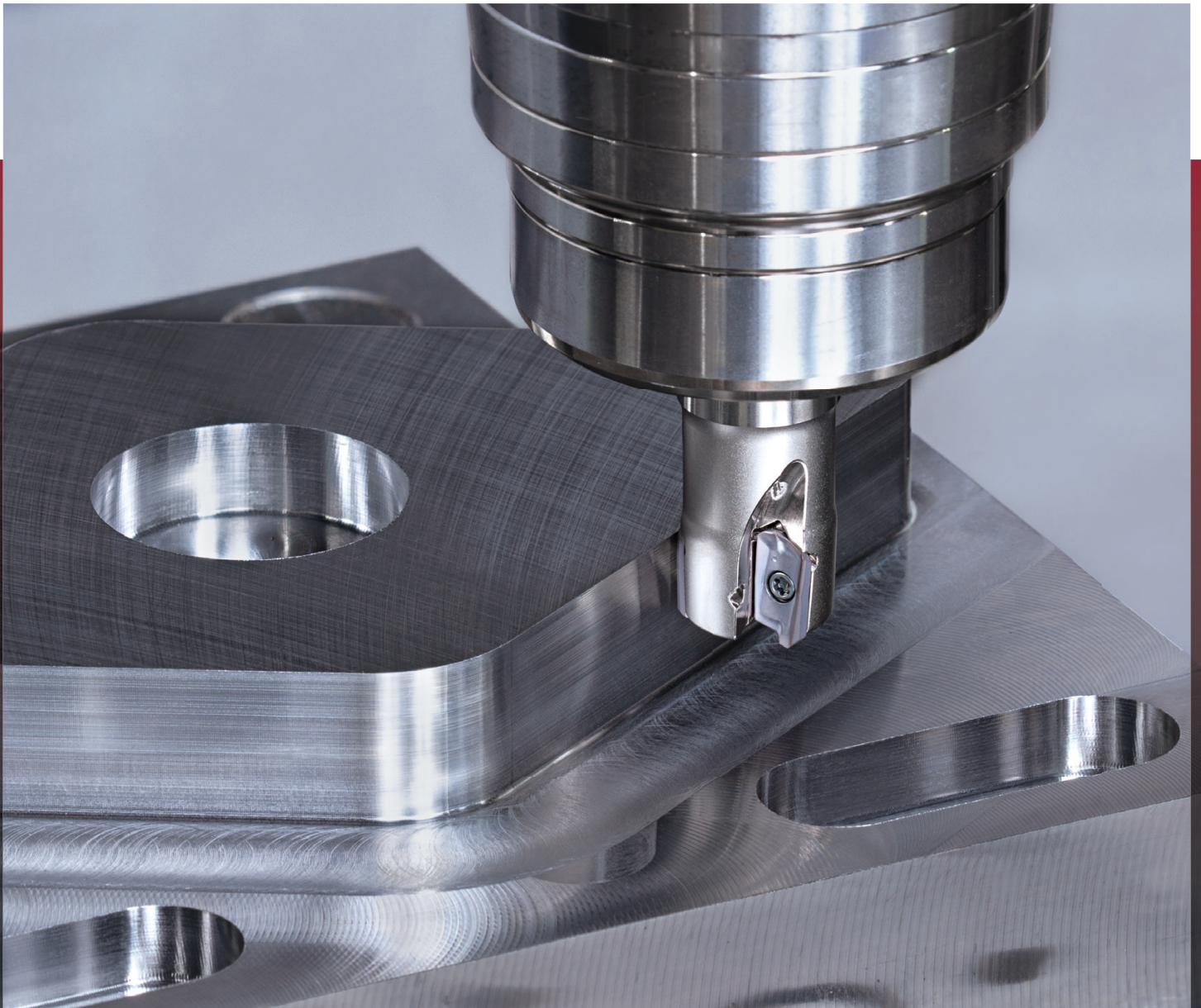


Square shoulder milling tool

TUNG^{ORCE}**FREC**

Tungaloy Report No. 506S1-G

Versatile shoulder milling cutter with unique V-shaped insert bottom for maximum productivity



