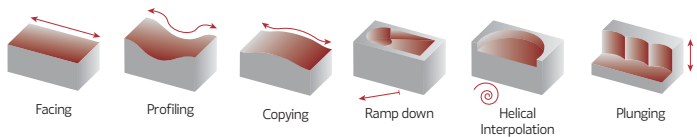


# TetraFeed

## Double-sided high feed milling solution



TETRAFEED  
XN20-06

NEW



INSERT SIZE  
**06** XNKU  
06T3



NEW

SINCE 1916

# NEW PHP | PHH = MILLING GRADES

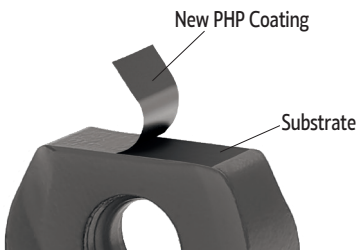


Novos graus de fresagem | Nuevos grados de fresado

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.

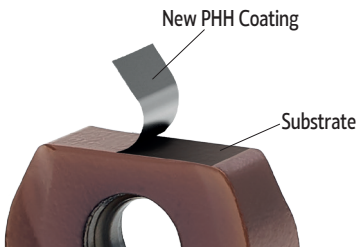
Test results shows that with the same material and cutting conditions this new grades can improve tool life up to 30%.

## PHP 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 GRADE = PVD grade



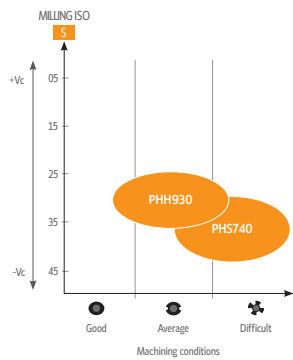
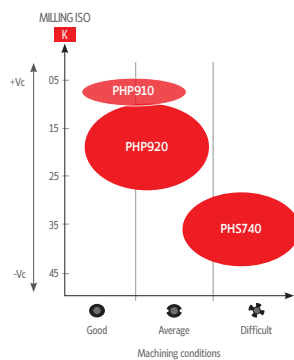
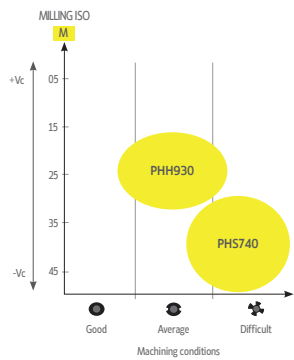
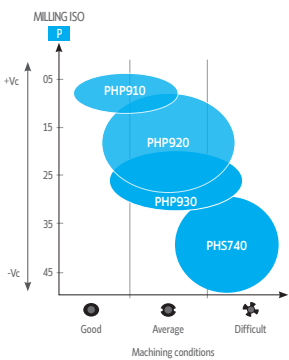
This new PHH coating technology has a very high thermal stability and provides long tool life. For applications in machining of hardened steels, stainless steels and titanium alloys.

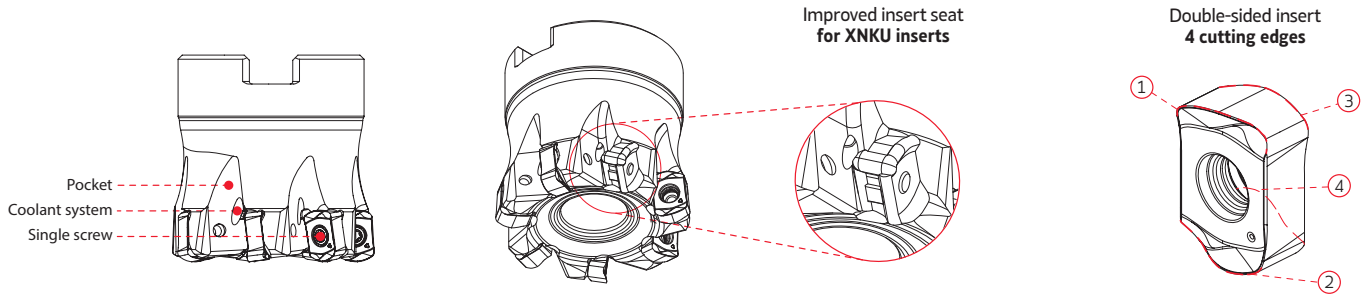
### P - STEEL

### M - STAINLESS STEEL

### K - CAST IRON

### S - HEAT RESISTANT / TITANIUM ALLOYS





## 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

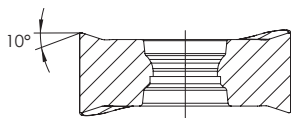
- Improved cutting edge;
- Improved wear resistance;

