

PROFILE MILLING

1 **W-PRO 62090**
> Suitable for machining **P M K S H**
> See page A - 226

2 **PLUS 49095 | 45095**
> Suitable for machining **P K H**
> See page A - 232

3 **TOROMILL 33590 | 33690 | 33790 | 33890 | 33990**
> Suitable for machining **P M S**
> See page A - 238

4 **TURBOMILL 34190 | 34290**
> Suitable for machining **P M S**
> See page A - 242

5 **TOROMILL X2 35190**
> Suitable for machining **P M K S**
> See page A - 252

6 **TOROMILL 24590 | 25090 | 25190 | 25290 | 25390**
> Suitable for machining **P K H**
> See page A - 260

7 **LINEPRO 40095 | 41095 | 40595**
> Suitable for machining **P K N H**
> See page A - 268

62090

W-PRO



W-PRO is a high precision finishing tool featuring a variety of shank options and two types of inserts, allowing each shank to accommodate either insert type. Its unique pocket design ensures secure insert clamping, precise edge positioning, and runout accuracy of 0.02mm or less.

A W-PRO é uma ferramenta de acabamento de alta precisão que apresenta uma variedade de opções de haste e dois tipos de pastilhas, permitindo que cada haste acomode qualquer tipo de pastilha. O seu design de alojamento garante fixação segura da pastilha, posicionamento preciso da aresta e precisão de concentricidade de 0,02 mm ou menos.

A W-PRO es una herramienta de acabado de alta precisión que presenta una variedad de opciones de vástago y dos tipos de plaquitas, permitiendo que cada vástago pueda alojar cualquier tipo de plaquita. Su diseño de alojamiento garantiza una sujeción segura de la plaquita, un posicionamiento preciso del filo y una precisión de concentricidad de 0,02 mm o menos.

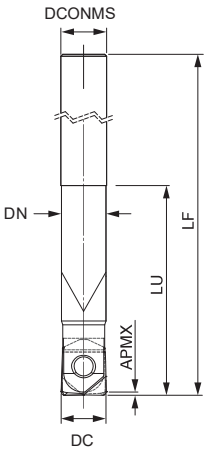
W-PRO 62090 > page 228



- From DC 8mm to 20mm
  De DC 8mm a 20mm | Desde DC 8mm hasta 20mm
- Available in threaded steel coupling and cylindrical carbide shank
  Disponível em acoplamento roscado e haste cilíndrica | Disponible en fijación roscada y mango cilíndrico
- One toolholder for two types of inserts
  Um suporte para dois tipos de pastilhas | Un portaherramientas para dos tipos de plaquitas
- Ideal for finishing operations on hardened steels
  Ideal para operações de acabamento em aços endurecidos | Ideal para operaciones de acabado en aceros endurecidos

W-PRO 62090





Cylindrical Carbide Shank

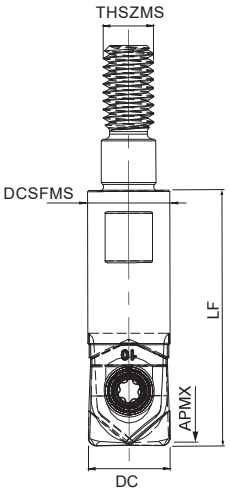
Tolerance R	Runout Tolerance
± 0,015	R 0,02

Order code Código	Reference Referência Referencia	CICT	Dimensions | Dimensões | Dimensiones (mm)					WT	Specifications				Insert Pastilha Inserto	Stock
			DC	DCONMS	DN	LF	LU		APMX (mm)		Ae max (mm)			
181156600	008E62090-02-U008140	2	8	8	7,7	140	35	0,09	4,0	2,5	0,8	0,8	WCR 08../WCL 08...	⛭
181156700	010E62090-02-U010150	2	10	10	9,7	150	45	0,15	5,0	3,0	1,0	1,0	WCR 10.../WCL 10...	⛭
181156800	010E62090-02-U010180	2	10	10	9,7	180	45	0,18	5,0	3,0	1,0	1,0	WCR 10.../WCL 10...	⛭
181155700	012E62090-02-U012165	2	12	12	11,7	165	55	0,24	6,0	4,0	1,2	1,2	WCR 12.../WCL 12...	⛭
181156900	012E62090-02-U012200	2	12	12	11,7	200	55	0,29	6,0	4,0	1,2	1,2	WCR 12.../WCL 12...	⛭
181157000	016E62090-02-U016200	2	16	16	15,7	200	65	0,51	8,0	5,0	1,6	1,6	WCR 16.../WCL 16...	⛭
181157100	016E62090-02-U016250	2	16	16	15,7	250	65	0,67	8,0	5,0	1,6	1,6	WCR 16.../WCL 16...	⛭
181157200	020E62090-02-U020220	2	20	20	19,7	220	70	0,87	10,0	6,0	2,0	2,0	WCR 20.../WCL 20...	⛭
181157300	020E62090-02-U020250	2	20	20	19,7	250	70	1,00	10,0	6,0	2,0	2,0	WCR 20.../WCL 20...	⛭
181157400	020E62090-02-U020300	2	20	20	19,7	300	70	1,23	10,0	6,0	2,0	2,0	WCR 20.../WCL 20...	⛭

⛭ Stock item | Produto de stock | Itens de stock

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





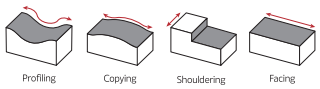
Threaded Steel Shank

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

Order code Código	Reference Referência Referencia	CICT	Dimensions | Dimensões | Dimensiones (mm)				WT	Specifications				Insert Pastilha Inserto	Stock
			DC	THSZMS	DCSFMS	LF		APMX (mm)		Ae max (mm)			
181167000	010R62090-02-UM06030	2	10	M6	6,5	30	0,011	5	3,0	1,0	1,0	WCR 10.../WCL 10...	⛭
181167100	012R62090-02-UM06030	2	12	M6	6,5	30	0,016	6	4,0	1,2	1,2	WCR 12.../WCL 12...	⛭
181167200	016R62090-02-UM08030	2	16	M8	8,5	30	0,028	8	5,0	1,6	1,6	WCR 16.../WCL 16...	⛭
181167300	020R62090-02-UM10035	2	20	M10	10,5	35	0,058	10	6,0	2,0	2,0	WCR 20.../WCL 20...	⛭

⛭ Stock item | Produto de stock | Itens de stock

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

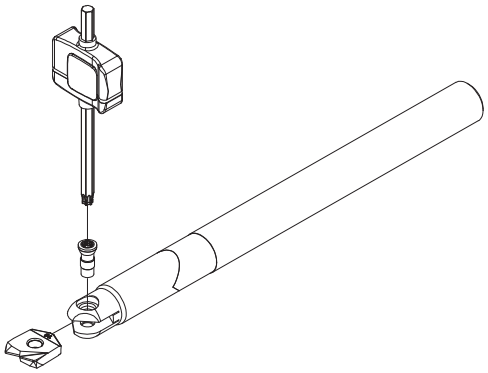


SPARE PARTS Acessórios | Repuestos

Order separately

Cutter DC	Insert Screw	Key (Torx)	Key (Torx - Nm)	Torque Value
8	P0300726	XT08	DT0812	1,2
10	P0350825	XT10	DT1020	2,0
12	P0501025	XT20	DT2050	5,0
16	P0501326	XT20	DT2050	5,0
20	P0601725	XT25	-	6,9

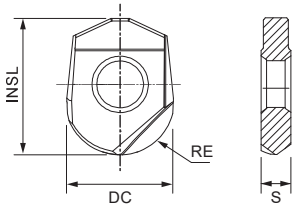
Note: The toolholder is supplied with the XT/PT key. To order the DT key please check the page A-301.
Check the procedures for the clamping screws on the page A-301.



WCR Inserts | Pastilhas | Plaquitas



WCR



WCR

		P				M				K				H				Dimensions Dimensões Dimensiones (mm)			
		PVD				PVD				PVD				PVD							
	(2) Grade code	X4	8F	X6	4F	X4	8F	X6	4F	X4	8F	X6	4F	X4	8F	X6	4F				
(1) Geometry code	ISO Reference	PHH603	PHF603	PHH910	PHF910	PHH603	PHF603	PHH910	PHF910	PHH603	PHF603	PHH910	PHF910	PHH603	PHF603	PHH910	PHF910	INSL	RE	S	DC
1112900	WCR 08	△	◉	△	◉	△	◉	△	◉	△	◉	△	◉	△	◉	△	◉	9,7	4,0	2,1	8,0
1111914	WCR 10		◉	△	◉		◉	△	◉		◉	△	◉		◉	△	◉	12,0	5,0	2,7	10,0
1112099	WCR 12	△	◉	△	◉	△	◉	△	◉	△	◉	△	◉	△	◉	△	◉	14,6	6,0	3,2	12,0
1112100	WCR 16	△	◉		◉	△	◉		◉	△	◉		◉	△	◉		◉	16,6	8,0	4,2	16,0
1112101	WCR 20		◉		◉		◉		◉		◉		◉		◉		◉	20,0	10,0	5,2	20,0

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

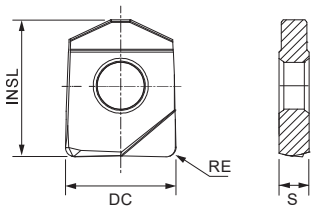
Insert Order Code: (1) Geometry code + (2) Grade code

W-PRO 62090

WCL Inserts | Pastilhas | Plaquitas



WCL

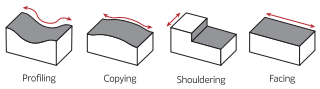


WCL

		P				M				K				H				Dimensions Dimensões Dimensiones (mm)			
		PVD				PVD				PVD				PVD							
	(2) Grade code	X4	8F	X6	4F	X4	8F	X6	4F	X4	8F	X6	4F	X4	8F	X6	4F				
(1) Geometry code	ISO Reference	PHH603	PHF603	PHH910	PHF910	PHH603	PHF603	PHH910	PHF910	PHH603	PHF603	PHH910	PHF910	PHH603	PHF603	PHH910	PHF910	INSL	RE	S	DC
1112879	WCL-08 R0.3		●		●		●		●		●		●		●		●	9,7	0,3	2,1	8,0
1112880	WCL-08 R0.5		●		●		●		●		●		●		●		●	9,7	0,5	2,1	8,0
1112853	WCL-08 R1.0		●	○	●		●	○	●		●	○	●		●	○	●	9,7	1,0	2,1	8,0
1112881	WCL-10 R0.3	○	●	○	●	○	●	○	●	○	●	○	●	○	●	○	●	12,0	0,3	2,7	10,0
1112882	WCL-10 R0.5		●		●		●		●		●		●		●		●	12,0	0,5	2,7	10,0
1112848	WCL-10 R1.0	○	●		●	○	●		●	○	●		●	○	●		●	12,0	1,0	2,7	10,0
1112883	WCL-10 R1.5		●		●		●		●		●		●		●		●	12,0	1,5	2,7	10,0
1112884	WCL-10 R2.0		●	○	●		●	○	●		●	○	●		●	○	●	12,0	2,0	2,7	10,0
1112885	WCL-12 R0.3		●		●		●		●		●		●		●		●	14,6	0,3	3,2	12,0
1112886	WCL-12 R0.5		●		●		●		●		●		●		●		●	14,6	0,5	3,2	12,0
1112096	WCL-12 R1.0		●	○	●		●	○	●		●	○	●		●	○	●	14,6	1,0	3,2	12,0
1112887	WCL-12 R1.5	○	●		●	○	●		●	○	●		●	○	●		●	14,6	1,5	3,2	12,0
1112888	WCL-12 R2.0		●		●		●		●		●		●		●		●	14,6	2,0	3,2	12,0
1112889	WCL-12 R3.0		●		●		●		●		●		●		●		●	14,6	3,0	3,2	12,0
1112890	WCL-16 R0.3	○	●		●	○	●		●	○	●		●	○	●		●	16,6	0,3	4,2	16,0
1112891	WCL-16 R0.5		●		●		●		●		●		●		●		●	16,6	0,5	4,2	16,0
1112097	WCL-16 R1.0	○	●		●	○	●		●	○	●		●	○	●		●	16,6	1,0	4,2	16,0
1112892	WCL-16 R1.5		●		●		●		●		●		●		●		●	16,6	1,5	4,2	16,0
1112893	WCL-16 R2.0	○	●	○	●	○	●	○	●	○	●	○	●	○	●	○	●	16,6	2,0	4,2	16,0
1112894	WCL-16 R3.0	○	●	○	●	○	●	○	●	○	●	○	●	○	●	○	●	16,6	3,0	4,2	16,0
1112895	WCL-20 R0.3		●		●		●		●		●		●		●		●	20,0	0,3	5,2	20,0
1112896	WCL-20 R0.5		●		●		●		●		●		●		●		●	20,0	0,5	5,2	20,0
1112098	WCL-20 R1.0	○	●	○	●	○	●	○	●	○	●	○	●	○	●	○	●	20,0	1,0	5,2	20,0
1112897	WCL-20 R1.5		●	○	●		●	○	●		●	○	●		●	○	●	20,0	1,5	5,2	20,0
1112898	WCL-20 R2.0		●		●		●		●		●		●		●		●	20,0	2,0	5,2	20,0
1112899	WCL-20 R3.0	○	●	○	●	○	●	○	●	○	●	○	●	○	●	○	●	20,0	3,0	5,2	20,0