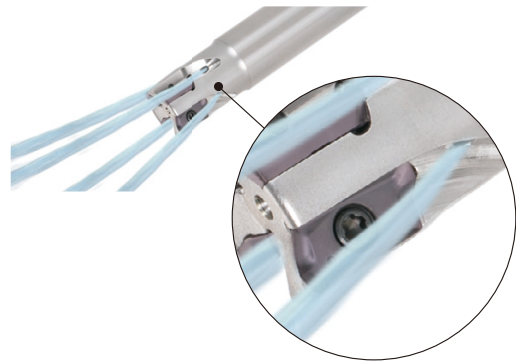


V-shaped insert bottom - a new generation of shoulder inserts

■ Pressed-to-size insert and high depth of cut



■ Pin-pointed coolant supply



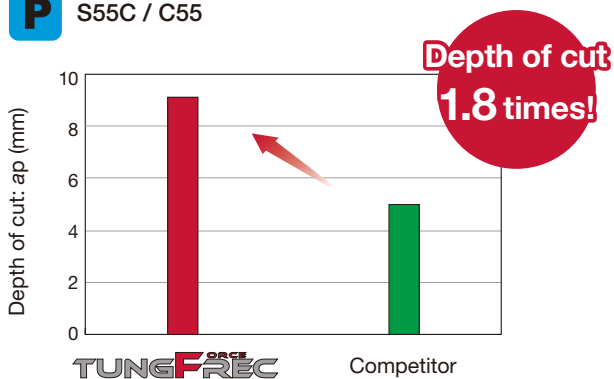
CUTTING PERFORMANCE

Performance comparison - Slotting depths



Slotting

P S55C / C55



Cutter : EPAV12M016C16.0R02 (ø16 mm, z = 2)
 Insert : AVMT120408PBER-MM AH3225
 Cutting speed : $V_c = 200$ m/min
 Feed per tooth : $f_z = 0.12$ mm/t
 Overhang : 10 mm
 Cutting width : $a_e = 16$ mm
 Coolant : Dry

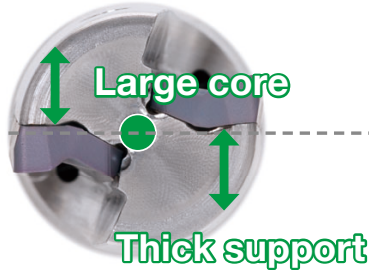
TungForce-Rec offered more productivity thanks to its rigid body

High productivity and stability

Robust and high-density cutter body design

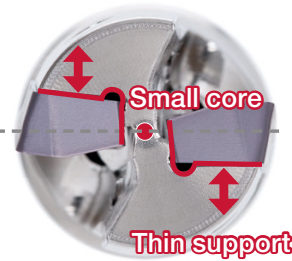
TUNGFORCE

The use of V-shaped insert bottom allows the cutter to retain a **large core and thick supporting material** for high tool rigidity



Conventional products

Small core diameter and thin supporting material leads to tool vibration and chatter



High body rigidity ensures more productivity and stability than ever

Comparison of cutters' insert-per-diameter density

Tool dia. (mm)	No. of inserts		Competitor	Productivity improvement compared to competitor
	TUNGFORCE Coarse pitch	TUNGFORCE Close pitch		
ø16	2	3	2	1.5 times
ø20	3	4	3	1.33 times
ø25	4	6	4	1.5 times
ø32	6	8	6	1.5 times
ø40	6	8	6	1.5 times
ø50	8	12	8	1.5 times
ø63	8	14	8	1.75 times

CUTTING PERFORMANCE

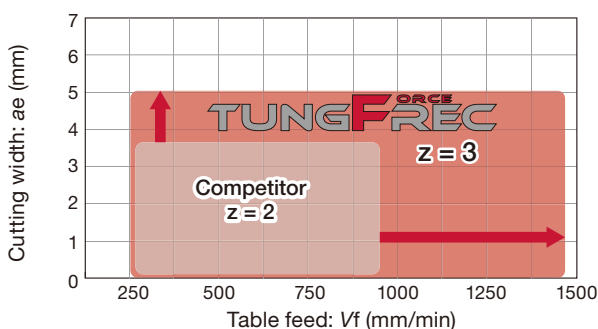
Performance comparison - Cutting width vs Table feed



Shoulder milling



S55C / C55



Cutter : EPAV12M016C16.0R03 (ø16 mm, z = 3)
 Insert : AVMT120408PBER-MM AH3225
 Cutting speed : $V_c = 160$ m/min
 Feed per tooth : $f_z = 0.12$ mm/t
 Depth of cut : $a_p = 9$ mm
 Overhang : 35 mm
 Coolant : Dry

TungForce-Rec enables high efficiency machining of up to 1.4x greater cutting width at a maximum of 1.5x faster table feed
 (See Page 11 - Practical Example 2, 3 and 4)

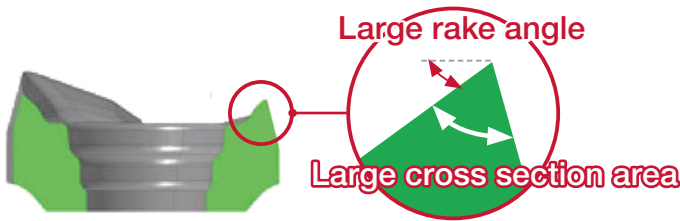
High cutter density x high rigidity tool design = super high feed shouldering

