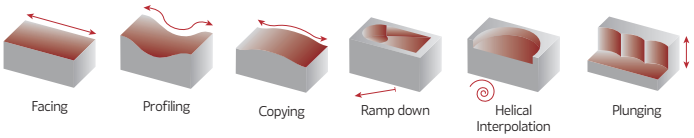
TetraFeed
Double-sided high feed milling solution



palbit TOOLING SOLUTIONS EXPERTS SINCE1916

NEW
TETRAFEED
16320

PHP NEW GRADE

PHH NEW GRADE

PHS NEW GRADE

PDF

VIDEO

INSERT SIZE 06 XNKU 06T3

NEW

SINCE 1916

NEW PHP | PHH - MILLING GRADES

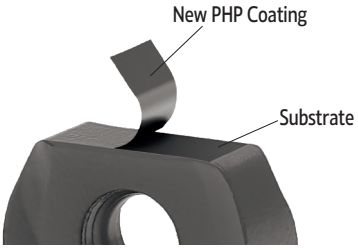
NEW

Novos graus de fresagem | Nuevos grados de fresado

The new grades PHP and PHH are the result achieved by a new PVD coating technology. This method allows the formation of sputter smooth coatings, with superior adhesion, higher oxidation resistance and improved wear resistance, comparatively to standard PVD coating.
Test results shows that with the same material and cutting conditions this new grades can improve tool life up to 30%.

PHP NEW GRADE

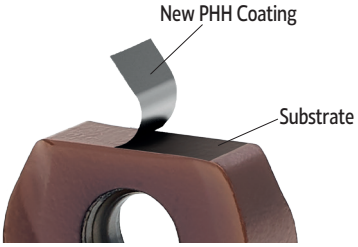
PHP GRADE - PVD grade



This new PHP coating technology coating provides hardness stabilization which improves wear and welding resistance.
For high-performance applications in unalloyed, alloyed and high-speed steels and suitable for cast iron machining.

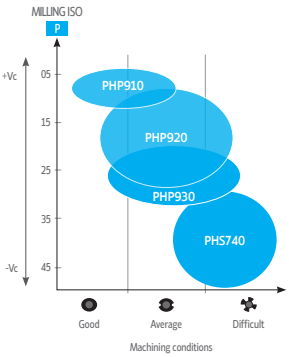
PHH NEW GRADE

PHH GRADE - PVD grade

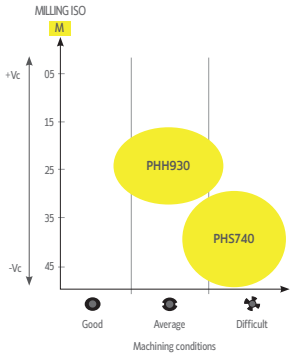


This new PHH coating technology has a very high thermal stability and provides long tool life.
For applications in machining of hardened steels, stainless steels and titanium alloys.

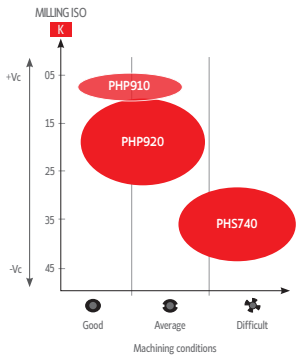
P - STEEL



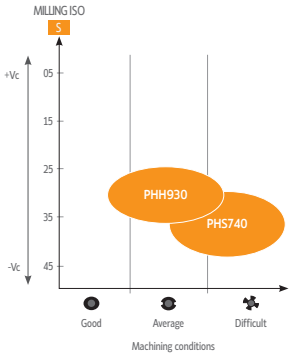
M - STAINLESS STEEL



K - CAST IRON

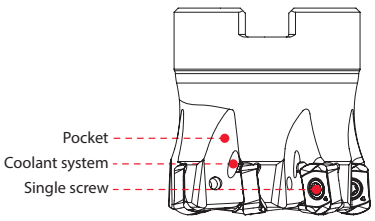


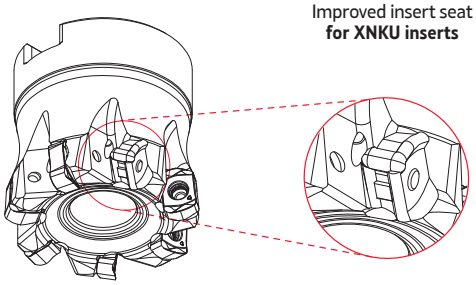
S - HEAT RESISTANT / TITANIUM ALLOYS

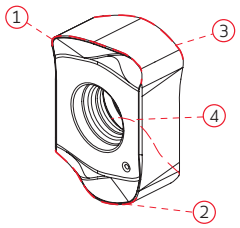


TETRAFEED 16320

NEW







MILLING CUTTER

Design
- Optimized design for better chip evacuation;