### Double-sided insert

- Double-sided insert with 4 cutting edges;

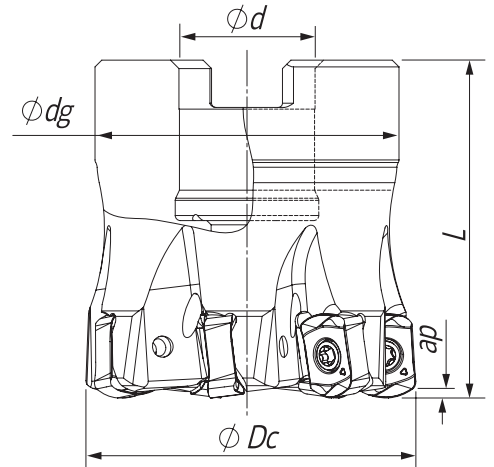
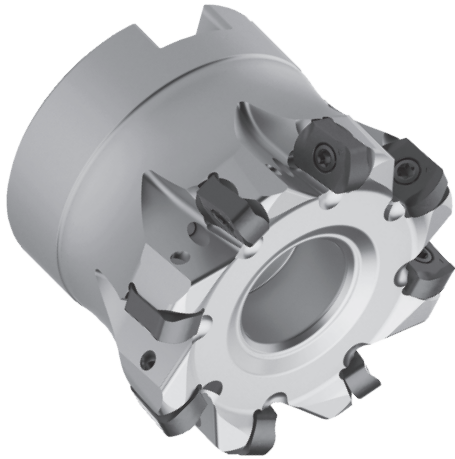
# XNKU 06T3

XNKU-MP



## GEOMETRY FEATURES | Características geométricas | Características geométricas

Geometry	Features   Características   Características
Geometry <b>MP</b> General machining	Geometry with a reinforced cutting edge for general applications on different materials.

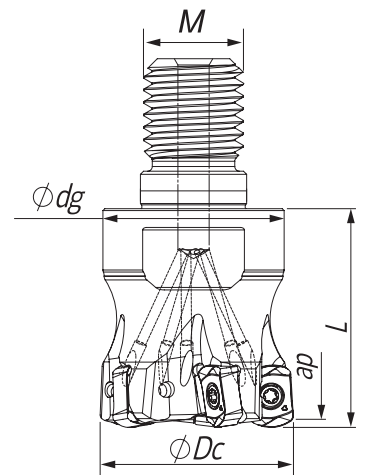


**Arbor Mounting**  
 $\kappa_r=20^\circ$  |  $\gamma_p=-7^\circ$  |  $R_p=0.071$

Order code Código	Reference Referência Referencia		Dimensions   Dimensões   Dimensiones (in)					Specifications		Insert	Stock	
			$\phi Dc$	$\phi d/M$	$\phi dg$	L		Ap max (in)	Arbor Type			
181169900	XN20 D1.50-A.500/1.50-07-06		7	1.500	0.500	1.450	1.500	0.434	0.040	A	XNKU 06...	
181170000	XN20 D2.00-A.750/1.50-08-06		8	2.000	0.750	1.770	1.500	0.725	0.040	A	XNKU 06...	
181170100	XN20 D2.50-A1.00/1.50-09-06		9	2.500	1.000	1.850	1.500	1.100	0.040	A	XNKU 06...	

Stock item | Produto de stock | Itens de stock

Available under request (see page A-10) | Disponível sobre consulta (consulte a página A-10) | Disponible bajo consulta (mire página A-10)