Low cutting force and anti-chipping performance

Obtuse flank surface and large rake angle

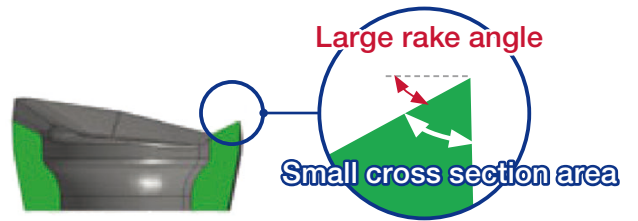


Large rake angle and obtuse flank surface provide low cutting force and anti-chipping performance



Competitor

Large rake angle offers low cutting force but small cross section area leads to chipping on the edge



High productivity and stability are achieved by the unique cutting edge design

CUTTING PERFORMANCE

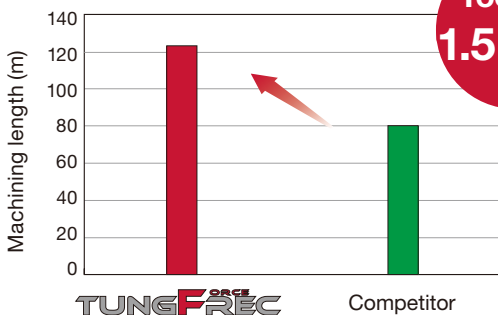
Tool life



Shoulder milling

P

S55C / C55



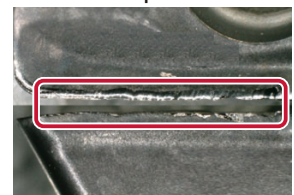
Insert wear modes after machining 80 meters

TUNGFORCE REC

Competitor



No chipping



Chipping due to low cutting edge rigidity

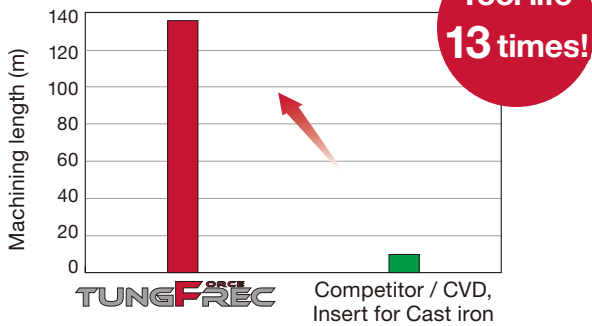
Cutter : EPAV12M020C20.0R03 (ø20 mm, z = 1)
 Insert : AVMT120408PBER-MM AH3225
 Cutting speed : $V_c = 180$ m/min
 Feed per tooth : $f_z = 0.12$ mm/t
 Depth of cut : $a_p = 6$ mm
 Cutting width : $a_e = 6$ mm
 Coolant : Dry

Low cutting force and obtuse flank surface offers long and stable tool life
 (See Page 11 - Practical Example 1))



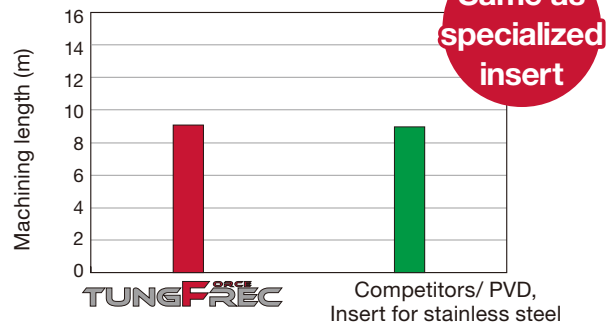
Shoulder milling

K FC250 / GG25 / 250



Cutter : EPAV12M020C20.0R03 ($\phi 20$ mm, $z = 1$)
 Insert : AVMT120408PBER-MM AH120
 Cutting speed : $V_c = 200$ m/min
 Feed per tooth : $f_z = 0.15$ mm/t
 Depth of cut : $a_p = 6$ mm
 Cutting width : $a_e = 6$ mm
 Coolant : Dry

M SUS304 / X5CrNi18-9



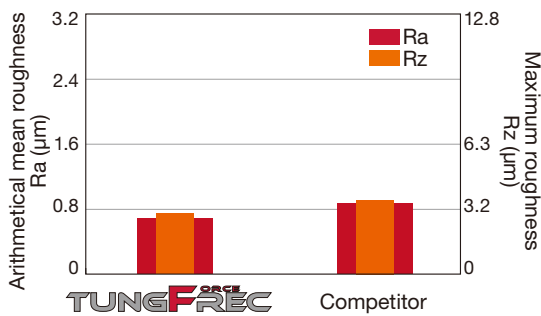
Cutter : EPAV12M020C20.0R03 ($\phi 20$ mm, $z = 1$)
 Insert : AVMT120408PBER-MM AH3225
 Cutting speed : $V_c = 130$ m/min
 Feed per tooth : $f_z = 0.08$ mm/t
 Depth of cut : $a_p = 6$ mm
 Cutting width : $a_e = 4$ mm
 Coolant : Dry

