607... | Inserts | Pastilhas | Plaquetas



N								
	⁽²⁾ Grade code	UNC	PCD	Dimensions (mm)				
		10	D6					
⁽¹⁾ Geometry code	ISO Reference	PH0910	PDP410	iC	S	I	R	F
1111659	ANHX 160708 PNFR-LN			11,20	10,80	16	0,8	1,4
1111597	ANHX 160712 PNFR-LN			11,20	10,50	16	1,2	1,2

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	Aluminium and Non Ferrous	30-130	PH0910		

RECOMMENDED CUTTING CONDITIONS

ISO	PSM	Material	HB (Brinell)	Vc (m/min)		Feed fz (mm/t)
				← Wear Resistance	Toughness →	
				PH0910		ANHX 1607... LN
N	10	Aluminium and Non Ferrous	30-130	300-1200		0,10-0,40

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

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

(Note 3):

Operation	ae	Vc & fz	ap (mm)
Slotting	100%	<20%	2,0-3,5
Shouldering	<50%	>8%	6,0-8,0
	≤25%	>12%	8,0-15,0

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

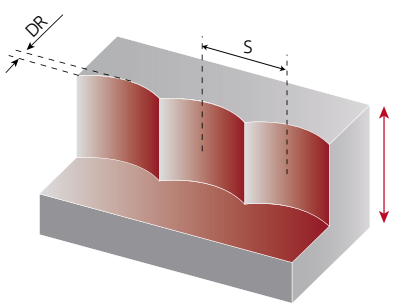
- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

CHIP-BREAKER SELECTION GUIDE

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

PLUNGING | Mergulho | Plunge

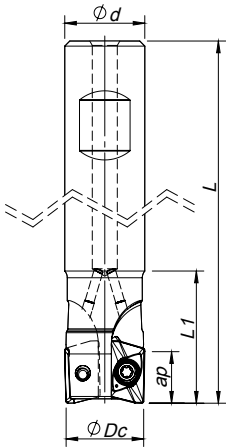
L≤3Dc	L>3Dc	S max.
fz (mm/t)		
0,10-0,20	0,10-0,14	$S_{max} = \sqrt{D_c \cdot D_r - D_r^2}$



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



Weldon Shank
K_r=90° | γ_p=+5°

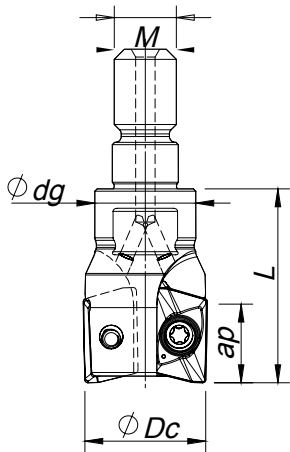


Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (mm)					Specifications	Insert Pastilha Inserto	Stock
			ØDc	Ød/M	L	L1		Ap max (mm)		
181087900	016W20190-02-05-016085	2	16	16	85	32	0,10	10,0	XPET 1003...	
181100600	016W20190-02-05-016150	2	16	16	150	70	0,13	10,0	XPET 1003...	
181108600	017W20190-02-05-016150	2	17	16	150	36	0,14	10,0	XPET 1003...	
181088000	020W20190-03-05-020090	3	20	20	90	28	0,21	10,0	XPET 1003...	
181100700	020W20190-03-05-020150	3	20	20	150	70	0,26	10,0	XPET 1003...	
181108700	022W20190-03-05-020150	3	22	20	150	70	0,30	10,0	XPET 1003...	
181088100	025W20190-04-05-025095	4	25	25	95	30	0,33	10,0	XPET 1003...	
181100800	025W20190-04-05-025150	4	25	25	150	80	0,36	10,0	XPET 1003...	
181108800	027W20190-04-05-025150	4	27	25	150	80	0,38	10,0	XPET 1003...	

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



Threaded Coupling
K_r=90° | γ_p=+5° ~+6°

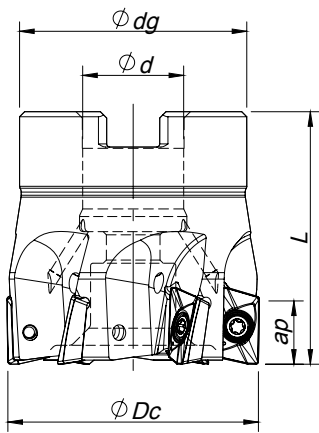


Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (mm)					Specifications	Insert Pastilha Inserto	Stock
			ØDc	Ød/M	Ødg	L		Ap max (mm)		
181088200	016R20190-02-05-M08025	2	16	M8	14	25	0,03	10,0	XPET 1003...	
181088300	020R20190-03-05-M10030	3	20	M10	18	30	0,06	10,0	XPET 1003...	
181088400	025R20190-04-05-M12035	4	25	M12	21	35	0,12	10,0	XPET 1003...	
181088500	032R20190-05-06-M16035	5	32	M16	29	35	0,15	10,0	XPET 1003...	

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



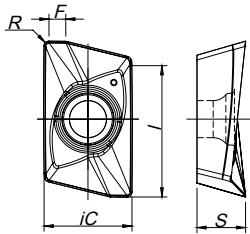
Arbor Mounting
K_r=90° | γ_p=+7° ~+8°



Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (mm)					Specifications		Insert Pastilha Inserto	Stock
			ØDc	Ød/M	Ødg	L		Arbor Type	Ap max (mm)		
181088600	040A20190-06-07-016040	6	40	16	36	40	0,22	A	10,0	XPET 1003...	
181088700	050A20190-07-08-022040	7	50	22	42	40	0,31	A	10,0	XPET 1003...	
181088800	063A20190-08-08-022040	8	63	22	52	40	0,43	A	10,0	XPET 1003...	

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

XPET 1003... || Inserts | Pastilhas | Plaquitas

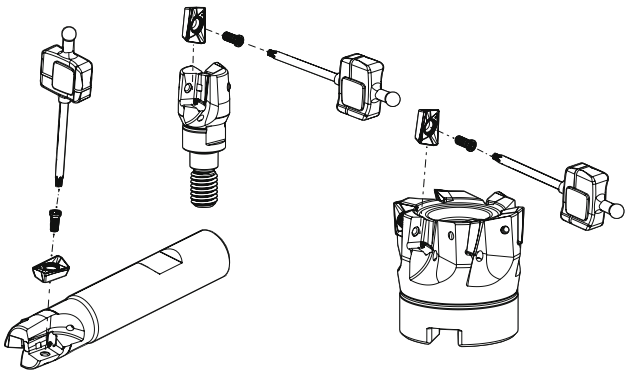


N								
⁽¹⁾ Geometry code	ISO Reference	UNC	PCD	Dimensions (mm)				
		10	D6					
		PH0910	PDP410	iC	S	I	R	F
1111984	XPET 100304 PDFR-LN			6,95	3,96	10,50	0,40	1,20
1111985	XPET 100312 PDFR-LN			6,95	3,96	10,50	1,20	0,90

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
W20190 - 16-27	P0250704	XT08	1,2
R20190 - 16-32	P0250704	XT08	1,2
A20190 - 40-63	P0250704	XT08	1,2



GRADES SELECTION GUIDE

ISO	PSM	Material	HB (Brinell)	Grades	
				← Wear Resistance	Toughness →
N	10	Aluminium and Non Ferrous	30-130	PH0910	

Good Conditions
 Average Conditions
 Difficult Conditions

RECOMMENDED CUTTING CONDITIONS

ISO	PSM	Material	HB (Brinell)	Vc (m/min)		Feed fz (mm/t)
				← Wear Resistance	Toughness →	
N	10	Aluminium and Non Ferrous	30-130	PH0910		XPET 1003... LN
				350-1400		0,07-0,25

(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):

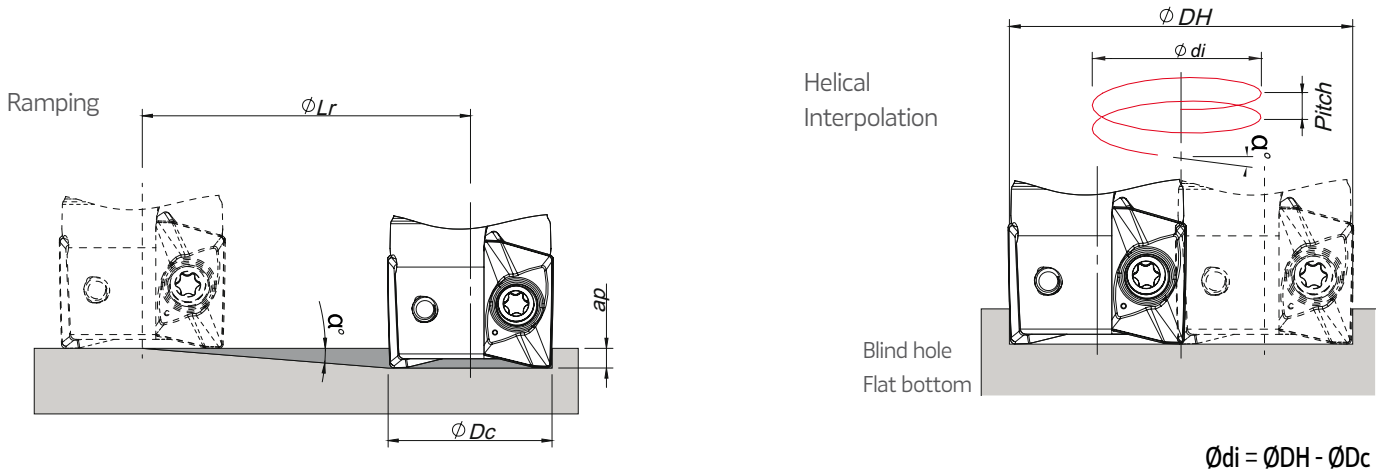
Operation	a_e	Vc & fz	a_p (mm)
Slotting	100%	<20%	2,0-4,0
Shouldering	<50%	>8%	3,0-6,0
	≤25%	>12%	7,0-9,0

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

CHIP-BREAKER SELECTION GUIDE

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

RAMPING AND HELICAL INTERPOLATION



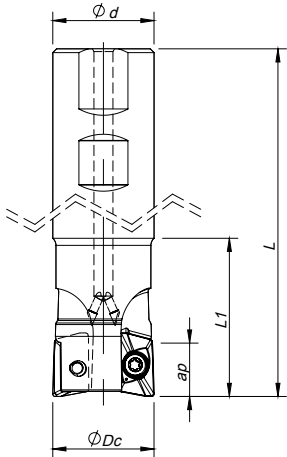
ØDc	Ramping			Helical Interpolation		
				Diameter for Blind Hole, Flat Bottom Face (1)		Max Pitch/Rev.
	Max Ramp a°	Max a_p	Min Lr	ØDHmin	ØDHmax	
16	7,5	10,0	76,0	27,6	-	4,8
17	7,0	10,0	81,4	29,6	-	4,9
20	5,0	10,0	114,3	35,6	-	4,3
22	4,5	10,0	127,1	39,6	-	4,3
25	3,5	10,0	163,5	45,6	-	4,0
27	3,0	10,0	190,8	49,6	-	3,7
32	2,5	10,0	229,0	59,6	-	3,8
40	1,7	10,0	336,9	75,6	-	3,3
50	1,3	10,0	440,7	95,6	-	3,2
63	1,0	10,0	572,9	121,6	-	3,2

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

Note: During helical interpolation do not exceed maximum pitch
When using HF insert or other different insert radius to calculate the ØDHmin and ØDHmax use the below equation:
- Minium 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
 $K_r=90^\circ$ | $\gamma_p=+6^\circ \sim +7^\circ$

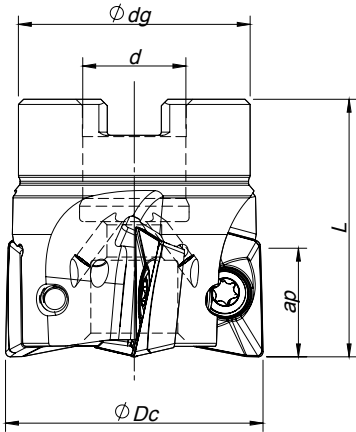


Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (mm)				Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	Ød/M	L	L1		Ap max (mm)			
181090500	032W20290-02-06-032110	2	32	32	110	50	0,56	17,0		XPET 1706...	
181090600	032W20290-02-06-032200	2	32	32	200	60	1,10	17,0		XPET 1706...	
181090700	040W20290-03-07-032115	3	40	40	115	50	0,67	17,0		XPET 1706...	
181090800	040W20290-03-07-032200	3	40	49	200	60	1,19	17,0		XPET 1706...	