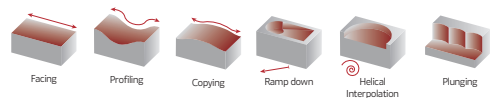


**Threaded Coupling**  
 $\kappa_r=20^\circ$  |  $\gamma_p=-7^\circ$  |  $R_p=0.071$

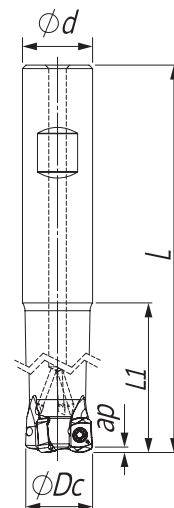
Order code Código	Reference Referência Referencia		Dimensions   Dimensões   Dimensiones (in)					Specifications		Insert	Stock
			$\phi Dc$	$\phi d/M$	$\phi dg$	L		Ap max (in)	Arbor Type		
181169400	XN20 D.625-R-08/.984-02-06		2	0.625	M8	0.580	0.985	0.050	0.040	XNKU 06...	
181169500	XN20 D.750-R-10/1.18-03-06		3	0.750	M10	0.730	1.180	0.090	0.040	XNKU 06...	
181169600	XN20 D1.00-R-12/1.18-04-06		4	1.000	M12	0.905	1.180	0.145	0.040	XNKU 06...	
181169700	XN20 D1.25-R-16/1.38-05-06		5	1.250	M16	1.180	1.380	0.340	0.040	XNKU 06...	
181169800	XN20 D1.50-R-20/1.58-06-06		6	1.500	M20	1.440	1.575	0.455	0.040	XNKU 06...	

Stock item | Produto de stock | Itens de stock

Available under request (see page A-10) | Disponível sobre consulta (consulte a página A-10) | Disponible bajo consulta (mire página A-10)



**Weldon Shank**  
 $K_r=20^\circ$  |  $\gamma_p=-7^\circ$  |  $R_p=0.071$



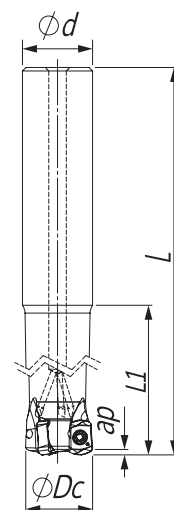
Order code Código	Reference Referência Referencia		Dimensions   Dimensões   Dimensiones (in)				 lbs	Specifications	Insert	Stock
			$\phi Dc$	$\phi d/M$	L	L1		$A_p$ max (in)		
181170200	XN20 D.625-W.625/3.50-02-06	2	0.625	0.625	3.500	1.250	0.224	0.040	XN KU 06...	
181170300	XN20 D.750-W.750/4.00-03-06	3	0.750	0.750	4.000	1.750	0.372	0.040	XN KU 06...	
181170400	XN20 D1.00-W1.00/5.00-04-06	4	1.000	1.000	5.000	2.500	0.782	0.040	XN KU 06...	
181170500	XN20 D1.25-W1.25/5.00-05-06	5	1.250	1.250	5.000	2.500	1.316	0.040	XN KU 06...	

Stock item | Produto de stock | Itens de stock

Available under request (see page A-10) | Disponível sobre consulta (consulte a página A-10) | Disponible bajo consulta (mire pagina A-10)



**Cylindrical Shank**  
 $K_r=20^\circ$  |  $\gamma_p=-7^\circ$  |  $R_p=0.071$



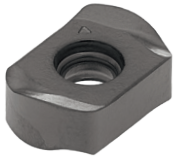
Order code Código	Reference Referência Referencia		Dimensions   Dimensões   Dimensiones (in)				 lbs	Specifications	Insert	Stock
			$\phi Dc$	$\phi d/M$	L	L1		$A_p$ max (in)		
181170600	XN20 D.625-C.625/6.00-02-06	2	0.625	0.625	6.000	2.000	0.458	0.040	XN KU 06...	
181170700	XN20 D.750-C.750/6.50-03-06	3	0.750	0.750	6.500	2.950	0.632	0.040	XN KU 06...	
181170800	XN20 D1.00-C1.00/7.00-04-06	4	1.000	1.000	7.000	4.000	1.106	0.040	XN KU 06...	
181170900	XN20 D1.25-C1.25/8.00-05-06	5	1.250	1.250	8.000	5.000	2.074	0.040	XN KU 06...	
181171000	XN20 D1.50-C1.50/5.00-06-06	6	1.500	1.500	5.000	2.250	1.973	0.040	XN KU 06...	

Stock item | Produto de stock | Itens de stock

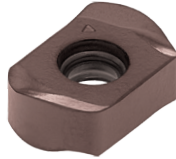
Available under request (see page A-10) | Disponível sobre consulta (consulte a página A-10) | Disponible bajo consulta (mire pagina A-10)

## XNKU 06T3... | Inserts | Pastilhas | Plaquetas

XNKU-MP  
(PHP grade)



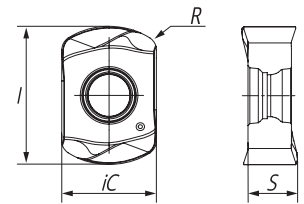
XNKU-MP  
(PHH grade)