General purpose (MM) chip breaker covers all materials with high level of performance

High versatility

Surface finishing

P S55C / C55

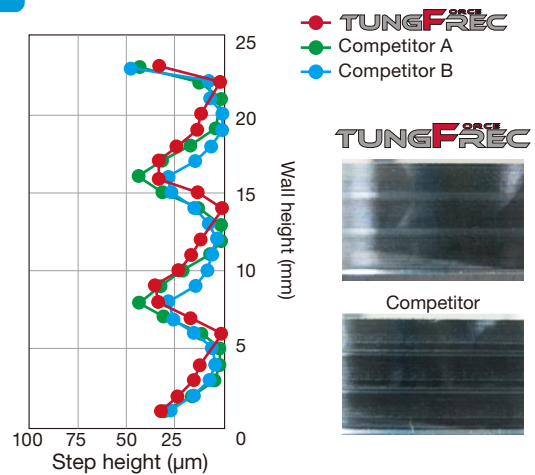


Cutter : EPAV12M020C20.0R03 ($\phi 20$ mm, $z = 3$)
 Insert : AVMT120408PBER-MM AH3225
 Cutting speed : $V_c = 180$ m/min
 Feed per tooth : $f_z = 0.1$ mm/t
 Depth of cut : $a_p = 1$ mm
 Cutting width : $a_e = 16$ mm
 Coolant : Dry

Better surface quality vs the competitor

Wall finishing

P S55C / C55



Cutter : EPAV12M020C20.0R03 ($\phi 20$ mm, $z = 3$)
 Insert : AVMT120408PBER-MM AH3225
 Cutting speed : $V_c = 180$ m/min
 Feed per tooth : $f_z = 0.1$ mm/t
 Depth of cut : $a_p = 8$ mm
 Cutting width : $a_e = 3$ mm
 Coolant : Dry

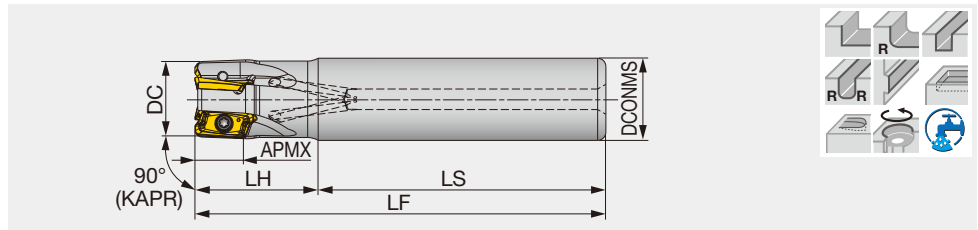
Equal or better wall step than competitors

Precise machining capabilities

EPAV12

High-end square shoulder endmill, with screw clamp system

GAMP = +6.0°~ +7.6°, GAMF = -37.1°~ -32.4°



Designation	APMX	DC	CICT	DCONMS	LS	LH	LF	WT(kg)	Air hole	Insert
EPAV12M012C12.0R01	11.5	12	1	12	60	25	85	0.06	With	AVM/GT12...
EPAV12M016C16.0R02	11.5	16	2	16	60	25	85	0.12	With	AVM/GT12...
EPAV12M016C16.0R03	11.5	16	3	16	60	25	85	0.12	With	AVM/GT12...
EPAV12M016C16.0R02L	11.5	16	2	16	105	40	145	0.20	With	AVM/GT12...
EPAV12M020C20.0R03	11.5	20	3	20	70	30	100	0.22	With	AVM/GT12...
EPAV12M020C20.0R04	11.5	20	4	20	70	30	100	0.21	With	AVM/GT12...
EPAV12M020C20.0R02L	11.5	20	2	20	135	50	185	0.41	With	AVM/GT12...
EPAV12M025C25.0R04	11.5	25	4	25	80	35	115	0.38	With	AVM/GT12...
EPAV12M025C25.0R06	11.5	25	6	25	80	35	115	0.39	With	AVM/GT12...
EPAV12M025C25.0R03L	11.5	25	3	25	150	70	220	0.74	With	AVM/GT12...
EPAV12M032C32.0R06	11.5	32	6	32	80	40	120	0.68	With	AVM/GT12...
EPAV12M032C32.0R08	11.5	32	8	32	80	40	120	0.68	With	AVM/GT12...
EPAV12M032C32.0R03L	11.5	32	3	32	175	80	255	1.47	With	AVM/GT12...