Pocket
- Strong pocket design for better cutter body durability;
- Improved insert seat;

INSERT

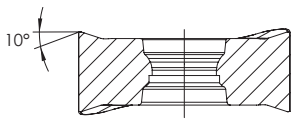
Insert Width
- Large cross section;

Cutting edge
- Improved cutting edge;
- Improved wear resistance;

Double-sided insert
- Double-sided insert with 4 cutting edges;

XNKU 06T3

XNKU-MP



P M K S

INSERT SIZE 06 XNKU 06T3

NEW

XNKU-MP

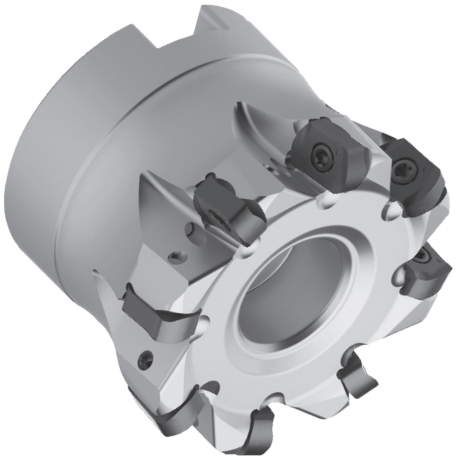
GEOMETRY FEATURES ‖ Características geométricas | Características geométricas

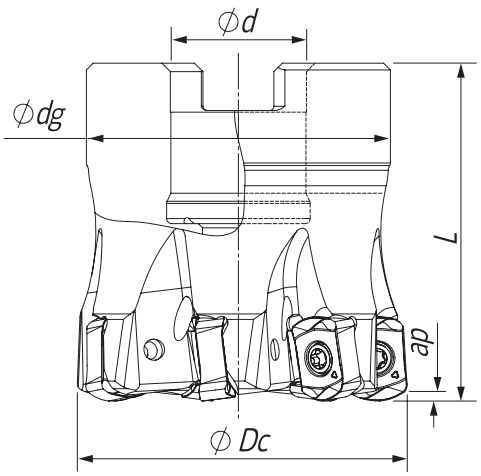
Geometry	Features | Características | Características
Geometry MP General machining	Geometry with a reinforced cutting edge for general applications on different materials.

palbit TOOLING SOLUTIONS EXPERTS SINCE 1916

TETRAFEED 16320

NEW



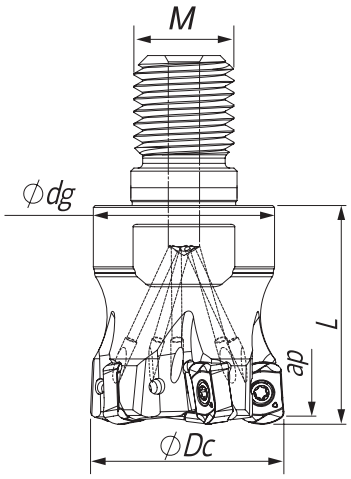


Arbor Mounting

K_r=20° | γ_p=-7° | Rp=1,8

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications		Insert	Stock
			ØDc	Ød	Ødg	L		Ap max (mm)	Arbor Type		
181152300	040A16320-07-07-016040	7	40	16	36	40	0,20	1,00	A	XNKU 06...	◈
181157500	050A16320-06-07-022040	6	50	22	42	40	0,25	1,00	A	XNKU 06...	◈
181152400	050A16320-08-07-022040	8	50	22	42	40	0,29	1,00	A	XNKU 06...	◈
181152500	052A16320-08-07-022040	8	52	22	40	40	0,39	1,00	A	XNKU 06...	◈
181152600	063A16320-09-07-022040	9	63	22	48	40	0,50	1,00	A	XNKU 06...	◈