XNKU-MP  
(PHS grade)



XNKU-MP



		P		M		K		S		Dimensions Dimensões Dimensiones (in)							
		CVD	PVD	CVD	PVD	CVD	PVD	CVD	PVD								
<sup>(2)</sup> Grade code		T9	X5	T1	P4	T9	X9	T9	X5	T1	T9	X9					
<sup>(1)</sup> Geometry code	ISO Reference	PHS740	PHP910	PHP920	PHP930	PHS740	PHH930	PHS740	PHP910	PHP920	PHS740	PHH930	iC	S	I	R	F
1112802	XNKU 06T310-MP												0.270	0.142	0.394	0.039	-

First choice | Primeira opção | 1ª opción

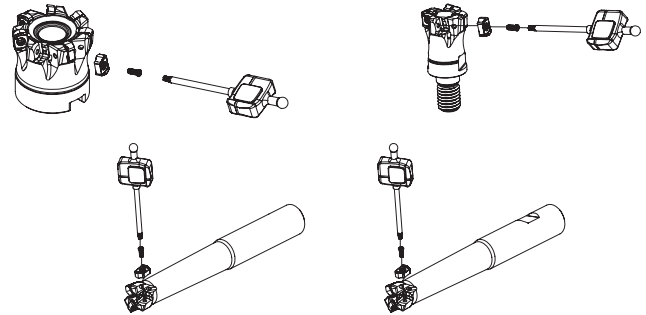
Stock item | Produto de stock | Itens de stock

Available under request | Disponível sobre consulta  
Disponível bajo consulta

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

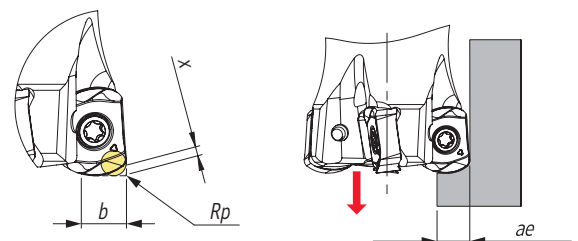
## SPARE PARTS Complementos | Repuestos

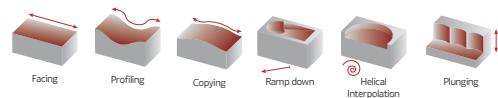
Cutter ØDc	Insert Screw 	Key (Torx) 	Order separately	
			Key (Torx - Nm) 	Torque Value 
XN-A-06 - 1.500-2.500	P0250704	XT08	DT0812	10.6
XN-R-06 - 0.625-1.500	P0250704	XT08	DT0812	10.6
XN-W-06 - 0.265-1.250	P0250704	XT08	DT0812	10.6
XN-C-06 - 0.625-1.500	P0250704	XT08	DT0812	10.6



## PROGRAMMING DATA | Dados para programação | Datos para la programación

Insert	Programming Data			
	Rp	X	b	ae
XNKU 06T310-MP	0.071	0.016	0.142	0.134





## 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 (sfm)					Feed fz (in/t)
				← Wear Resistance			Toughness →		
				PHP910	PHP920	PHP930	PHH930	PHS740	
P	1	Unalloyed Steel	125-220	590-820	590-820	525-755	-	525-755	0.020-0.060
	2	Low-Alloyed Steel	220-280	525-790	560-690	490-625	-	490-620	0.020-0.060
	3	High-Alloyed Steel	280-380	460-755	525-655	460-590	-	460-590	0.020-0.060
M	4	SS - Ferritic / Martensitic	200-330	-	-	-	425-560	395-590	0.020-0.055
	5	SS - Austenitic	200-330	-	-	-	330-525	330-490	0.020-0.055
	6	SS - Austenitic-ferritic (Duplex)	230-260	-	-	-	260-455	230-420	0.020-0.055
K	7	Malleable Cast Iron	130-230	590-985	590-1050	-	-	525-985	0.020-0.060
	8	Grey Cast Iron	180-245	525-820	560-920	-	-	490-850	0.020-0.060
	9	Nodular Cast iron	160-250	490-690	330-790	-	-	260-720	0.020-0.060
S	11	Heat Resistant Super Alloys	200-320	-	-	-	100-245	100-230	0.020-0.050

