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Incredible reliability
in profile milling!





FIXR MILL
TUNGALOY

Ideal solution for three dimensional
machining of profile surfaces!

FIXRMILL

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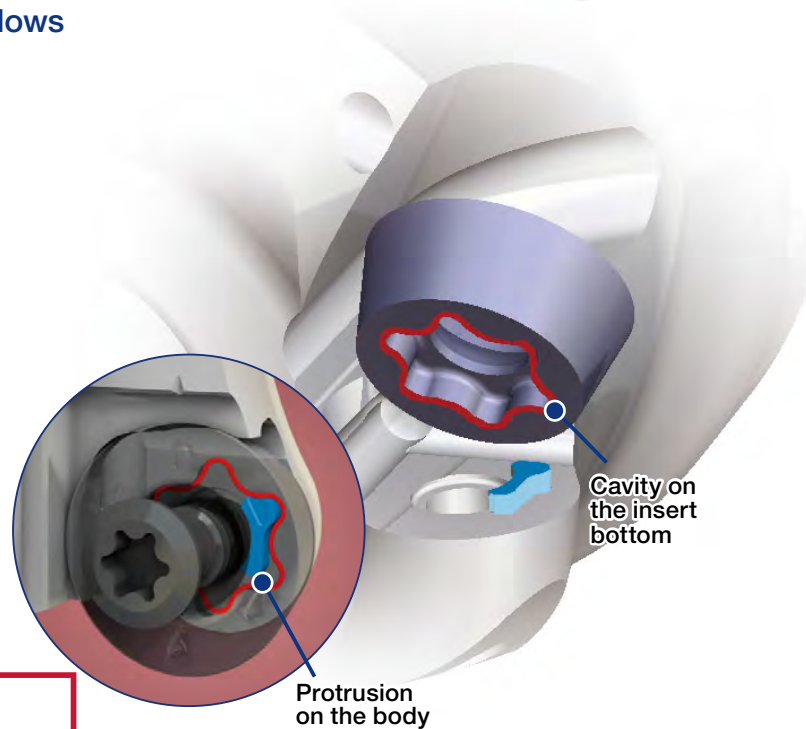
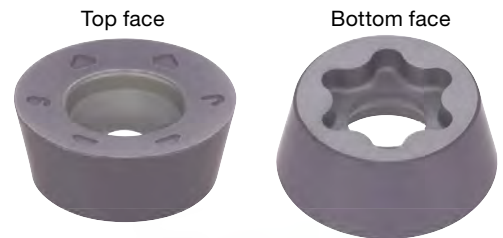
Innovative and safe anti-rotation system, featuring FIX insert location and higher clamping rigidity

Special inserts with anti-rotation system

- The protrusion on the body and the cavity on the insert bottom fit each other to guarantee exact indexing and prevent insert rotation.
- The unique insert fixation in the pocket allows up to 6 indexes.
- Two types of chipbreakers are available:
MJ: General purpose machining
ML: Low cutting force machining

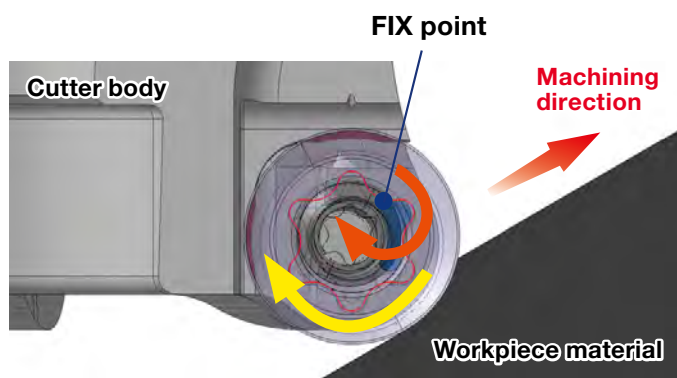
Rigid insert clamping system

- The location of the FIX point on the protrusion and the cavity ensures that the insert is pushed inside into the pocket due to the cutting forces, offering rigid clamping.



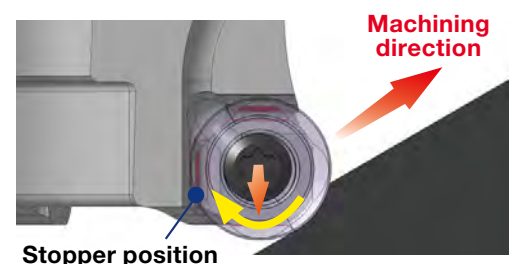
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The cutting force pushes the insert into the insert seat, providing high clamping forces.



