

NEW

TAC Mill Series : Shoulder Milling Cutter

TUNGREC

TPO / EPO type

New Milling Cutter For Various Machining

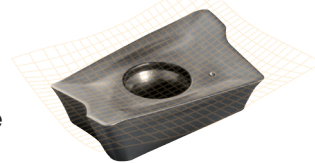


TPO / EPO for shoulder milling

TUNGREC High productivity for semi-finish milling and high 90° shoulder accuracy

Features Free cutting action due to high helical cutting edges and high axial rake angles.

Positive rake insert



1 Minimal mismatch on multiple vertical passes

2 Smooth cutting
Due to the cutting edge with helical geometry

3 Three types of chipbreaker for various applications

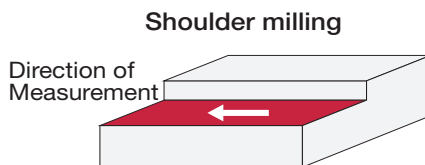
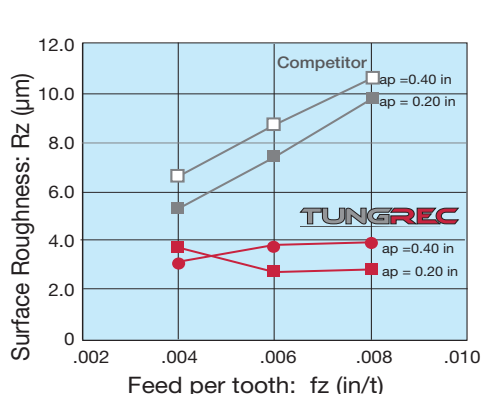
4 Superior chip evacuation with air hole

MJ: for general machining
HJ: for high feed machining (Available in 7mm only)
AJ: for aluminium machining

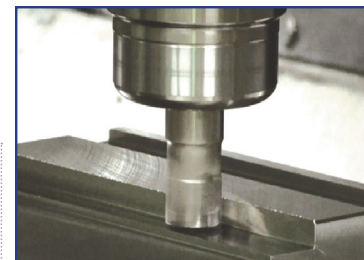
Cutting performance

1. Comparison of surface roughness

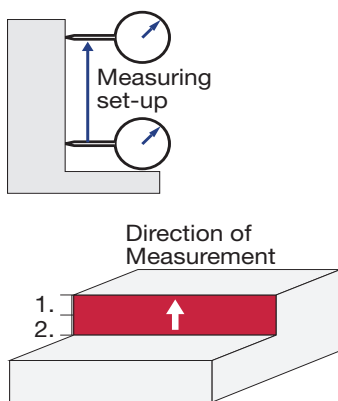
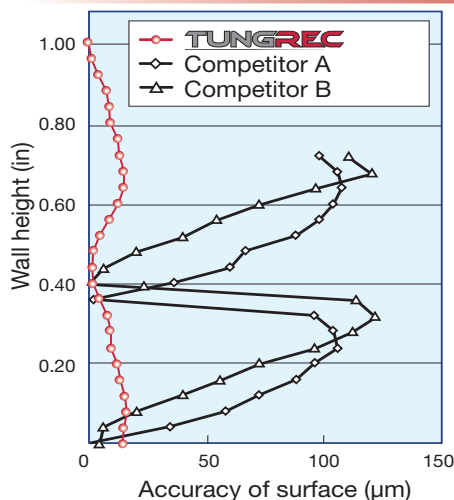
Machine : BT50 M/C, 25kW
Coolant : Dry



Milling cutter : EPO18R100U0100W02 (ø 1", 2 tooth)
Inserts : AOMT180508PDPR-MJ
Grade : AH140
Work material : Carbon steel 1055 SAE (200HB)
Cutting speed : Vc = 500 SFM
Feed per tooth : fz = .004 - .008 ipt
Depth of cut : ap = 0.20 in / 0.40 in
Cutting width : ae = 0.80