SPARE PARTS



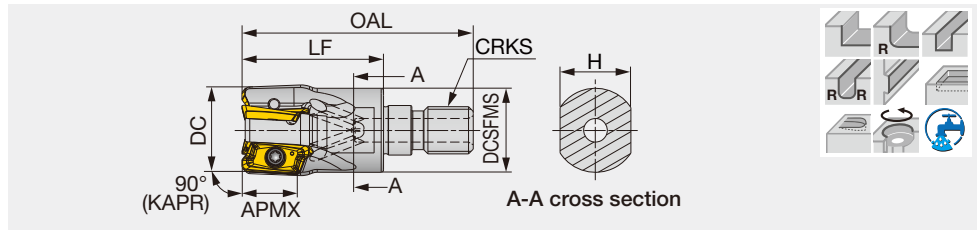
Designation	Clamping screw	Wrench
EPAV12M012C12.0R01	CPSB-2.5	IP-8D
EPAV12M016C16.0R02	CPSB-2.5	IP-8D
EPAV12M016C16.0R03	CPSB-2.5S	IP-8D
EPAV12M016C16.0R02L	CPSB-2.5	IP-8D
EPAV12M020C20.0R03	CPSB-2.5	IP-8D
EPAV12M020C20.0R04	CPSB-2.5S	IP-8D
EPAV12M020C20.0R02L	CPSB-2.5	IP-8D
EPAV12M025C25.0R04	CPSB-2.5	IP-8D
EPAV12M025C25.0R06	CPSB-2.5S	IP-8D
EPAV12M025C25.0R03L	CPSB-2.5	IP-8D
EPAV12M032C32.0R06	CPSB-2.5	IP-8D
EPAV12M032C32.0R08	CPSB-2.5S	IP-8D
EPAV12M032C32.0R03L	CPSB-2.5	IP-8D

*Recommended clamping torque (N·m): CSPB-2.5, CSPB-2.5S =1.3

HPAV12-M

High-end square shoulder mill, modular type (TungFlex)

GAMP = +6.0°~ +7.6°, GAMF = -37.1°~ -32.4°



Designation	APMX	DC	CICT	OAL	LF	H	DCSFMS	CRKS	WT(kg)	Air hole	Insert
HPAV12M016M08R02	11.5	16	2	42	25	10	14.5	M8	0.03	With	AVM/GT12...
HPAV12M016M08R03	11.5	16	3	42	25	10	14.5	M8	0.03	With	AVM/GT12...
HPAV12M020M10R03	11.5	20	3	49	30	15	17.8	M10	0.06	With	AVM/GT12...
HPAV12M020M10R04	11.5	20	4	49	30	15	17.8	M10	0.05	With	AVM/GT12...
HPAV12M025M12R04	11.5	25	4	57	35	17	23	M12	0.1	With	AVM/GT12...
HPAV12M025M12R06	11.5	25	6	57	35	17	23	M12	0.1	With	AVM/GT12...
HPAV12M032M16R06	11.5	32	6	63	40	22	28.8	M16	0.21	With	AVM/GT12...
HPAV12M032M16R08	11.5	32	8	63	40	22	28.8	M16	0.21	With	AVM/GT12...
HPAV12M040M16R06	11.5	40	6	63	40	22	28.8	M16	0.25	With	AVM/GT12...
HPAV12M040M16R08	11.5	40	8	63	40	22	28.8	M16	0.24	With	AVM/GT12...

SPARE PARTS



Designation	Clamping screw	Wrench
HPAV12M016M08R02	CSPB-2.5	IP-8D
HPAV12M016M08R03	CSPB-2.5S	IP-8D
HPAV12M020M10R03	CSPB-2.5	IP-8D
HPAV12M020M10R04	CSPB-2.5S	IP-8D
HPAV12M025M12R04	CSPB-2.5	IP-8D
HPAV12M025M12R06	CSPB-2.5S	IP-8D
HPAV12M032M16R06	CSPB-2.5	IP-8D
HPAV12M032M16R08	CSPB-2.5S	IP-8D
HPAV12M040M16R06	CSPB-2.5	IP-8D
HPAV12M040M16R08	CSPB-2.5	IP-8D

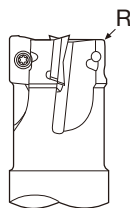
*Recommended clamping torque (N·m): CSPB-2.5, CSPB-2.5S =1.3