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



Threaded Coupling

K_r=20° | γ_p=-7° | Rp=1,8

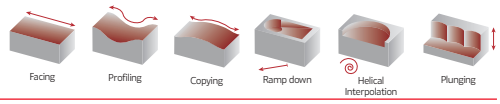
Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications	Insert	Stock
			ØDc	ØM	Ødg	L		Ap max (mm)		
181151300	016R16320-02-07-M08025	2	16	M08	13	25	0,02	1,00	XNKU 06...	◈
181151400	020R16320-03-07-M10028	3	20	M10	18	28	0,05	1,00	XNKU 06...	◈
181151500	025R16320-04-07-M12035	4	25	M12	18	35	0,07	1,00	XNKU 06...	◈
181148000	032R16320-05-07-M16035	5	32	M16	29	35	0,16	1,00	XNKU 06...	◈
NEW 181178600	035R16320-05-07-M16035	5	35	M16	29	35	0,16	1,00	XNKU 06...	◈
181151600	035R16320-06-07-M16035	6	35	M16	29	35	0,17	1,00	XNKU 06...	◈
181151700	040R16320-05-07-M16045	5	40	M16	29	45	0,24	1,00	XNKU 06...	◈
NEW 181178500	040R16320-06-07-M16035	6	40	M16	29	35	0,23	1,00	XNKU 06...	◈
181151800	042R16320-07-07-M16035	7	42	M16	29	35	0,24	1,00	XNKU 06...	◈

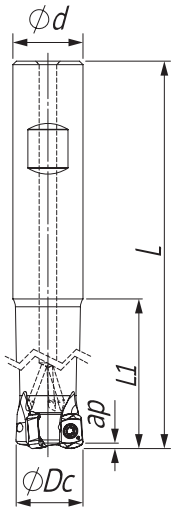
◈ Stock item | Produto de stock | Itens de stock ◯ Available under request | Disponível sobre consulta | Disponible bajo consulta

TETRAFEED 16320

XNKU

NEW





Weldon Shank

K_r=20° | γ_p=-7° | Rp=1,8

Order code Código	Reference Referência Referencia		Dimensions | Dimensões | Dimensiones (mm)				Kg	Specifications	Insert	Stock
			ØDc	Ød	L	L1		Ap max (mm)		
181161000	016W16320-02-07-016150	2	16	16	150	50	0,19	1,00	XNKU 06...	◈
181151900	020W16320-03-03-020160	3	20	20	160	90	0,29	1,00	XNKU 06...	◈
181152000	025W16320-04-07-025180	4	25	25	180	100	0,40	1,00	XNKU 06...	◈
181152100	032W16320-05-07-032200	5	32	32	200	120	1,10	1,00	XNKU 06...	◈

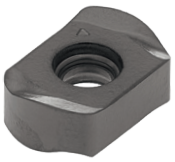
◈ Stock item | Produto de stock | Itens de stock

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

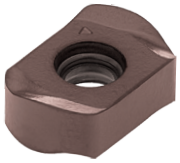
XNKU 06T3... | Inserts | Pastilhas | Plaquitas

PHP NEW GRADE · PHH NEW GRADE · PHS NEW GRADE

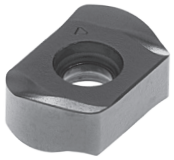
XNKU-MP (PHP grade)



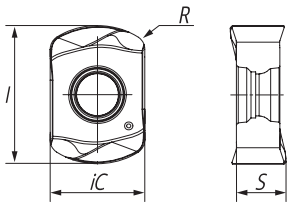
XNKU-MP (PHH grade)



XNKU-MP (PHS grade)



XNKU-MP



		P				M		K		S		Dimensions Dimensões Dimensiones (mm)			
		CVD	PVD			CVD	PVD	CVD	PVD	CVD	PVD				
	(2) Grade code	T9	G4	T1	P4	T9	X9	T9	T1	T9	X9				
(1) Geometry code	ISO Reference	PHS740	PHP910	PHP920	PHP930	PHS740	PHH930	PHS740	PHP920	PHS740	PHH930	iC	S	l	R
NEW 1112802	XNKU 06T310-MP	◈	◈	◈	◯	◈	◈	◈	◈	◈	◈	6,85	3,60	10,00	1,00

◈ First choice | Primeira opção | 1ª opción

◈ Stock item | Produto de stock | Itens de stock

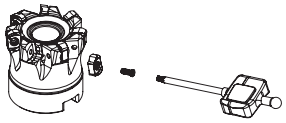
◯ Available under request | Disponível sobre consulta | Disponible bajo consulta