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

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



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

ISO	PSM	Material	HB (Brinell)	Grades ← Wear Resistance — Toughness → PHH603	PHF603	PHH910	PHF910
P	1	Unalloyed Steel	125-220	✓	✓	✓	✓
	2	Low-Alloyed Steel	220-280	✓	✓	✓	✓
	3	High-Alloyed Steel	280-380	✓	✓	✓	✓
M	4	SS - Ferritic / Martensitic	200-330	✓	✓	✓	✓
	5	SS - Austenitic	200-330	✓	✓	✓	✓
	6	SS - Austenitic-ferritic (Duplex)	230-260	✓	✓	✓	✓
K	7	Malleable Cast Iron	130-230	✓	✓	✓	✓
	8	Grey Cast Iron	180-245	✓	✓	✓	✓
	9	Nodular Cast iron	160-250	✓	✓	✓	✓
H	12	Hardened Steels	40-55 HRC	✓	✓	✓	✓

Good Conditions Average Conditions Difficult Conditions

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

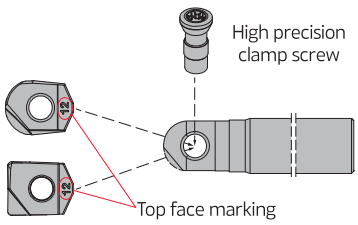
ISO	PSM	Material	HB (Brinell)	Vc (m/min) ← Wear Resistance — Toughness → PHH603	PHF603	PHH910	PHF910	Feed fz (mm/t) WCR	WCL
P	1	Unalloyed Steel	125-220	180-310	180-310	140-270	140-270	0,15-0,45	0,10-0,30
	2	Low-Alloyed Steel	220-280	180-300	180-300	140- 260	140- 260	0,15-0,40	0,10-0,25
	3	High-Alloyed Steel	280-380	180-280	180-280	140-220	140-220	0,10-0,40	0,10-0,25
M	4	SS - Ferritic / Martensitic	200-330	170-300	170-300	130-260	130-260	0,15-0,35	0,10-0,25
	5	SS - Austenitic	200-330	160-290	160-290	120-250	120-250	0,15-0,35	0,10-0,25
	6	SS - Austenitic-ferritic (Duplex)	230-260	150-270	150-270	110-230	110-230	0,15-0,30	0,08-0,20
K	7	Malleable Cast Iron	130-230	200-380	200-380	180-370	180-370	0,10-0,50	0,10-0,35
	8	Grey Cast Iron	180-245	180-360	180-360	180-350	180-350	0,10-0,45	0,10-0,30
	9	Nodular Cast iron	160-250	160-310	160-310	160-290	160-290	0,10-0,40	0,10-0,30
H	12	Hardened Steels	46-54 HRC	90-270	90-270	80-260	80-260	0,05-0,20	0,05-0,15
	13	Hardened Steels	55-62 HRC	80-200	80-200	70-180	70-180	0,05-0,15	0,04-0,12
	14	Hardened Steels	63-70 HRC	70-180	70-180	70-160	70-160	0,04-0,12	0,04-0,10

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

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

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

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



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

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

Note: Always replace worn or damaged screws.

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

49095 | 45095

PLUS



The PLUS line is designed for semi-finishing to finishing operations, featuring double-sided positive inserts. The PLUS line offers the advantage of an economical insert with six positive cutting edges. This makes it ideal for profile applications in the mold and die industry.

A linha PLUS é projetada para operações de semi-acabamento a acabamento, apresentando pastilhas positivas de dois lados. Oferece a vantagem de uma pastilha económica com seis arestas de corte positivas. Isso torna-a ideal para aplicações de perfil na indústria de moldes e matrizes.

La línea PLUS está diseñada para operaciones de semiacabado a acabado, presentando plaquitas positivas de dos lados. Ofrece la ventaja de una plaquita económica con seis filos de corte positivos. Esto la hace ideal para aplicaciones de perfil en la industria de moldes y matrices.

LINEPRO 49095 > page 234



- From DC 16mm to 35mm
  De DC 16mm a 35mm | Desde DC 16mm hasta 35mm
- Available in threaded coupling
  Disponível em acoplamento roscado | Disponible en fijación roscada
- Negative inserts with 6 cutting-edges
  Pastilhas negativas com 6 arestas de corte | Insertos negativos con 6 filos de corte

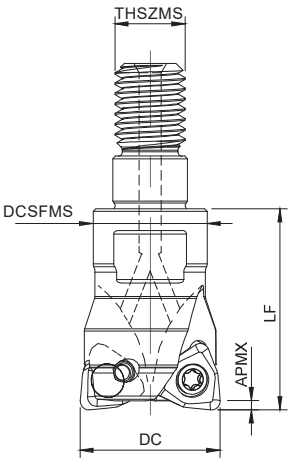
LINEPRO 45095 > page 236



- From DC 25mm to 42mm
  De DC 25mm a 42mm | Desde DC 25mm hasta 42mm
- Available in threaded coupling
  Disponível em acoplamento roscado | Disponible en fijación roscada
- Designed for finishing and profile milling
  Projetado para acabamento e fresagem de perfil | Diseñado para acabado y fresado de perfil

PLUS 49095





Threaded Coupling

KAPR=95° | GAMP=-7°

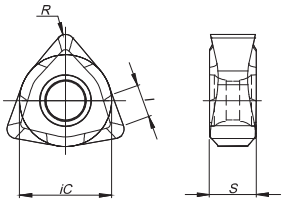
Order code Código	Reference Referência Referencia	CICT	Dimensions | Dimensões | Dimensiones (mm)				WT	Specifications	Insert Pastilha Inserto	Stock
			DC	THSZMS	DCSFMS	LF		APMX (mm)		
181030400	016R49095-02-07-M08023	2	16	M8	13	23	0,024	0,30	WNHU 04T310	◈
181028600	020R49095-03-07-M10028	3	20	M10	18	28	0,052	0,30	WNHU 04T310	◈
181030500	025R49095-04-07-M12030	4	25	M12	21	30	0,082	0,30	WNHU 04T310	◈
181030600	035R49095-05-07-M16035	5	35	M16	29	35	0,190	0,30	WNHU 04T310	◈

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

WNHU 04T310 Inserts | Pastilhas | Plaquitas



WNHU

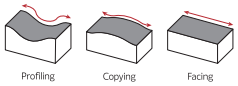


WNHU

		P			K		H		Dimensions Dimensões Dimensiones (mm)			
		PVD			PVD		PVD					
	(2) Grade code	X5	T1	P4	X5	T1	X4	X5				
(1) Geometry code	ISO Reference	PHP910	PHP920	PHP930	PHP910	PHP920	PHH603	PHP910	iC	S	I	R
1110783	WNHU 04T310	◈	◈	◈	◈	◈	◈	◈	6,35	3,50	2,80	1,00

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

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

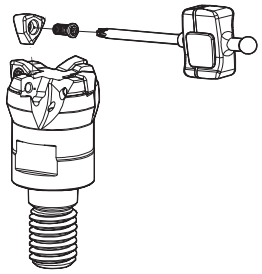


SPARE PARTS Acessórios | Repuestos

Order separately

Cutter DC	Insert Screw	Key (Torx)	Key (Torx - Nm)	Torque Value
R49095 - 16-35	P0250704	XT08	DT0812	1,2

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



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

ISO	PSM	Material	HB (Brinell)	Grades ← Wear Resistance — Toughness → PHH603	PHP910	PHP920	PHP930
P	1	Unalloyed Steel	125-220		✓	✓	✓
	2	Low-Alloyed Steel	220-280		✓	✓	✓
	3	High-Alloyed Steel	280-380	✓	✓	✓	✓
K	7	Malleable Cast Iron	130-230		✓	✓	
	8	Grey Cast Iron	180-245		✓	✓	
	9	Nodular Cast iron	160-250		✓	✓	
H	12	Hardened Steels	40-55 HRC	✓	✓		

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

Good Conditions Average Conditions Difficult Conditions

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

ISO	PSM	Material	HB (Brinell)	Vc (m/min) ← Wear Resistance — Toughness → PHH603	PHP910	PHP920	PHP930
P	1	Unalloyed Steel	125-220	-	180-250	180-240	160-220
	2	Low-Alloyed Steel	220-280	-	160-240	160-220	140-200
	3	High-Alloyed Steel	280-380	180-310	140-230	140-210	120-190
K	7	Malleable Cast Iron	130-230	-	180-300	160-260	150-240
	8	Grey Cast Iron	180-245	-	160-250	140-240	140-230
	9	Nodular Cast iron	160-250	-	150-210	120-200	100-190
H	12	Hardened Steels	40-55 HRC	70-270	60-250	-	-

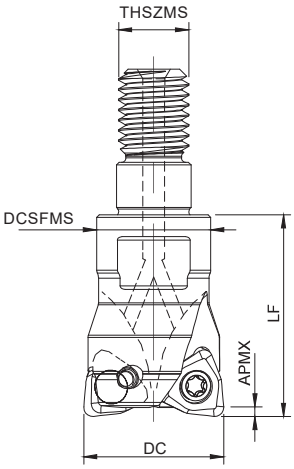
(Note 1) Grade PHH603 must be used only on finishing operations.
(Note 2)

Insert	Feed f_z (mm/t) Roughing	Finishing	AP Rec.
WNHU 04T310	0,15-0,25	0,10-0,20	0,10-0,50

(Note 3) Cutting conditions should be adjusted according to the machine and work rigidity.
(Note 4) If chattering occurs, reduce a_p and V_c by 30% and keep the same f_z per tooth.

PLUS 45095





Threaded Coupling

KAPR=95° | GAMP=-6°

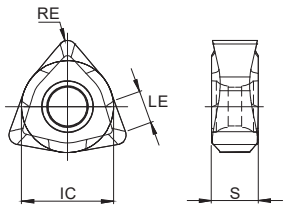
Order code Código	Reference Referência Referencia	CICT	Dimensions | Dimensões | Dimensiones (mm)				WT	Specifications	Insert Pastilha Inserto	Stock
			DC	THSZMS	DCSFMS	LF		APMX (mm)		
181037500	025R45095-02-06-M12030	2	25	M12	21	30	0,079	0,50	WNHU 060410	◈
181037600	035R45095-03-06-M16035	3	35	M16	29	35	0,185	0,50	WNHU 060410	◈
181037700	042R45095-04-06-M16035	4	42	M16	29	35	0,219	0,50	WNHU 060410	◈

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

WNHU 060410 Inserts | Pastilhas | Plaquitas



WNHU

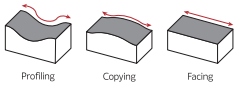


WNHU

		P	K	H		Dimensions Dimensões Dimensiones (mm)			
		PVD	PVD	PVD					
	(2) Grade code	X5	X5	X4	X5				
(1) Geometry code	ISO Reference	PHP910	PHP910	PHH903	PHP910	IC	S	LE	RE
1111424	WNHU 060410	◈	◈	◈	◈	9,53	4,76	3,40	1,00

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

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

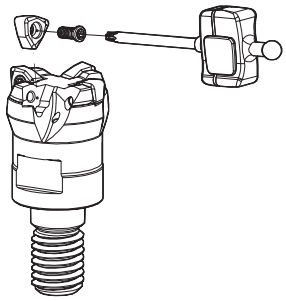


SPARE PARTS Acessórios | Repuestos

Order separately

Cutter DC	Insert Screw	Key (Torx)	Key (Torx - Nm)	Torque Value
R45095 - 25-42	P0350902	XT10	DT1020	2,0

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



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

ISO	PSM	Material	HB (Brinell)	Grades ← Wear Resistance — Toughness → PHH603	PHP910
P	1	Unalloyed Steel	125-220		✓
	2	Low-Alloyed Steel	220-280		✓
	3	High-Alloyed Steel	280-380	✓	✓
K	7	Malleable Cast Iron	130-230		✓
	8	Grey Cast Iron	180-245		✓
	9	Nodular Cast iron	160-250		✓
H	12	Hardened Steels	40-55 HRC	✓	✓

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

Good Conditions Average Conditions Difficult Conditions

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

ISO	PSM	Material	HB (Brinell)	Vc (m/min) ← Wear Resistance — Toughness → PHH603	PHP910
P	1	Unalloyed Steel	125-220	-	180-250
	2	Low-Alloyed Steel	220-280	-	160-240
	3	High-Alloyed Steel	280-380	180-310	140-230
K	7	Malleable Cast Iron	130-230	-	180-300
	8	Grey Cast Iron	180-245	-	160-250
	9	Nodular Cast iron	160-250	-	150-210
H	12	Hardened Steels	40-55 HRC	70-270	60-250

(Note 1) Grade PHH603 must be used only on finishing operations.
(Note 2)

Insert	Feed f_z (mm/t)		AP Rec.
	Roughing	Finishing	
WNHU 060410	0,15-0,30	0,10-0,25	0,10-0,50

(Note 3) Cutting conditions should be adjusted according to the machine and work rigidity.
(Note 4) If chattering occurs, reduce a_p and V_c by 30% and keep the same f_z per tooth.