Screw-on clamping + problem with insert with flat contact face

Cutting force rotates the insert and reduces the contact area, making insert unstable.



Grades

I AH725



Steel Cast Iron

For general purpose milling

- Provides high reliability in steel and cast iron machining
- Highly versatile grade with excellent wear and chipping resistance

I AH130



Stainless

For general stainless steel milling

- Reduces crater and notch wear
- Provides exceptionally reliable milling



Special Surface Technology
PREMIUMTEC
TUNGALOY

I AH4035



Stainless

Ideal grade for high chromium content stainless steels

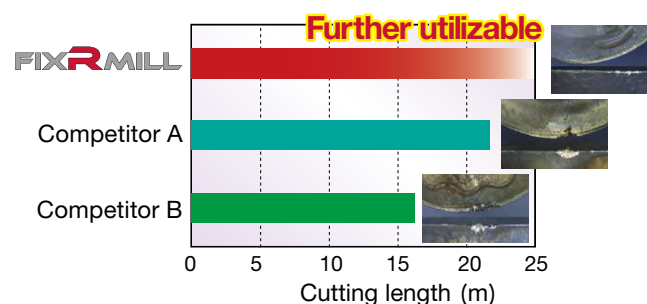
- Newly developed grade with exceptional balance of wear and chipping resistance
- Drastically reduces flank wear and chipping when machining stainless steels



Special Surface Technology
PREMIUMTEC
TUNGALOY

Comparison of tool life

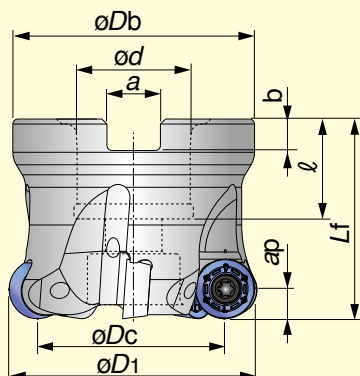
Longer tool life than competitors' products



Cutter	: TRP12R050M22.0E05 (z = 5)
Insert	: RPMT1204EN-ML
Grade	: AH4035
Workpiece	: SUS420J1 / X20Cr13
Cutting speed	: $V_c = 300$ m/min
Feed per tooth	: $f_z = 0.5$ mm/t
Depth of cut	: $a_p = 2.0$ mm
Width of cut	: $a_e = 32.5$ mm
Machine	: Horizontal M/C, BT40

Cutter

Bore type



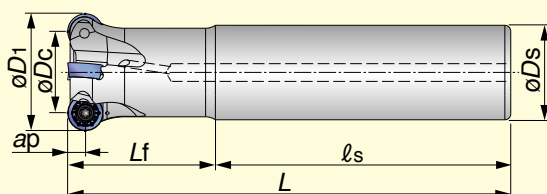
TRP10: Max. $ap = 5$ mm
 TRP12: Max. $ap = 6$ mm
 TRP16: Max. $ap = 8$ mm

Parts

Description		Parts Cat. No.		
Applicable cutter		TRP10...	TRP12...	TRP16...
Clamping screw		CSPB-3.5S	CSTR-4L100	CSPB-5
Wrench	Bit	BLD IP15/S7	BT15S	BLD IP20/S7
	Grip	H-TBS	H-TBS	H-TBS
Mono block type substitution wrench		-	-	-

Cat. No.	Stock	No. of inserts	Dimensions (mm)								Weight (kg)	Air hole	Center bolt	Inserts
			ϕD_1	ϕD_c	ϕD_b	ϕd	ℓ	L_f	b	a				
NEW TRP10R040M16.0E05	●	5	40	30	35	16	18	40	5.6	8.4	0.2	with	FSHM8-30H	RPMT10T3EN-M*
TRP12R050M22.0E05	●	5	50	38	47	22	20	40	6.3	10.4	0.3	with	CM10X30H	RPMT1204EN-M*
TRP12R052M22.0E05	●	5	52	40	49	22	20	40	6.3	10.4	0.3	with	CM10X30H	RPMT1204EN-M*
TRP12R063M22.0E06	●	6	63	51	59	22	20	40	6.3	10.4	0.6	with	CM10X30H	RPMT1204EN-M*
TRP12R066M27.0E06	●	6	66	54	62	27	22	40	7	12.4	0.6	with	CM12X30H	RPMT1204EN-M*
TRP16R063M22.0E05	●	5	63	47	59	22	20	40	6.3	10.4	0.6	with	CM10X30H	RPMT1606EN-M*
TRP16R066M27.0E05	●	5	66	50	62	27	22	40	7	12.4	0.7	with	CM12X30H	RPMT1606EN-M*