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



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

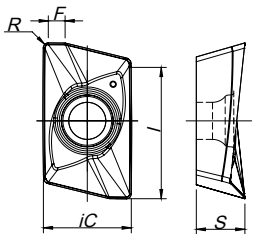


Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (mm)				Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	Ød/M	Ødg	L		Arbor Type	Ap max (mm)		
181090900	040A20290-04-07-016040	4	40	16	32	40	0,18	A	17,0	XPET 1706...	
181091000	050A20290-05-08-022040	5	50	22	42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

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



XPET 1706... | Inserts | Pastilhas | Plaquetas

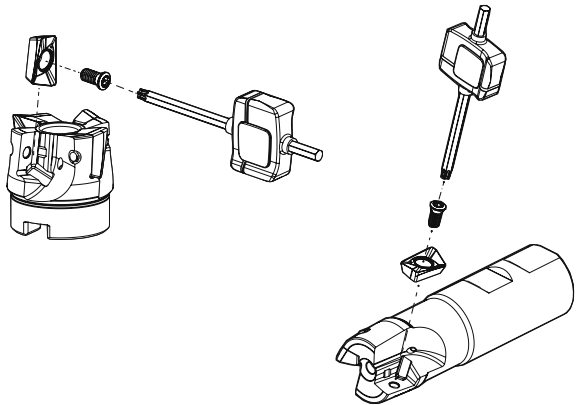


N								
	⁽²⁾ Grade code	UNC	PCD	Dimensions (mm)				
		10	D6					
⁽¹⁾ Geometry code	ISO Reference	PH0910	PDP410	iC	S	I	R	F
1111990	XPET 170608 PDFR-LN			11,30	6,35	17,50	0,80	1,20
1111991	XPET 170620 PDFR-LN			11,30	6,35	17,50	2,00	1,00
1111992	XPET 170632 PDFR-LN			11,30	6,35	17,50	3,20	0,80

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
W20290 - 32-40	P0451001	XT20	5,0
A20290 - 40-80	P0451001	XT20	5,0
A20290 - 100-125	P0451001	PT20	5,0



GRADES SELECTION GUIDE

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

RECOMMENDED CUTTING CONDITIONS

ISO	PSM	Material	HB (Brinell)	Vc (m/min)		Feed fz (mm/t)
				← Wear Resistance	Toughness →	
N	10	Aluminium and Non Ferrous	30-130	PH0910		XPET 1706... LN
				350-1400		

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

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

(Note 3):

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

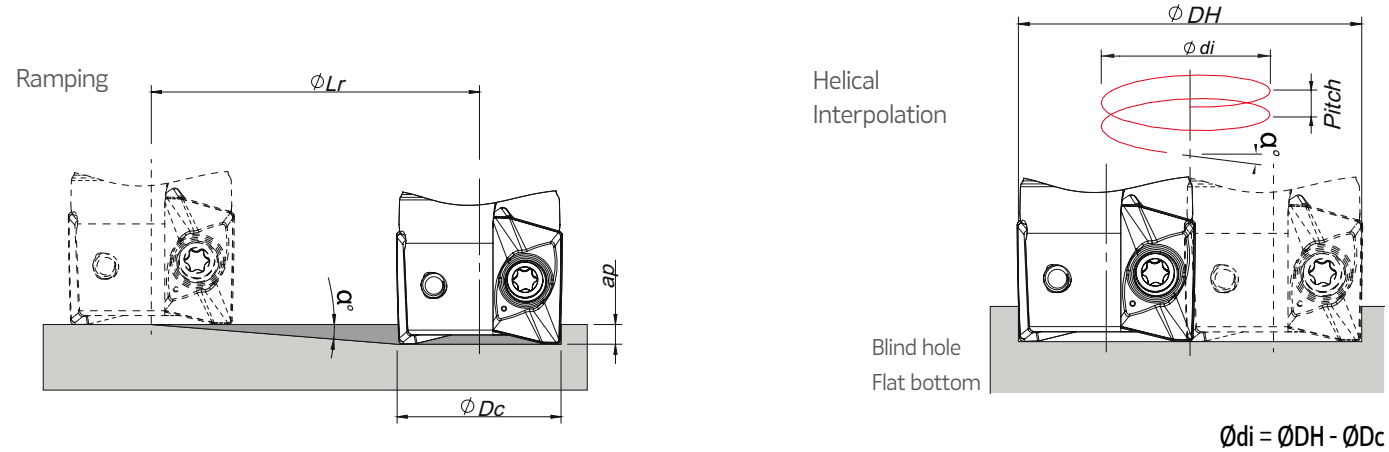
(Note 4):
It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

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

CHIP-BREAKER SELECTION GUIDE

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

RAMPING AND HELICAL INTERPOLATION

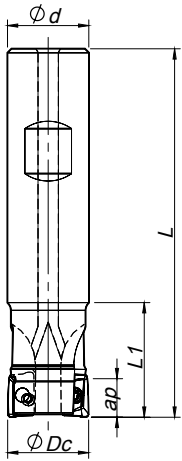


ϕDc	Ramping			Helical Interpolation		
				Diameter for Blind Hole, Flat Bottom Face (1)		Max Pitch/Rev.
	Max Ramp a°	Max a_p	Min L_r	ϕDH_{min}	ϕDH_{max}	
32	3,8	17,0	255,9	58,8	-	5,6
40	2,7	17,0	360,5	74,8	-	6,3
50	2,0	17,0	486,8	-	62,4	5,2
63	1,5	17,0	649,2	-	78,4	5,7
80	1,0	17,0	973,9	94,8	-	4,9
100	0,8	17,0	1217,5	-	98,4	5,3
125	0,7	17,0	1498,4	120,8	-	4,8
				-	124,4	5,0
				154,8	-	4,1
				-	158,4	4,3
				194,8	-	4,2
				-	198,4	4,3
				244,8	-	4,3
				-	248,4	4,4

(1) using LP insert with radius 0,8 mm
Note: During helical interpolation do not exceed maximum pitch
When using HF insert or other different insert radius to calculate the ϕDH_{min} and ϕDH_{max} use the below equation:
- Minium Diameter: $\phi DH_{min} = 2x(\phi Dc - (R \text{ corner radius} + F \text{ width of edge wiper}))$
- Maximum Diameter: $\phi DH_{max} = 2 \times (\phi Dc - R \text{ corner radius})$



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



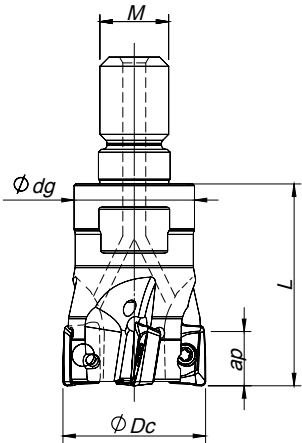
Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (mm)				 Kg	Specifications	Insert Pastilha Inserto	Stock
			ØDc	Ød/M	L	L1		Ap max (mm)		
181041300	016W17090-02-07-016085	2	16	16	85	26	0,110	9,0	APET 1003...	
181031700	016W17090-02-07-016150	2	16	16	150	26	0,210	9,0	APET 1003...	
181041400	020W17090-03-09-020090	3	20	20	90	28	0,190	9,0	APET 1003...	
181041600	020W17090-03-09-020150	3	20	20	150	28	0,320	9,0	APET 1003...	
181041700	025W17090-04-09-020150	4	25	20	150	26	0,340	9,0	APET 1003...	
181041500	025W17090-04-09-025095	4	25	25	95	30	0,310	9,0	APET 1003...	

Stock item | Produto de stock | Itens de stock

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



Threaded Coupling
 $K_r=90^\circ \mid \gamma_p=+7^\circ \sim +9^\circ$



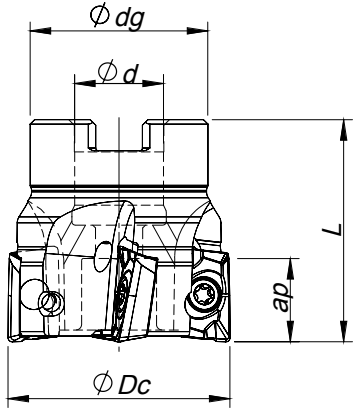
Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (mm)				 Kg	Specifications	Insert Pastilha Inserto	Stock
			ØDc	Ød/M	Ødg	L		Ap max (mm)		
181015100	016R17090-02-07-M08025	2	16	M8	13	25	0,030	9,0	APET 1003...	
181015200	020R17090-03-09-M10030	3	20	M10	18	30	0,058	9,0	APET 1003...	
181015300	025R17090-04-09-M12035	4	25	M12	21	35	0,110	9,0	APET 1003...	

Stock item | Produto de stock | Itens de stock

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



Arbor Mounting
 $K_r=90^\circ \mid \gamma_p=+9^\circ$

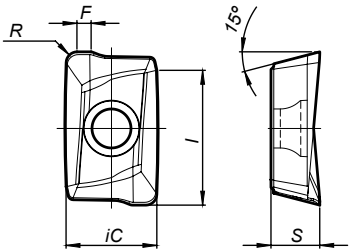


Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (mm)				 Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	Ød/M	Ødg	L		Arbor Type	Ap max (mm)		
181010200	040A17090-06-09-022040	6	40	22	39	40	0,210	A	9,0	APET 1003...	
181010300	050A17090-07-09-022040	7	50	22	40	40	0,320	A	9,0	APET 1003...	
181014300	063A17090-08-09-022040	8	63	22	48	40	0,560	A	9,0	APET 1003...	

Stock item | Produto de stock | Itens de stock

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

APET 1003... | Inserts | Pastilhas | Plaquetas



N								
	⁽²⁾ Grade code	UNC	PCD	Dimensions (mm)				
		10	D6	iC	S	I	R	F
⁽¹⁾ Geometry code	ISO Reference	PH0910	PDP410					
1112043	APET 100305 PDFR-LN			6,70	3,50	10,00	0,50	1,20

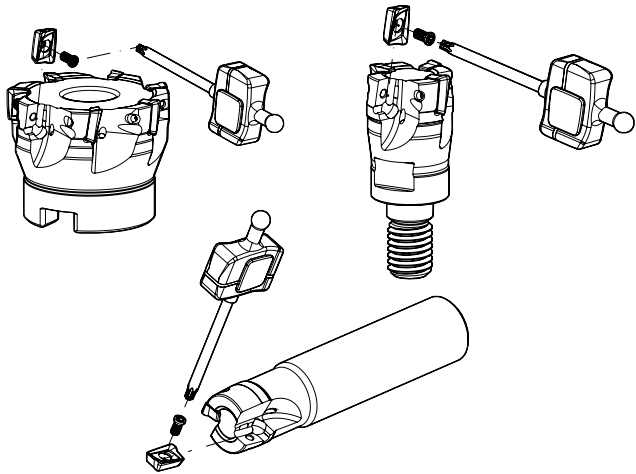
Stock item | Produto de stock | Itens de stock

☐ 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
W17090 - 16-25	P0250503	XT08	1,2
R17090 - 16-25	P0250503	XT08	1,2
A17090 - 40-63	P0250503	XT08	1,2



GRADES SELECTION GUIDE

ISO	PSM	Material	HB (Brinell)	Grades	
				← Wear Resistance	Toughness →
N	10	Aluminium and Non Ferrous	30-130	PH0910	

Good Conditions
 Average Conditions
 Difficult Conditions

RECOMMENDED CUTTING CONDITIONS

ISO	PSM	Material	HB (Brinell)	Vc (m/min)		Feed fz (mm/t)
				← Wear Resistance	Toughness →	
N	10	Aluminium and Non Ferrous	30-130	PH0910		APET 1003... LN
				350-1400		0,07-0,20

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

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

(Note 3):

Operation	a_e	Vc & fz	a_p (mm)
Slotting	100%	<20%	3,0-4,0
Shouldering	<50%	>8%	5,0-6,0
	≤25%	>12%	7,0-8,0

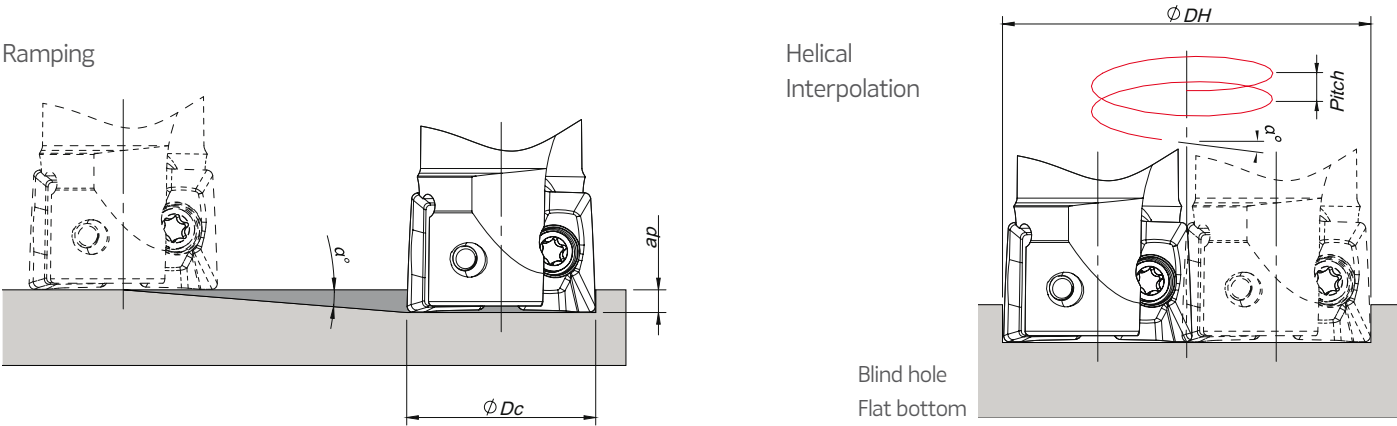
(Note 4): It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:
- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.

(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	Aluminium and Non Ferrous	30-130	APET 1003... LN	-

RAMPING AND HELICAL INTERPOLATION



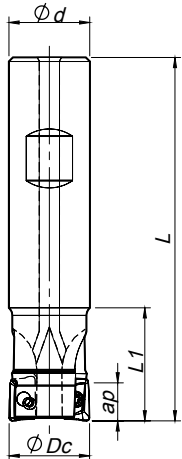
$\varnothing di = \varnothing DH - \varnothing Dc$

ØDc	Ramping			Helical Interpolation		
				Diameter for Blind Hole, Flat Bottom Face (1)		Max Pitch/Rev.
	Max Ramp a^o	Max a_p	Min Lr	ØDHmin	ØDHmax	
16	1,3	9,0	396,6	29,2 -	- 31,0	0,9 1,1
20	0,9	9,0	572,9	37,2 -	- 39,0	0,8 0,9
25	0,6	9,0	859,4	47,2 -	- 49,0	0,7 0,8
40	0,4	9,0	1289,1	77,2 -	- 79,0	0,8 0,9
50	0,25	9,0	2062,6	97,2 -	- 99,0	0,6 0,7
63	0,2	9,0	2578,3	123,2 -	- 125,0	0,7 0,7

(1) using LP insert with radius 0,8 mm
Note: During helical interpolation do not exceed maximum pitch
When using HF insert or other different insert radius to calculate the ØDHmin and ØDHmax use the below equation:
- Minium Diameter: $\varnothing DH_{min} = 2x(\varnothing Dc - (R \text{ corner radius} + F \text{ width of edge wiper}))$
- Maximum Diameter: $\varnothing DH_{max} = 2 \times (\varnothing Dc - R \text{ corner radius})$