33590 | 33690 | 33790 | 33890 | 33990

TOROMILL

34190 | 34290

TURBOMILL



The TOROMILL and TURBOMILL lines are designed for rough machining in challenging cutting materials. The innovative TURBOMILL round insert copy mill features a unique anti-rotation system. This system effectively secures the inserts in place, preventing any movement within the pockets during machining. As a result, it ensures tool reliability and precise indexing when machining difficult cutting materials.

As linhas TOROMILL e TURBOMILL são projetadas para fresagem de desbaste em materiais de corte desafiadores. A inovadora fresa de cópia com pastilha redonda TURBOMILL apresenta um sistema único de anti-rotação. Esse sistema garante efetivamente que as pastilhas permaneçam no lugar, evitando qualquer movimento dentro dos alojamentos durante a fresagem. Como resultado, garante a fiabilidade da ferramenta e a indexação precisa ao maquinar materiais de corte difíceis.

Las líneas TOROMILL y TURBOMILL están diseñadas para fresado de desbaste en materiales de corte desafiantes. La innovadora fresa de copia con plaquita redonda TURBOMILL presenta un sistema único de anti-rotación. Este sistema garantiza efectivamente que las plaquitas permanezcan en su lugar, evitando cualquier movimiento dentro de los alojamientos durante el fresado. Como resultado, asegura la fiabilidad de la herramienta y la indexación precisa al mecanizar materiales de corte difíciles.

TOROMILL 33590 | 33690 | 33790 | 33890 | 33990 > page 240



- From DC 16mm to 125mm
  De DC 16mm a 125mm | Desde DC 16mm hasta 125mm
- Available in arbor, threaded, weldon and cylindrical shank
  Disponível em montagem tipo árvore, acoplamento roscado e haste cilíndrica | Disponible en fijación con tornillo central, fijación roscada y mango cilíndrico
- Smooth cutting and low power requirement
  Corte suave e baixa potência requerida | Corte suave y bajo requisito de potencia
- For stainleess and HRSA applications
  Para aplicações em aço inoxidável e HRSA | Para aplicaciones de acero inoxidable y HRSA

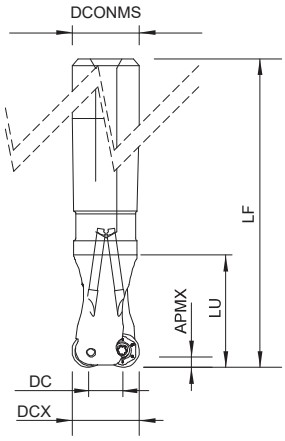
TURBOMILL 34190 | 34290 > page 244



- From DC 20mm to 80mm
  De DC 20mm a 80mm | Desde DC 20mm hasta 80mm
- Available in arbor mounting, threaded coupling and cylindrical shank
  Disponível em montagem tipo árvore, acoplamento roscado e haste cilíndrica | Disponible en fijación con tornillo central, fijación roscada y mango cilíndrico
- Unique anti-rotation system
  Sistema único de anti-rotação | Sistema único de anti-rotación
- Round positive insert with 4 or 6 cutting edges
  Pastilha positiva redonda com 4 ou 6 arestas de corte | Plaquita positiva redonda con 4 o 6 filos de corte

TOROMILL 33590 | 33690 | 33790





Cylindrical Shank

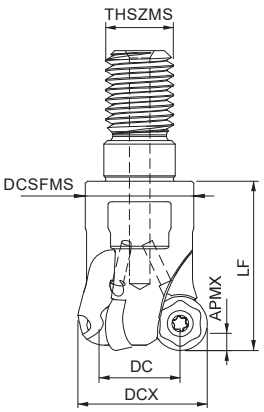
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Order code Código	Reference Referência Referencia	CICT	Dimensions | Dimensões | Dimensiones (mm)					WT	Specifications	Insert Pastilha Inserto	Stock
			DCX	DC	DCONMS	LF	LU		APMX (mm)		
					33590						
181122500	016E33590-02-04-016160	2	16	8	16	160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

◈ Stock item | Produto de stock | Itens de stock

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





Threaded Coupling

GAMP=+5°

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

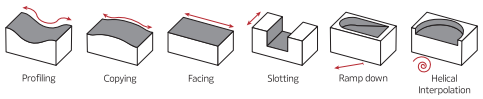
◈ Stock item | Produto de stock | Itens de stock

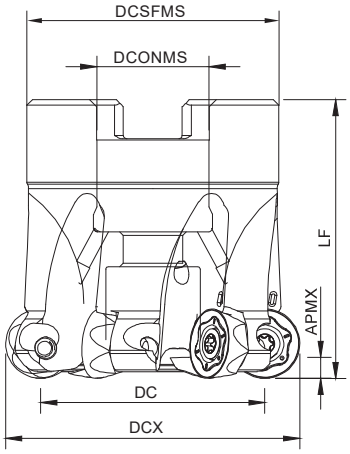
○ Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

TOROMILL 33590 | 33690 | 33790

RDHT | RPHT







Arbor Mounting

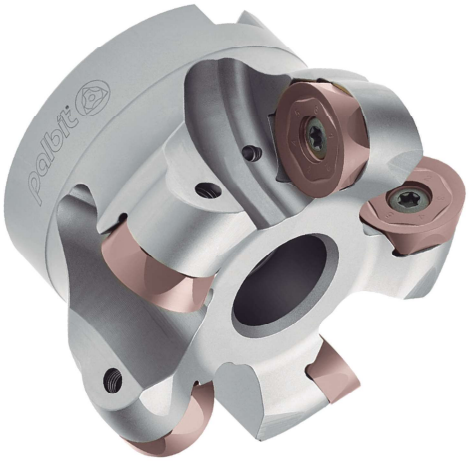
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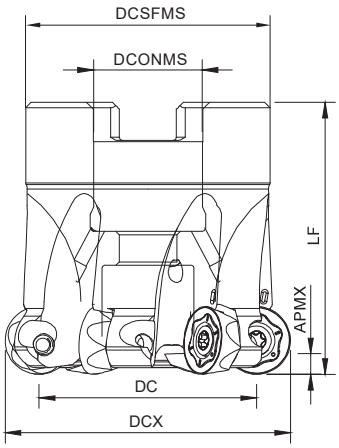
Order code Código	Reference Referência Referencia	CICT	Dimensions | Dimensões | Dimensiones (mm)					WT	Specifications		Insert Pastilha Inserto	Stock
			DCX	DC	DCONMS	DCSFMS	LF		Arbor Type	APMX (mm)		
						33690						
181123700	042A33690-06-05-016040	6	42	32	16	36	40	0,16	A	5,0	RP...10T3 M0E	◈
181123800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

◈ Stock item | Produto de stock | Itens de stock

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

TOROMILL 33890 | 33990





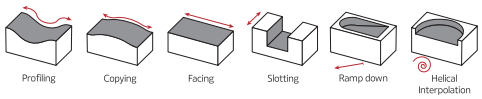
Arbor Mounting

GAMP=+5°

Order code Código	Reference Referência Referencia	CICT	Dimensions | Dimensões | Dimensiones (mm)					WT	Specifications		Insert Pastilha Inserto	Stock
			DCX	DC	DCONMS	DCSFMS	LF		Arbor Type	APMX (mm)		
						33890						
181124500	050A33890-04-05-022040	4	50	34	22	42	40	0,21	A	8,0	RP...1605 M0E	◈
181124600	052A33890-04-05-022040	4	52	36	22	42	40	0,25	A	8,0	RP...1605 M0E	○
181114900	063A33890-05-05-022040	5	63	47	22	48	40	0,37	A	8,0	RP...1605 M0E	◈
181124700	066A33890-05-05-027050	5	66	54	27	48	50	0,46	A	8,0	RP...1605 M0E	◈
181124800	080A33890-06-05-027052	6	80	64	27	60	52	0,85	A	8,0	RP...1605 M0E	◈
181124900	100A33890-07-05-032052	7	100	84	32	80	52	1,57	A	8,0	RP...1605 M0E	◈
181122200	125A33890-08-05-040052	8	125	109	40	90	52	2,12	A	8,0	RP...1605 M0E	◈
						33990						
181112200	080A33990-05-05-027050	5	80	60	27	60	50	0,73	A	10,0	RP...2006 M0E	◈
181099800	100A33990-06-05-032063	6	100	80	32	80	63	1,62	A	10,0	RP...2006 M0E	◈
181099900	125A33990-06-05-040063	6	125	105	40	90	63	2,53	A	10,0	RP...2006 M0E	◈

◈ Stock item | Produto de stock | Itens de stock

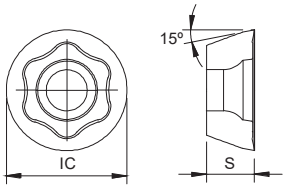
○ Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)



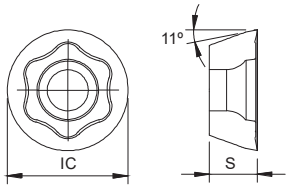
RDHT | RPHT Inserts | Pastilhas | Plaquitas


RDHT


RPHT



RDHT



RPHT

		P				M				S			Dimensions Dimensões Dimensiones (mm)	
		CVD	PVD			PVD				PVD				
	(2) Grade code	T9	T1	Z1	Z2	X9	Y2	Z2	Z3	X9	Y2	Z3		
(1) Geometry code	ISO Reference	PHS740	PHP920	PHP808	PHP530	PHH930	PHH808	PHP530	PHH530	PHH930	PHH808	PHH530	IC	S
1112152	RDHT 0802 M0E-LS				◉			◉	◉			◉	8,00	2,38
1112253	RPHT 10T3 M0E-MS		◉			◉				◉			10,00	3,97
1112772	RPHT 10T3 M0E-LS	◉		◉	◉		◉	◉	◉		◉	◉	10,00	3,97
1112186	RPHT 1204 M0E-MS		◉			◉				◉			12,00	4,76
1112766	RPHT 1204 M0E-LS	◉		◉	◉		◉	◉	◉		◉	◉	12,00	4,76
1112254	RPHT 1605 M0E-MS		◉			◉				◉			16,00	5,56
1112951	RPHT 1605 M0E-LS			◉	◉		◉	◉	◉		◉	◉	16,00	5,56
1112958	RPHT 2006 M0E-LS				◉		◉	◉	◉		◉	◉	20,00	6,35

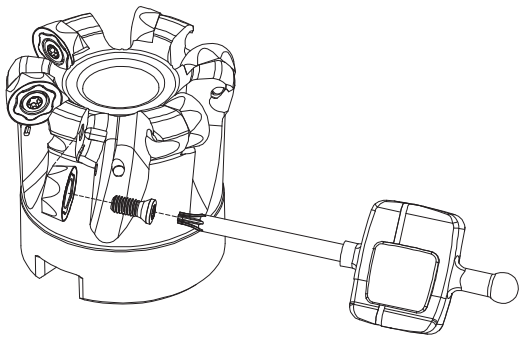
◉ First choice | Primeira opção | 1ª opción ◉ Stock item | Produto de stock | Itens de stock ○ Available under request (see page A-9) | Disponível sobre consulta (consulte a página A-9) | Disponible bajo consulta (mire pagina A-9)

