



EXP & TXP

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Super “Quick motion” milling cutter

NEW

- -MH, -ML Chipbreaker
- T1015 Grade
for cast irons



EXP & TXP ^{NEW} Milling cutter

Super “Quick motion” milling cutter

Features

Modern machine tool centres allow for highly economic production by means of increased number of revolutions and higher table feed rates. So far, these cutting parameters have been applied for smooth milling rev. precision finishing. The innovative EXP & TXP milling cutter now optimize also the more time consuming roughing operation. The EXP & TXP

milling cutter are suited for **feed rates > 2 mm/tooth** and thus lead to a substantial reduction in machining time.

With the EXP & TXP milling cutter, surface milling operations, ramping and cavity enlarging at maximum cutting depths of 1.5 mm are possible. Compared to conventional cutting parameter the machin-

ing time can be reduced by one half. The economic design of the insert with three cutting edges with chipbreaker reduces cutting forces and thus enables the use of the larger TXP milling cutter also on machines with low spindle speed.

NEW






Benefits

- Highly economic design with 3 cutting edge
- New chipbreaker geometries for optimum performance
- Stable double clamping system of the insert
- All EXP milling cutter with inner coolant
- Extremely quiet running at large cutting depths

Feed rate up to 3 mm/tooth for maximal productivity in roughing operations

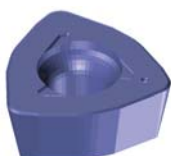


Grade

AH120  	AH140 	T3030 	T1015 
Coated fine grain carbide for milling of steels, alloy steels and cast irons The TiAlN-PVD coating provides for application in medium to high cutting speed operations	High toughness for medium finishing and roughing of stainless steels at low cutting speeds	New MT-CVD coated grade for general milling operations of carbon steels and alloy steels at medium cutting speeds Superior balance between wear-resistance and toughness	New MT-CVD coated grade for universal milling operations of cast iron materials at high cutting speeds Extremely wear resistant

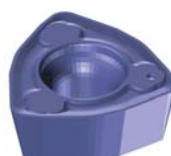
Chipbreaker

-MH



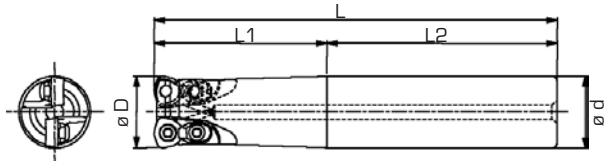
Negative chamfered cutting edge for increased stability
High performance for interrupted cutting

-ML



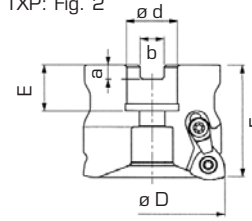
Positive rake angle for reduced cutting forces
For low power machine tools

EXP: Fig. 1



Cylindrical shank with air hole

TXP: Fig. 2



Specifications: EXP 05/06/08 milling cutter

● Standard stock in Europe

Item code	Stock	No. of inserts	Dimensions (mm)					Inserts	Replacement parts			Fig.	
			$\varnothing D$	$\varnothing d$	L	L1	L2		Clamping screw	Clamp-set	Wrench		
EXP05020RS	●	2	20	20	130	50	WPM*05H315ZPR**	CSPB-3.5S	-	IP-15D	1		
EXP05021RS	●		21										
EXP06025RS	●	26	25	140	60	80		WPM*06X415ZPR**	CSPB-4S	CSY-15		IP-15D	
EXP06026RS	●												25
EXP06032RS	●	3	32	150	70	80		WPM*06X415ZPR**	CSPB-4S	CSY-15		IP-15D	
EXP06032RSB	●												32
EXP06033RS	●	3	33	32	150	50		100	WPM*06X415ZPR**	CSPB-4S		CSY-15	IP-15D
EXP06033RSB	●												
EXP06040RS	●	2	40	250	50	200		WPM*06X415ZPR**	CSPB-4S	CSY-15		IP-15D	
EXP08040RSA	●												40
EXP05020RL	●	2	20	20	180	100	WPM*05H315ZPR**	CSPB-3.5S	-	IP-15D	1		
EXP05021RL	●		21										
EXP06025RL	●	26	25	200	120	80		WPM*06X415ZPR**	CSPB-4S	CSY-15		IP-15D	
EXP06026RL	●												25
EXP06032RL	●	3	32	32	150	70		230	WPM*06X415ZPR**	CSPB-4S		CSY-15	IP-15D
EXP06032RLB	●												
EXP06033RL	●	3	33	32	150	50		100	WPM*06X415ZPR**	CSPB-4S		CSY-15	IP-15D
EXP06033RLB	●												
EXP06040RL	●	2	40	250	50	200		WPM*06X415ZPR**	CSPB-4S	CSY-15		IP-15D	
EXP08040RLA	●												40
EXP05020RLL	●	2	20	20	250	130	120	WPM*05H315ZPR**	CSPB-3.5S	-	IP-15D	1	
EXP05021RLL	●		21										
EXP06025RLL	●	26	25	300	180	120	WPM*06X415ZPR**		CSPB-4S	CSY-15	IP-15D		
EXP06026RLL	●												25
EXP06032RLL	●	3	32	32	150	70	230		WPM*06X415ZPR**	CSPB-4S	CSY-15		IP-15D
EXP06033RLL	●												
EXP06040RLL	●	2	40	250	50	250	WPM*06X415ZPR**		CSPB-4S	CSY-15	IP-15D		
EXP08040RLL	●												40