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



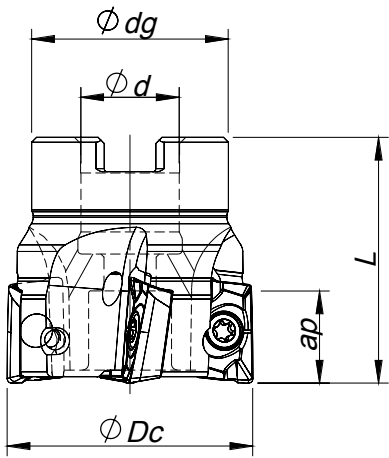
Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (mm)					Specifications	Insert Pastilha Inserto	Stock
			ϕDc	ϕd	L	L1		Ap max (mm)		
181041800	025W18090-02-06-025100	2	25	25	100	44	0,310	14,5	AP... 1604	
181042100	025W18090-02-06-025200	2	25	25	200	60	0,670	14,5	AP... 1604	
181041900	032W18090-03-07-032110	3	32	32	110	50	0,560	14,5	AP... 1604	
181042200	032W18090-03-07-032200	3	32	32	200	60	1,100	14,5	AP... 1604	
181042000	040W18090-04-08-032115	4	40	32	115	40	0,670	14,5	AP... 1604	
181042300	040W18090-04-08-032200	4	40	32	200	40	1,190	14,5	AP... 1604	

Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta | Disponible bajo consulta



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



Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (mm)					Specifications		Insert Pastilha Inserto	Stock
			ϕDc	ϕd	ϕdg	L		Arbor Type	Ap max (mm)		
181031200	040A18090-04-08-016040	4	40	16	32	40	0,180	A	14,5	AP... 1604	
181030900	050A18090-05-08-022040	5	50	22	42	40	0,290	A	14,5	AP... 1604	
181031300	063A18090-06-09-022040	6	63	22	52	40	0,530	A	14,5	AP... 1604	
181031400	080A18090-07-10-027050	7	80	27	60	50	0,920	B	14,5	AP... 1604	
181031500	100A18090-08-10-032050	8	100	32	80	50	1,680	B	14,5	AP... 1604	
181031600	125A18090-09-10-040063	9	125	40	90	63	3,010	B	14,5	AP... 1604	

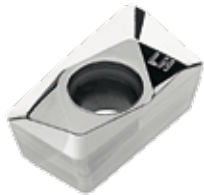
Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta | Disponible bajo consulta



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

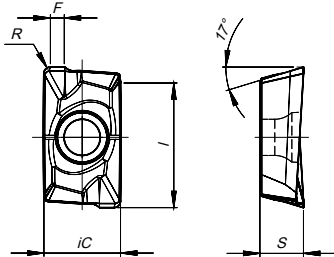
APKT - LN



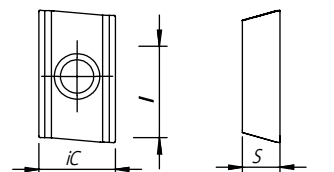
APHT - LN



APKT - LN



APHT - LN



N								
	⁽²⁾ Grade code	UNC	PCD	Dimensions (mm)				
		10	D6					
⁽¹⁾ Geometry code	ISO Reference	PH0910	PDP410	ic	S	I	R	F
1111924	APHT 1604 PDFR-LN			9,45	5,35	16,00	-	1,74
1111923	APKT 160408 PDFR-LN			9,45	5,35	16,00	0.80	1,74

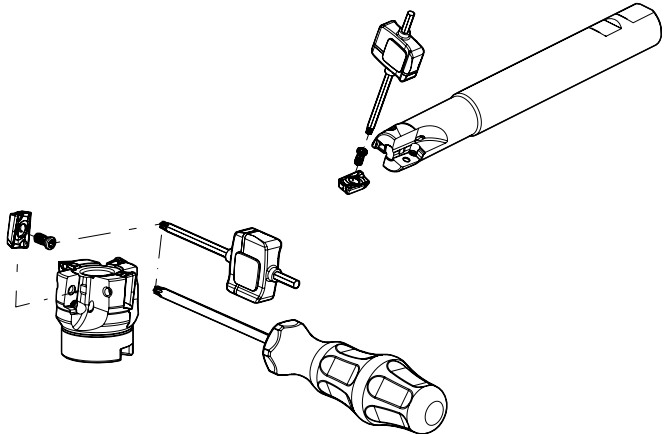
Stock item | Produto de stock | Itens de stock

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
W18090 - 25-40	P0400900	XT15	3,0
A18090 - 40-80	P0400900	XT15	3,0
A18090 - 100-125	P0400900	PT15	3,0



GRADES SELECTION GUIDE

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

RECOMMENDED CUTTING CONDITIONS

ISO	PSM	Material	HB (Brinell)	Vc (m/min)		Feed fz (mm/t)
				← Wear Resistance Toughness →		
				PH0910		
N	10	Aluminium and Non Ferrous	30-130	350-1400		AP...T 1604... LN 0,07-0,20

(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 (mm)
Slotting	100%	<20%	5,0-6,0
	<50%	>8%	6,0-9,0
Shouldering	≤25%	>12%	10,0-12,5

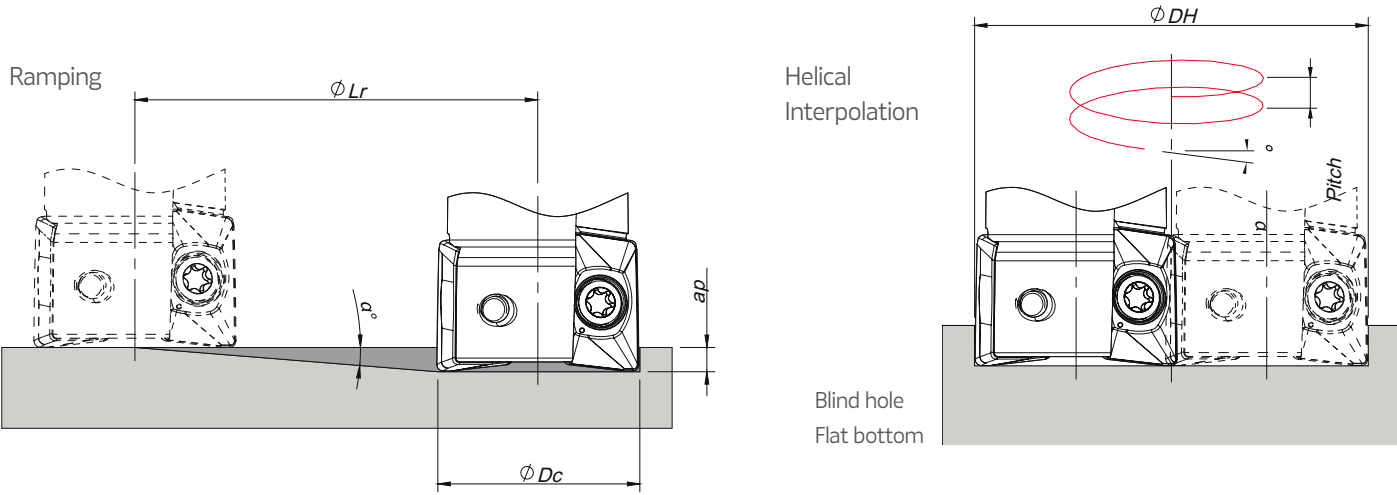
(Note 4):
It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

- 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 choise	Difficult Operations
N	10	Aluminium and Non Ferrous	30-130	AP...T 16... PDFR-LN	APHT 16.... PDFR-LN

RAMPING AND HELICAL INTERPOLATION



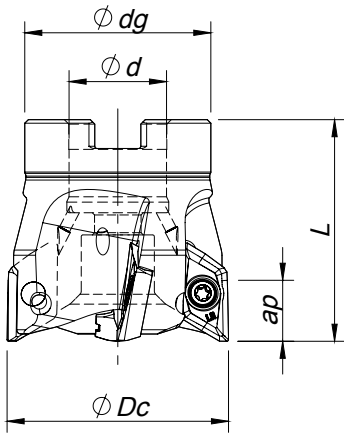
$\varnothing di = \varnothing DH - \varnothing Dc$

$\varnothing Dc$	Ramping			Helical Interpolation		
				Diameter for Blind Hole, Flat Bottom Face (1)		Max Pitch/Rev.
	Max Ramp a°	Max a_p	Min Lr	$\varnothing DH_{min}$	$\varnothing DH_{max}$	
25	3	14,5	276,7	46,1 -	- 48,4	3,5 3,9
32	2	14,5	415,2	60,1 -	- 62,4	3,1 3,3
40	1,5	14,5	553,7	76,1 -	- 78,4	3,0 3,2
50	1,1	14,5	755,2	96,1 -	- 98,4	2,8 2,9
63	0,85	14,5	977,3	122,1 -	- 124,4	2,8 2,9
80	0,64	14,5	1298,1	156,1 -	- 158,4	2,7 2,7
100	0,5	14,5	1661,5	196,1 -	- 198,4	2,6 2,7
125	0,38	14,5	2186,3	246,1 -	- 248,4	2,5 2,6

(1) Using insert radius 0,8 mm
Note: During helical interpolation do not exceed maximum pitch
When using different insert radius to calculate the $\varnothing DH_{min}$ and $\varnothing DH_{max}$ use the below equation:
- Minium Diameter: $\varnothing DH_{min} = 2 \times (\varnothing Dc - (R \text{ corner radius} + F \text{ width of edge wiper}))$
- Maximum Diameter: $\varnothing DH_{max} = 2 \times (\varnothing Dc - R \text{ corner radius})$



Arbor Mounting
K_r=90° | γ_p=+11°

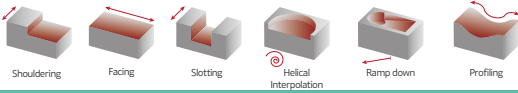
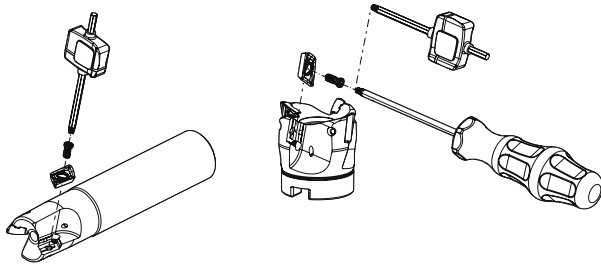


Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (mm)					Specifications			Insert Pastilha Inserto	Stock
			ØDc	Ød	Ødg	L		Arbor Type	Max ap (mm)	rpm max		
181094200	040A76090-03-11-016050-A	3	40	16	32	50	0,3	A	14,0	29 000	0,4~3,2	
181083400	050A76090-04-11-022050-A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

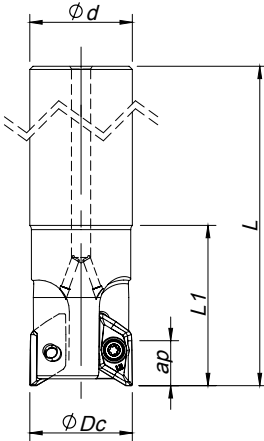
Stock item | Produto de stock | Itens de stock Available under request | Disponível sobre consulta | Disponible bajo consulta

SPARE PARTS | Complementos | Complementos

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



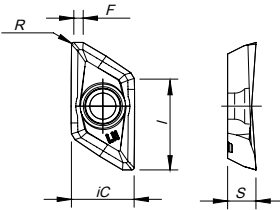
Cylindrical Shank
K_r=90° | γ_p=+6° ~+11°



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

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

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



N									
	⁽²⁾ Grade code	UNC	PCD	Dimensions (mm)					
		10	D6						
⁽¹⁾ Geometry code	ISO Reference	PH0910	PDP410	iC	S	I	R	F	Holder Type
1111624	XDGX 15M504 PDFR-LN			11,20	5,00	16,0	0,40	1,50	A
1111625	XDGX 15M508 PDFR-LN			11,20	5,00	16,0	0,80	1,10	A
1111626	XDGX 15M512 PDFR-LN			11,20	5,00	16,0	1,20	0,70	A
1111627	XDGX 15M516 PDFR-LN			11,20	5,00	16,0	1,60	0,40	A
1111628	XDGX 15M520 PDFR-LN			11,20	5,00	16,0	2,00	0,20	A
1112154	XDGX 15M530 PDFR-LN			11,20	5,00	16,0	3,00	0,60	A
1111629	XDGX 15M532 PDFR-LN			11,20	5,00	16,0	3,20	0,60	A
1111630	XDGX 15M540 PDFR-LN			11,20	5,00	16,0	4,00	0,50	B
1111631	XDGX 15M550 PDFR-LN			11,20	5,00	16,0	5,00	0,40	B

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 (m/min)	Width of Cut ae (mm)	Depth of Cut ap (mm)	Feed fz(mm/t)
				PH0910			
N	10	Aluminium and Non Ferrous	30-130	350-1400	≤ 25% ØDc	≤5,0	0,35 - 0,40
						5,0 - 10,0	0,30 - 0,35
						10,0 - 15,0	0,25 - 0,30
					< 50% ØDc	≤5,0	0,35 - 0,40
						5,0 - 10,0	0,30 - 0,35
						10,0 - 15,0	0,25 - 0,30
					≤ 75% ØDc	≤5,0	0,30 - 0,35
						5,0 - 10,0	0,25 - 0,30
						10,0 - 15,0	0,20 - 0,25

RECOMMENDED CUTTING CONDITIONS FOR SLOTTING

ISO	PSM	Material	HB (Brinell)	Vc (m/min)	Width of Cut ae (mm)	Depth of Cut ap (mm)	Feed fz(mm/t)
				PH0910			
N	10	Aluminium and Non Ferrous	30-130	350-1400	100% ØDc	≤5,0	0,25 - 0,35
						5,0 - 10,0	0,20 - 0,30
						10,0 - 15,0	0,15 - 0,25

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

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

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

(Note 3) Use internal coolant supply

OPERATIONAL GUIDE

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

Table 1 - Maximum allowable revolutions:

ØDc	Ø20	Ø25	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100
RPM (min ⁻¹)	40000	38000	33000	29000	24000	21000	19000	16000

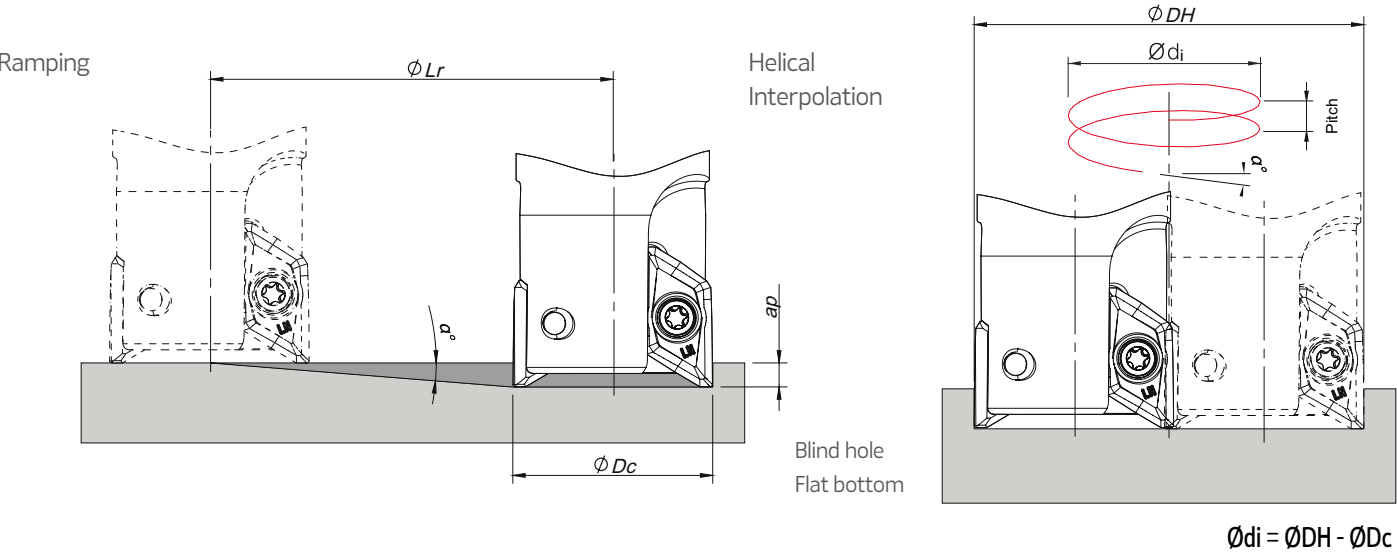
- Even when operating under the maximum allowable spindle speed, if the spindle speed is equal or higher than the values shown in Table 2., it is recommended that the balance quality (with the arbor or chuck) according ISO 1940.