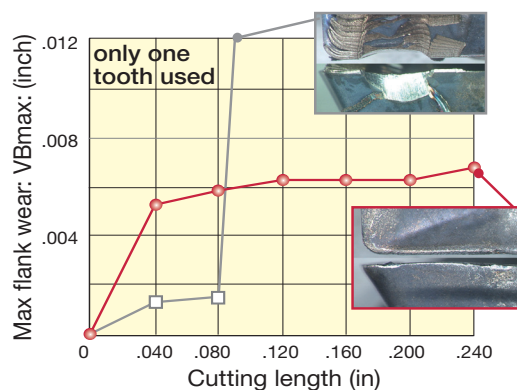
2. Comparison of wall surface roughness



2 passes
1. ap = 0.55in
2. ap = 0.55in

Milling cutter : EPO18R025M25.0-02 (ø25, 2 tooth)
Inserts : AOMT180508PDPR-MJ
Grade : AH140
Work material : Carbon steel 1055 SAE (200HB)
Cutting speed : Vc = 500 SFM
Feed per tooth : fz = .004 (ipt)
Depth of cut : ap = 0.55 in x 2 passes
Cutting width : ae = 0.20 in

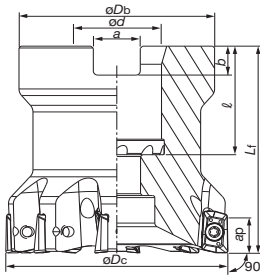
3. Comparison of tool life



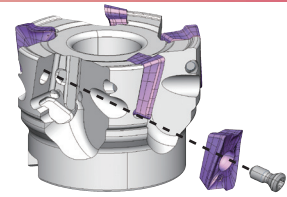
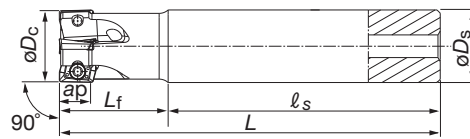
Milling cutter : EPO18R025M25.0-02 (ø25, 2 tooth)
Inserts : AOMT180508PDPR-MJ
Grade : AH140
Work material : Stainless steels (304SS)
Cutting speed : Vc = 500 SFM
Feed per tooth : fz = .006 ipt
Depth of cut : ap = 0.20 in
Cutting width : ae = 0.40 in

Milling cutter TPO07R / EPO07R Specification

Shell type



Shank type



Shell Type Components

Description	Replacement Parts Cat. No.
Clamping screw	CSTB-2.5L046
Wrench	T-7DB

Shell type

Max. depth of cut : Max. $ap = 0.276$ (in)

Cat. No.	Stock	No. of Inserts	Dimensions (in)							Weight (kg)	Air hole	** Coolant thru center bolt	Inserts
			ϕD_c	ϕD_b	L_f	d	b	a	l				
TPO07R200U0075A12	●	12	2.00	1.69	1.57	0.75	0.20	0.31	0.79	0.30	With	C0.375X1.125H	AOMT0702... AOGT0702...

** Coolant thru center bolt sold separately

Shank type

Cat. No.	Stock	No. of Inserts	Dimensions (in)					Air hole	Inserts	Shank Style
			ϕD_c	l_s	L_f	L	ϕD_s			
EPO07R050U0050-02	●	2	0.50	2.25	0.75	3.00	0.50	With	AOMT0702... AOGT0702...	Cylindrical Weldon
EPO07R063U0063-04	●	4	0.625	2.56	0.94	3.50	0.63	With		
EPO07R075U0075-05	●	5	0.75	2.87	1.13	4.00	0.75	With		
EPO07R100U0075-03	●	3	1.00	2.00	1.50	3.50	0.75	With		
EPO07R100U0100W07	●	7	1.00	2.28	1.50	3.78	1.00	With		

Inserts TPO07R / EPO07R Specification

Fig. 1 MJ

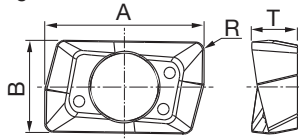


Fig. 2 HJ

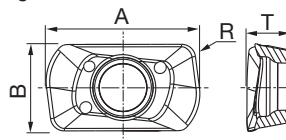
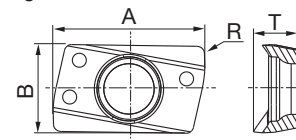