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

SPARE PARTS Acessórios | Repuestos

Order separately

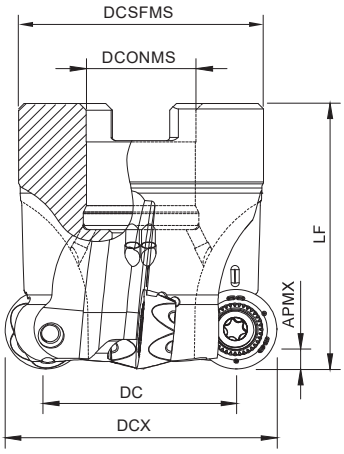
Cutter DC	Insert Screw	Key (Torx)	Key (Torx - Nm)	Torque Value
33590				
R33590	P0250503	XT08	DT0812	1,20
E33590	P0250503	XT08	DT0812	1,20
33690				
A33690	P0300800	XT09	DT0914	1,40
R33690	P0300800	XT09	DT0914	1,40
E33690	P0300800	XT09	DT0914	1,40
33790				
A33790	P0350800	XT15	DT1530	3,00
33890				
A33890	P0451100	XT20	DT2050	5,00
33990				
A33990	P0501302	PT20	DT2050	5,00



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

TURBOMILL 34190





Arbor Mounting

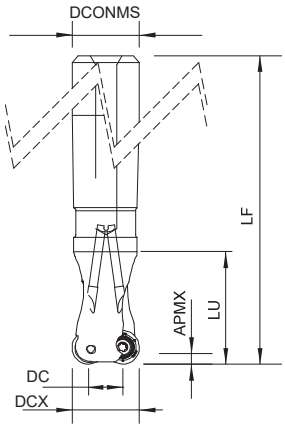
GAMP=+5º

Order code Código	Reference Referência Referencia	CICT	Dimensions | Dimensões | Dimensiones (mm)					WT	Specifications		Insert Pastilha Inserto	Stock
			DCX	DC	DCONMS	DCSFMS	LF		Arbor Type	APMX (mm)		
181160100	042A34190-06-05-016040	6	42	32	16	36	40	0,16	A	5	RPHT 10T3M0E-LS(4)	◎
181160200	050A34190-06-05-022039	6	50	40	22	42	40	0,26	A	5	RPHT 10T3M0E-LS(4)	◎
181160700	052A34190-07-05-022040	7	52	42	22	42	40	0,30	A	5	RPHT 10T3M0E-LS(4)	◎

◎ Stock item | Produto de stock | Itens de stock

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





Cylindrical Shank

GAMP=+5º

Order code Código	Reference Referência Referencia	CICT	Dimensions | Dimensões | Dimensiones (mm)					WT	Specifications	Insert Pastilha Inserto	Stock
			DCX	DC	DCONMS	LF	LU		APMX (mm)		
181187200	020E34190-02-05-020180	2	20	10	20	180	50	0,40	5,0	RPHT 10T3M0E-LS(4)	◎
181183300	025E34190-03-05-025200	3	25	15	25	200	60	0,76	5,0	RPHT 10T3M0E-LS(4)	◎
181191500	032E34190-04-05-032200	4	32	22	32	200	60	0,98	5,0	RPHT 10T3M0E-LS(4)	○

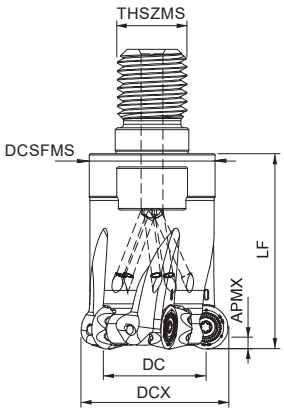
◎ Stock item | Produto de stock | Itens de stock

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

TURBOMILL 34190
RPHT







Threaded Coupling

GAMP=+5°

Order code Código	Reference Referência Referencia	CICT	Dimensions | Dimensões | Dimensiones (mm)					WT	Specifications	Insert Pastilha Inserto	Stock
			DCX	DC	THSZMS	DCSFMS	LF		APMX (mm)		
181191600	020R34190-02-05-M10032	2	20	10	M10	16	32	0,10	5,0	RPHT 10T3M0E-LS(4)	○
181191700	025R34190-03-05-M12035	3	25	15	M12	21	35	0,19	5,0	RPHT 10T3M0E-LS(4)	○
181191800	032R34190-04-05-M16035	4	32	22	M16	29	35	0,31	5,0	RPHT 10T3M0E-LS(4)	○
181182300	035R34190-05-05-M16045	5	35	25	M16	29	45	0,40	5,0	RPHT 10T3M0E-LS(4)	◈

◈ Stock item | Produto de stock | Itens de stock

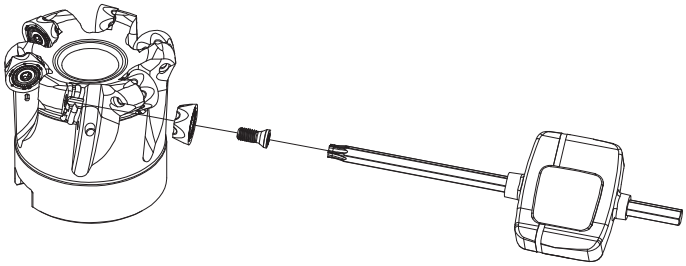
○ Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

SPARE PARTS Acessórios | Repuestos

Order separately

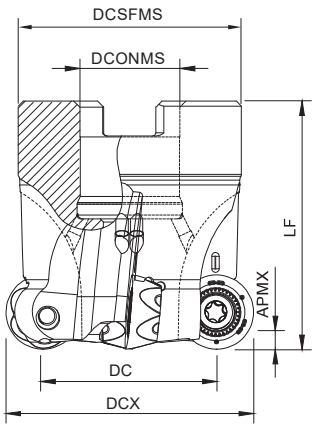
Cutter DC	Insert Screw	Key (Torx)	Key (Torx - Nm)	Torque Value
				
A34190 - 42-52	P0300800	XT09	DT0914	1,40
E34190 - 20-32	P0300800	XT09	DT0914	1,40
R34190 - 20-35	P0300800	XT09	DT0914	1,40

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



TURBOMILL 34290





Arbor Mounting

GAMP=+5º

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

◈ Stock item | Produto de stock | Itens de stock

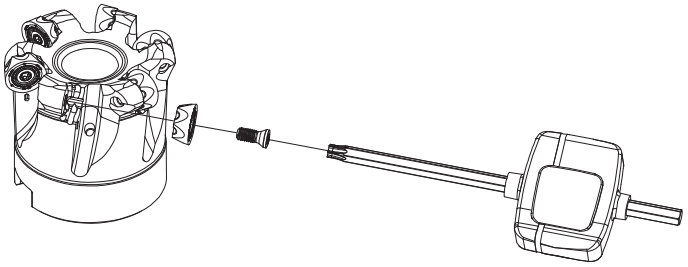
◯ Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

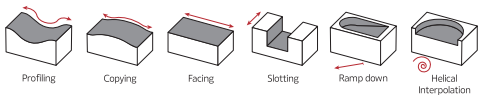
SPARE PARTS Acessórios | Repuestos

Order separately

Cutter DC	Insert Screw	Key (Torx)	Key (Torx - Nm)	Torque Value
				Nm
A34290 - 40	P0350800	XT15	DT1530	3,00
A34290 - 50	P0351000	XT15	DT1530	3,00
A34290 - 52-80	P0350800	XT15	DT1530	3,00

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





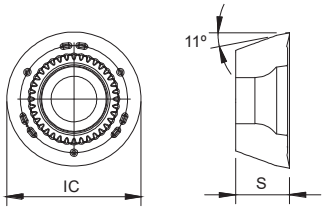
RPHT-LS Inserts | Pastilhas | Plaquitas



RPHT-LS



RPHT-LS4



RPHT-LS | LS4

		P			M			S		Dimensions Dimensões Dimensiones (mm)	
		CVD	PVD		PVD			PVD			
	(2) Grade code	T9	Z1	Z2	Y2	Z2	Z3	Y2	Z3		
(1) Geometry code	ISO Reference	PHS740	PHP808	PHP530	PHH808	PHP530	PHH530	PHH808	PHH530	IC	S
1112772	RPHT 10T3 M0E-LS	◈	◈	◉	◈	◈	◉	◈	◉	10,00	3,97
1113021	RPHT 10T3 M0E-LS4			◉		◈	◉		◉	10,00	3,97
1112766	RPHT 1204 M0E-LS	◈	◈	◉	◈	◈	◉	◈	◉	12,00	4,76
1113020	RPHT 1204 M0E-LS4			◉		◈	◉		◉	12,00	4,76

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

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

TOROMILL 33590 | 33690 | 33790 | 33890 | 33990 | TURBOMILL 34190 | 34290

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

ISO	PSM	Material	HB (Brinell)	Grades ← Wear Resistance — Toughness → PHP920	PHH930	PHP530	PHH530	PHP808	PHH808	PHS740
P	1	Unalloyed Steel	125-220	✓		✓		✓		✓
P	2	Low-Alloyed Steel	220-280	✓		✓		✓		✓
P	3	High-Alloyed Steel	280-380	✓		✓		✓		✓
M	4	SS - Ferritic / Martensitic	200-330		✓	✓	✓		✓	
M	5	SS - Austenitic	200-330		✓		✓		✓	
M	6	SS - Austenitic-ferritic (Duplex)	230-260		✓		✓		✓	
S	11	Heat Resistant Super Alloys	200-320		✓		✓		✓	

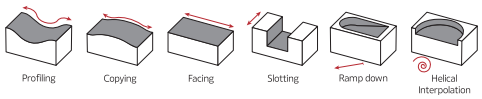
Good Conditions Average Conditions Difficult Conditions

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

ISO	PSM	Material	HB (Brinell)	Vc (m/min) ← Wear Resistance — Toughness → PHP920	PHH930	PHP530	PHH530	PHP808	PHH808	PHS740
P	1	Unalloyed Steel	125-220	180-250	-	180-340	-	180-340	-	180-350
P	2	Low-Alloyed Steel	220-280	160-230	-	180-340	-	180-340	-	180-340
P	3	High-Alloyed Steel	280-380	140-220	-	180-330	-	180-330	-	180-340
M	4	SS - Ferritic / Martensitic	200-330	-	140-210	150-270	170-280	-	160-270	-
M	5	SS - Austenitic	200-330	-	120-170	-	160-280	-	160-270	-
M	6	SS - Austenitic-ferritic (Duplex)	230-260	-	100-150	-	150-260	-	150-250	-
S	11	Heat Resistant Super Alloys	200-320	-	30-110	-	30-150	-	30-140	-

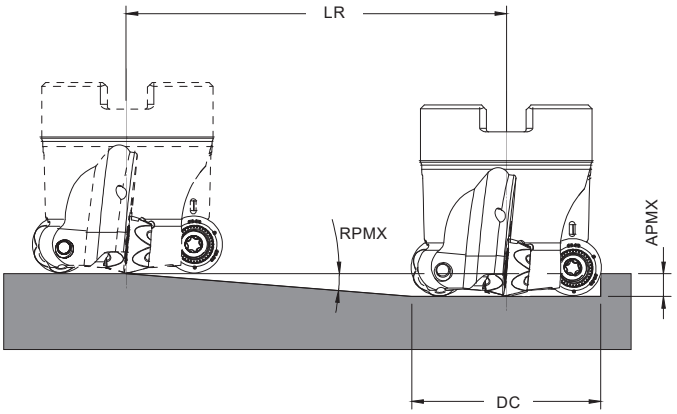
ISO	PSM	Material	HB (Brinell)	Feed fz (mm/t) RDHT 08..	RPHT 10...	RPHT 12...	RPHT 16...	RPHT 20...
P	1	Unalloyed Steel	125-220	0,05-0,35	0,05-0,40	0,05-0,45	0,08-0,55	0,10-0,55
P	2	Low-Alloyed Steel	220-280	0,05-0,35	0,05-0,40	0,05-0,45	0,08-0,55	0,10-0,55
P	3	High-Alloyed Steel	280-380	0,05-0,30	0,05-0,35	0,05-0,40	0,08-0,50	0,10-0,55
M	4	SS - Ferritic / Martensitic	200-330	0,05-0,25	0,05-0,30	0,05-0,35	0,08-0,45	0,10-0,50
M	5	SS - Austenitic	200-330	0,05-0,25	0,05-0,30	0,05-0,35	0,08-0,45	0,10-0,50
M	6	SS - Austenitic-ferritic (Duplex)	230-260	0,05-0,25	0,05-0,30	0,05-0,35	0,08-0,45	0,10-0,45
S	11	Heat Resistant Super Alloys	200-320	0,05-0,20	0,05-0,25	0,05-0,30	0,08-0,35	0,10-0,40

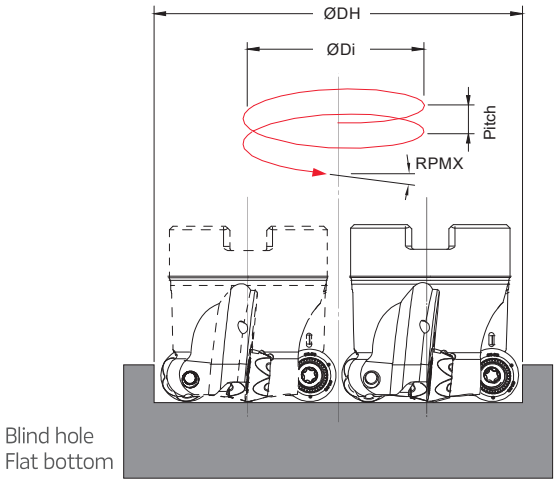
(Note 1) Cutting conditions a_e/Dc=70%.