STANDARD CUTTING CONDITIONS

ISO	Workpiece materials	Hardness	Priority	Grades	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)	
P	Low carbon steel S15C / C15E / C15E4, SS400 / E275A, etc.	- 200 HB	First choice	AH3225	100 - 300	0.06 - 0.22	
		- 200 HB	Wear resistance	T3225	200 - 400	0.06 - 0.18	
	Carbon steel and alloy steel S55C / C55, SCM440 / 42CrMo4, etc.	- 300 HB	First choice	AH3225	100 - 250	0.06 - 0.22	
		- 300 HB	Wear resistance	T3225	200 - 400	0.06 - 0.18	
	Prehardend steel NAK80, PX5, etc.	30 - 40 HRC	First choice	AH3225	100 - 200	0.06 - 0.22	
		30 - 40 HRC	Wear resistance	T3225	200 - 400	0.06 - 0.15	
M	Stainless steel SUS304 / X5CrNi18-9, SUS316 / X5CrNiMo17-12-3, etc.	-	First choice	AH3225	80 - 180	0.07 - 0.2	
K	Grey cast iron FC250 / GG25 / 250, FC300 / GG30 / 300, etc.	150 - 250 HB	First choice	AH120	100 - 300	0.05 - 0.12	
		150 - 250 HB	Wear resistance	T1215	200 - 400	0.05 - 0.18	
	Ductile cast iron FCD400, FCD600 / GGG60 / 600-3, etc.	150 - 250 HB	First choice	AH120	100 - 250	0.05 - 0.12	
		150 - 250 HB	Wear resistance	T1215	150 - 300	0.05 - 0.18	
N	Aluminum alloys Si < 13%	-	First choice	KS05F	300 - 1500	0.05 - 0.32	
	Aluminum alloys Si ≥ 13%	-	First choice	KS05F	100 - 200	0.05 - 0.32	
S	Titanium alloys Ti-6Al-4V, etc.	- 40 HRC	First choice	AH3225	20 - 60	0.04 - 0.15	
	Superalloys Inconel718, etc.	- 40 HRC	First choice	AH120	20 - 40	0.04 - 0.15	
H	Hardened steel	SKD61 / X40CrMoV5-1, etc.	40 - 50 HRC	First choice	AH120	50 - 150	0.04 - 0.07
		SKD11 / X153CrMoV12, etc.	50 - 60 HRC	First choice	AH120	40 - 70	0.04 - 0.07

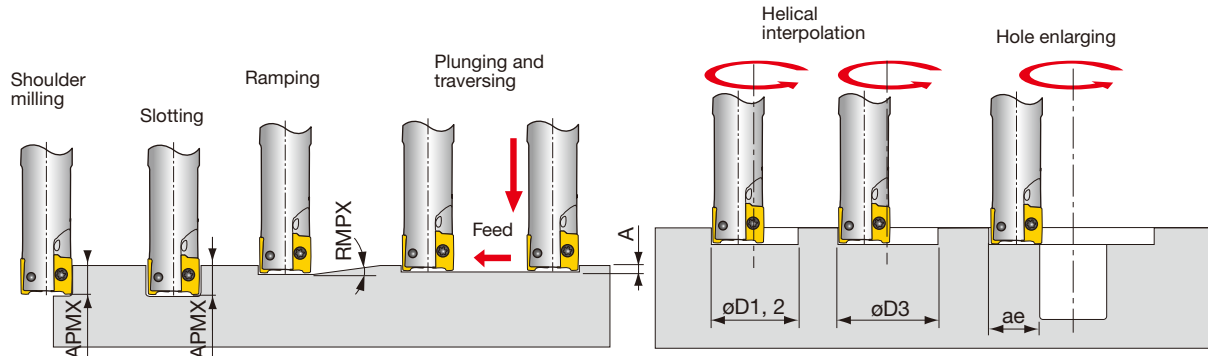
CAUTIONARY POINT IN MODIFYING CUTTER BODIES

When using inserts with corner radius
RE ≥ 2 mm, standard cutter bodies have to be
modified "R". (EPAV12, TPAV12, HPAV12)



Corner radius RE (mm)	The dimension of modifying (mm)
0.4 - 1.6	Unnecessary
2 - 3	2

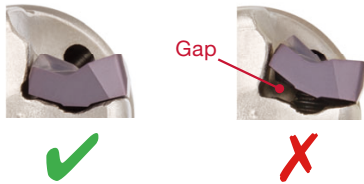
MACHINING APPLICATIONS



Designation	DC	Max. depth of cut		Max. plunging	Min. machining	Max. machining		Max. cutting width in enlarging
		APMX	RMPX			øD2	øD3*	
EPAV12M012...	12	11.5	4.5	0.5	17.8	23	22	11
E/HPAV12M016...	16	11.5	3.5	0.5	25.3	31	30	15
E/HPAV12M020...	20	11.5	3	0.5	33	39	38	19
E/HPAV12M025...	25	11.5	2.5	0.5	42.6	49	48	24
E/HPAV12M032...	32	11.5	2	0.5	56.4	63	62	31
HPAV12M040...	40	11.5	2	0.5	71.5	78	77	39
TPAV12M050...	50	11.5	2	0.5	90.4	99	98	49
TPAV12M063...	63	11.5	1.8	0.5	115.6	125	124	62