Shank type



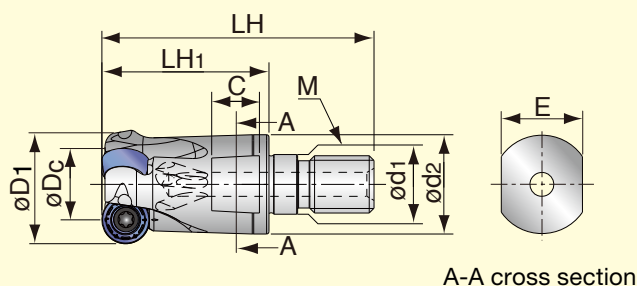
ERP10: Max. $ap = 5$ mm
 ERP12: Max. $ap = 6$ mm
 ERP16: Max. $ap = 8$ mm

Parts

Description		Parts Cat. No.		
Applicable cutter		ERP10...	ERP12...	ERP16...
Clamping screw		CSPB-3.5S	CSTR-4L100	CSPB-5
Wrench	Bit	BLD IP15/S7	-	-
	Grip	H-TBS	-	-
Mono block type substitution wrench		-	T-15DB	IP-20D

	Cat. No.	Stock	No. of inserts	Dimensions (mm)						Weight (kg)	Air hole	Inserts
				$\varnothing D_1$	$\varnothing D_c$	$\varnothing D_s$	ℓ_s	L_f	L			
NEW	ERP10R020M20.0-02	●	2	20	10	20	100	50	150	0.3	with	RPMT10T3EN-M*
NEW	ERP10R025M25.0-02	●	2	25	15	25	90	60	150	0.5	with	RPMT10T3EN-M*
NEW	ERP10R032M32.0-04	●	4	32	22	32	80	70	150	0.8	with	RPMT10T3EN-M*
NEW	ERP10R035M32.0-04	●	4	35	25	32	100	50	150	0.9	with	RPMT10T3EN-M*
	ERP12R032M32.0-03	●	3	32	20	32	100	50	150	0.8	with	RPMT1204EN-M*
	ERP12R040M32.0-04	●	4	40	28	32	100	50	150	0.9	with	RPMT1204EN-M*
	ERP16R040M32.0-02	●	2	40	24	32	100	50	150	0.9	with	RPMT1606EN-M*

Modular type



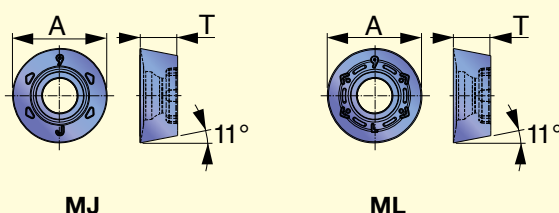
HRP10: Max. ap = 5 mm
HRP12: Max. ap = 6 mm

Parts

Description	Parts Cat. No.	
Applicable cutter	HRP10R...	HRP12R...
Clamping screw	CSPB-3.5S	CSTR-4L100
Wrench	Bit	BLD IP15/S7
	Grip	H-TBS

	Cat. No.	Stock	No. of Inserts	Dimensions (mm)									Weight (kg)	Air hole	Applicable Insert
				øD1	øDc	LH	LH1	C	E	ød1	ød2	M			
NEW	HRP10R020MM10-02	●	2	20	10	49	30	10	15	10.5	17.8	M10	0.1	with	RPMT10T3EN-M*
NEW	HRP10R025MM12-02	●	2	25	15	57	35	10	17	12.5	20.8	M12	0.1	with	RPMT10T3EN-M*
NEW	HRP10R032MM16-04	●	4	32	22	63	40	12	22	17.0	28.8	M16	0.2	with	RPMT10T3EN-M*
	HRP12R032MM16-03	●	3	32	20	63	40	12	22	17.0	28.8	M16	0.2	with	RPMT1204EN-M*

Insert

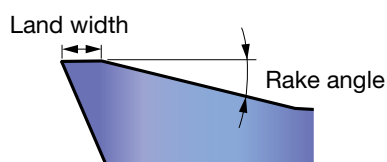


Cat. No.	Accuracy	Honing	Grades PREMIUMTEC			Dimensions (mm)		Cutters
			AH725	AH4035	AH130	A	T	
RPMT10T3EN-MJ	M	with	●	●	●	10	3.97	H/E/TRP10R...
RPMT10T3EN-ML	M	with	●	●	●	10	3.97	H/E/TRP10R...
RPMT1204EN-MJ	M	with	●	●	●	12	4.76	H/E/TRP12R...
RPMT1204EN-ML	M	with	●	●	●	12	4.76	H/E/TRP12R...
RPMT1606EN-MJ	M	with	●	●	●	16	6.35	E/TRP16R
RPMT1606EN-ML	M	with	●	●	●	16	6.35	E/TRP16R