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

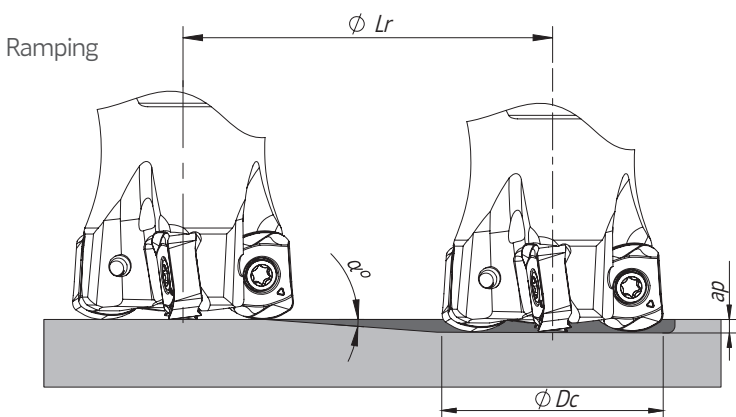
(Note 2) It's possible to occur vibrations in certain cases. Please reduce depth of cut and / or reduce cutting conditions in following cases:

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

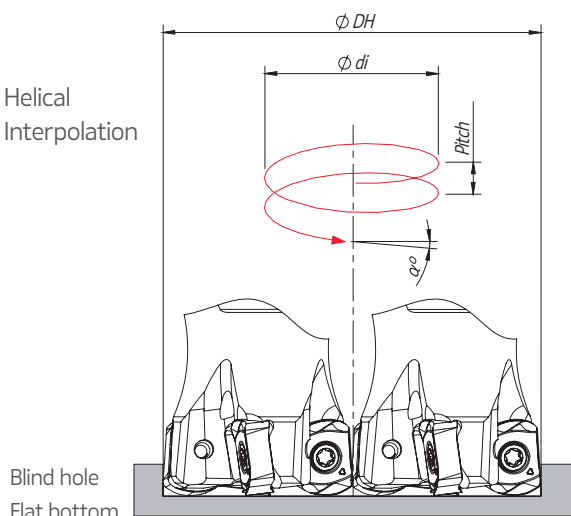
(Note 3) When using  $\phi D_c=0.625$ in apply 70% or less feed (fz) from the table.

## RAMPING AND HELICAL INTERPOLATION

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



Helical Interpolation



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

$\phi Dc$	Ramping			Helical Interpolation		
	Max Ramp $a^\circ$	Max $ap$	Min $Lr$	$\phi DH_{min}$	$\phi DH_{max}$	Max Pitch/Rev.
0.625	0.5	0.039	4.469	0.966	-	0.009
				-	1.171	0.014
0.750	0.5	0.039	4.469	1.216	-	0.012
				-	1.421	0.018
1.000	0.8	0.039	2.793	1.716	-	0.031
				-	1.921	0.040
1.250	0.8	0.039	2.793	2.216	-	0.042
				-	2.421	0.051
1.500	0.4	0.039	5.586	2.716	-	0.026
				-	2.921	0.031
2.000	0.3	0.039	7.448	3.716	-	0.028
				-	3.921	0.031
2.500	0.25	0.039	8.938	4.716	-	0.030
				-	4.921	0.030

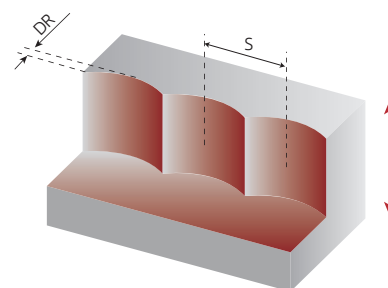
Note: During helical interpolation do not exceed max Pitch.

(\*) 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

$L \leq 3Dc$	$L > 3Dc$	$S_{max}$
$f_z$ (in/t)		
0.004-0.006	0.002-0.004	$S_{max} = \sqrt{DC \cdot Dr - Dr^2}$



S max and DR corresponding cutting diameter $Dc$ (in)							
$DR$ (in)	$Dc$ (in)						
	0.625	0.750	1.000	1.250	1.500	2.000	2.500
0.039	0.151	0.167	0.194	0.217	0.239	0.277	0.310
0.079	0.208	0.230	0.270	0.304	0.335	0.390	0.437
0.118	0.245	0.273	0.323	0.365	0.404	0.471	0.530