RAMPING AND HELICAL INTERPOLATION

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





ØDi = ØDH - DC

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

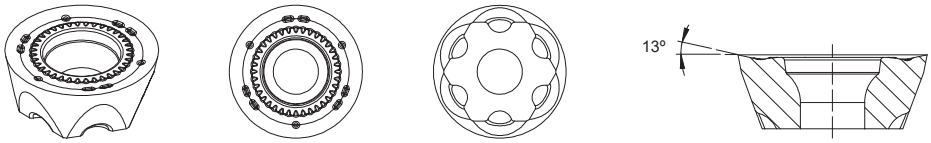
Note: During helical interpolation do not exceed APMX.

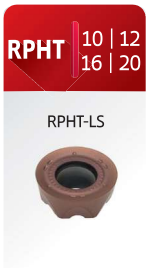
TOROMILL 33590 | 33690 | 33790 | 33890 | 33990 | TURBOMILL 34190 | 34290

RPHT-LS INSERT INFORMATION Informação de pastilha RPHT-LS | Información del inserto RPHT-LS

P M S

RPHT-LS





6 cutting edges insert

- Insert with 6 cutting edges for a higher productivity.

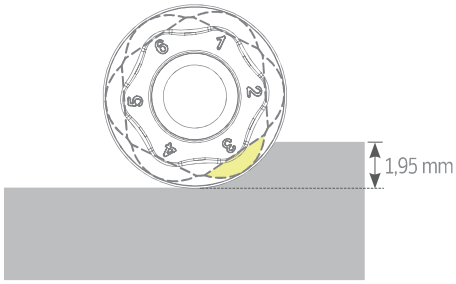
Insert Geometry

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

The maximum depth of cut using 6 cutting edges (LS)

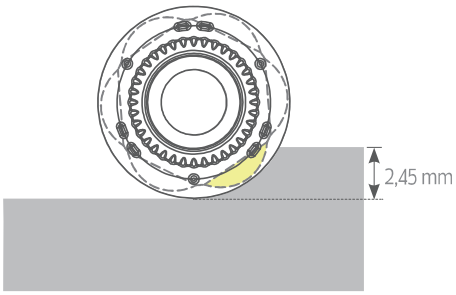
TOROMILL 33590

RDHT 0802 M0E-LS



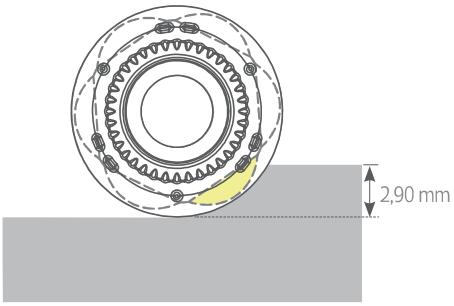
TOROMILL 33690
TURBOMILL 34190

RPHT 10T3 M0E-LS



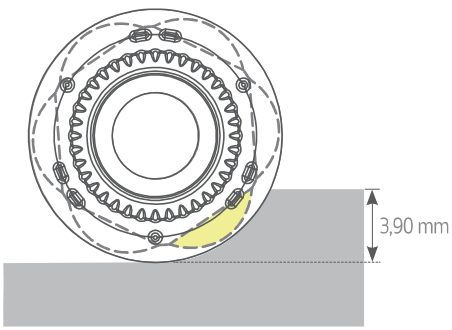
TOROMILL 33690
TURBOMILL 34290

RPHT 1204 M0E-LS



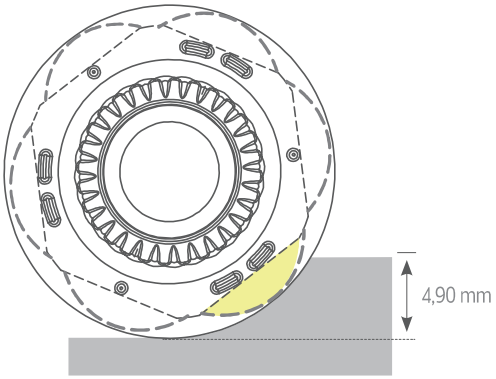
TOROMILL 33890

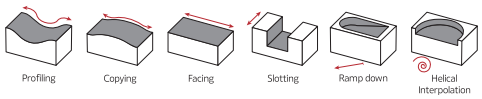
RPHT 1605 M0E-LS



TOROMILL 33990

RPHT 2006...

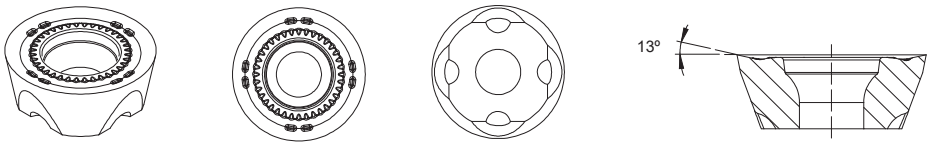


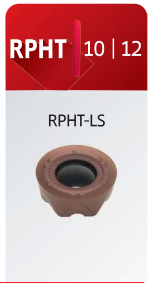


INSERT INFORMATION RPHT-LS4 Informação de pastilha RPHT-LS | Información del inserto RPHT-LS

P M S

RPHT-LS4





4 cutting edges insert

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

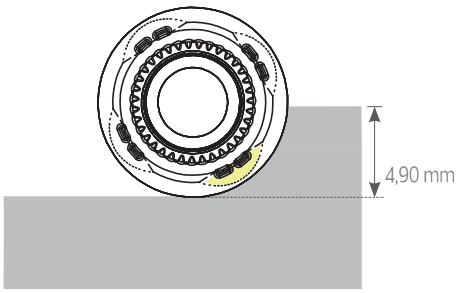
Insert Geometry

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

The maximum depth of cut using 4 cutting edges (LS4)

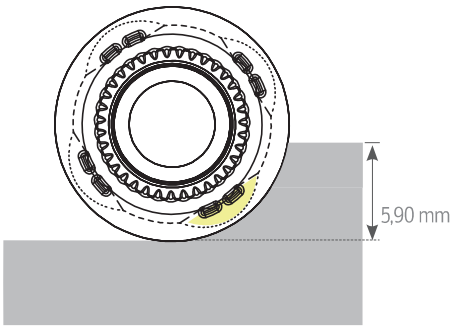
TURBOMILL 34190

RPHT 10T3 M0E-LS4



TURBOMILL 34290

RPHT 1204 M0E-LS4



GEOMETRY FEATURES Características geométricas | Características geométricas

Geometry	Features | Características | Características
Geometry **LS** General machining	Optimized geometry for stainless steel and HRSA. Suitable for alloy steel machining.
Geometry **LS4** General machining	Optimized geometry for stainless steel and HRSA. Suitable for alloy steel machining. 4 Cutting edges version.

35190

TOROMILL X2



The TOROMILL X2 line is a double-sided inserts offer double the cost-effectiveness, boasting machining with high metal removal rates. With twice the number of cutting edges and an optimal depth of cut, they ensure efficient performance. This design not only enhances productivity but also reduces downtime for insert changes.

A linha TOROMILL X2 é composta por pastilhas de dois lados que oferecem o dobro de economia, proporcionando fresagem com altas taxas de remoção de metal. Com o dobro de arestas de corte e uma profundidade de corte otimizada, elas garantem um desempenho eficiente. Esse design não apenas aumenta a produtividade, mas também reduz o tempo de troca de pastilhas.

La línea TOROMILL X2 está compuesta por plaquitas de doble cara que ofrecen el doble de economía, permitiendo el fresado con altas tasas de remoción de metal. Con el doble de filos de corte y una profundidad de corte óptima, garantizan un rendimiento eficiente. Este diseño no solo aumenta la productividad, sino que también reduce el tiempo de cambio de plaquitas.

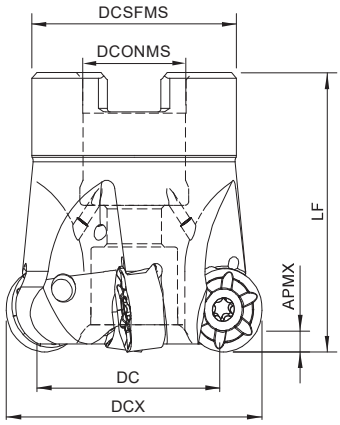
TOROMILL X2 35190 > page 254



- From DC 32mm to 100mm
  De DC 32mm a 100mm | Desde DC 32mm hasta 100mm
- Available in arbor mounting, threaded coupling and weldon shank
  Disponível em montagem tipo árvore, acoplamento roscado e haste weldon | Disponible en fijación con tornillo central, fijación roscada y mango tipo weldon
- Round negative insert with 12 cutting edges
  Pastilha negativa redonda com 12 arestas de corte | Pastilla negativa redonda con 12 filos de corte

TOROMILL X2 35190





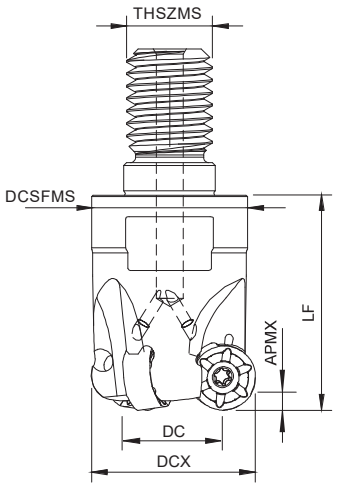
Arbor Mounting

GAMP=-7º

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

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





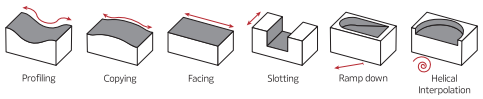
Threaded Coupling

GAMP=-7º

Order code Código	Reference Referência Referencia	CICT	Dimensions | Dimensões | Dimensiones (mm)					WT	Specifications	Insert Pastilha Inserto	Stock
			DCX	DC	THSZMS	DCSFMS	LF		APMX (mm)		
181128500	032R35190-03-07-M16040	3	32	20	M16	29	40	0,16	3,0	RNHX 1204 M0E...	⊛
181128700	042R35190-04-07-M16040	4	42	30	M16	29	40	0,20	3,0	RNHX 1204 M0E...	◯

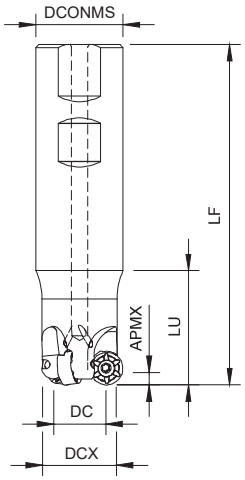
⊛ Stock item | Produto de stock | Itens de stock ◯ Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

TOROMILL X2 35190
RNHX 12





Weldon Shank
GAMP=-7°



Order code Código	Reference Referência Referencia	CICT	Dimensions | Dimensões | Dimensiones (mm)					WT	Specifications	Insert Pastilha Inserto	Stock
			DCX	DC	DCONMS	LF	LU		APMX (mm)		
181087000	032W35190-03-07-032125	3	32	20	32	125	42	0,98	3,0	RNHX 1204 M0E...	◈

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

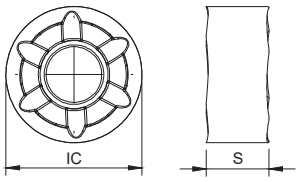
RNHX 1204... Inserts | Pastilhas | Plaquitas



RNHX-LP



RNHX-MP



RNHX-LP | MP

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

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

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

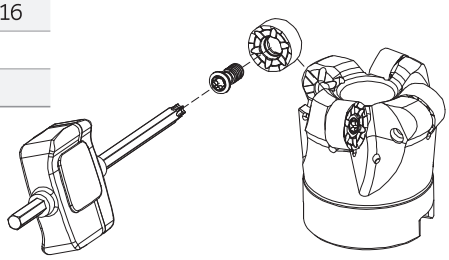
TOROMILL X2 35190

SPARE PARTS Acessórios | Repuestos

Order separately

Cutter DC	Insert Screw	Key (Torx)	Key (Torx - Nm)	Torque Value	Screw	DIN 6368 Wrench
A35190 - 40-80	P0401065	XT15	DT1530	3,00	-	-
A35190 - 100	P0401065	XT15	DT1530	3,00	J0164110	SD6368-16
R35190 - 32-42	P0401065	XT15	DT1530	3,00	-	-
W35190 - 32	P0401065	XT15	DT1530	3,00	-	-