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

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

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

RAMPING AND HELICAL INTERPOLATION



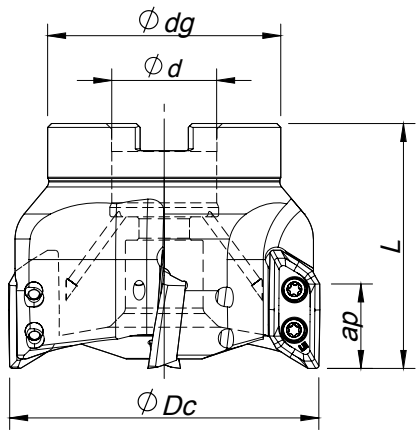
Holder Type	ØDc	Helical Interpolation					
		Ramping			Diameter for Blind Hole, Flat Bottom Face (1)		Max Pitch/Rev.
		Max Ramp α°	Max ap	Min Lr	ØDHmin	ØDHmax	
A	20	23	15,0	35,3	36,2 -	- 38,4	21,6 24,5
	25	21	15,0	39,1	46,2 -	- 48,4	25,6 28,2
	32	15	15,0	56,0	60,2 -	- 62,4	23,7 25,6
	40	10	15,0	85,1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

(1) using insert radius 0,8 mm

Note: During helical interpolation do not exceed maximum pitch.
When using different insert radius to calculate the ØDHmin and ØDHmax use the below equation:
- Minium Diameter: ØDHmin = 2x(ØDc-(R corner radius + F width of edge wiper)
- Maximum Diameter: ØDHmax = 2 x (ØDc - R corner radius)



Arbor Mounting
K_r=90° | γ_p=+7°

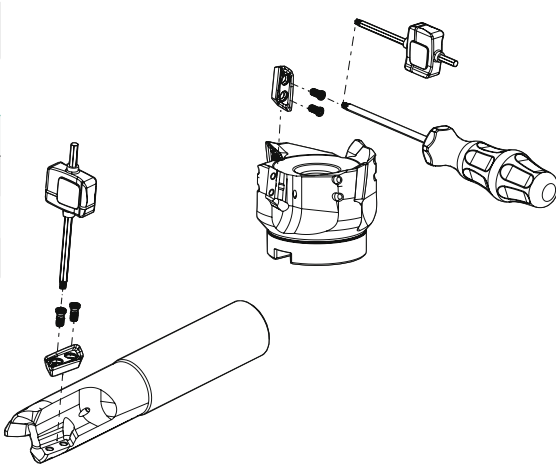


Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (mm)						Specifications			Insert radius Raio da pastilha Rayo del Inserto	Stock
			ØDc	Ød	Ødg	L	L1		Arbor Type	Max ap (mm)	rpm max		
181093000	050A77090-03-07-022050-A	3	50	22	42	50	-	0,4	A	21,5	30 000	0,8~3,2	
181093100	063A77090-03-07-022050-A	3	63	22	42	50	-	0,5	A	21,5	25 000	0,8~3,2	
181071600	080A77090-04-07-027063-A	4	80	27	60	63	-	1,2	A	21,5	23 000	0,8~3,2	
181093200	100A77090-05-07-032063-A	5	100	32	70	63	-	1,8	A	21,5	19 000	0,8~3,2	
181093300	125A77090-06-07-040063-A	6	125	40	100	63	-	2,7	A	21,5	16 000	0,8~3,2	
181093400	050A77090-03-07-022050-B	3	50	22	42	50	-	0,4	B	21,0	30 000	4,0~5,0	
181093500	063A77090-03-07-022050-B	3	63	22	42	50	-	0,5	B	21,0	25 000	4,0~5,0	
181093600	080A77090-04-07-027063-B	4	80	27	60	63	-	1,2	B	21,0	23 000	4,0~5,0	
181093700	100A77090-05-07-032063-B	5	100	32	70	63	-	1,8	B	21,0	19 000	4,0~5,0	
181093800	125A77090-06-07-040063-B	6	125	40	100	63	-	2,7	B	21,0	16 000	4,0~5,0	

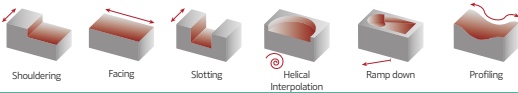
Stock item | Produto de stock | Itens de stock Available under request | Disponível sobre consulta | Disponible bajo consulta

SPARE PARTS | Complementos | Complementos

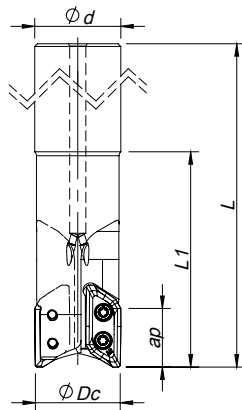
Cutter ØDc	Insert Screw	Key (Torx)	Torque Value	Screw	DIN 6368 Wrench
E77090 - 32-40					
A77090 - 50-80	P0401200	XT15	3,0	-	-
A77090 - 100	P0401200	PT15	3,0	J0164110	SD6368-16
A77090 - 125	P0401200	PT15	3,0	J0204610	SD6368-20



ALUPRO 77090
XDGX



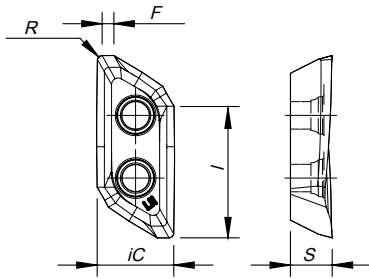
Cylindrical Shank
K_r=90° | γ_p=+6°



Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (mm)					 Kg	Specifications			Insert radius Raio da pastilha Rayo del Inserto	Stock
			ØDc	Ød	Ødg	L	L1		Arbor Type	Max ap (mm)	rpm max		
181069800	032E77090-02-06-032170-A	2	32	32	-	170	80	0,8	A	21.5	41 000	0,8~3,2	
181093900	040E77090-02-06-040170-A	2	40	40	-	170	80	0,9	A	21.5	36 000	0,8~3,2	
181094000	032E77090-02-06-032170-B	2	32	32	-	170	80	0,8	B	21.0	41 000	4,0~5,0	
181094100	040E77090-02-06-040170-B	2	40	40	-	170	80	0,9	B	21.0	36 000	4,0~5,0	

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

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



N									
	⁽²⁾ Grade code	UNC	PCD	Dimensions (mm)					
		10	D6	iC	S	I	R	F	Holder Type
⁽¹⁾ Geometry code	ISO Reference	PH0910	PDP410						
1111618	XDGX 22M708 PDFR-LN			13,00	7,00	22,0	0,80	2,00	A
1111619	XDGX 22M716 PDFR-LN			13,00	7,00	22,0	1,60	1,20	A
1111620	XDGX 22M720 PDFR-LN			13,00	7,00	22,0	2,00	0,80	A
1111621	XDGX 22M732 PDFR-LN			13,00	7,00	22,0	3,20	0,60	A
1111622	XDGX 22M740 PDFR-LN			13,00	7,00	22,0	4,00	0,90	B
1111623	XDGX 22M750 PDFR-LN			13,00	7,00	22,0	5,00	0,40	B

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 (m/min)	Width of Cut ae (mm)	Depth of Cut ap (mm)	Feed fz(mm/t)
				PH0910			
N	10	Aluminium and Non Ferrous	30-130	350-1400	≤ 25% ØDc	≤5.0	0,35 - 0,40
						5.0 - 10.0	0,30 - 0,35
						10.0 - 15.0	0,25 - 0,30
						15.0 - 20.0	0,20 - 0,25
					< 50% ØDc	≤5.0	0,35 - 0,40
						5.0 - 10.0	0,30 - 0,35
						10.0 - 15.0	0,25 - 0,30
						15.0 - 20.0	0,20 - 0,25
					≤ 75% ØDc	≤5.0	0,30 - 0,35
						5.0 - 10.0	0,25 - 0,30
						10.0 - 15.0	0,20 - 0,25
						15.0 - 20.0	0,15 - 0,20

RECOMMENDED CUTTING CONDITIONS FOR SLOTTING

ISO	PSM	Material	HB (Brinell)	Vc (m/min)	Width of Cut ae (mm)	Depth of Cut ap (mm)	Feed fz(mm/t)
				PH0910			
N	10	Aluminium and Non Ferrous	30-130	350-1400	100% ØDc	≤5.0	0,25 - 0,35
						5.0 - 10.0	0,20 - 0,30
						10.0 - 15.0	0,15 - 0,25
						15.0 - 20.0	0,10 - 0,20

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

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

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

(Note 3) Use internal coolant supply.

OPERATIONAL GUIDE

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

- When tightening the clamp screws, follow the order in Figure 1. The recommended torque value is 3.5Nm.

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

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

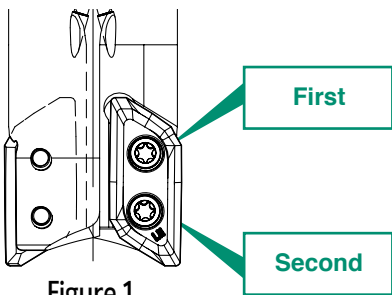


Table 1 - Maximum allowable revolutions:

ØDc	Ø32	Ø40	Ø50	Ø63	Ø80	Ø100	Ø125
RPM (min ⁻¹)	41000	36000	30000	25000	23000	19000	16000

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

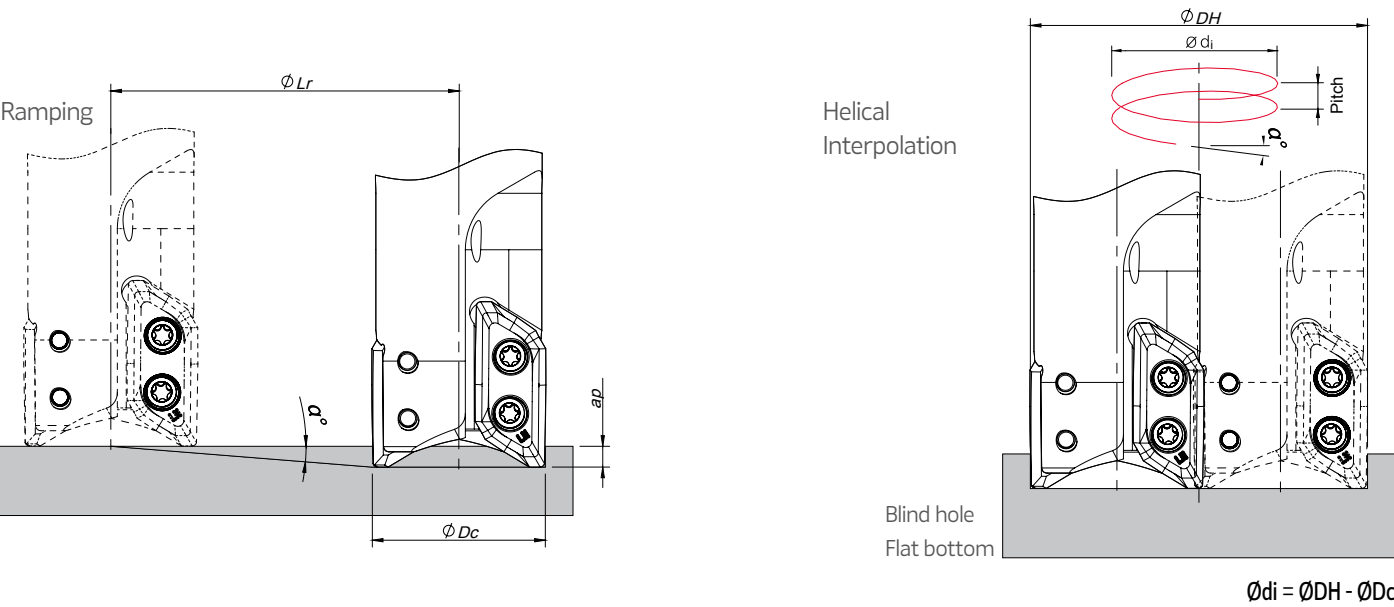
Table 2 - Maximum revolutions when balancing with the arbor or chuck has not been achieved:

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

- When setting the spindle speed, take into consideration the maximum allowable revolutions of arbor or chuck.

- Use the specified set bolt when using the arbor type with internal coolant supply.