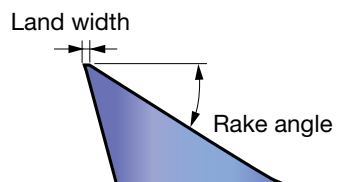
● : Stocked items

Chipbreaker

MJ chipbreaker



ML chipbreaker



● Standard cutting condition

ISO	Workpiece material	Hardness	Priority	Grade	Chip-breaker	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)	
P	Carbon steels (S45C / C45, S55C / C55 etc.)	< 300 HB	First choice	AH725	MJ	120 - 250	0.3 - 0.7	
		< 300 HB	for impact resistance	AH130	MJ	120 - 250	0.3 - 0.7	
	Alloy steels (SCM440 / 42CrMo4, SCr415 / 17Cr3 etc.)	150 - 300 HB	First choice	AH725	MJ	100 - 250	0.2 - 0.6	
		150 - 300 HB	for impact resistance	AH130	MJ	100 - 250	0.2 - 0.6	
	Tool steels (SKD11 / X153CrMoV12 etc.)	< 300 HB	-	AH725	ML	80 - 180	0.2 - 0.4	
M	Stainless steels (SUS304 / X5CrNi18-9, SUS316 / X5CrNiMo17-12-3 etc.)	< 200 HB	First choice	AH130	ML	100 - 250	0.2 - 0.6	
		< 200 HB	for impact resistance	AH130	MJ	100 - 250	0.2 - 0.6	
	Stainless steels (SUS430 / X6Cr17 etc.)	< 200 HB	First choice	AH4035	ML	100 - 300	0.2 - 0.6	
		< 200 HB	for impact resistance	AH4035	MJ	100 - 300	0.2 - 0.6	
K	Grey cast irons (FC250 / GG25 / 250 etc.)	150 - 250 HB	-	AH725	ML	120 - 250	0.3 - 0.7	
	Ductile cast irons (FCD400 / GGG40 etc.)	150 - 250 HB	-	AH725	ML	100 - 200	0.3 - 0.7	
H	Hardened steels (SKD61 / X40CrMoV5-1 etc.)	40 - 50 HRC	-	AH725	MJ	60 - 140	0.1 - 0.3	
	Hardened steels (SKD11 / X153CrMoV12 etc.)	50 - 60 HRC	-	AH725	MJ	20 - 60	0.05 - 0.2	

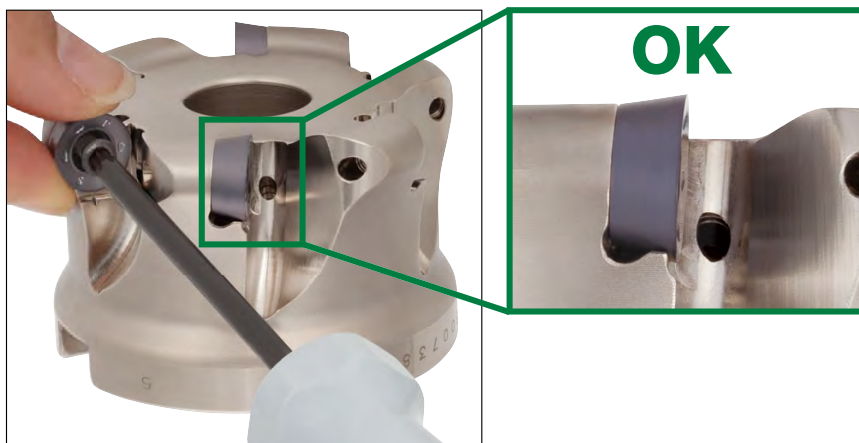
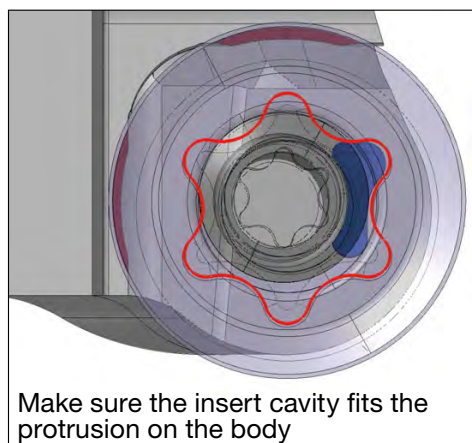
- Use air blast to remove chips from the work area in slot milling or pocketing operation.
- When machining at high cutting speeds of more than Vc = 1000 m/min, the dynamic balance of the tools must be adjusted.