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



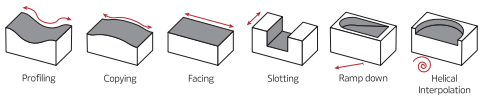
GRADES SELECTION GUIDE Guia para selecção de graus | Tabla para selección de calidades

ISO	PSM	Material	HB (Brinell)	Grades ← Wear Resistance — Toughness → PHP920	PHP930	PHH930	PHP530	PHH530
P	1	Unalloyed Steel	125-220	✓	✓		✓	
	2	Low-Alloyed Steel	220-280	✓	✓		✓	
	3	High-Alloyed Steel	280-380	✓	✓		✓	
M	4	SS - Ferritic / Martensitic	200-330			✓	✓	✓
	5	SS - Austenitic	200-330			✓		✓
	6	SS - Austenitic-ferritic (Duplex)	230-260			✓		✓
K	7	Malleable Cast Iron	130-230	✓	✓			
	8	Grey Cast Iron	180-245	✓	✓			
	9	Nodular Cast iron	160-250	✓	✓			
S	11	Heat Resistant Super Alloys	200-320			✓		✓

Good Conditions Average Conditions Difficult Conditions

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

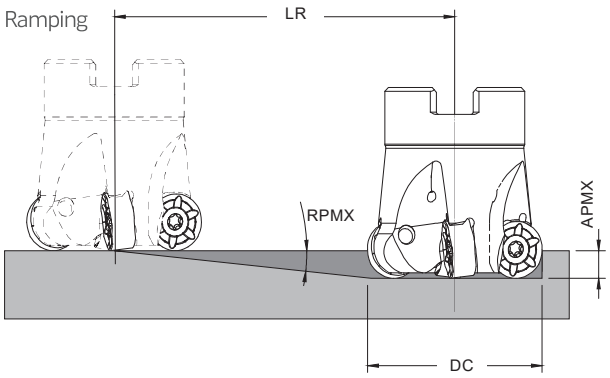
ISO	PSM	Material	HB (Brinell)	Vc (m/min) ← Wear Resistance — Toughness → PHP920	PHP930	PHH930	PHP530	PHH530	Feed fz (mm/t) RNHX 12... LP	RNHX 12... MP
P	1	Unalloyed Steel	125-220	180-250	160-230	-	180-340	-	0,15-0,45	0,15-0,50
	2	Low-Alloyed Steel	220-280	160-230	140-210	-	180-340	-	0,15-0,45	0,15-0,50
	3	High-Alloyed Steel	280-380	140-220	120-200	-	180-330	-	0,15-0,45	0,15-0,45
M	4	SS - Ferritic / Martensitic	200-330	-	-	140-210	150-270	170-280	0,10-0,35	-
	5	SS - Austenitic	200-330	-	-	120-170	-	160-280	0,10-0,35	-
	6	SS - Austenitic-ferritic (Duplex)	230-260	-	-	100-150	-	150-260	0,10-0,35	-
K	7	Malleable Cast Iron	130-230	-	150-280	-	-	-	-	0,15-0,55
	8	Grey Cast Iron	180-245	-	130-230	-	-	-	-	0,15-0,55
	9	Nodular Cast iron	160-250	-	80-190	-	-	-	-	0,15-0,50
S	11	Heat Resistant Super Alloys	200-320	-	-	30-110	-	30-150	0,05-0,30	-



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

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

RAMPING Descida em rampa | Bajada en rampa



Insert	DC	Ramping		
		RPMX	APMX	Min LR
RNHX 1204	32	1	3	171,9
	40	0,8	3	214,8
	42	0,8	3	214,8
	50	0,8	3	214,8
	63	0,6	3	286,5
	80	0,5	3	343,8

24590 | 25090 | 25190 | 25290 | 25390

TOROMILL



The TOROMILL is a standard profile milling tool designed for steel applications.

A TOROMILL é uma ferramenta standard de fresagem de perfil projetada para aplicações em aço.

El TOROMILL es una herramienta estándar de fresado de perfil diseñada para aplicaciones en acero.

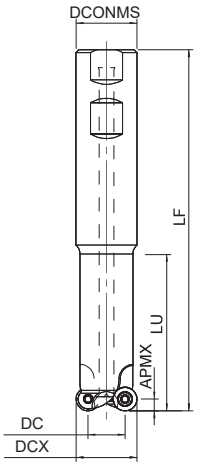
TOROMILL 24590 | 25090 | 25190 | 25290 | 25390 > page 260



- From DC 15mm to 160mm
  De DC 15mm a 160mm | Desde DC 15mm hasta 160mm
- Available in arbor mounting, threaded coupling and weldon shank
  Disponível em montagem tipo árvore, acoplamento roscado e haste weldon | Disponible en fijación con tornillo central, fijación roscada y mango tipo weldon
- From sizes 07 to 20
  De tamanhos 07 a 20 | Desde el tamaño 07 hasta el 20
- Lower power requirement
  Menor necessidade de potência | Menor necesidad de potencia

TOROMILL 24590 | 25090 | 25190 | 25290 | 25390





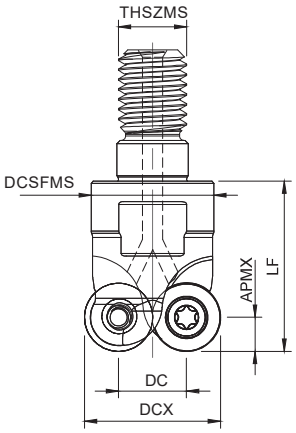
Weldon Shank

GAMP=0°

Order code Código	Reference Referência Referencia	CICT	Dimensions | Dimensões | Dimensiones (mm)					WT	Specifications	Insert Pastilha Inserto	Stock
			DCX	DC	DCONMS	LF	LU		APMX (mm)		
					24590						
181047000	015W24590-02-U016160	2	15	8	16	160	40	0,220	3,5	RD... 0702...	⚙
181047100	015W24590-02-U025220	2	15	8	25	220	40	0,600	3,5	RD... 0702...	⚙
					25090						
181047200	020W25090-02-020160	2	20	10	20	160	-	0,322	5,0	RD... 1003...	⚙
181047300	020W25090-02-025220	2	20	10	25	220	60	0,610	5,0	RD... 1003...	⚙
					25190						
181047400	025W25190-02-025220	2	25	13	25	220	-	0,678	6,0	RD... 12T3...	⚙
181047500	025W25190-02-032230	2	25	13	32	230	80	1,015	6,0	RD... 12T3...	⚙

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





Threaded Coupling

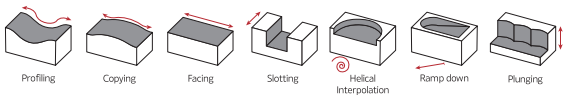
GAMP=0°

Order code Código	Reference Referência Referencia	CICT	Dimensions | Dimensões | Dimensiones (mm)					WT	Specifications	Insert Pastilha Inserto	Stock
			DCX	DC	THSZMS	DCSFMS	LF		APMX (mm)		
					24590						
181015400	015R24590-03-M08020	3	15	8	M8	13	20	0,019	3,5	RD... 0702...	⚙
181019100	016R24590-02-M08020	2	16	9	M8	13	20	0,019	3,5	RD... 0702...	⚙
181037900	016R24590-03-M08020	3	16	9	M8	13	20	0,019	3,5	RD... 0702...	⚙
181011400	020R24590-04-M10025	4	20	13	M10	18	25	0,047	3,5	RD... 0702...	⚙
					25090						
181011500	020R25090-02-M10025	2	20	10	M10	18	25	0,041	5,0	RD... 1003...	⚙
181011600	025R25090-03-M12030	3	25	15	M12	21	30	0,075	5,0	RD... 1003...	⚙
181011700	030R25090-04-M16035	4	30	20	M16	29	35	0,190	5,0	RD... 1003...	◯
181015500	035R25090-05-M16043	5	35	25	M16	29	43	0,240	5,0	RD... 1003...	⚙
181049900	042R25090-05-M16040	5	42	32	M16	29	40	0,243	5,0	RD... 1003...	⚙
					25190						
181011800	024R25190-02-M12032	2	24	12	M12	21	32	0,072	6,0	RD... 12T3...	⚙
181011900	035R25190-03-M16042	3	35	23	M16	29	42	0,205	6,0	RD... 12T3...	⚙
181012000	042R25190-04-M16042	4	42	30	M16	29	42	0,232	6,0	RD... 12T3...	⚙

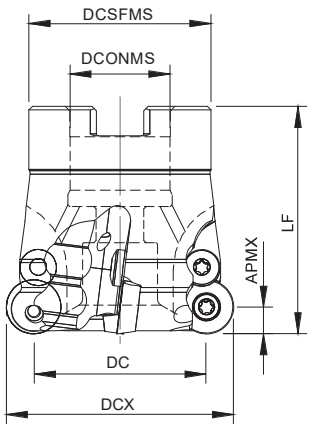
⚙ Stock item | Produto de stock | Itens de stock ◯ Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)

TOROMILL 24590 | 25090 | 25190 | 25290 | 25390

RDHW | RDHT | RDMW | RDMT







Arbor Mounting

GAMP=0° (*+7°)

Order code Código	Reference Referência Referencia	CICT	Dimensions | Dimensões | Dimensiones (mm)					WT	Specifications		Insert Pastilha Inserto	Stock
			DCX	DC	DCONMS	DCSFMS	LF		Arbor Type	APMX (mm)		
					25090							
181010600	042A25090-06-016044	6	42	32	16	36	44	0,254	A	5,0	RD... 1003...	♲
181017500	052A25090-07-022050	7	52	42	22	40	50	0,395	A	5,0	RD... 1003...	♲
					25190							
181051900	050C25190-05-07-022050*	5	50	38	22	40	50	0,312	A	6,0	RD... 12T3...	♲
181010700	052C25190-05-022050	5	52	40	22	40	50	0,337	A	6,0	RD... 12T3...	♲
181010800	052C25190-05-07-022050*	5	52	40	22	40	50	0,335	A	6,0	RD... 12T3...	♲
181016100	066C25190-06-027050	6	66	54	27	48	50	0,550	A	6,0	RD... 12T3...	♲
181010900	066C25190-06-07-027050*	6	66	54	27	48	50	0,600	A	6,0	RD... 12T3...	♲
181016500	080C25190-07-027050	7	80	68	27	60	50	1,000	A	6,0	RD... 12T3...	♲
181016600	080C25190-07-07-027052*	7	80	68	27	60	52,5	1,000	A	6,0	RD... 12T3...	♲

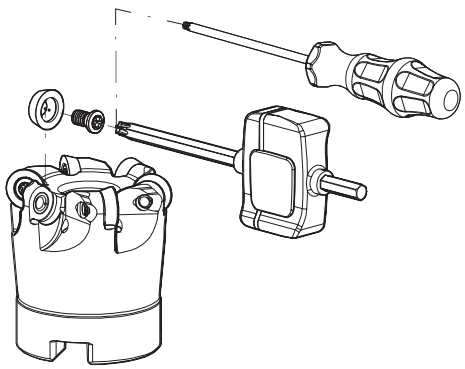
♲ Stock item | Produto de stock | Itens de stock

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

SPARE PARTS Acessórios | Repuestos

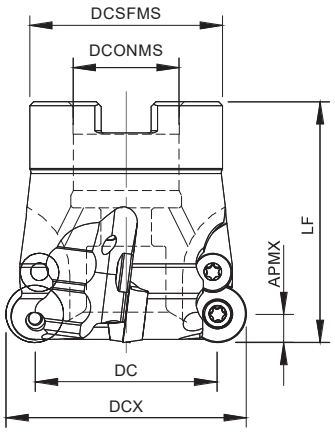
Cutter DC	Insert Screw	Key (Torx)	Order separately Key (Torx - Nm)	Torque Value	Order separately Screw Clamp
					
W24590 - 15	P0250503	XT08	DT0812	1,2	-
R24590 - 15-20	P0250503	XT08	DT0812	1,2	-
W25090 - 20	P0350800	XT15	DT1530	3,0	-
R25090 - 20-42	P0350800	XT15	DT1530	3,0	-
A25090 - 42-52	P0350800	XT15	DT1530	3,0	-
W25190 - 25	P0350800	XT15	DT1530	3,0	-
R25190 - 24-42	P0350800	XT15	DT1530	3,0	-
C25190 - 50-80	P0350800	XT15	DT1530	3,0	P0350750