RAMPING AND HELICAL INTERPOLATION



Ødi = ØDH - ØDc

Holder Type	ØDc	Helical Interpolation					
		Ramping			Diameter for Blind Hole, Flat Bottom Face (1)		Max Pitch/Rev.
		Max Ramp a°	Max ap	Min Lr	ØDHmin	ØDHmax	
A	32	19	21,5	62,4	60,0	-	30,3
	40	13	21,5	93,1	76,0	-	26,1
	50	9	21,5	135,7	96,0	-	22,9
	63	7	21,5	175,1	122,0	-	22,7
	80	5	21,5	245,7	156,0	-	20,9
	100	4	21,5	307,5	196,0	-	21,1
	125	3	21,5	410,2	246,0	-	19,9
B	32	18	21,0	64,6	60,0	-	28,6
	40	11	21,0	108,0	76,0	-	22,0
	50	8	21,0	149,4	96,0	-	20,3
	63	6	21,0	199,8	122,0	-	19,5
	80	4	21,0	300,3	156,0	-	16,7
	100	3	21,0	400,7	196,0	-	15,8
	125	2	21,0	601,4	246,0	-	13,3
					-	248,4	13,5

(1) using insert radius 0,8 mm

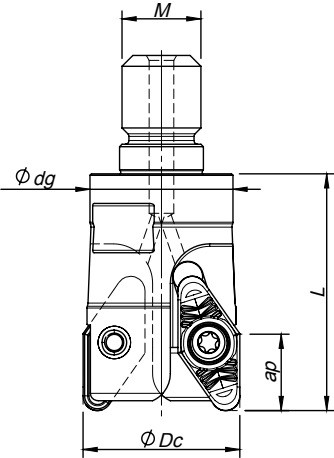
Note: During helical interpolation do not exceed maximum pitch.

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

- Minium Diameter: ØDHmin = 2x(ØDc-(R corner radius + F width of edge wiper)
- Maximum Diameter: ØDHmax = 2 x (ØDc - R corner radius)



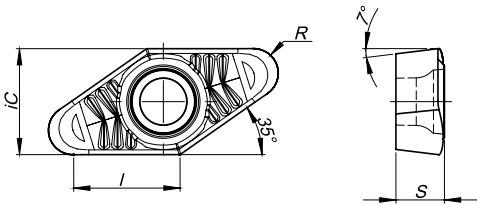
Threaded Coupling
 $K_r=90^\circ$ | $\gamma_p=0^\circ$



Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (mm)				Kg	Specifications	Insert Pastilha Inserto	Stock
			ϕDc	$\phi d/M$	ϕdg	L		Ap max (mm)		
181019900	032R08390-02-M16048	2	32	M16	29	48	0,19	15,00	VCGX 22...	

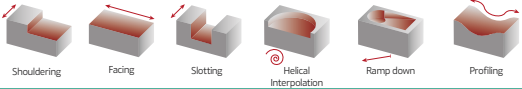
Stock item | Produto de stock | Itens de stock Available under request | Disponível sobre consulta | Disponible bajo consulta

VCGX 220530 | Inserts | Pastilhas | Plaquitass



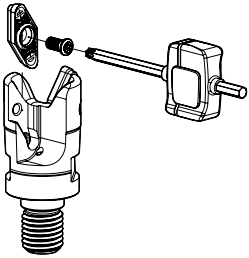
N								
⁽¹⁾ Geometry code	⁽²⁾ Grade code	UNC	PCD	Dimensions (mm)				
	ISO Reference	10	D6	iC	S	L	R	F
1121907	VCGX 220530 LN			12,70	5,60	12,7	3,00	-

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
			Nm
R08390 – 32	P0451001	XT20	500



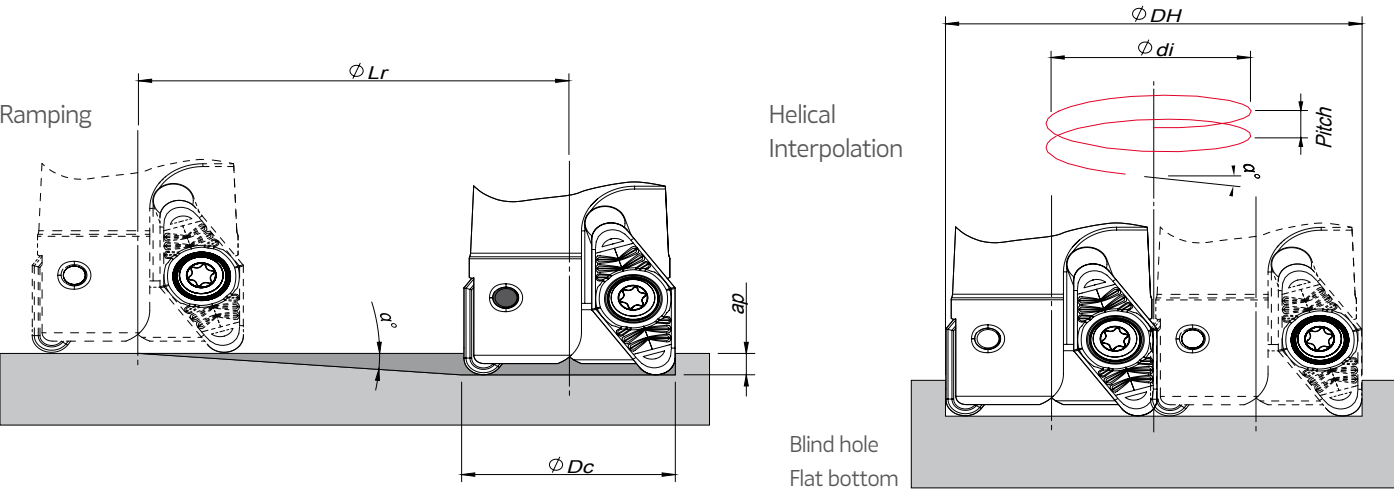
RECOMMENDED CUTTING CONDITIONS

ISO	PSM	Material	HB (Brinell)	Vc (m/min)	Feed fz(mm/t)
				PH0910	VCGX 22...
N	10	Aluminium and Non Ferrous	30-130	350-1400	0,20-0,50

ϕDc	$\phi 32$
RPM (min^{-1})	9500

(Note 1) Cutting conditions $a_e/Dc=70\%$.
(Note 2) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:
- When using long shank;
- When using long tool overhang with arbor type;
- When application has poor clamping rigidity or when using a low rigidity machine.
(Note 3) Use internal coolant supply.

RAMPING AND HELICAL INTERPOLATION



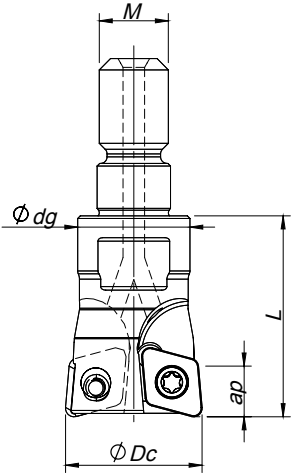
$\phi di = \phi DH - \phi Dc$

ϕDc	Ramping			Helical Interpolation		
	Max Ramp a°	Max a_p	Min Lr	ϕDH_{min}	ϕDH_{max}	Max Pitch/Rev.
35	6,8	15,0	25,4	53,0 -	- 62,0	7,0 11,0

Note: During helical interpolation do not exceed max Pitch.



Threaded Coupling
K_r=95° | γ_p=+7° ~ (+9°)

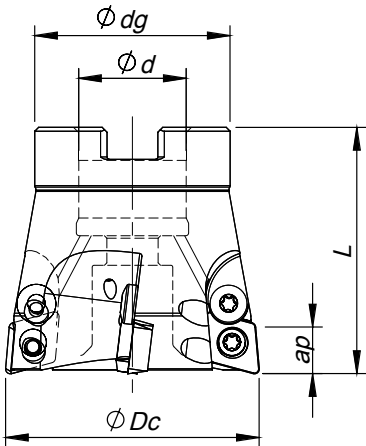


Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (mm)					Specifications	Insert Pastilha Inserto	Stock	
			ØDc	Ød/M	Ødg	L		Ap max (mm)			
LINEPRO 41095											
181012400	010R41095-02-09-M06020*	2	10	M6	9,8	20	0,010	0,8	XDHW 0401...		
181016300	012R41095-02-09-M06020*	2	12	M6	9,8	20	0,012	0,8	XDHW 0401...		
LINEPRO 40095											
181012100	016R40095-02-07-M08023	2	16	M8	13	23	0,022	1,0	XDHW 0602...		
181012200	020R40095-03-07-M10028	3	20	M10	18	28	0,050	1,0	XDHW 0602...		
181015600	025R40095-03-07-M12030	3	25	M12	21	30	0,081	1,0	XDHW 0602...		
181034000	025R40095-04-07-M12030	4	25	M12	21	30	0,078	1,0	XDHW 0602...		
LINEPRO 40595											
181015700	025R40595-02-07-M12035	2	25	M12	21	35	0,077	1,0	XDHW 10T3...		
181012300	035R40595-03-07-M16043	3	35	M16	29	43	0,200	1,0	XDHW 10T3...		
181016900	042R40595-04-07-M16043	4	42	M16	29	43	0,230	1,0	XDHW 10T3...		

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



Arbor Mouting
K_r=95° | γ_p=+7°

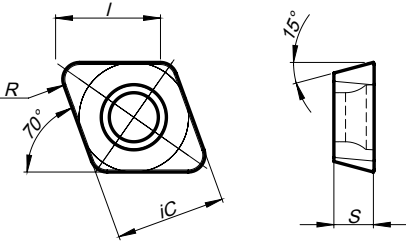


Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (mm)					Specifications		Insert Pastilha Inserto	Stock
			ØDc	Ød/M	Ødg	L		Arbor Type	Ap max (mm)		
LINEPRO 40595											
181027700	052C40595-05-07-022050	5	52	22	40	50	0,342	A	1,0	XDHW 10T3...	
181027800	066C40595-06-07-027050	6	66	27	48	50	0,565	A	1,0	XDHW 10T3...	
181027900	080C40595-07-07-027050	7	80	27	60	50	0,972	A	1,0	XDHW 10T3...	

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



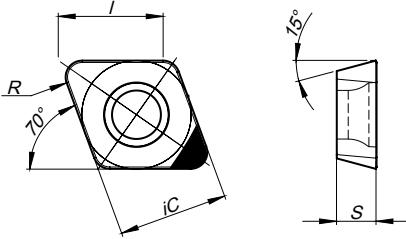
XDHW | Inserts | Pastilhas | Plaquitas



N									
	⁽²⁾ Grade code	CVD	PCD	Dimensions (mm)					
		P2	D6	iC	S	I	F	B	R
⁽¹⁾ Geometry code	ISO Reference	PHD103	PDP410						
1110905	XDHW 040105			4,00	1,59	4,00	-	-	0,50
1110573	XDHW 040110			4,00	1,59	4,00	-	-	1,00
1110532	XDHW 060210			6,50	2,38	6,20	-	-	1,00
1110565	XDHW 10T310			10,00	3,97	9,90	-	-	1,00

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

HARDMILL XDHW = PCD | Inserts | Pastilhas | Plaquitas

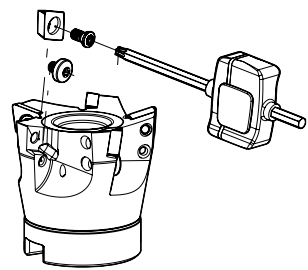
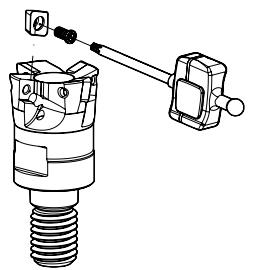


N									
	⁽²⁾ Grade code	CVD	PCD	Dimensions (mm)					
		P2	D6	iC	S	I	F	B	R
⁽¹⁾ Geometry code	ISO Reference	PHD103	PDP410						
1112316	XDHW 040110 FN			4,00	1,59	4,00	-	-	1,00
1112318	XDHW 060210 FN			6,50	2,38	6,20	-	-	1,00
1112320	XDHW 10T310 FN			10,00	3,97	9,90	-	-	1,00

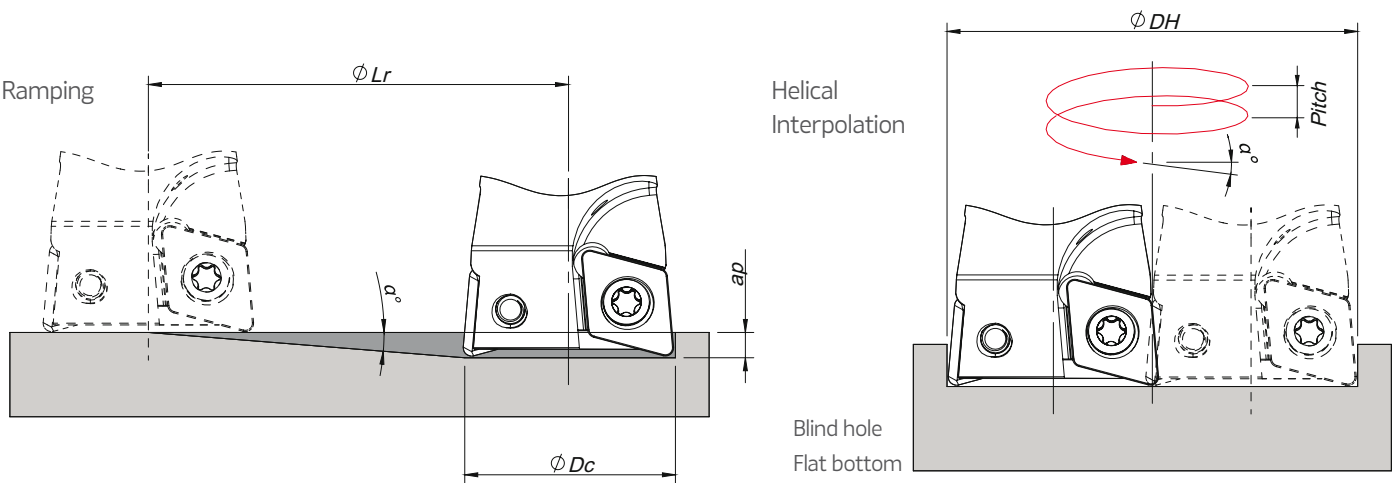
Stock item | Produto de stock | Itens de stock Available under request | Disponível sobre consulta | Disponible bajo consulta Insert order code = (1) Geometry Code + (2) Grade Code

SPARE PARTS | Complementos | Complementos

Cutter ØDc	Insert Screw	Key (Torx)	Torque Value	Screw Clamp
				
R41095 – 10 - 12	P0180401	XT06	0,3	-
R40095 – 16 - 25	P0250503	XT08	1,2	-
R40595 – 25 - 42	P0350800	XT15	3,0	-
C40595 – 52 - 80	P0350800	XT15	3,0	P0350750



RAMPING AND HELICAL INTERPOLATION



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

GRADES SELECTION GUIDE

ISO	PSM	Material	HB (Brinell)	Grades	
				← Wear Resistance Toughness →	
N	10	Aluminium and Non Ferrous	30-130	PHD103	  
					

RECOMMENDED CUTTING CONDITIONS

ISO	PSM	Material	HB (Brinell)	Vc (m/min)
				← Wear Resistance Toughness →
N	10	Aluminium and Non Ferrous	30-130	PHD103
				300-1000

Insert	Feed fz (mm/t)		ap Rec.
	Roughing	Finishing	
XD... 04	0,10-0,20	0,10-0,15	0,10-0,50
XD... 06	0,15-0,30	0,10-0,25	0,20-0,80
XD... 10	0,15-0,35	0,10-0,30	0,20-0,80

(Note 1): Cutting conditions should be adjusted according to the machine and work rigidity.