- Cutting conditions are limited by machine power, workpiece rigidity and spindle output. When the cutting width or depth is large, set Vc and fz to the lower recommended values and check the machine power and vibration.

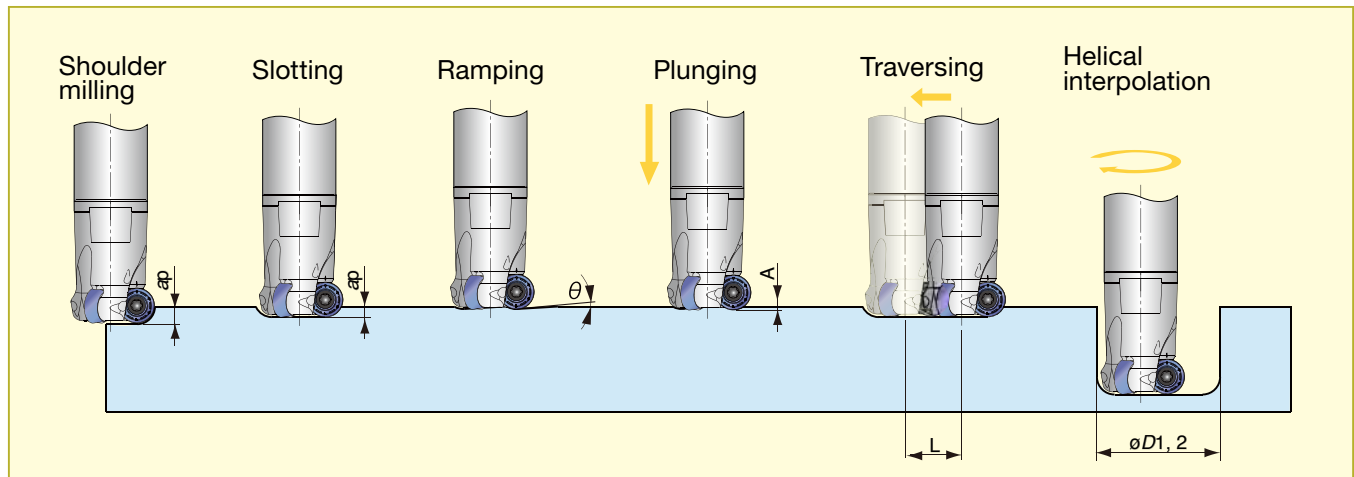
Tool dia.: ϕD_c (mm), Number of revolutions: n (min ⁻¹), Feed speed: V_f (mm/min), Depth of cut: $a_p = 2.0$ mm																	
$\phi 20$		$\phi 25$		$\phi 32$			$\phi 35$		$\phi 40$				$\phi 50$		$\phi 63$		
n	V_f	n	V_f	n	V_f		n	V_f	n	V_f			n	V_f	n	V_f	
	E/HRP10		E/HRP10, E/HRP12		E/HRP10	E/HRP12		ERP10		TRP10	ERP12	ERP16		ERP12		TRP12	TRP16
2870	2870	2290	2290	1790	3580	2690	1640	3280	1430	3580	2860	1430	1150	2880	910	2730	2280
$V_c = 180$ m/min, $f_z = 0.5$ mm/t																	
2870	2870	2290	2290	1790	3580	2690	1640	3280	1430	3580	2860	1430	1150	2880	910	2730	2280
$V_c = 180$ m/min, $f_z = 0.5$ mm/t																	
2710	2160	2170	1740	1690	2700	2030	1550	2480	1350	2700	2160	1080	1080	2160	860	2060	1720
$V_c = 170$ m/min, $f_z = 0.4$ mm/t																	
2710	2160	2170	1740	1690	2700	2030	1550	2480	1350	2700	2160	1080	1080	2160	860	2060	1720
$V_c = 170$ m/min, $f_z = 0.4$ mm/t																	
2070	1240	1660	1000	1290	1550	1160	1180	1420	1030	1550	1240	620	830	1250	660	1190	990
$V_c = 130$ m/min, $f_z = 0.3$ mm/t																	
2710	2160	2170	1740	1690	2700	2030	1550	2480	1350	2700	2160	1080	1080	2160	860	2060	1720
$V_c = 170$ m/min, $f_z = 0.4$ mm/t																	
2710	2160	2170	1740	1690	2700	2030	1550	2480	1350	2700	2160	1080	1080	2160	860	2060	1720
$V_c = 170$ m/min, $f_z = 0.4$ mm/t																	
3180	2540	2550	2040	1990	3180	2390	1820	2910	1590	3180	2540	1270	1270	2540	1010	2420	2020
$V_c = 200$ m/min, $f_z = 0.4$ mm/t																	
3180	2540	2550	2040	1990	3180	2390	1820	2910	1590	3180	2540	1270	1270	2540	1010	2420	2020
$V_c = 200$ m/min, $f_z = 0.4$ mm/t																	
2870	2870	2290	2290	1790	3580	2690	1640	3280	1430	3580	2860	1430	1150	2880	910	2730	2280
$V_c = 180$ m/min, $f_z = 0.5$ mm/t																	
2390	2390	1910	1910	1490	2980	2240	1360	2720	1190	2980	2380	1190	950	2380	760	2280	1900
$V_c = 150$ m/min, $f_z = 0.5$ mm/t																	
1590	630	1270	510	990	790	590	910	730	800	800	640	320	640	640	510	610	510
$V_c = 100$ m/min, $f_z = 0.2$ mm/t																	
640	150	510	120	400	190	140	360	170	320	190	150	75	250	150	200	140	120
$V_c = 40$ m/min, $f_z = 0.12$ mm/t																	