*Flat bottom hole

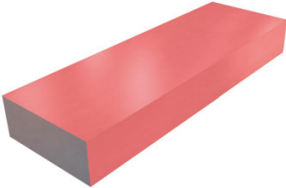
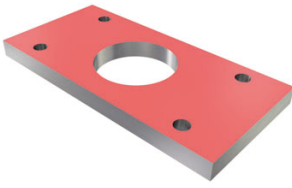
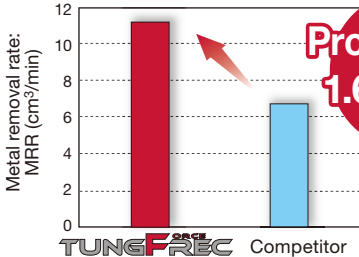
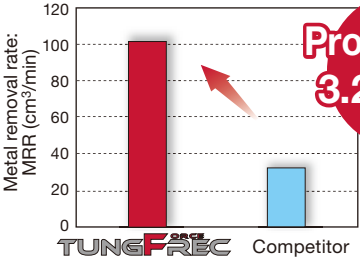
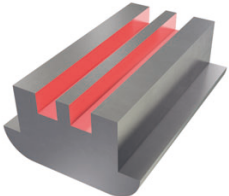
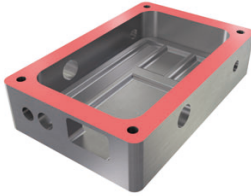
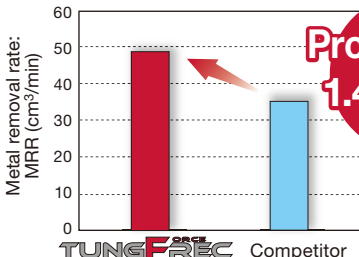
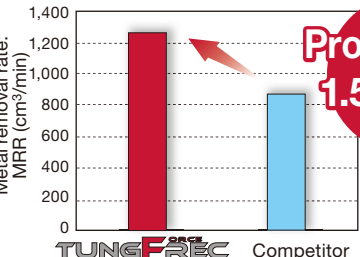
When clamping the insert, please confirm that there is no gap between the cutter body and the insert as shown in the picture.



Estimation of chip thickness - calculated from feed per tooth (fz) and cutting width (ae) data

Feed per tooth fz (mm/t)	Cutting width (%): ae (mm) / Tool dia.: DC (mm)														
	1%	2%	2.5%	3%	4%	5%	10%	15%	20%	25%	30%	35%	40%	45%	50% -
0.03	0.006	0.008	0.009	0.01	0.012	0.013	0.018	0.021	0.024	0.026	0.027	0.029	0.029	0.03	0.03
0.05	0.01	0.014	0.016	0.017	0.02	0.022	0.03	0.036	0.04	0.043	0.046	0.048	0.049	0.05	0.05
0.08	0.016	0.022	0.025	0.027	0.031	0.035	0.048	0.057	0.064	0.069	0.073	0.076	0.078	0.08	0.08
0.10	0.02	0.028	0.031	0.034	0.039	0.044	0.06	0.071	0.08	0.087	0.092	0.095	0.098	0.099	0.1
0.12	0.024	0.034	0.037	0.041	0.047	0.052	0.072	0.086	0.096	0.104	0.11	0.114	0.118	0.119	0.12
0.15	0.03	0.042	0.047	0.051	0.059	0.065	0.09	0.107	0.12	0.13	0.137	0.143	0.147	0.149	0.15
0.18	0.036	0.05	0.056	0.061	0.071	0.078	0.108	0.129	0.144	0.156	0.165	0.172	0.176	0.179	0.18
0.20	0.04	0.056	0.062	0.068	0.078	0.087	0.12	0.143	0.16	0.173	0.183	0.191	0.196	0.199	0.2
0.22	0.044	0.062	0.069	0.075	0.086	0.096	0.132	0.157	0.176	0.191	0.202	0.21	0.216	0.219	0.22
0.25	0.05	0.07	0.078	0.085	0.098	0.109	0.15	0.179	0.2	0.217	0.229	0.238	0.245	0.249	0.25
0.28	0.056	0.078	0.087	0.096	0.11	0.122	0.168	0.2	0.224	0.242	0.257	0.267	0.274	0.279	0.28
0.30	0.06	0.084	0.094	0.102	0.118	0.131	0.18	0.214	0.24	0.26	0.275	0.286	0.294	0.298	0.3
0.40	0.08	0.112	0.125	0.136	0.157	0.174	0.24	0.286	0.32	0.346	0.367	0.382	0.392	0.398	0.4