(Note 2): If chattering occurs, reduce ap and Vc by 30% and keep the same fz per thooth.

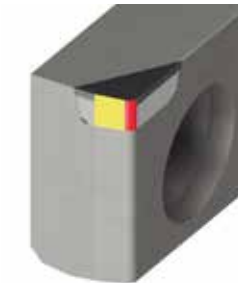
Note: During helical interpolation do not exceed max Pitch.

Insert	ØDc	Ramping			Helical Interpolation		
		Max Ramp a°	Max ap	Min Lr	ØDHmin	ØDHmax	Max Pitch/Rev.
XDHW 04...	10	7,3	0,8	6,2	18,0 -	- 20,0	3,2 4,0
	12	5,3	0,8	8,6	22,0 -	- 24,0	2,9 3,5
XDHW 06...	16	8	1,0	7,1	30,0 -	- 32,0	6,2 7,1
	20	5,7	1,0	10,0	38,0 -	- 40,0	5,6 6,3
	25	4	1,0	14,3	48,0 -	- 50,0	5,1 5,5
XDHW 10...	25	8,7	1,0	6,5	48,0 -	- 50,0	11,1 12,0
	35	5,2	1,0	11,0	68,0 -	- 70,0	9,4 10,0
	42	4	1,0	14,3	82,0 -	- 84,0	8,8 9,2
	52	3	1,0	19,1	102,0 -	- 104,0	8,2 8,6
	66	2,3	1,0	24,9	130,0 -	- 132,0	8,1 8,3
	80	1,8	1,0	31,8	158,0 -	- 160,0	7,7 7,9

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

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

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



XNHW 120504 PZFR-0150045



XNHW 120504 PZFR-000080



XNHW 120508 PZFR-015045



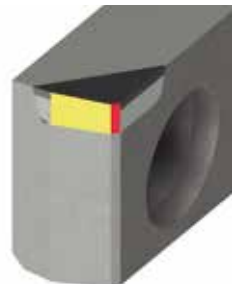
XNHW 120508 PZTR-015045



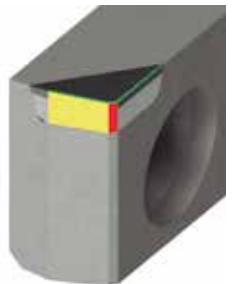
XNHW 120508 PZTR-000080



XNHW 1205 PZFR-020120



XNHW 1205 PZFR-030045



XNHW 1205 PZTR-030045

 Cutting edge Type (radius, chamfer)

 Wipper cutting edge

 Edge Preparation (F, T)



XNHW 1205 PZFR-020120



NEW

XNHW 120508 PZTR-000080



NEW

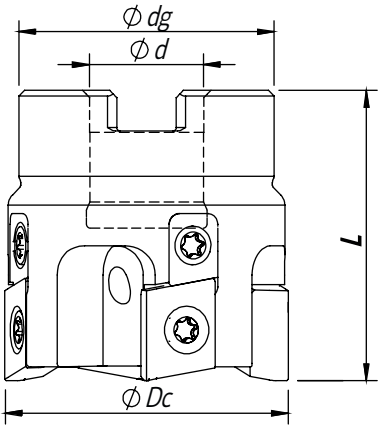
XNHW 120508 PZTR-015045



NEW



Arbor Mounting
K_r=90° | γ_p=7

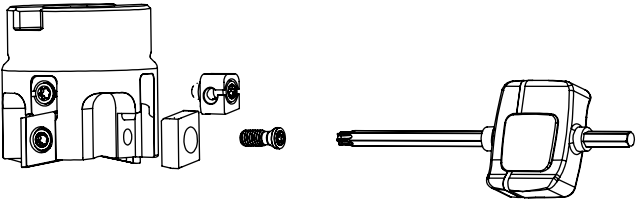


Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (mm)				 Kg	Specifications		Insert Pastilha Inserto	Stock
			ØDc	Ød	Ødg	L		Arbor Type	N max (mm)		
181129700	040A72090-04-016040	4	40	16	36	40	0,32	A	32 000	XNHW 1205...	
181129800	050A72090-04-022040	4	50	22	46	40	0,38	A	32 000	XNHW 1205...	
181129900	050A72090-05-022040	5	50	22	46	40	0,37	A	32 000	XNHW 1205...	
181130000	063A72090-04-022040	4	63	22	49	40	0,65	A	29 000	XNHW 1205...	
181130100	063A72090-07-022040	7	63	22	49	40	0,62	A	29 000	XNHW 1205...	
181130200	080A72090-05-027050	5	80	27	60	50	1,25	A	26 000	XNHW 1205...	
181130300	080A72090-09-027050	9	80	27	60	50	1,17	A	26 000	XNHW 1205...	
181130400	100A72090-06-032050	6	100	32	70	50	1,93	A	24 000	XNHW 1205...	
181130500	100A72090-12-032050	12	100	32	70	50	1,80	A	24 000	XNHW 1205...	
181130600	125A72090-08-040063	8	125	40	72	63	2,88	A	22 000	XNHW 1205...	
181130700	125A72090-14-040063	14	125	40	72	63	2,60	A	22 000	XNHW 1205...	
181135500	160A72090-10-040063	10	160	40	72	63	3,30	A	18 000	XNHW 1205...	
181135600	160A72090-16-040063	16	160	40	118	63	5,45	A	18 000	XNHW 1205...	

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

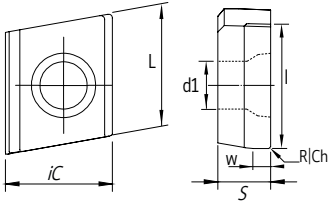
SPARE PARTS | Complementos | Complementos

Cutter ØDc	Insert Screw	Key (Torx)	Torque Value
HardMill 72090	P0401100 SETDEV AS 04 00	XT15	3,00



XNHW 1205... | Inserts | Pastilhas | Plaquetas

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



N									
⁽¹⁾ Geometry code	⁽²⁾ Grade code	PCD		Dimensions (mm)					
		I3	D6	L	S	I	d1	R	W
	ISO Reference	PDP403	PDP410						
1112564	XNHW 120504 PZFR-015045			12,25	5,40	4,50	4,80	0,40	1,50
1112565	XNHW 120504 PZFR-000080			12,25	5,40	8,00	4,80	0,40	-
1112566	XNHW 120508 PZFR-015045			12,25	5,40	4,50	4,80	0,80	1,50
1112551	XNHW 120508 PZTR-015045			12,25	5,40	4,50	4,80	0,80	1,50
1112552	XNHW 120508 PZTR-000080			12,25	5,40	8,00	4,80	0,80	-
1112553	XNHW 1205 PZFR-020120			12,25	5,40	12,00	4,80	-	2,00
1112567	XNHW 1205 PZFR-030045			12,25	5,40	4,50	4,80	-	3,00
1112568	XNHW 1205 PZTR-030045			12,25	5,40	4,50	4,80	-	3,00

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

ISO	Material		HB (Brinell)	Vc (m/min)	Feed fz (mm/t)
	Work piece material	Type of treatment / alloy		PDP403	XNHW 12...
N	Aluminium wrought alloys		80	300 - 4000	0,05 - 0,40
			90	300 - 1500	
	Aluminium cast alloys	< 12% Si	130	300 - 5000	
		< 12% Si	90	300 - 3000	
		> 12% Si	100	300 - 1000	
		brass, red bronze	100	100 - 700	
		bronze	-	100 - 1500	
		lead-free copper and electrolytic copper	-	300 - 3000	
	Non-metallic materials	thermosetting plastics	-	80 - 300	
		fibre-reinforced plastics	200-320	80 - 300	
		hard rubber		80 - 300	

SOLID CARBIDE END MILLS

Fresas de metal duro integral | Fresas de carburo monobloque



SELECTION GUIDE FOR SOLID CARBIDE END MILLS

Guia de seleção para fresas de metal duro integral | Guía para fresas en carburo monobloque

Line	Reference	Image	Diameter in mm Ø		Flutes number	Helix angle	Square	Corner Chamfer	Ball Nose	Work Materials		
			Minimum	Maximum								
ALUMINIUM	HC38AS		Ø 3	Ø 12	3	38°		✓		✓	✓	✓

HC38AS Corner Chamfer ALU, Helix 38°, hort Length

Si ≤ 10

Side milling

Slotting



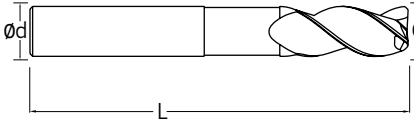
N

Short

3

38°

45°
Corner chamfer



Order code Código	Reference Referência Referencia		Dimensions Dimensões Dimensiones (mm)				Stock
			ØDc	Ød	ap	L	
211220400	HC38AS 3 030 07	3	3	6	7	57	
211220500	HC38AS 3 040 08	3	4	6	8	57	
211220600	HC38AS 3 050 10	3	5	6	10	57	
211220700	HC38AS 3 060 10	3	6	6	10	57	
211220800	HC38AS 3 080 16	3	8	8	16	63	
211220900	HC38AS 3 100 19	3	10	10	19	72	
211221000	HC38AS 3 120 22	3	12	12	22	83	

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

Tolerances (Metric)			
Diameter	ØDc	Ød	L
3-6	-0,000/-0,007	-0,000/-0,007	±0,8
6-10	-0,000/-0,007	-0,000/-0,007	±0,8
10-18	-0,000/-0,007	-0,000/-0,007	±0,8

RECOMENDED CUTTING SPEEDS (m/min)

Velocidades de corte recomendadas (m/mim) | Velocidades de corte recomendables (m/min)

Material Group	Vc (m/min)	
	min	max
Aluminium Si < 2% - Soft	400	600
Aluminium Si 2 - 10% - hard	200	250
Copper/Copper Alloys - Soft	400	600
Brass - Soft	200	250

In slotting reduce Vc by 50%.
Slotting is not recommended on hardened material over than 62 HRC.
On hardened materials it is recommended to reduce feed guidelines with 60%.

MILLING GRADES

ISO	Uncoated grades	CBN PCD	Coated Grades		
			PVD	CVD	
N ALUMINIUM & NON FERROUS	05	PH0910 NEW PDP403 PDP410		PHD103	- Wear resistance - Resistência ao desgaste - Resistencia al desgaste - Toughness - Tenacidade - Tenacidad
	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

POLYCRYSTALLINE DIAMOND

PDP403
(N01-N10)



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

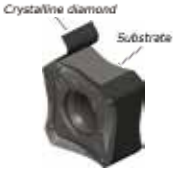
PDP410
(N01-N20)



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

CRYSTALLINE DIAMOND

PHD103
(N05-N15)



Carbide with highly abrasion-resistant diamond coating for graphite machining

COMPARATIVE GRADES CHART | Tabela comparativa de graus | Tabla de comparación de calidad

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

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

UNCOATED GRADES | GRAUS NÃO REVESTIDOS | GRADOS SÍN RECUBRIMIENTO

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



TURNING



TURNING

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

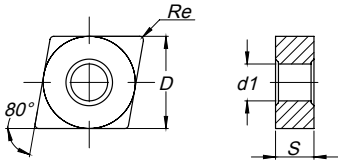
N 7°	Fine finishing	Finishing	Medium	Roughing	Heavy roughing
		LN 			
	Uncoated Grades				
		PH0910 (N01-N20) 			
Continuous cut ← → Interrupted cut					

CNMG-MS  Medium to Finishing Page 68 Rhombic 80°	DNMG-MS  Medium to Finishing Page 68 Rhombic 55°	TNMG-MS  Medium to Finishing Page 69 Triangular 90°
VNMG-MS  Medium to Finishing Page 69 Rhombic 35°	WNMG-MS  Medium to Finishing Page 70 Trigon 80°	

CCGT-LN  Finishing to fine finishing Page 71 Rhombic 80°	DCGT-LN  Finishing to fine finishing Page 71 Rhombic 55°	RCGT-LN  Finishing to fine finishing Page 72 Round R°
SCGT-LN  Finishing to fine finishing Page 72 Square 90°	TCGT-LN  Finishing to fine finishing Page 73 Triangular 60°	VCGT-LN  Finishing to fine finishing Page 73 Rhombic 35°

CN = RHOMBIC 80° NEGATIVE

RÔMBICA 80° NEGATIVA | RÓMBICA 80° NEGATIVA

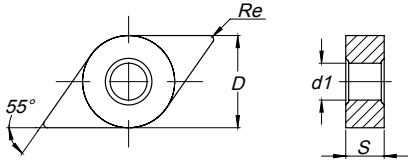


N														
		(2) Grade code		UNC	Dimensions (mm) Dimensões (mm) Dimensiones (mm)				Cutting Conditions Condições de Corte Condiciones de Corte					
				10										
Inserts Pastilhas Plaquetas	(1) Geometry code	ISO Reference	ANSI Reference	PH0910	D	S	Re	d1	ap (mm)	Min	Max	fn (mm/rev)	Min	Max
 Medium to Finishing	CNMG-MS 1121479	CNMG 120404-MS	CNMG 431-MS	⊗	12,700	4,76	0,40	5,16	1,50	0,20	3,60	0,15	0,10	0,20
	1121481	CNMG 120408-MS	CNMG 432-MS	⊗	12,700	4,76	0,80	5,16	2,00	0,30	3,60	0,25	0,10	0,40
	1121483	CNMG 120412-MS	CNMG 433-MS	⊗	12,700	4,76	1,20	5,16	2,40	0,40	3,60	0,30	0,15	0,60
	1121486	CNMG 120416-MS	CNMG 434-MS	○	12,700	4,76	1,60	5,16	2,40	0,40	3,60	0,40	0,15	0,80