Specifications: TXP 08 milling cutter

● Standard stock in Europe

Item code	Stock	No. of inserts	Dimensions (mm)						Inserts	Replacement parts			Fig.
			$\varnothing D$	$\varnothing d$	F	E	a	b		Clamping screw	Clamp-set	Wrench	
TXP08050R-E	●	3	50	22	50	20	6.3	10.4	WPMT080615Z*R**	CSTB-5	CSX20	T-20T	2
TXP08052R-E	●		52										
TXP08063R-E	●	4	63	27	63	22	7.0	12.4					
TXP08066R-E	●		66										
TXP08080R-E	●	5	80	27	63	22	7.0	12.4					

EXP & TXP milling cutter

Specifications: Inserts

● Standard stock in Europe

	Item code	Tolerance	Honing	Dimensions (mm)			Grade			
				a	t	B	PVD coated		CVD coated	
							AH120	AH140	T3030	T1015
WPMW type WPMT080615ZSR -MH type -ML type R = 1.5	WPMW05H315ZPR	M	Mit	5	3.50	7.94	●	●	●	●
	WPMT05H315ZPR-MH						●	●		
	WPMT05H315ZPR-ML						●	●	●	
	WPMW06X415ZPR			6	4.20	9.525	●	●	●	●
	WPMT06X415ZPR-MH						●	●		
	WPMT06X415ZPR-ML						●	●	●	
	WPMT080615ZSR			8	6.35	12.7	●	●	●	●
	WPMT080615ZSR-MH						●	●		
	WPMT080615ZSR-ML						●	●	●	

Cutting conditions EXP 05 / 06 type

Work materials	Grade	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)	Recommended cutting conditions			
				ø 20, ø 21 t = 2	ø 25, ø 26 t = 2	ø 32, ø 33 t = 2 - 3	ø 40 t = 3
Carbon steels Ck45 etc. < 300HB	T3030 (AH120)	100 - 250	0.5 - 2.0	Vc = 150 m/min, fz = 0.8 mm/t	Vc = 150 m/min, fz = 1.0 mm/t		
				ap = 1.0 mm, ae = 1.0 x D mm Z-axis plunging: fz = 0.2 mm/t			
Alloy steels 42CrMo4, 16MnCr5 etc. < 300HB	T3030 (AH120)	100 - 200	0.5 - 2.0	Vc = 130 m/min, fz = 0.8 mm/t	Vc = 130 m/min, fz = 1.0 mm/t		
				ap = 1.0 mm, ae = 1.0 x D mm Z-axis plunging: fz = 0.2 mm/t			
Die steels X96CrMoV12 etc. < 300HB	AH120 (T3030)	80 - 150	0.5 - 1.0	Vc = 100 m/min, fz = 0.5 mm/t			
				ap = 1.0 mm, ae = 1.0 x D mm Z-axis plunging: fz = 0.1 mm/t			
Stainless steels X5CrNi1810 etc. < 250HB	AH140	100 - 200	0.5 - 2.0	Vc = 130 m/min, fz = 0.8 mm/t	Vc = 130 m/min, fz = 1.0 mm/t		
				ap = 1.0 mm, ae = 1.0 x D mm Z-axis plunging: fz = 0.2 mm/t			
Cast irons GG25 etc.	T1015	100 - 250	0.8 - 2.5	Vc = 150 m/min, fz = 1.0 mm/t	Vc = 180 m/min, fz = 1.5 mm/t		
				ap = 1.0 mm, ae = 1.0 x D mm Z-axis plunging: fz = 0.2 mm/t			