■ Notification for clamping

- When installing the insert, please carefully locate the insert in the seat and fasten the screw.



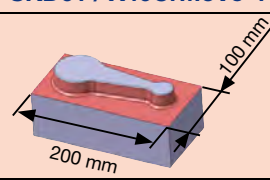
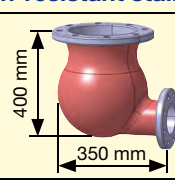
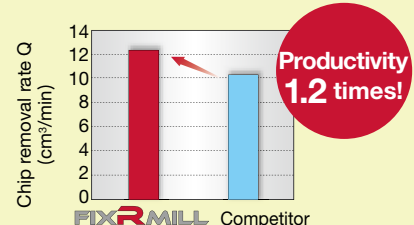
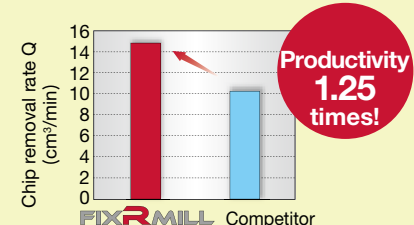
● Machining applications

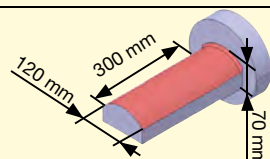
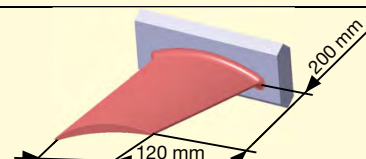
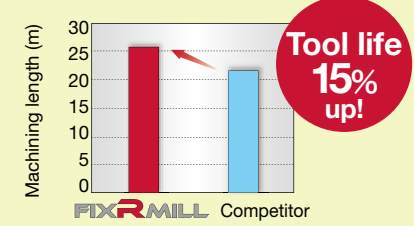


Cat. No.	Tool- ϕ ϕD_c (mm)	Max. depth of cut a_p (mm)	Max. ramping angle θ	Max. plunging A (mm)	Machining length for removing uncut portion L (mm)	Min. machining $\phi D1$ (mm)	*Max. machining $\phi D2$ (mm)
E/HRP10R020M...	20	5	2	0.3	12	27	39
E/HRP10R025M...	25	5	3.1	0.7	16	35	49
E/HRP10R032M...	32	5	8	2.5	23	46	63
E/HRP12R032M...	32	6	9.2	2.5	21	43	63
ERP10R035M32.0-04	35	5	8.2	3	26	51	69
ERP12R040M32.0-04	40	6	3.8	1.6	29	59	79
ERP16R040M32.0-02	40	8	7	2.3	25	54	79
TRP10R040M16.0E05	40	5	6	2.7	31	62	79
TRP12R050M22.0E05	50	6	4	2.5	39	79	99
TRP12R052M22.0E05	52	6	4	2.5	41	83	103
TRP12R063M22.0E06	63	6	3	2.5	52	105	125
TRP12R066M27.0E06	66	6	2.8	2.5	55	111	131
TRP16R063M22.0E05	63	8	3.3	2.5	48	99	125
TRP16R066M27.0E05	66	8	3.1	2.5	51	105	131