Fig. 3 AJ



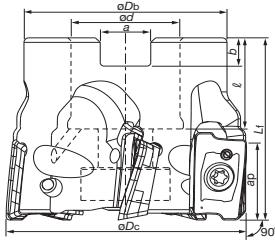
Cat. No.	Accuracy	Honing	Grades			Dimensions (in)				Shape	Cutter
			Coated		Carbide	A	B	T	R		
			AH725	AH140	KS15F						
AOMT070202PDPR-MJ	M	With	●	●		.32	.19	.10	.008	Fig. 1	EPO07R TPO07R
AOMT070204PDPR-MJ	M	With	●	●		.32	.19	.10	.016	Fig. 1	
AOMT070208PDPR-MJ	M	With	●	●		.32	.19	.10	.032	Fig. 1	
AOMT070216PDPR-MJ	M	With	●	●		.32	.19	.10	.063	Fig. 1	
AOMT070210PDPR-HJ	M	With	●	●		.35	.19	.10	.040	Fig. 2	
AOGT070204PDFR-AJ	G	Without			●	.32	.19	.10	.016	Fig. 3	

*Note: Max depth of cut for fig.2 HJ chipbreaker = 0.032"

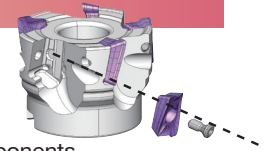
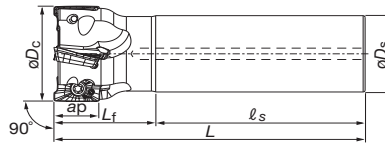
●: Stocked Standard

Milling cutter TPO18R / EPO18R Specification

Shell type



Shank type



Shell Type Components

Description	Replacement Parts Cat. No.	
Applicable cutter	TPO18R...	EPO18R...
Wrench	Torx Bit	BT15M
	Grip	H-TBS
Mono block type substitution wrench	-	T-15DB

Shell type

Max. depth of cut : Max. ap = 0.67in

Cat. No.	Stock	No. of inserts	Dimensions (in)							Weight (kg)	Air hole	Center bolt	Screw	Inserts
			ϕD_c	ϕD_b	L_f	l	ϕd	b	a					
TPO18R200U0075A05	●	5	2.00	1.63	1.57	0.75	0.75	0.20	0.31	0.3	With	C0.375X1.125H	CSTB-4L093	AOMT1805... AOGT1805...
TPO18R250U0075A06	●	6	2.50	2.13	1.57	0.75	0.75	0.20	0.31	0.5	With			
TPO18R300U0100A07	●	7	3.00	2.25	1.75	1.02	1.00	0.24	0.37	0.7	With	C0.500X1.375H		
TPO18R400U0150A08	●	8	4.00	3.00	2.00	0.75	1.50	0.35	0.63	1.3	Without	N/A	CSTB-4L120	
TPO18R500U0150A09	●	9	5.00	4.00	2.00	0.75	1.50	0.35	0.63	2.8	Without			
TPO18R600U0200A10	●	10	6.00	4.75	2.00	1.02	2.00	0.39	0.75	3.7	Without			

Shank type (Weldon)

Cat. No.	Stock	No. of inserts	Dimensions (in)					Weight (kg)	Air hole	Screw	Inserts
			ϕD_c	l_s	L_f	L	ϕD_s				
EPO18R100U0100W02	●	2	1.00	2.25	1.75	4.00	1.00	0.3	With	CSTB-4L085	AOMT1805... AOGT1805...
EPO18R100U0100W02L	●	2	1.00	2.25	2.75	5.00	1.00	0.4			
EPO18R125U0125W03	●	3	1.25	2.25	2.25	4.50	1.25	0.6			
EPO18R125U0125W03L	●	3	1.25	2.25	4.25	6.50	1.25	0.8			
EPO18R150U0125W04	●	4	1.50	2.25	2.25	4.50	1.25	0.6			
EPO18R150U0125W03L	●	3	1.50	2.25	4.25	6.50	1.25	1.1			
EPO18R200U0125W05	●	5	2.00	2.25	2.25	4.50	1.25	0.7			