EXP / TXP 08 type

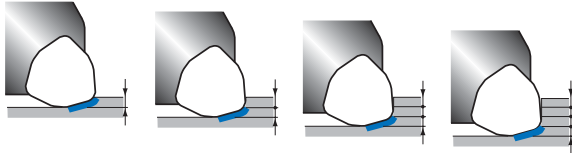
Work materials	Grade	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)	Recommended cutting conditions			
				ø 40 t = 2	ø 50, ø 52 t = 3	ø 63, ø 66 t = 4	ø 80 t = 5
Carbon steels Ck45 etc. < 300HB	T3030 (AH120)	150 - 250	0.5 - 2.0	Vc = 180 m/min, fz = 1.0 mm/t	Vc = 200 m/min, fz = 1.5 mm/t		
				ap = 1.0 mm, ae = 40 mm Z-axis plunging: fz = 0.2 mm/t			
Alloy steels 42CrMo4, 16MnCr5 etc. < 300HB	T3030 (AH120)	100 - 200	0.5 - 2.0	Vc = 130 m/min, fz = 1.0 mm/t	Vc = 150 m/min, fz = 1.5 mm/t		
				ap = 1.0 mm, ae = 40 mm Z-axis plunging: fz = 0.2 mm/t			
Die steels X96CrMoV12 etc. < 300HB	AH120 (T3030)	80 - 150	0.5 - 1.0	Vc = 100 m/min, fz = 0.5 mm/t	Vc = 120 m/min, fz = 0.8 mm/t		
				ap = 1.0 mm, ae = 40 mm Z-axis plunging: fz = 0.1 mm/t			
Stainless steels X5CrNi1810 etc. < 250HB	AH140	100 - 200	0.5 - 2.0	Vc = 130 m/min, fz = 1.0 mm/t	Vc = 150 m/min, fz = 1.5 mm/t		
				ap = 1.0 mm, ae = 40 mm Z-axis plunging: fz = 0.2 mm/t			
Cast irons GG25 etc.	T1015	150 - 250	0.8 - 2.5	Vc = 180 m/min, fz = 1.5 mm/t	Vc = 200 m/min, fz = 2.0 mm/t		
				ap = 1.0 mm, ae = 40 mm Z-axis plunging: fz = 0.2 mm/t			

EXP & TXP milling cutter

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Constant load on the cutting edge independent of cutting depth

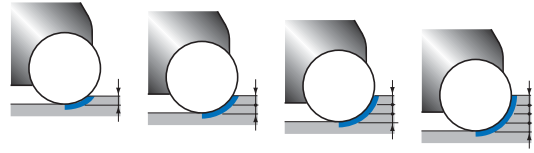
➔ Constant spindle load



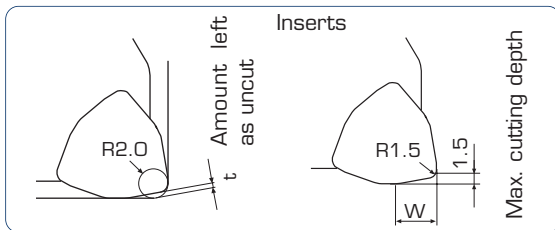
Milling cutter with round inserts

Increased cutting depth leads to increased load at the cutting edge

➔ varying spindle load



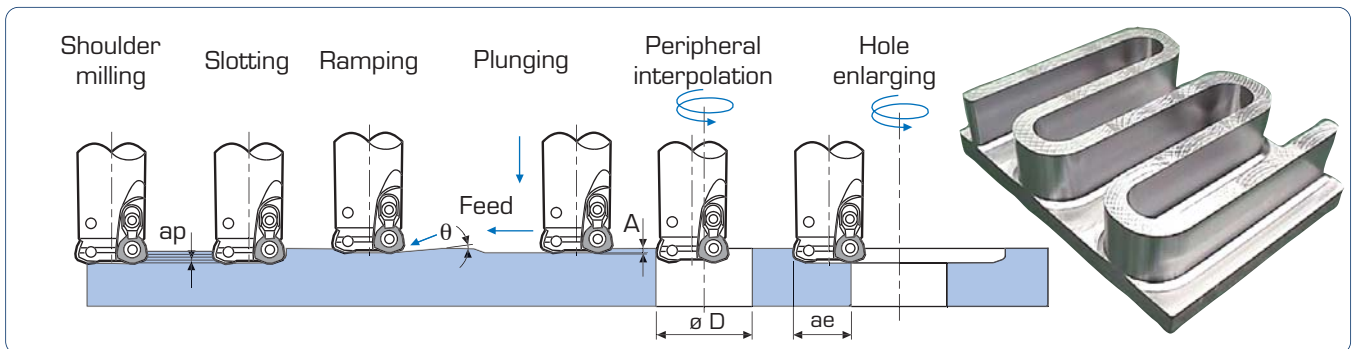
Tool geometry on programming



Milling type	W (mm)	t (mm)	R (mm)
EXP05	3.8	0.5	2.0
EXP06	4.3	0.7	2.5
TXP / EXP08	5.7	0.7	2.0

When programming the machine path, a theoretical radius (R) and the residual amount (t) should be calculated.