*For flat bottom hole

Practical examples

Workpiece type		Die	Machine part
Cutter		ERP12R032M32.0-03	TRP12R050M22.0E05
Insert		RPMT1204EN-ML	RPMT1204EN-ML
Grade		AH725	AH130
Workpiece material		SKD61 / X40CrMoV5-1	Corrosion-resistant stainless steel
		 K	 M
Cutting conditions	Cutting speed: V_c (m/min)	130	200
	Feed per tooth: f_z (mm/t)	0.4	0.3
	Depth of cut: a_p (mm)	1.0	1.0
	Width of cut: a_e (mm)	26.0	< 50
	Method of machining	Profile milling	Profile milling on curved surface
	Coolant	Air blast	Wet
	Machine	Vertical M/C, BT40	5 axis M/C, BT50
Results		 Due to the high rigidity, 1.2 times higher productivity can be achieved without any chipping or vibration.	 Due to the high toughness and rigidity, higher cutting speed and feed is possible. This improves productivity by 25%.

Workpiece type		Machine part	Blade
Cutter		TRP12R050M22.0E05	ERP10R032M32.0-04
Insert		RPMT1204EN-MJ	RPMT10T3EN-ML
Grade		AH4035	AH4035
Workpiece material		SUS420J1 / X20Cr13	Martensitic stainless steel
		 M	 M
Cutting conditions	Cutting speed: V_c (m/min)	300	275
	Feed per tooth: f_z (mm/t)	0.5	0.11
	Depth of cut: a_p (mm)	2.0	0.5 - 1.0
	Width of cut: a_e (mm)	< 50	< 32
	Method of machining	Profile milling on curved surface	Profile milling on curved surface
	Coolant	Air blast	Wet
	Machine	5 axis M/C, BT50	5 axis M/C, BT50
Results		 High wear resistance provides 1.15 times longer tool life.	 Due to the high rigidity, higher cutting speed and feed is possible without any chipping or vibration. This improves productivity by 30%.

Tungaloy Corporation (Head office)

11-1 Yoshima-Kogyodanchi
Iwaki-city, Fukushima, 970-1144 Japan
Phone: +81-246-36-8501
Fax: +81-246-36-8542
www.tungaloy.co.jp

Tungaloy America, Inc.

3726 N Ventura Drive
Arlington Heights, IL 60004, U.S.A.
Phone: +1-888-554-8394
Fax: +1-888-554-8392
www.tungaloyamerica.com

Tungaloy Canada

432 Elgin St. Unit 3
Brantford, Ontario N3S 7P7, Canada
Phone: +1-519-758-5779
Fax: +1-519-758-5791
www.tungaloy.co.jp/ca

Tungaloy de Mexico S.A.

C Los Arellano 113,
Parque Industrial Siglo XXI
Aguascalientes, AGS, Mexico 20290
Phone: +52-449-929-5410
Fax: +52-449-929-5411
www.tungaloy.co.jp/mx

Tungaloy do Brasil Ltda.

Avd. Independencia N4158 Residencial Flora
13280-000 Vinhedo, São Paulo, Brasil
Phone: +55-19-38262757
Fax: +55-19-38262757
www.tungaloy.com/br

Tungaloy Germany GmbH

An der Alten Ziegelei 1
D-40789 Monheim, Germany
Phone: +49-2173-90420-0
Fax: +49-2173-90420-19
www.tungaloy.de

Tungaloy France S.A.S.

ZA Courtaboeuf - Le Rio
1 rue de la Terre de feu
F-91952 Courtaboeuf Cedex, France
Phone: +33-1-6486-4300
Fax: +33-1-6907-7817
www.tungaloy.fr

Tungaloy Italia S.r.l.

Via E. Andolfato 10
I-20126 Milano, Italy
Phone: +39-02-252012-1
Fax: +39-02-252012-65
www.tungaloy.it

Tungaloy Czech s.r.o.

Turanka 115
CZ-627 00 Brno, Czech Republic
Phone: +420-532 123 391
Fax: +420-532 123 392
www.tungaloy.cz

Tungaloy Ibérica S.L.