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



TOROMILL 24590 | 25090 | 25190 | 25290 | 25390





Arbor Mounting

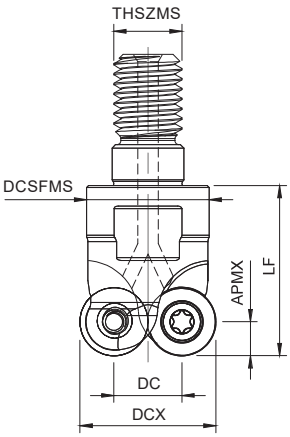
GAMP=0° (*+7°)

Order code Código	Reference Referência Referencia	CICT	Dimensions | Dimensões | Dimensiones (mm)					WT	Specifications		Insert Pastilha Inserto	Stock
			DCX	DC	DCONMS	DCSFMS	LF		Arbor Type	APMX (mm)		
						25290						
181017900	052C25290-04-022050	4	52	36	22	40	50	0,305	A	8,0	RD... 1604...	⛃
181018000	052C25290-04-07-022050*	4	52	36	22	40	50	0,324	A	8,0	RD... 1604...	⛃
181011000	066C25290-05-027050	5	66	50	27	48	50	0,550	A	8,0	RD... 1604...	⛃
181016700	066C25290-05-07-027050*	5	66	50	27	48	50	0,550	A	8,0	RD... 1604...	⛃
181016200	080C25290-06-027052	6	80	64	27	60	52	0,910	A	8,0	RD... 1604...	⛃
181011100	080C25290-06-07-027052*	6	80	64	27	60	52	0,934	A	8,0	RD... 1604...	⛃
181017300	125C25290-08-07-U040052*	8	125	109	40	90	52	2,340	B	8,0	RD... 1604...	⛃
181017400	160C25290-09-07-U040052*	9	160	144	40	120	52	4,750	B	8,0	RD... 1604...	⛃
						25390						
181026400	080C25390-05-07-027050*	5	80	60	27	60	50	0,840	A	10,0	RD... 2006...	⛃
181016800	100C25390-06-07-U032052*	6	100	80	32	70	52	1,180	B	10,0	RD... 2006...	⛃
181020500	125C25390-07-07-U040052*	7	125	105	40	90	52	2,030	B	10,0	RD... 2006...	⛃
181020600	160C25390-08-07-U040052*	8	160	140	40	120	52	4,320	B	10,0	RD... 2006...	⛃

⛃ Stock item | Produto de stock | Itens de stock

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





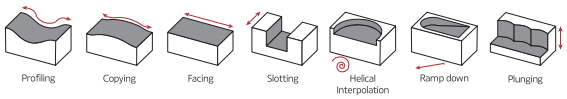
Threaded Coupling

GAMP=0°

Order code Código	Reference Referência Referencia	CICT	Dimensions | Dimensões | Dimensiones (mm)					WT	Specifications	Insert Pastilha Inserto	Stock
			DCX	DC	THSZMS	DCSFMS	LF		APMX (mm)		
						25290					
181002600	032R25290-02-M16040	2	32	16	M16	29	40	0,162	8,0	RD... 1604...	⛃
181034800	032R25290-03-M16042	3	35	19	M16	29	42	0,230	8,0	RD... 1604...	◯

⛃ Stock item | Produto de stock | Itens de stock

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



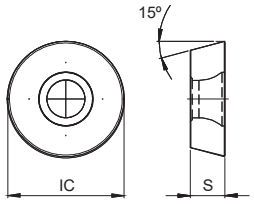
RDHW | RDHT | RDMW | RDMT Inserts | Pastilhas | Plaquitas


RDHT


RDHW


RDMT


RDMW



RDHT | RDHW | RDMT | RDMW

		P						K			H	Dimensions Dimensões Dimensiones (mm)	
		PVD						PVD			PVD		
	(2) Grade code	M6	54	68	78	86	I5	54	68	I5	M6		
(1) Geometry code	ISO Reference	PH6103	PH6910	PH6920	PH6125	PH6135	PH6740	PH6910	PH6920	PH6740	PH6103	IC	S
1110548	RDHW 0702 M0T	●	●	●				●	●		●	7,00	2,38
1110087	RDHW 1003 M0T	●	●	●		●		●	●		●	10,00	3,18
1110082	RDHT 1003 M0T				●	●						10,00	3,18
1110583	RDMT 1003 M0T				●	●						10,00	3,18
1110549	RDMW 1003 M0T			●	●	●						10,00	3,18
1110090	RDHW 12T3 M0T	●	●	●		●		●	●		●	12,00	3,97
1112040	RDHT 12T3 M0S-MP			●			●		●	●		12,00	3,97
1110083	RDHT 12T3 M0T				●	●						12,00	3,97
1110558	RDMT 12T3 M0T				●	●						12,00	3,97
1110096	RDMW 12T3 M0T			●	●	●			●			12,00	3,97
1110092	RDHW 1604 M0T	●	●	●		●		●	●		●	16,00	4,76
1112039	RDHT 1604 M0S-MP			●			●		●	●		16,00	4,76
1110084	RDHT 1604 M0T				●	●						16,00	4,76
1110556	RDMT 1604 M0T				●	△						16,00	4,76
1110097	RDMW 1604 M0T			●	●	●			●			16,00	4,76
1110869	RDMW 2006 M0T				●							20,00	6,35

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

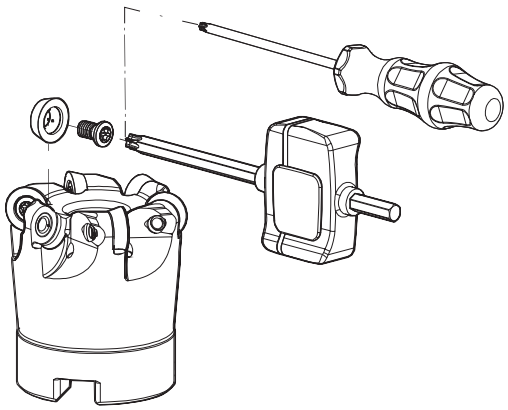
Insert Order Code: (1) Geometry code + (2) Grade code

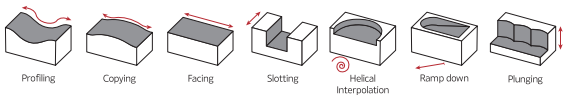
TOROMILL 24590 | 25090 | 25190 | 25290 | 25390

SPARE PARTS Acessórios | Repuestos

Cutter DC	Insert Screw	Key (Torx)	Order separately Key (Torx - Nm)	Torque Value	Order separately Screw Clamp	Washer	Washer Screw
							
24590							
W24590 - 15	P0250503	XT08	DT0812	1,2	-	-	-
R24590 - 15-20	P0250503	XT08	DT0812	1,2	-	-	-
25090							
W25090 - 20	P0350800	XT15	DT1530	3,0	-	-	-
R25090 - 20-42	P0350800	XT15	DT1530	3,0	-	-	-
A25090 - 42-52	P0350800	XT15	DT1530	3,0	-	-	-
25190							
W25190 - 25	P0350800	XT15	DT1530	3,0	-	-	-
R25190 - 24-42	P0350800	XT15	DT1530	3,0	-	-	-
C25190 - 50-80	P0350800	XT15	DT1530	3,0	P0350750	-	-
25290							
R25290 - 32-35	P0451001	XT20	DT2050	5,0	-	-	-
C25290 - 52-80	P0451001	XT20	DT2050	5,0	-	HC01200	P0451001
C25290 - 125-160	P0451001	XT20	DT2050	5,0	-	HC01200	P0451001
25390							
C25390 - 80-160	P0601402	TT20	-	10,0	-	HC01200	P0451001

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





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

ISO	PSM	Material	HB (Brinell)	Grades ← Wear Resistance — Toughness → PH6103	PH6910	PH6920	PH6125	PH6135	PH6740
P	1	Unalloyed Steel	125-220	✓	✓	✓	✓	✓	✓
	2	Low-Alloyed Steel	220-280	✓	✓	✓	✓	✓	✓
	3	High-Alloyed Steel	280-380	✓	✓	✓	✓	✓	✓
K	7	Malleable Cast Iron	130-230		✓	✓			✓
	8	Grey Cast Iron	180-245		✓	✓			✓
	9	Nodular Cast iron	160-250		✓	✓			✓
H	12	Hardened Steels	40-55 HRC	✓					

Good Conditions Average Conditions Difficult Conditions

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

ISO	PSM	Material	HB (Brinell)	Chip breaker application 1st choise	Dificult Operations
P	1	Unalloyed Steel	125-220	RD...T ...	RD...W ...
	2	Low-Alloyed Steel	220-280	RD...T ...	-
	3	High-Alloyed Steel	280-380	RD...W ...	-
K	7	Malleable Cast Iron	130-230	RD...T ...	RD...W ...
	8	Grey Cast Iron	180-245	RD...W ...	-
	9	Nodular Cast iron	160-250	RD...W ...	-
H	12	Hardened Steels	40-55 HRC	RD...W ...	-

TOROMILL 24590 | 25090 | 25190 | 25290 | 25390

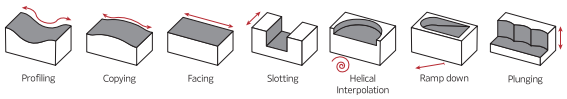
RECOMMENDED CUTTING CONDITIONS Condições de corte recomendadas | Condiciones de corte recomendables

ISO	PSM	Material	HB (Brinell)	Vc (m/min) ← Wear Resistance Toughness →					
				PH6103	PH6910	PH6920	PH6125	PH6135	PH6740
P	1	Unalloyed Steel	125-220	180-300	180-250	150-230	160-190	150-180	130-160
	2	Low-Alloyed Steel	220-280	180-250	170-210	140-220	140-180	140-170	120-150
	3	High-Alloyed Steel	280-380	180-230	160-200	130-180	130-160	120-150	100-130
K	7	Malleable Cast Iron	130-230	-	170-300	150-280	-	-	130-250
	8	Grey Cast Iron	180-245	-	150-250	130-230	-	-	110-220
	9	Nodular Cast iron	160-250	-	90-210	80-190	-	-	80-170
H	12	Hardened Steels	40-55 HRC	120-240	-	-	-	-	-

ISO	PSM	Material	HB (Brinell)	RD... 07		RD... 10		RD... 12	
				fz (mm/t)	AP (mm)	fz (mm/t)	AP (mm)	fz (mm/t)	AP (mm)
P	1	Unalloyed Steel	125-220	≤0,18	≤1,50	≤0,24	≤2,50	≤0,27	≤2,50
	2	Low-Alloyed Steel	220-280	≤0,18	≤1,50	≤0,24	≤2,50	≤0,25	≤2,50
	3	High-Alloyed Steel	280-380	≤0,15	≤1,50	≤0,21	≤2,50	≤0,20	≤2,50
K	7	Malleable Cast Iron	130-230	≤0,20	≤1,50	≤0,25	≤2,50	≤0,24	≤2,50
	8	Grey Cast Iron	180-245	≤0,20	≤1,50	≤0,25	≤2,50	≤0,24	≤2,50
	9	Nodular Cast iron	160-250	≤0,18	≤1,50	≤0,22	≤2,50	≤0,22	≤2,50
H	12	Hardened Steels	40-55 HRC	≤0,12	≤1,50	≤0,18	≤2,50	≤0,18	≤2,50

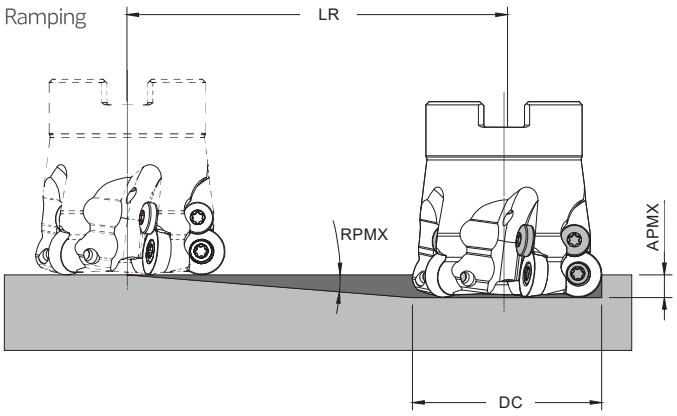
ISO	PSM	Material	HB (Brinell)	RD... 16		RD... 20	
				fz (mm/t)	AP (mm)	fz (mm/t)	AP (mm)
P	1	Unalloyed Steel	125-220	≤0,33	≤3,50	≤0,33	≤5,00
	2	Low-Alloyed Steel	220-280	≤0,33	≤3,50	≤0,33	≤5,00
	3	High-Alloyed Steel	280-380	≤0,27	≤3,50	≤0,27	≤5,00
K	7	Malleable Cast Iron	130-230	≤0,35	≤3,50	≤0,35	≤5,00
	8	Grey Cast Iron	180-245	≤0,35	≤3,50	≤0,35	≤5,00
	9	Nodular Cast iron	160-250	≤0,32	≤3,50	≤0,32	≤5,00
H	12	Hardened Steels	40-55 HRC	≤0,25	≤3,50	≤0,20	≤5,00

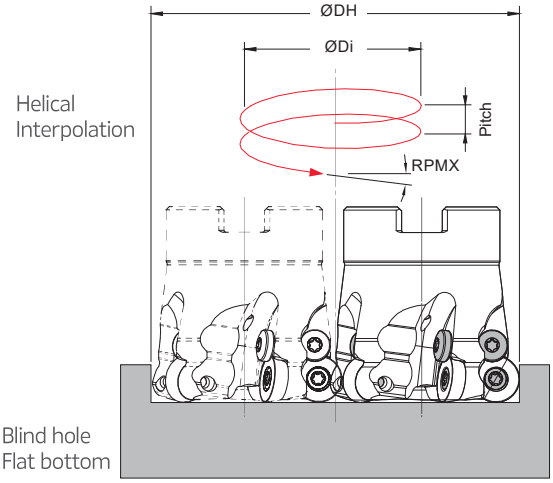
(Note 1) Cutting conditions a_e/Dc=70%.
(Note 2) Cutting conditions should be adjusted according to the machine and work rigidity.
(Note 3) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:
- When using long shank;
-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



RAMPING AND HELICAL INTERPOLATION

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





ØDi = ØDH - DC

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

Note: During helical interpolation do not exceed APMX.