Inserts TPO18R / EPO18R Specification

Fig. 4 MJ

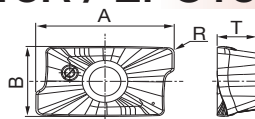
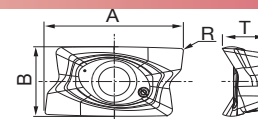


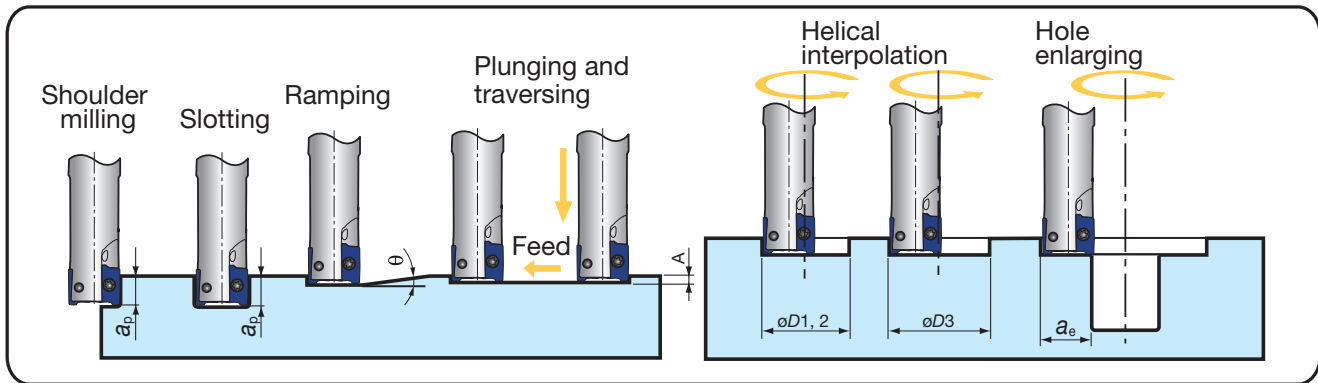
Fig. 5 AJ



Cat. No.	Accuracy	Honing	Grades			Dimensions (inch)				Shape	Cutter
			Coated		Carbide	A	B	T	R		
			AH725	AH140							
AOMT180508PDPR-MJ	M	with	●	●		0.77	0.43	0.22	0.32	Fig. 4	EPO18R TPO18R
AOMT180516PDPR-MJ	M	with	●	●		0.77	0.43	0.22	0.63	Fig. 4	
AOMT180524PDPR-MJ	M	with	●	●		0.77	0.43	0.22	.095	Fig. 4	
AOMT180532PDPR-MJ	M	with	●	●		0.77	0.43	0.22	.126	Fig. 4	
AOGT180504PDFR-AJ	G	without			●	0.77	0.43	0.24	.016	Fig. 5	
AOGT180508PDFR-AJ	G	without			●	0.77	0.43	0.24	.032	Fig. 5	

●: Stocked Standard

Machining applications



Cat. No.	Tool- ϕ	Max. depth of cut a_p (in)	Max. ramping angle θ	Max. plunging A (in)	Min. machining $\phi D1$ (in)	Max. machining $\phi D2$ (in)	*Max. machining $\phi D3$ (in)	Max. cutting width in enlarging a_e (in)
EPO07R050U0050-02	0.500	0.276	7.5	0.020	0.685	0.961	0.862	0.480
EPO07R063U0063-04	0.625	0.276	5	0.020	0.935	1.211	1.112	0.650
EPO07R075U0075-05	0.750	0.276	3.5	0.020	1.185	1.461	1.362	0.730
EPO07R100U100W07	1.000	0.276	2.4	0.020	1.685	1.961	1.862	0.980
TPO07R200U0075A12	2.000	0.276	0.9	0.020	3.685	3.961	3.862	1.980
EPO18R100U0100W02*	1.000	0.670	5.5	0.039	1.272	1.921	1.764	0.961
EPO18R125U0125W03*	1.250	0.670	3.5	0.039	1.772	2.421	2.264	1.211
EPO18R150U0125W04*	1.500	0.670	2.7	0.039	2.272	2.921	2.764	1.461
TPO/EPO18R200U...	2.000	0.670	1.9	0.039	3.272	3.921	3.764	1.961
TPO18R250U0075A06	2.500	0.657	1.4	0.039	4.272	4.921	4.764	2.461
TPO18R300U0100A07	3.000	0.657	1.1	0.039	5.272	5.921	5.764	2.961
TPO18R400U0150A08	4.000	0.657	0.8	0.039	7.272	7.921	7.764	3.961
TPO18R500U0150A09	5.000	0.657	0.6	0.039	9.272	9.921	9.764	4.961
TPO18R600U0200A10	6.000	0.657	0.5	0.039	11.272	11.921	11.764	5.961