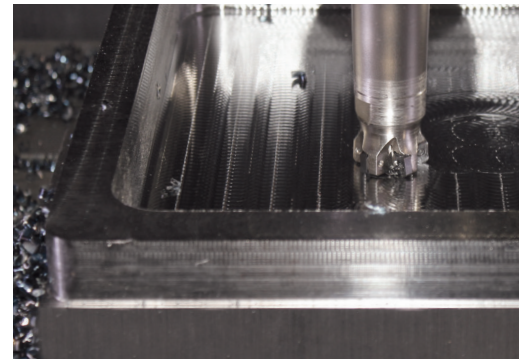
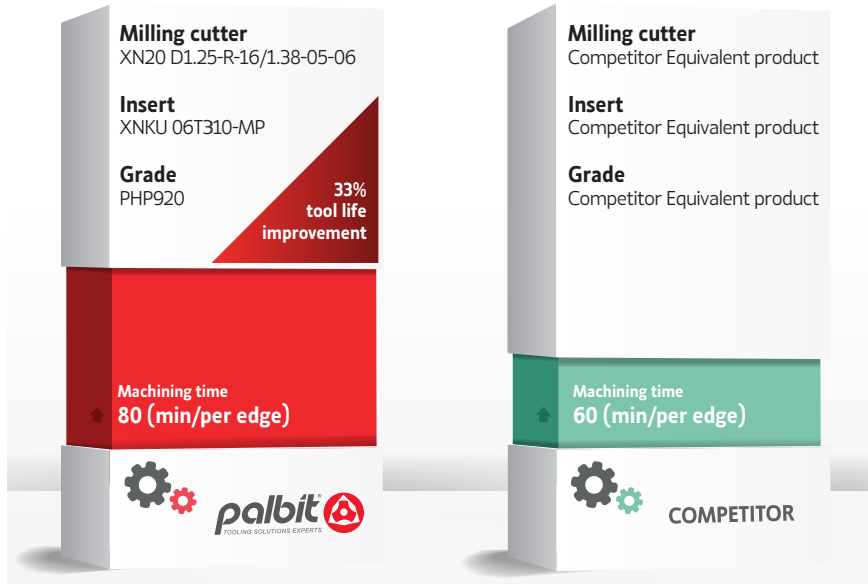
Note: Recommended for  $L \leq 4 Dc$  for extra long tool this step and side cut must be reduced.



# TETRAFEED XN20-06 = XNKU 06T3



## PHP TEST REPORT

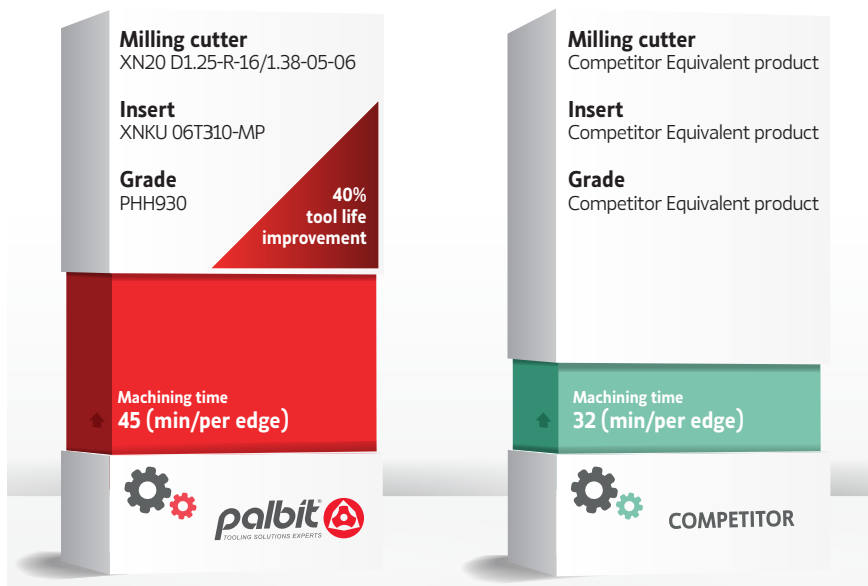


Workpiece material: 40CrMnNiMo7 (1.2738) - (32-36 HRC)

Cutting speed: Vc (sfm)	656
Feed per tooth: fz (in/t)	0.026
Depth of cut: ap (in)	0.039
Width of cut: ae (in)	0.945
Method of machining	Ramping and Helical Interpolation
Coolant	Dry



## PHH TEST REPORT



Workpiece material: stainless steel, AISI 316

Cutting speed: Vc (sfm)	394
Feed per tooth: fz (in/t)	0.039
Depth of cut: ap (in)	0.020
Width of cut: ae (in)	0.945
Method of machining	Ramping and Helical Interpolation
Coolant	Dry



TETRAFEED  
XN20-06

NEW

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