PRACTICAL EXAMPLES

Workpiece type		1. Plate for mold	2. Machine parts	
Cutter		EPAV12M20C20.0R04 (ø20 mm, z = 4)	TPAV12M050B22.0R12 (ø50 mm, z = 12)	
Insert		AVMT120408PDER-MM	AVMT120408PDER-MM	
Grade		AH3225	AH3225	
Workpiece material		Prehardened steel  P	Structural steel SS400  P	
Cutting conditions	Cutting speed : Vc (m/min)	72	157	
	Feed per tooth: fz (mm/t)	0.1	0.12	
	Feed speed : Vf (m/min)	458	1440	
	Depth of cut : ap (mm)	4	2	
	Width of cut : ae (mm)	6	35	
	Process	Face milling	Face milling	
	Coolant	Air blast	Air blast	
Machine	Vertical M/C, BT50	Vertical M/C, BT40		
Results	 <p>Productivity 1.6 times!</p> <p>Thanks to dense number of teeth and robust cutting edge, TungForce-Rec offered high productivity without chipping.</p>		 <p>Productivity 3.2 times!</p> <p>Dense number of teeth and large rake angle allowed TungForce-Rec to offer high productivity without chattering.</p>	
Workpiece type		3. Machine parts	4. Machine parts	
Cutter		EPAV12M20C20.0R04 (ø20 mm, z = 4)	TPAV12M050B22.0R12 (ø50 mm, z = 12)	
Insert		AVMT120408PDER-MM	AVGT120408PDER-MA	
Grade		AH3225	KS05F	
Workpiece material		SNCM431 / 30CrNiMo8  P	Cast aluminum  N	
Cutting conditions	Cutting speed : Vc (m/min)	157	950	
	Feed per tooth: fz (mm/t)	0.12	0.15	
	Feed speed : Vf (m/min)	1200	6000	
	Depth of cut : ap (mm)	2	6	
	Width of cut : ae (mm)	20	35	
	Process	Slotting	Face milling	
	Coolant	Air blast	External supply	
Machine	Vertical M/C, BT40	Vertical M/C, BT50		
Results	 <p>Productivity 1.4 times!</p> <p>Dense number of teeth and rigid tool design allowed TungForce-Rec to offer high productivity in slotting operation.</p>		 <p>Productivity 1.5 times!</p> <p>Dense number of teeth and rigid tool design allowed TungForce-Rec to offer high productivity in cast aluminum machining.</p>	

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.tungaloy.com/us

Tungaloy Canada

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

Tungaloy France S.A.S.

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

Tungaloy Scandinavia AB

Bultgatan 38
442 40 Kungälv, Sweden
Phone: +46-462119200
Fax: +46-462119207
www.tungaloy.com/se

Tungaloy Rus, LLC

Andropova avenue, h.18/7,
11 floor, office 3, 115432,
Moscow, Russia
Phone: +7-499-683-01-80
Fax: +7-499-683-01-81
www.tungaloy.com/ru

Tungaloy Polska Sp. z o.o.

Ul. Irysowa 1, 55-040 Bielany
Wroclawskie, Poland
Phone: +48 607 907 237
www.tungaloy.com/pl

Tungaloy U.K. Ltd

Gallan Park, Watling Street,
Cannock, WS110XG, UK
Phone: +44 121 4000 231
Fax: +44 121 270 9694
www.tungaloy.com/uk

Tungaloy Hungary Kft

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

Tungaloy Turkey

Serifali Mah.bayraktar Bulvari Kule Sk. No:26
34775 Umraniye / Istanbul / Turkey
Phone: +90 216 540 04 67
Fax: +90 216 540 04 87
www.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.com/nl

Tungaloy Croatia

Ulica bana Josipa Jelačića 87,
10430, Samobor, Croatia
Phone: +385 1 3326 604
Fax: +385 1 3327 683
www.tungaloy.com/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.com/cn

Tungaloy Cutting Tools (Taiwan) Co.,Ltd.

9F, No.293, Zhongyang Rd,
Xinzhuan Dist, New Taipei City,
24251 Taiwan
Phone: +886-2-8521-9986
Fax: +886-2-8521-8935
www.tungaloy.com/tw

Tungaloy Cutting Tools (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.com/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.com/sing

Tungaloy Vietnam

LE04.38, Lexington Residence
67 Mai Chi Tho St., Dist. 2,
Ho Chi Minh City, Vietnam
Phone: +84-2837406660
www.tungaloy.com/sing

Tungaloy India Pvt. Ltd.

One International Center,
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.com/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.com/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.com/my

Tungaloy Australia Pty Ltd

Unit 68 1470 Ferntree Gully Road
Knoxfield 3180 Victoria, 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.com/id



www.tungaloy.com

follow us at:

facebook.com/tungaloyjapan
twitter.com/tungaloyjapan
www.youtube.com/tungaloycorporation



AS9100 Certified
78006
2015.11.04
ISO 14001 Certified
EC97J1123
1997.11.26

Distributed by:



FIND US ON THE CLOUD!
machingcloud.com