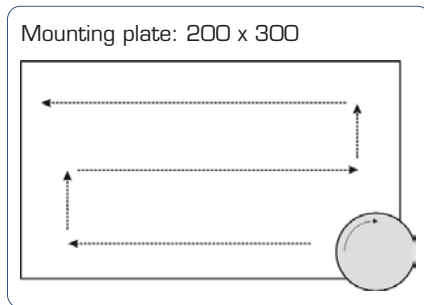
Application



Item code	Tool ø (mm)	Max. cutting depth ap (mm)	Max. ramping angle (θ)	Max. plunging A (mm)	Min. machining ø D (mm)	Max. machining ø D (mm)	Max. cutting width for enlarging ae (mm)
EXP05020RS/L/LL	20	1.5	3°	0.5	30	37	16
EXP05021RS/L/LL	21		2° 30'		32	39	17
EXP06025RS/L/LL	25		5°		33	47	20
EXP06026RS/L/LL	26		4° 30'	1.0	35	49	21
EXP06032RS/L/LL	32		3° 30'		47	61	27
EXP06033RS/L/LL	33		3°		49	63	28
EXP06040RS/L/LL	40		2°		63	77	35
EXP08040R/L/LL			6°		53	34	
TXP08050R-E	50		4°		72	97	44
TXP08052R-E	52		2° 30'	76	101	46	
TXP08063R-E	63			98	123	57	
TXP08066R-E	66			104	129	60	
TXP08080R-E	80	1° 30'	132	157	74		

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Practical examples

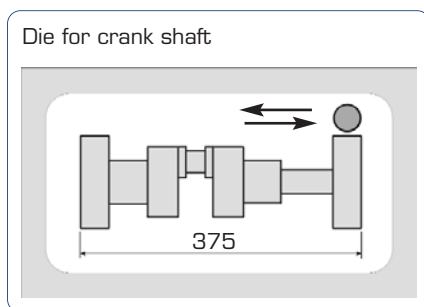


Face milling
 Cutter: TXP08080R-E (t = 5)
 Insert: WPMT080615ZSR
 Grade: AH120
 Work materials: X155CrVMo12-1
 (1.2379)
 Cutting speed: $V_c = 160$ m/min
 Table feed: $V_f = 7035$ mm/min
 Feed rate: $f = 11.05$ mm/rev
 Feed per tooth: $f_z = 2.21$ mm/t
 Axial cutting depth: $a_p = 3 \times 1.0$ mm
 Chip removal: $Q = 492$ cm³/min
 Coolant: Without

Result:
 Compared to conventional surface milling with 45° milling cutter, the machining time was reduced by 80 %.

45° Milling head $\varnothing 125$ mm:
 1 min 52 sec / Mounting plate

TXP08080R-E $\varnothing 80$ mm:
 0 min 23 sec / Mounting plate



Copy milling
 Cutter: EXP06040RS (t = 3)
 Insert: WPMW06X415ZPR
 Grade: AH120
 Work material: 40CrMnMo7 (1.2311)
 Cutting speed: $V_c = 150$ m/min
 Table feed: $V_f = 4500$ mm/min
 Feed per tooth: $f_z = 1.25$ mm/t
 Axial cutting depth: $a_p = 1.0$ mm
 Coolant: Air
 Machining time: 29 minutes
 (roughing cycle)

Result:
 With the EXP milling cutter stable machining conditions for roughing operations were achieved and thus machining time was reduced by almost 50 %.
 Change of inserts was unnecessary.

Tungaloy Europe GmbH

Elisabeth-Selbert-Straße 3 · D - 40764 Langenfeld
 Tel. +49 (0 21 73) 9 04 20-0 · Fax +49 (0 21 73) 9 04 20-18
 e-mail: info@tungaloy.de
 www.tungaloy-eu.com

Tungaloy Italia S.p.A.

Via E. Andolfato, 10 · I - 20126 MILANO
 Tel. +39 (02) 25 20 12-1 · Fax +39 (02) 25 20 12-65
 e-mail: info@tungaloy.it
 www.tungaloy-eu.com

Tungaloy France S.a.r.l.

6, Avenue des Andes · F - 91952 COURTABOEUF CEDEX
 Tel. +33 (01) 64 86 43 00 · Fax +33 (01) 69 07 78 17
 e-mail: info@tungaloy.fr
 www.tungaloy-eu.com



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