C/Miquel Servet, 43B, Nau 7
Pol. Ind. Bufalvent
ES-08243 Manresa (BCN), Spain
Phone: +34 93 113 1360
Fax: +34 93 876 2798
www.tungaloy.es

Tungaloy Scandinavia AB

Bultgatan 38
442 40 Kungälv, Sweden
Phone: +46-462119200
www.tungaloy.se

Tungaloy Rus, LLC

36-D Harkovsky Lane
308009 Belgorod, Russia
Phone: +7 4722 24 00 07
Fax: +7 4722 24 00 08
www.tungaloy.co.jp/ru

Tungaloy East LLC

Stachek str., h.4, office 2, Ekaterinburg,
620017, Russia
Phone: +7-343-389-13-22
Fax: +7-343-278-94-35
www.tungaloy.co.jp/rue

Tungaloy Polska Sp. z o.o.

ul. Genewska 24
03-963 Warszawa, Poland
Phone: +48-22-617-0890
Fax: +48-22-617-0890
www.tungaloy.co.jp/pl

Tungaloy U.K. Ltd

The Technology Centre,
Wolverhampton Science Park
Glaisher Drive, Wolverhampton
West Midlands WV10 9RU, UK
Phone: +44 121 4000 231
Fax: +44 121 270 9694
www.tungaloy.co.jp/uk
salesinfo@tungaloyuk.co.uk

Tungaloy Hungary Kft

Erzsébet királyné útja 125
H-1142 Budapest, Hungary
Phone: +36 1 781-6846
Fax: +36 1 781-6866
www.tungaloy.co.jp/hu
info@tungaloytools.hu

Tungaloy Turkey

Dudullu.OSB 4. Cad No:4
34776 Umraniye Istanbul, TURKEY
Phone: +90 216 540 04 67
Fax: +90 216 540 04 87
www.tungaloy.com.tr
info@tungaloy.com.tr

Tungaloy Benelux b.v.

Tjalk 70
NL-2411 NZ Bodegraven, Netherlands
Phone: +31 172 630 420
Fax: +31 172 630 429
www.tungaloy-benelux.com

Tungaloy Croatia

Josipa Kozarca 4
10432 Bregana, Croatia
Phone: +385 1 3326 604
Fax: +385 1 3327 683
www.tungaloy.hr

Tungaloy Cutting Tool (Shanghai) Co., Ltd.

Rm No 401 No.88 Zhabei
Jiangchang No.3 Rd
Shanghai 200436, China
Phone: +86-21-3632-1880
Fax: +86-21-3621-1918
www.tungaloy.co.jp/tcts

Tungaloy Cutting Tool (Thailand) Co., Ltd.

Interlink tower 4th Fl.
1858/5-7 Bangna-Trad Road
km.5 Bangna, Bangna, Bangkok 10260
Thailand
Phone: +66-2-751-5711
Fax: +66-2-751-5715
www.tungaloy.co.th

Tungaloy Singapore (Pte.), Ltd.

62 Ubi Road 1, #06-11 Oxley BizHub 2
Singapore 408734
Phone: +65-6391-1833
Fax: +65-6299-4557
www.tungaloy.co.jp/tspl

Tungaloy Vietnam

Unit 18, 4th Fl. Saigon Centre Building
65 Le Loi Blvd.
Dist 1, Ho Chi Minh City, Vietnam
Phone: +84-8-3827-0201
Fax: +84-8-3827-0203
www.tungaloy.co.jp/tspl

Tungaloy India Pvt. Ltd.

Indiabulls Finance Centre,
Unit # 902-A, 9th Floor,
Tower 1, Senapati Bapat Marg,
Elphinstone Road (West),
Mumbai -400013, India
Phone: +91-22-6124-8804
Fax: +91-22-6124-8899
www.tungaloy.co.jp/in

Tungaloy Korea Co., Ltd

#1312, Byucksan Digital Valley 5-cha
Beotkkot-ro 244, Geumcheon-gu
153-788 Seoul, Korea
Phone: +82-2-2621-6161
Fax: +82-2-6393-8952
www.tungaloy.co.jp/kr

Tungaloy Malaysia Sdn Bhd

50 K-2, Kelana Mall, Jalan SS6/14
Kelana Jaya, 47301
Petaling Jaya, Selangor Darul Ehsan
Malaysia
Phone: +603-7805-3222
Fax: +603-7804-8563
www.tungaloy.co.jp/my

Tungaloy Australia Pty Ltd

PO Box 2232, Rowville,
Victoria 3178, Australia
Phone: +61-3-9755-8147
Fax: +61-3-9755-6070
www.tungaloy.com.au

PT. Tungaloy Indonesia

Kompleks Grand Wisata Block AA-10 No.3-5
Cibitung
Bekasi 17510, Indonesia
Phone: +62-21-8261-5808
Fax: +62-21-8261-5809
www.tungaloy.co.jp/id



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