⊗ Stock Itens | Itens de stock ○ Available under request | Disponível sob consulta | Disponible bajo consulta Insert Order Code: ⁽¹⁾Geometry code + ⁽²⁾Grade code

DN = RHOMBIC 55° NEGATIVE

RÔMBICA 55° NEGATIVA | RÓMBICA 55° NEGATIVA

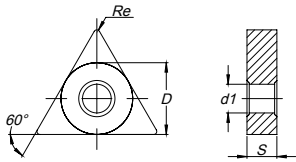


N														
		(2) Grade code		UNC	Dimensions (mm) Dimensões (mm) Dimensiones (mm)				Cutting Conditions Condições de Corte Condiciones de Corte					
				10										
Inserts Pastilhas Plaquetas	(1) Geometry code	ISO Reference	ANSI Reference	PH0910	D	S	Re	d1	ap (mm)	Min	Max	fn (mm/rev)	Min	Max
 Medium to Finishing	DNMG-MS 1121503	DNMG 150404-MS	DNMG 431-MS	⊗	12,700	4,76	0,40	5,16	1,50	0,20	3,60	0,15	0,10	0,20
	1121505	DNMG 150408-MS	DNMG 432-MS	⊗	12,700	4,76	0,80	5,16	2,00	0,30	3,80	0,25	0,10	0,40
	1121509	DNMG 150412-MS	DNMG 433-MS	⊗	12,700	4,76	1,20	5,16	2,50	0,40	4,00	0,30	0,15	0,60
	1121513	DNMG 150416-MS	DNMG 434-MS	○	12,700	4,76	1,60	5,16	2,80	0,40	4,50	0,40	0,15	0,80
	1121927	DNMG 150604-MS	DNMG 441-MS	⊗	12,700	6,35	0,40	5,16	1,50	0,20	3,60	0,15	0,10	0,20
	1121928	DNMG 150608-MS	DNMG 442-MS	⊗	12,700	6,35	0,80	5,16	2,00	0,30	4,00	0,25	0,10	0,40
	1122030	DNMG 150612-MS	DNMG 443-MS	○	12,700	6,35	1,20	5,16	2,80	0,40	4,50	0,30	0,15	0,60

⊗ Stock Itens | Itens de stock ○ Available under request | Disponível sob consulta | Disponible bajo consulta Insert Order Code: ⁽¹⁾Geometry code + ⁽²⁾Grade code

TN = TRIANGULAR 60° NEGATIVE

TRIANGULAR 60° NEGATIVA | TRIANGULAR 60° NEGATIVA

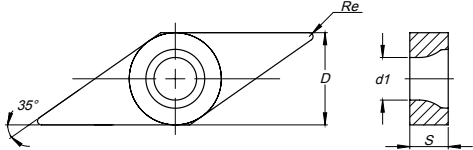


N														
		(2) Grade code		UNC	Dimensions (mm) Dimensões (mm) Dimensiones (mm)				Cutting Conditions Condições de Corte Condiciones de Corte					
				10										
Inserts Pastilhas Plaquetas	(1) Geometry code	ISO Reference	ANSI Reference	PH0910	D	S	Re	d1	ap (mm)	Min	Max	fn (mm/rev)	Min	Max
 Medium to Finishing	TNMG-MS 1121557	TNMG 160404-MS	TNMG 331-MS	⊗	9,525	4,76	0,40	3,81	2,00	0,30	3,80	0,15	0,10	0,20
	1121559	TNMG 160408-MS	TNMG 332-MS	⊗	9,525	4,76	0,80	3,81	2,00	0,30	3,80	0,25	0,10	0,40
	1121561	TNMG 160412-MS	TNMG 333-MS	⊗	9,525	4,76	1,20	3,81	2,00	0,40	3,80	0,30	0,15	0,60

⊗ Stock Itens | 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

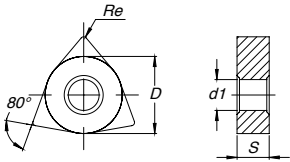


N														
		(2) Grade code		UNC	Dimensions (mm) Dimensões (mm) Dimensiones (mm)				Cutting Conditions Condições de Corte Condiciones de Corte					
				10										
Inserts Pastilhas Plaquetas	(1) Geometry code	ISO Reference	ANSI Reference	PH0910	D	S	Re	d1	ap (mm)	Min	Max	fn (mm/rev)	Min	Max
 Medium to Finishing	VNMG-MS 1121579	VNMG 160404-MS	VNMG 331-MS	⊗	9,525	4,76	0,40	3,81	2,00	0,20	4,00	0,15	0,10	0,20
	1121580	VNMG 160408-MS	VNMG 332-MS	⊗	9,525	4,76	0,80	3,81	2,50	0,20	4,00	0,25	0,15	0,40

⊗ Stock Itens | 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



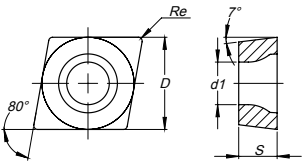
N														
				UNC	Dimensions (mm) Dimensões (mm) Dimensiones (mm)				Cutting Conditions Condições de Corte Condiciones de Corte					
				10										
Inserts Pastilhas Plaquitas	(1) Geometry code	ISO Reference	ANSI Reference	PH0910	D	S	Re	d1	ap (mm)	Min	Max	fn (mm/rev)	Min	Max
 Medium to Finishing	1121588	WNMG 080408-MS	WNMG 432-MS	📦	12,700	4,76	0,80	5,16	2,50	0,70	4,00	0,25	0,20	0,40
	1121590	WNMG 080412-MS	WNMG 433-MS	📦	12,700	4,76	1,20	5,16	2,50	1,00	4,00	0,30	0,25	0,55

📦 Stock Itens | 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°



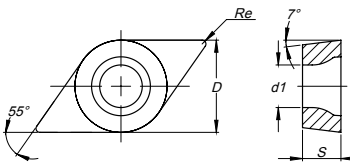
N														
				UNC	Dimensions (mm) Dimensões (mm) Dimensiones (mm)				Cutting Conditions Condições de Corte Condiciones de Corte					
				10										
Inserts Pastilhas Plaquitas	(1) Geometry code	ISO Reference	ANSI Reference	PH0910	D	S	Re	d1	ap (mm)	Min	Max	fn (mm/rev)	Min	Max
	1121884	CCGT 060202-LN	CCGT 21.50.5-LN	📦	6,350	2,38	0,20	2,80	1,00	0,05	3,00	0,07	0,05	0,12
	1121885	CCGT 060204-LN	CCGT 21.51-LN	📦	6,350	2,38	0,40	2,80	1,55	0,10	3,00	0,15	0,10	0,20
	1121886	CCGT 09T302-LN	CCGT 32.50.5-LN	📦	9,525	3,97	0,20	4,40	1,53	0,05	3,00	0,07	0,05	0,12
	1121887	CCGT 09T304-LN	CCGT 32.51-LN	📦	9,525	3,97	0,40	4,40	2,55	0,10	5,00	0,16	0,10	0,22
	1121888	CCGT 09T308-LN	CCGT 32.52-LN	📦	9,525	3,97	0,80	4,40	2,55	0,10	5,00	0,22	0,15	0,45
	1123679	CCGT 120402-LN	CCGT 430.5-LN	📦	12,700	4,76	0,20	5,50	2,03	0,05	4,00	0,07	0,05	0,12
	1123681	CCGT 120404-LN	CCGT 431-LN	📦	12,700	4,76	0,40	5,50	2,55	0,10	5,00	0,17	0,10	0,26
	1123682	CCGT 120408-LN	CCGT 432-LN	📦	12,700	4,76	0,80	5,50	2,80	0,10	5,50	0,25	0,15	0,50

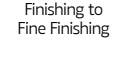
📦 Stock Itens | Itens de stock ○ Available under request | Disponível sob consulta | Disponible bajo consulta Insert Order Code: ⁽¹⁾Geometry code + ⁽²⁾Grade code

DC = RHOMBIC 55° POSITIVE

RÔMBICA 55° POSITIVA | RÓMBICA 55° POSITIVA

RELIEF ANGLE 7°



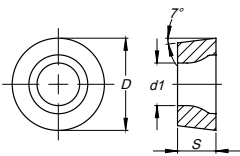
N														
				UNC	Dimensions (mm) Dimensões (mm) Dimensiones (mm)				Cutting Conditions Condições de Corte Condiciones de Corte					
				10										
Inserts Pastilhas Plaquitas	(1) Geometry code	ISO Reference	ANSI Reference	PH0910	D	S	Re	d1	ap (mm)	Min	Max	fn (mm/rev)	Min	Max
	1121900	DCGT 070202-LN	DCGT 21.50.5-LN	📦	6,350	2,38	0,20	2,80	1,00	0,05	3,00	0,07	0,05	0,12
	1121901	DCGT 070204-LN	DCGT 21.51-LN	📦	6,350	2,38	0,40	2,80	2,05	0,10	4,00	0,15	0,10	0,20
	1111540	DCGT 11T302-LN	DCGT 32.50.5-LN	📦	9,525	3,97	0,20	4,40	2,03	0,05	4,00	0,07	0,05	0,12
	1111534	DCGT 11T304-LN	DCGT 32.51-LN	📦	9,525	3,97	0,40	4,40	2,55	0,10	5,00	0,16	0,10	0,22
	1121904	DCGT 11T308-LN	DCGT 32.52-LN	📦	9,525	3,97	0,80	4,40	2,55	0,10	5,00	0,22	0,15	0,50
	1124004	DCGT 11T312-LN	DCGT 32.53-LN	📦	9,525	3,97	1,20	4,40	2,70	0,15	5,00	0,35	0,15	0,70

📦 Stock Itens | 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°



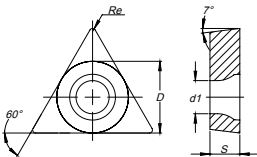
N														
		(2) Grade code		UNC	Dimensions (mm) Dimensões (mm) Dimensiones (mm)				Cutting Conditions Condições de Corte Condiciones de Corte					
				10										
Inserts Pastilhas Plaquitas	(1) Geometry code	ISO Reference	ANSI Reference	PH0910	D	S	Re	d1	ap (mm)	Min	Max	fn (mm/rev)	Min	Max
 Finishing to Fine Finishing	RCGT-LN 1124005	RCGT 0602M0-LN	RCGT 0602M0-LN		6,00	2,38	-	2,80	1,25	0,50	2,00	0,13	0,05	0,20
	1124006	RCGT 0803M0-LN	RCGT 0803M0-LN		8,00	3,18	-	3,40	1,50	0,50	2,50	0,15	0,05	0,25
	1124007	RCGT 1003M0-LN	RCGT 1003M0-LN		10,00	3,18	-	4,40	2,00	1,00	3,00	0,20	0,10	0,30
	1123684	RCGT 1204M0-LN	RCGT 1204M0-LN		12,00	4,76	-	4,40	2,25	1,00	3,50	0,23	0,10	0,35

Stock Itens | Itens de stock Available under request | Disponível sob consulta | Disponible bajo consulta Insert Order Code: ⁽¹⁾Geometry code + ⁽²⁾Grade code

TC = TRIANGULAR 60° POSITIVE

TRIANGULAR 60° POSITIVA | TRIANGULAR 60° POSITIVA

RELIEF ANGLE 7°



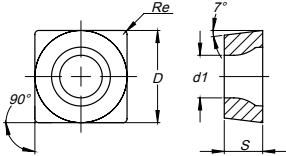
N														
		(2) Grade code		UNC	Dimensions (mm) Dimensões (mm) Dimensiones (mm)				Cutting Conditions Condições de Corte Condiciones de Corte					
				10										
Inserts Pastilhas Plaquitas	(1) Geometry code	ISO Reference	ANSI Reference	PH0910	D	S	Re	d1	ap (mm)	Min	Max	fn (mm/rev)	Min	Max
 Finishing to Fine Finishing	TCGT-LN 1124011	TCGT 090202-LN	TCGT 1.81.50.5-LN		5,560	2,38	0,20	2,50	1,00	0,05	2,50	0,10	0,07	0,15
	1123683	TCGT 090204-LN	TCGT 1.81.51-LN		5,560	2,38	0,40	2,50	1,00	0,05	2,50	0,15	0,10	0,20
	1121895	TCGT 110202-LN	TCGT 21.50.5-LN		6,350	2,38	0,20	2,80	2,03	0,05	4,00	0,12	0,07	0,15
	1121896	TCGT 110204-LN	TCGT 21.51-LN		6,350	2,38	0,40	2,80	2,05	0,10	4,00	0,15	0,10	0,20
	1124012	TCGT 110208-LN	TCGT 21.52-LN		6,350	2,38	0,80	2,80	2,05	0,10	4,00	0,25	0,15	0,50
	1121897	TCGT 16T302-LN	TCGT 32.50.5-LN		9,525	3,97	0,20	4,40	2,53	0,05	5,00	0,10	0,07	0,15
	1121898	TCGT 16T304-LN	TCGT 32.51-LN		9,525	3,97	0,40	4,40	2,80	0,10	5,50	0,15	0,10	0,20
	1121899	TCGT 16T308-LN	TCGT 32.52-LN		9,525	3,97	0,80	4,40	2,80	0,10	5,50	0,25	0,15	0,50
	1124013	TCGT 16T312-LN	TCGT 32.53-LN		9,525	3,97	1,20	4,40	3,00	0,15	5,50	0,45	0,15	0,70
	1124014	TCGT 16T316-LN	TCGT 32.54-LN		9,525	3,97	1,60	4,40	3,00	0,15	5,50	0,65	0,20	0,90

Stock Itens | 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

QUADRA 90° POSITIVA | ESCUADRA 90° POSITIVA

RELIEF ANGLE 7°



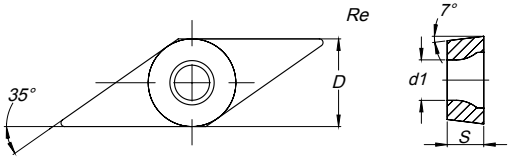
N														
		(2) Grade code		UNC	Dimensions (mm) Dimensões (mm) Dimensiones (mm)				Cutting Conditions Condições de Corte Condiciones de Corte					
				10										
Inserts Pastilhas Plaquitas	(1) Geometry code	ISO Reference	ANSI Reference	PH0910	D	S	Re	d1	ap (mm)	Min	Max	fn (mm/rev)	Min	Max
 Finishing to fine Finishing	SCGT-LN 1124008	SCGT 09T304-LN	SCGT 32.51-LN		9,525	3,97	0,4	4,40	2,05	0,10	4,00	0,16	0,10	0,26
	1124009	SCGT 09T308-LN	SCGT 32.52-LN		9,525	3,97	0,8	4,40	2,55	0,10	5,00	0,22	0,15	0,40
	1124010	SCGT 120404-LN	SCGT 431-LN		12,700	4,76	0,4	5,50	2,55	0,10	5,00	0,20	0,10	0,26
	1123685	SCGT 120408-LN	SCGT 432-LN		12,700	4,76	0,8	5,50	2,55	0,10	5,00	0,30	0,15	0,50