41095 | 40095 | 40595

LINEPRO



The LINEPRO is a versatile profile milling tool equipped with carbide inserts suitable for steel, cast iron, and hardened steel operation, while offering carbide inserts with PCD tips for aluminum applications.

A LINEPRO é uma ferramenta versátil de fresagem de perfil equipada com pastilhas de metal duro adequadas para operações em aço, ferro fundido e aço temperado, enquanto oferece pastilhas de metal duro com pontas de PCD para aplicações em alumínio.

La LINEPRO es una herramienta versátil de fresado de perfil equipada con plaquitas de metal duro adecuadas para operaciones en acero, hierro fundido y acero endurecido, mientras que ofrece plaquitas de metal duro con puntas de PCD para aplicaciones en aluminio.

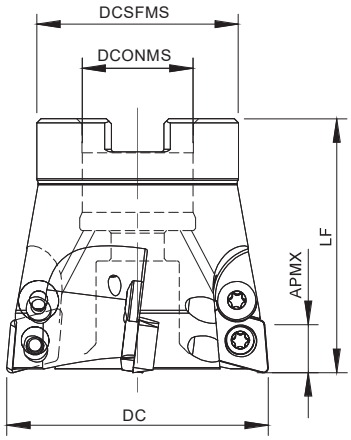
LINEPRO 41095 | 40095 | 40595 > page 270



- From DC 16mm to 80mm
  De DC 16mm a 80mm | Desde DC 16mm hasta 80mm
- Available in arbor mounting and threaded coupling
  Disponível em montagem tipo árvore e acoplamento roscado | Disponible en fijación con tornillo central y fijación roscada
- Screw clamp
  Parafuso de grampo | Tornillo de brida
- PCD tipped insert for aluminium application
  Pastilhas com pontas de PCD para aplicação em alumínio | Plaquitas con puntas de PCD para aplicación en aluminio

LINEPRO 41095 | 40095 | 40595





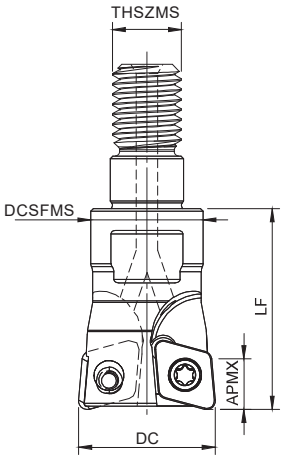
Arbor Mounting

KAPR=95° | GAMP=+7°

Order code Código	Reference Referência Referencia	CICT	Dimensions | Dimensões | Dimensiones (mm)				WT	Specifications		Insert Pastilha Inserto	Stock
			DC	DCONMS	DCSFMS	LF		Arbor Type	APMX (mm)		
40595											
181027700	052C40595-05-07-022050	5	52	22	40	50	0,342	A	1,0	XD... 10T3...	◈
181027800	066C40595-06-07-027050	6	66	27	48	50	0,565	A	1,0	XD... 10T3...	◈
181027900	080C40595-07-07-027050	7	80	27	60	50	0,972	A	1,0	XD... 10T3...	◈

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



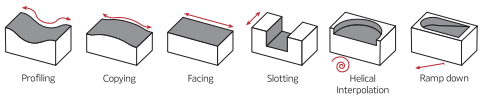


Threaded Coupling

KAPR=95° | GAMP=+7° (*+9°)

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

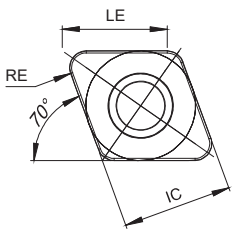
◈ Stock item | Produto de stock | Itens de stock ◯ Available under request (see page A-8) | Disponível sobre consulta (consulte a página A-8) | Disponible bajo consulta (mire pagina A-8)



XDHW Inserts | Pastilhas | Plaquitas



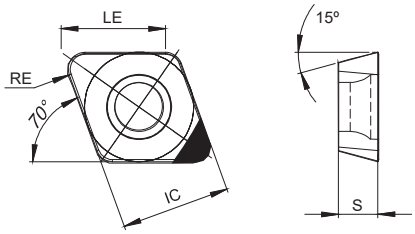
XDHW



XDHW



XDHW - PCD & PCBN (HARDMILL)



XDHW FN | XDHW SN

		P				K		N		H		Dimensions Dimensões Dimensiones (mm)			
		PVD				PVD		CVD	PCD	PVD	PCBN				
	(2) Grade code	M6	54	78	86	54	78	P2	D6	M6	S4				
(1) Geometry code	ISO Reference	PH6103	PH6910	PH6125	PH6135	PH6910	PH6125	PHD103	PDP410	PH6103	PBH920	IC	S	LE	RE
1110905	XDHW 040105	○	○	○		○		◈		○		4,00	1,59	4,00	0,50
1110573	XDHW 040110	◈	◈	◈		◈	◈	◈		◈		4,00	1,59	4,00	1,00
1112316	XDHW 040110 FN								◈			4,00	1,59	4,00	1,00
1112317	XDHW 040110 SN										◈	4,00	1,59	4,00	1,00
1110532	XDHW 060210	◈	◈	◈	◈	◈	◈	◈		◈		6,50	2,38	6,20	1,00
1112318	XDHW 060210 FN								◈			6,50	2,38	6,20	1,00
1111875	XDHW 060210 SN										◈	6,50	2,38	6,20	1,00
1110565	XDHW 10T310	◈	◈	◈	◈	◈	◈	○		◈		10,00	3,97	9,90	1,00
1112320	XDHW 10T310 FN								◈			10,00	3,97	9,90	1,00
1112321	XDHW 10T310 SN										◈	10,00	3,97	9,90	1,00

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

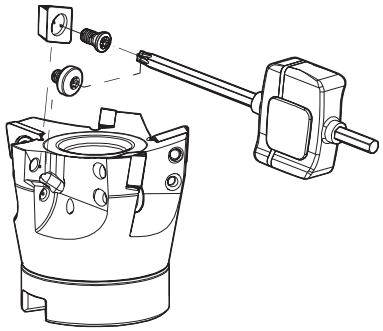
Insert order code = (1) Geometry Code + (2) Grade Code

LINEPRO 41095 | 40095 | 40595

SPARE PARTS Acessórios | Repuestos

Cutter DC	Insert Screw	Key (Torx)	Key (Torx - Nm) Order separately	Torque Value	Screw Clamp Order separately
R41095 – 10 - 12	P0180401	XT06	DT0606	0,6	-
R40095 – 16 - 25	P0250503	XT08	DT0812	1,2	-
R40595 – 25 - 42	P0350800	XT15	DT1530	3,0	-
C40595 – 52 - 80	P0350800	XT15	DT1530	3,0	P0350750

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



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

ISO	PSM	Material	HB (Brinell)	Grades ← Wear Resistance			Toughness →		PCD	PCBN
				PHD103	PH6103	PH6910	PH6125	PH6135	PDP410	PBH920
P	1	Unalloyed Steel	125-220		✓	✓	✓	✓		
	2	Low-Alloyed Steel	220-280		✓	✓	✓	✓		
	3	High-Alloyed Steel	280-380		✓	✓	✓	✓		
K	7	Malleable Cast Iron	130-230				✓			
	8	Grey Cast Iron	180-245				✓			
	9	Nodular Cast iron	160-250				✓			
N	10	Aluminium and Non Ferrous	30-130	✓					✓	
H	12	Hardened Steels	40-55 HRC		✓					✓

Good Conditions Average Conditions Difficult Conditions

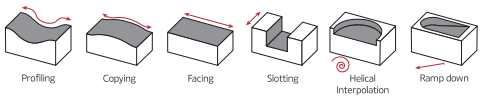
RECOMMENDED CUTTING CONDITIONS Condições de corte recomendadas | Condiciones de corte recomendables

ISO	PSM	Material	HB (Brinell)	Vc (m/min) ← Wear Resistance			Toughness →		PCD	PCBN
				PHD103	PH6103	PH6910	PH6125	PH6135	PDP410	PBH920
P	1	Unalloyed Steel	125-220	-	180-300	180-250	160-190	150-180	-	-
	2	Low-Alloyed Steel	220-280	-	180-250	170-210	140-180	140-170	-	-
	3	High-Alloyed Steel	280-380	-	180-230	160-200	130-160	120-150	-	-
K	7	Malleable Cast Iron	130-230	-	-	170-300	160-290	-	-	-
	8	Grey Cast Iron	180-245	-	-	150-250	140-240	-	-	-
	9	Nodular Cast iron	160-250	-	-	90-210	80-200	-	-	-
N	10	Aluminium and Non Ferrous	30-130	300-1000	-	-	-	-	800-3000	-
H	12	Hardened Steels	40-55 HRC	-	120-260	-	-	-	-	200-600

(Note 1)

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

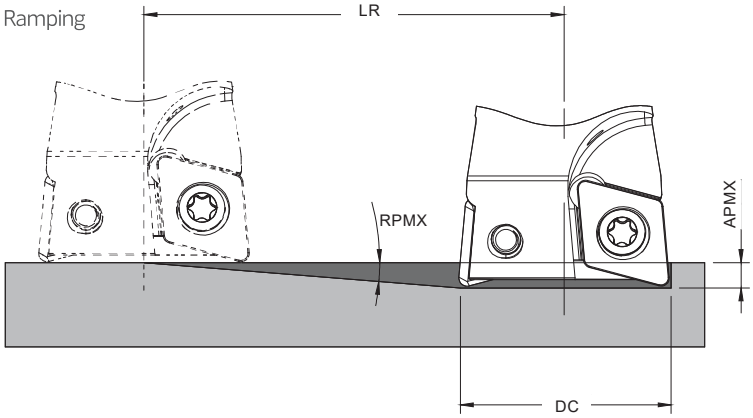
(Note 2) Cutting conditions should be ajusted according to the machine and work rigidity.
(Note 3) If chattering occurs, reduce ap and Vc by 30% and keep the same fz per tooth.



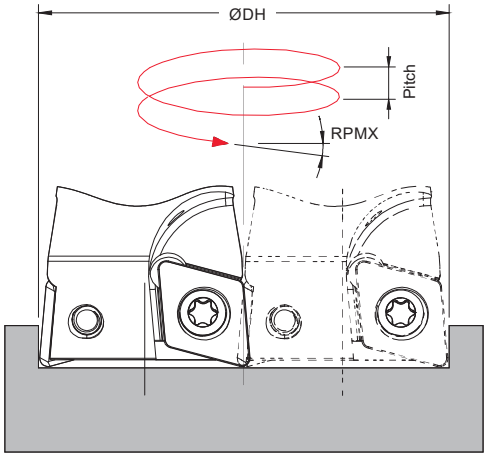
RAMPING AND HELICAL INTERPOLATION

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

Ramping



Helical Interpolation



Blind hole
Flat bottom

ØDi = ØDH - DC

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

Note: During helical interpolation do not exceed APMX.