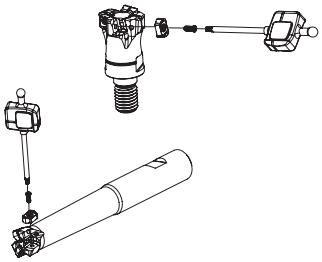
Insert order code = (1) Geometry Code + (2) Grade Code

SPARE PARTS Complementos | Repuestos

Order separately

Cutter ØDc	Insert Screw	Key (Torx)	Key (Torx - Nm)	Torque Value
				
A16320 - 40-63	P0250704	XT08	DT0812	1,20
R16320 - 20-42	P0250704	XT08	DT0812	1,20
W16320 - 20-32	P0250704	XT08	DT0812	1,20





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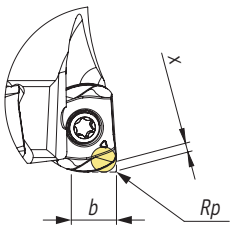
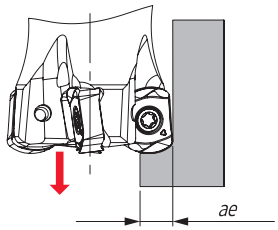
PROGRAMMING DATA | Dados para programação | Datos para la programación

Insert	Programming Data			
	Rp	X	b	a_e
XNKU 06T310-MP	1,8	0,4	3,6	3,4





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

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

Good Conditions

Average Conditions

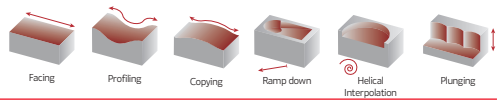
Difficult Conditions

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

ISO	PSM	Material	HB (Brinell)	Vc (m/min) ← Wear Resistance — Toughness →					Feed fz (mm/t)
				PHP910	PHP920	PHP930	PHH930	PHS740	XNKU 06...-MP
P	1	Unalloyed Steel	125-220	180-250	180-250	160-230	-	160-230	0,50-1,50
	2	Low-Alloyed Steel	220-280	160-240	170-210	150-190	-	150-190	0,50-1,50
	3	High-Alloyed Steel	280-380	140-230	160-200	140-180	-	140-180	0,50-1,50
M	4	SS - Ferritic / Martensitic	200-330	-	-	-	130-170	120-180	0,50-1,40
	5	SS - Austenitic	200-330	-	-	-	100-160	100-150	0,50-1,40
	6	SS - Austenitic-ferritic (Duplex)	230-260	-	-	-	80-140	70-130	0,50-1,40
K	7	Malleable Cast Iron	130-230	180-300	180-320	-	-	160-300	0,50-1,50
	8	Grey Cast Iron	180-245	160-250	170-280	-	-	150-260	0,50-1,50
	9	Nodular Cast iron	160-250	150-210	100-240	-	-	80-220	0,50-1,50
S	11	Heat Resistant Super Alloys	200-320	-	-	-	30-75	30-70	0,50-1,30

(Note 1) Cutting conditions a_e/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.

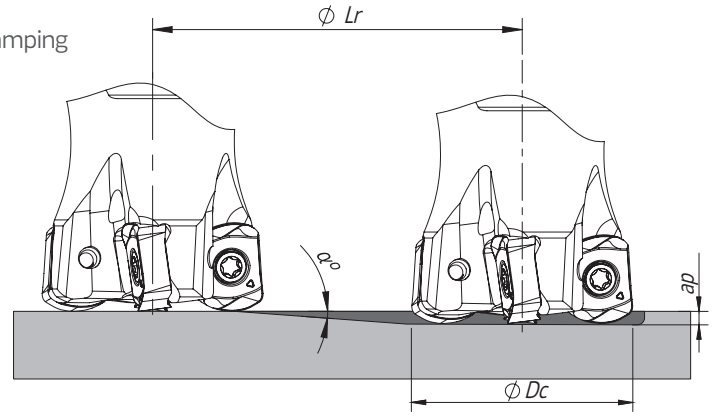
(Note 3) When using ØDc=16mm apply 70% or less feed (fz) from the table.