Stock Itens | Itens de stock Available under request | Disponível sob consulta | Disponible bajo consulta Insert Order Code: ⁽¹⁾Geometry code + ⁽²⁾Grade code

VC = RHOMBIC 35° POSITIVE

RÔMBICA 35° POSITIVA | RÓMBICA 35° POSITIVA

RELIEF ANGLE 7°



N														
		(2) Grade code		UNC	Dimensions (mm) Dimensões (mm) Dimensiones (mm)				Cutting Conditions Condições de Corte Condiciones de Corte					
				10										
Inserts Pastilhas Plaquitas	(1) Geometry code	ISO Reference	ANSI Reference	PH0910	D	S	Re	d1	ap (mm)	Min	Max	fn (mm/rev)	Min	Max
 Finishing to Fine Finishing	VCGT-LN 1123689	VCGT 110301-LN	VCGT 220.2-LN		6,350	3,18	0,10	2,80	1,53	0,05	3,00	0,04	0,02	0,06
	1121889	VCGT 110302-LN	VCGT 220.5-LN		6,350	3,18	0,20	2,80	1,53	0,05	3,00	0,07	0,05	0,12
	1121890	VCGT 110304-LN	VCGT 221-LN		6,350	3,18	0,40	2,80	1,53	0,05	3,00	0,15	0,10	0,25
	1121891	VCGT 110308-LN	VCGT 222-LN		6,350	3,18	0,80	2,80	1,53	0,05	3,00	0,22	0,15	0,45
	1124015	VCGT 130302-LN	VCGT 2.520.5-LN		7,940	3,18	0,20	3,40	2,00	0,10	4,00	0,07	0,05	0,12
	1124016	VCGT 130304-LN	VCGT 2.521-LN		7,940	3,18	0,40	3,40	2,00	0,10	4,00	0,15	0,10	0,25
	1111878	VCGT 160402-LN	VCGT 330.5-LN		9,525	4,76	0,20	4,40	2,30	0,10	5,00	0,07	0,05	0,12
	1111533	VCGT 160404-LN	VCGT 331-LN		9,525	4,76	0,40	4,40	2,55	0,10	5,00	0,15	0,10	0,25
	1121893	VCGT 160408-LN	VCGT 332-LN		9,525	4,76	0,80	4,40	2,55	0,10	5,00	0,22	0,15	0,45
	1121894	VCGT 160412-LN	VCGT 333-LN		9,525	4,76	1,20	4,40	2,55	0,10	5,00	0,40	0,15	0,60
	1121929	VCGT 220530-LN	VCGT 43.57.5-LN		12,700	5,56	3,00	5,50	3,55	0,10	7,00	0,80	0,15	1,60

Stock Itens | 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 ALUMINIUM & NON FERROUS	05	PH0910		- Wear resistance - Resistência ao desgaste - Resistencia al desgaste
	10			
	15			
	20			
	25			
	30			
	35			
				- Toughness - Tenacidade - Tenacidad

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

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 Aluminium alloys.

ISO	Material	HB (brinell)	Uncoated	
			PH0910	
			0.1	0.3
N	Alluminium alloys	60-130	375-2400	40-240
	Cooper and cooper alloys	90-110	375-630	35-65

UNCOATED GRADES | GRAUS NÃO REVESTIDOS | CALIDADES SIN RECUBRIMIENTO

ISO		Palbit	Sandvik	Kennametal	Iscar	Seco	Mitsubishi	Sumitomo	Tungaloy	Walter	Kyocera	Taegutec	Korloy	Ceratizit
Material														
N ALUMINIUM	N01	PH0910	H10		IC20				KS05F	WK1	KW10	K10		
	N10		H10 H13A	KU10 K313 K68	IC20 IC08 IC28	890 HX KX	HTi10		TH10	WK1	KW10 KWK15	K10	H01	
	N20		H10 H13A	KU10 K313 K68	IC08 IC28	HX KX 883		H1	KS15F	WK1	KW10 KWK15		H01	
	N30				IC28									

PH7910 = Best available choice

NEGATIVES | NEGATIVAS | NEGATIVAS

Application		Palbit	Sandvik	Kennametal	Iscar	Seco	Tungaloy	Mitsubishi	Sumitomo	Walter	Kyocera	Taegutec	Korloy	Ceratizit
Mat.	Operations													
N ALUMINIUM	Medium	MS	MF, QM	MS , MP MG	PP	-	P		AX		AH , A3	ML	HA	F32

MS = Best available choice

POSITIVES | POSITIVAS | POSITIVAS - CLEARANCE ANGLE 7°

Application		Palbit	Sandvik	Kennametal	Iscar	Seco	Tungaloy	Mitsubishi	Sumitomo	Walter	Kyocera	Taegutec	Korloy	Ceratizit
Mat.	Operations													
N ALUMINIUM	Medium	LN	AL	HP, GT	AF, AS	AL	AL, PP	AZ, R/L-F	AG, AX, AY	PF2, PM2	AH, A3	FL	AK, AR	23P, 25P, 27



GROOVING &
PARTING OFF



GROOVING &
PARTING OFF

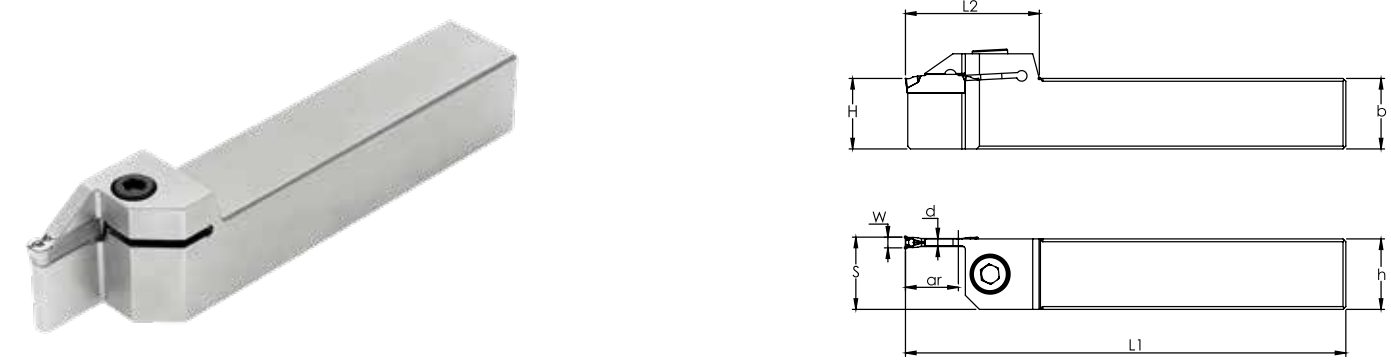
GPRC



Order code Código	Reference Referência Referencia	Dimensions Dimensões Dimensiones (mm)									Seat Size	Insert	Screw	Wrench	Stock
		ar	L1	h	b	H	L2	S	d	W					
213020400	GPRC-150 015 25.25.E.1	15	150	25	25	25	34	26,00	4,0	6	E	GP06...	D0602200	SS50	⊗
213020500	GPRC-150 023 25.25.E.1	23	150	25	25	25	42	26,00	4,0	6		GP06...	D0602200	SS50	⊗
213020600	GPRC-150 015 25.25.F.1	15	150	25	25	25	34	25,75	6,5	8	F	GP08...	D0602200	SS50	○
213020700	GPRC-150 023 25.25.F.1	23	150	25	25	25	42	25,75	6,5	8		GP08...	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

GPLC



Order code Código	Reference Referência Referencia	Dimensions Dimensões Dimensiones (mm)									Seat Size	Insert	Screw	Wrench	Stock
		ar	L1	h	b	H	L2	S	d	W					
213022800	GPLC-150 015 25.25.E.1	15	150	25	25	25	34	26	4	6	E	GP06...	D0602200	SS50	⊗
213022900	GPLC-150 023 25.25.E.1	23	150	25	25	25	42	26	4	6		GP06...	D0602200	SS50	⊗
213023000	GPLC-150 015 25.25.F.1	15	150	25	25	25	34	25,75	6,5	8	F	GP08...	D0602200	SS50	○
213023100	GPLC-150 023 25.25.F.1	23	150	25	25	25	42	25,75	6,5	8		GP08...	D0602200	SS50	○

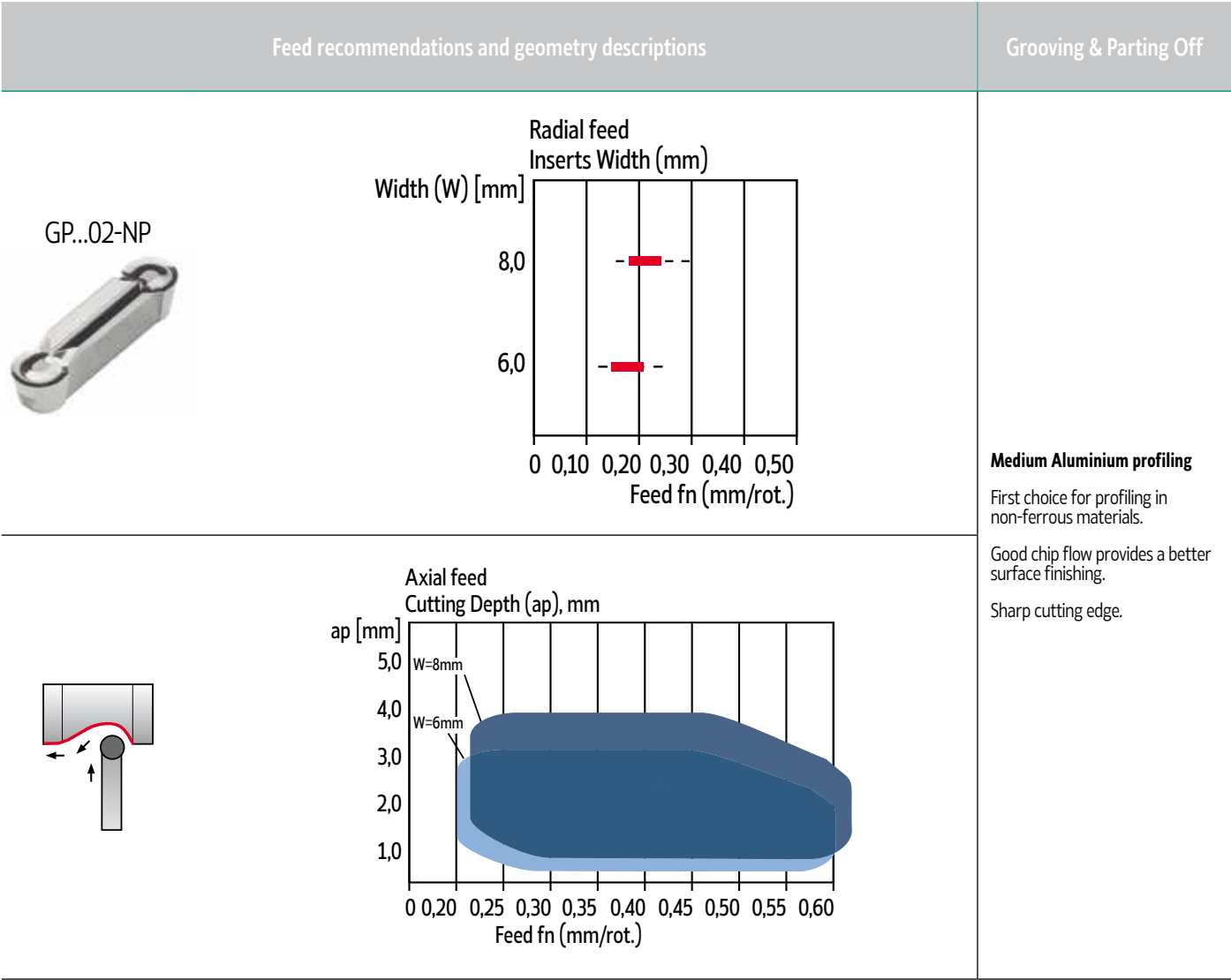
⊗ Stock item | Produto de stock | Itens de stock ○ Available under request | Disponível sobre consulta | Disponible bajo consulta
Note: For inserts with 2 cutting edges, the ar is defined by the insert

GP..02-NP | Non-Ferrous Profiling



N																
	⁽²⁾ Grade code	UNC	Dimensions(mm)							Cutting Conditions						
		10														
⁽¹⁾ Geometry code	ISO/ANSI Reference	PH0910	W	Re	L	x°	a	y°	Seat Size *	Ap (mm)	Min	Max	fn (mm/r)	Min	Max	
1130405	GP0600E300-N02-NP	⊗	6,0	3,0	25,4	-	18,5	7,0	E	1,30	0,50	2,50	0,20	0,15	0,25	
1130439	GP0800E400-N02-NP	○	8,0	4,0	25,4	-	18,5	7,0	E	1,50	0,60	2,60	0,20	0,16	0,30	

⊗ 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



GROOVING & PARTING OFF GRADES

ISO	Uncoated grades	Coated Grades		
		CVD	PVD	
N	05			- Wear resistance - Resistência ao desgaste - Resistencia al desgaste
	10			
	15			
	20			
	25			
	30			
	35			
ALUMINIUM & NON FERROUS				- 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 Aluminium alloys.

CUTTING SPEED (m/min) || Velocidade de corte (m/min) | Velocidad de corte (m/min)

ISO	Material	HB (brinell)	Uncoated
			PH0910
			0.04 -0.35
N	Alluminium alloys	60-130	190-1800
	Cooper and cooper alloys	90-110	40-420



MILLING



MILLING

TURNING



TURNING

GROOVING & PARTING OFF



GROOVING &
PARTING OFF



ALUMINIUM
& non ferrous materials

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