*Also applicable for long shank types

Standard cutting conditions

TungRec 07

Work material	Brinell hardness HB	Grades	Cutting Speed V_c (SFM)	Feed per tooth f_z (in/t)
Low carbon steels (S15C, SS400 etc.)	~ 200	AH725	300 - 660	.002" - .004" HJ Chipbreaker only .016" - .035"
High carbon steels (S45C, S55C etc.)	200 ~ 300		300 - 490	
Alloyed steels (SCM440, SCr415 etc.)	150 ~ 300		260 - 390	
Tool steels (SK, SKH etc.)	~ 300		300 - 490	
Stainless steels (SUS304, SUS316 etc.)	-	AH140	300 - 1000	
Grey Cast Irons (FC250, FC300 etc.)	150 ~ 250	AH725	300 - 590	
Ductile Cast Irons (FCD400 etc.)			980 - 3280	
Aluminium alloys (Si < 13%)	-	KS15F	330 - 660	.003" - .008"
Aluminium alloys (Si \geq 13%)			70 - 220	.002" - .003" HJ Chipbreaker .008" - .016"

Standard cutting conditions

TungRec 18

	Work material	Brinell hardness HB	Grades	SFM Feet / min	Feed (in) per tooth
Steel	Low Carbon... 1018,8620	100 ~ 250	AH725	400 - 1000	.004 - .018
	High Carbon... F-6180	250 ~ 400		350 - 500	.004 - .015
	Alloyed Steel... 4140, 4340	150 ~ 300		300 - 700	.004 - .018
	Tool Steel A-6, D-1, D-2	up to 300			
Stainless Steel	300 Series, 304, 316	up to 320	AH140	300 - 700	
	400 Series 15-5 PH			400 - 900	
	17-4 PH			200 - 400	
Cast Iron	Grey Cast Irons	150 ~250	AH725	300 - 1000	
	Ductile Cast Irons			300 - 600	
Aluminum	6061 T-6, 7075 T-6	-	KS15F	1500 - 3000	
Nickel Alloy	Inconel 600, 706, 718, 903, Hastelloy	-	AH725	75 - 120	.003 - .006
Titanium	6AL-4V	-	AH725	100 - 150	.005 - .008

- To remove excessive chip accumulation use an air blast.
- When chips stick to the cutting edges (aluminium machining), use a water soluble cutting fluid.
- When interrupted cutting or cutting a casting skin, the cutting feed (fz) should be reduced to below the values shown in the

- above tables.
- Cutting conditions are limited by machine power and material rigidity. When the cutting width or depth is large, set Vc and fz below the recommended values and check the machine vibration and spindle load.

Tungaloy America, Inc.

3726 N. Ventura Dr. Arlington Heights, IL 60004

Inside Sales: 1-888-554-8394

Technical Support: 1-888-554-8391

Fax: 1-888-554-8392



Become a fan on facebook



Follow us on Twitter @tungaloy



Watch our videos on You Tube

Tungaloy Canada

432 Elgin Street, Unit 3, Brantford, Ontario, Canada N3S-7P7

Phone: 519-758-5779, Fax: 519-758-5791

Tungaloy de Mexico S.A.

C Los Arellano 113, Vista Alegre, Aguascalientes, AGS, Mexico 20290

Phone: 011-52-449-929-5410, Fax: 011-52-449-929-5411



Distributed By:

www.tungaloyamerica.com