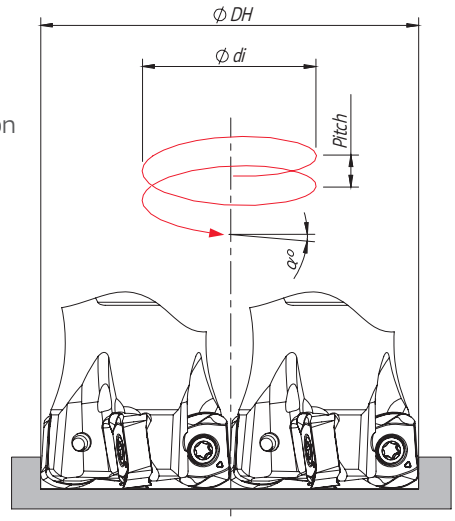
RAMPING AND HELICAL INTERPOLATION

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

Ramping



Helical Interpolation



Blind hole
Flat bottom

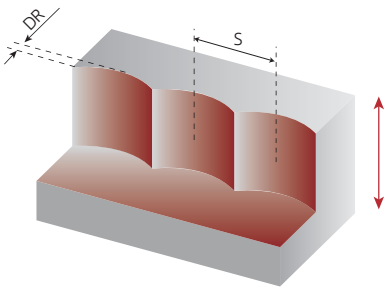
Ødi = ØDH - ØDc

ØDc	Ramping			Helical Interpolation		
	Max Ramp a°	Max a_p	Min Lr	ØDHmin	ØDHmax	Max Pitch/Rev.
16	0,5	1	114,6	24,8 -	- 30,0	0,2 0,3
20	0,5	1	114,6	32,8 -	- 38,0	0,3 0,4
25	0,8	1	71,6	42,8 -	- 48,0	0,7 1,0
32	0,8	1	71,6	56,8 -	- 62,0	1,0 1,3
35	0,5	1	114,6	62,8 -	- 68,0	0,7 0,9
40	0,4	1	143,2	72,8 -	- 78,0	0,7 0,8
42	0,4	1	143,2	76,8 -	- 82,0	0,7 0,8
50	0,3	1	191,0	92,8 -	- 98,0	0,7 0,7
52	0,3	1	191,0	96,8 -	- 102,0	0,7 0,8
63	0,25	1	229,2	118,8 -	- 124,0	0,7 0,8

Note: During helical interpolation do not exceed max Pitch.
(*) Down cutting is recommended, tool pass rotation should be counter-clockwise.
(*) In case of ramping and helical interpolation, apply 70% or less feed (fz) from recommended cutting conditions table.

PLUNGING | Mergulho | Plunge

L≤3Dc	L>3Dc	S max.
f_z (mm/t)		
0,08-0,15	0,05 - 0,10	$Smax = \sqrt{DC.Dr-Dr^2}$



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

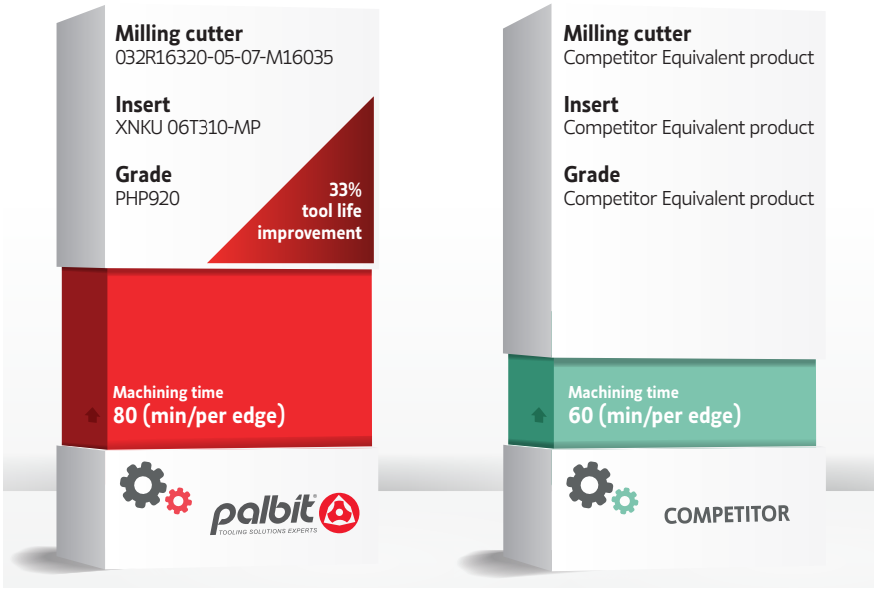
Note: Recommended for L ≤ 4 Dc for extra long tool this step and side cut must be reduced.

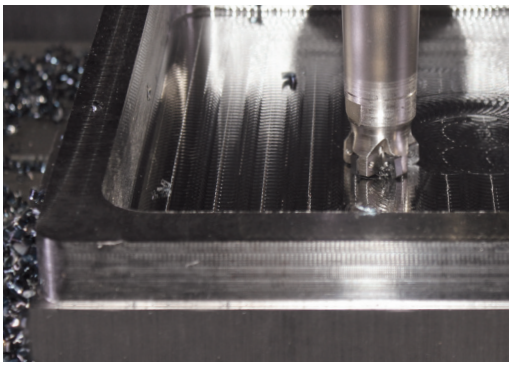
TETRAFEED 16320 - XNKU 06T3

SINCE 1916

PHP TEST REPORT

PHP NEW GRADE



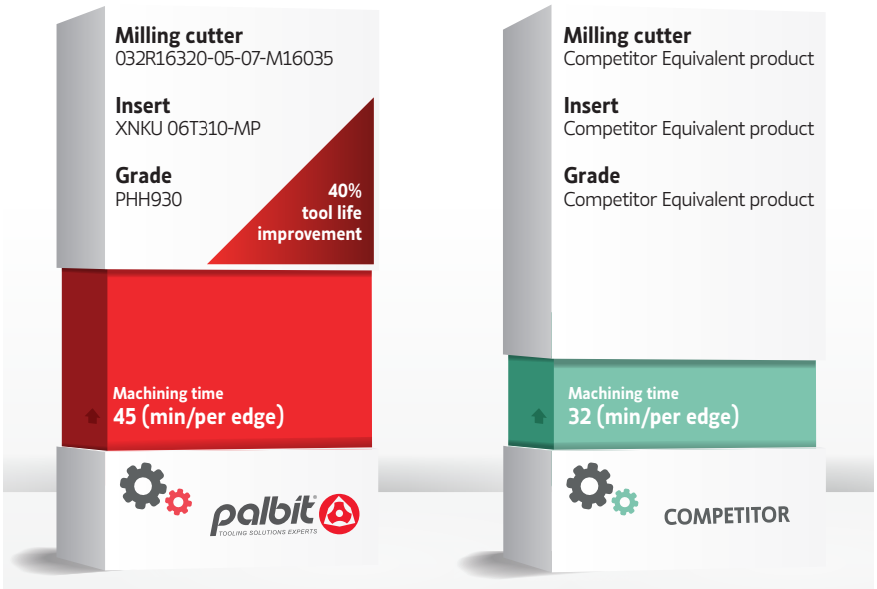


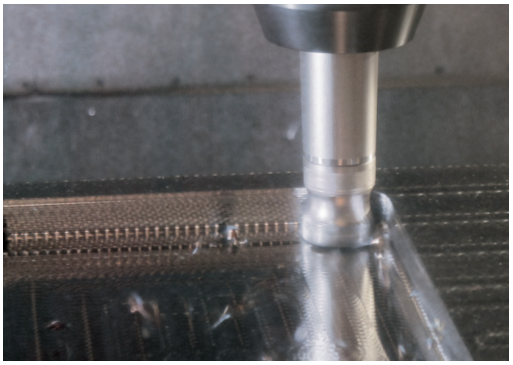
Workpiece material: 40CrMnNiMo7 (1.2738) - (32-36 HRC)

Cutting speed: Vc (m/min)	200
Feed per tooth: fz (mm/t)	0,65
Depth of cut: ap (mm)	1,0
Width of cut: ae (mm)	24
Method of machining	Ramping and Helical Interpolation
Coolant	Dry

PHH TEST REPORT

PHH NEW GRADE





Workpiece material: stainless steel, AISI 316

Cutting speed: Vc (m/min)	120
Feed per tooth: fz (mm/t)	1,0
Depth of cut: ap (mm)	0,5
Width of cut: ae (mm)	24
Method of machining	Ramping and Helical Interpolation
Coolant	Dry

FYMKT_52_ED00_REV10

palbit TOOLING SOLUTIONS EXPERTS

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