

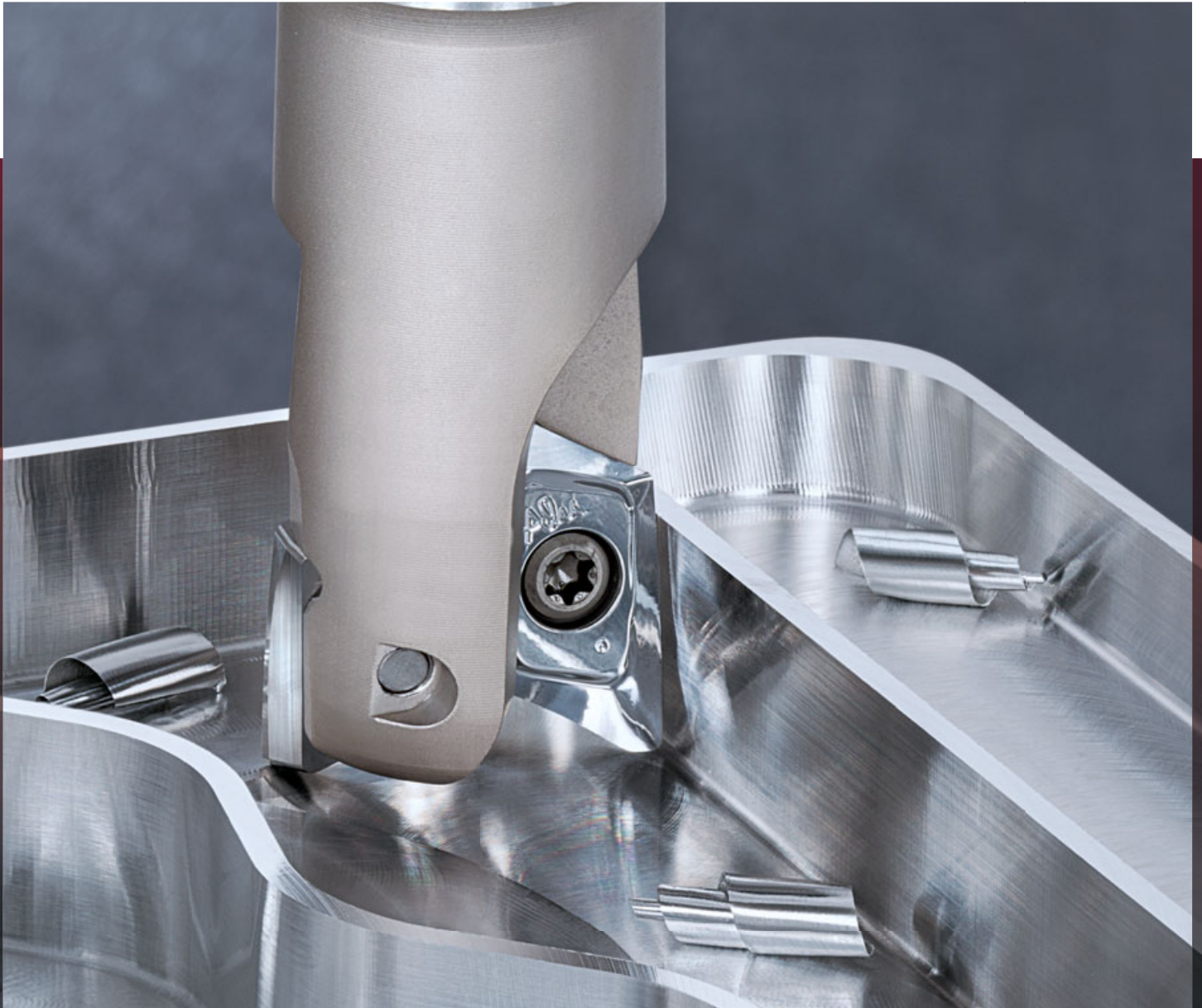


High speed milling cutter

TUNGALUMILL

Tungaloy Report No. 429S1-US

High performance aluminum milling cutters with redesigned inserts

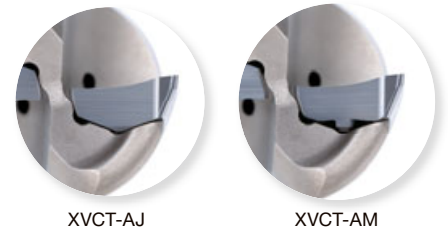
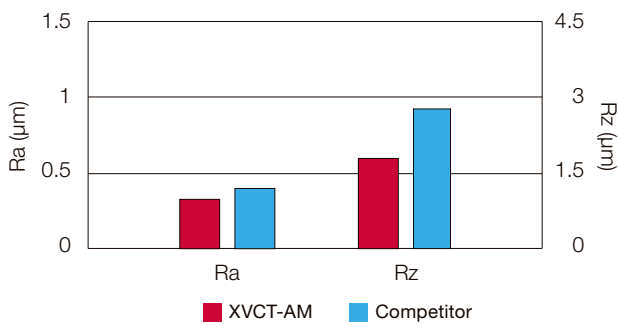


Advanced aluminum milling inserts with improved design for higher performance

Improved compatible bottom shape

Cutting performance

Comparison of surface roughness

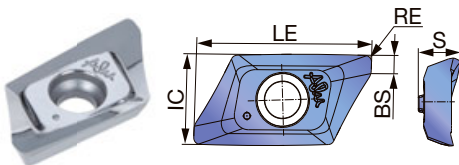


N

Cutter : TPV16R200U0075A04 ($\phi 2''$, $z = 4$)
 Insert : XVCT160508PEFR-AM TH10
 Workpiece material : 5052
 Cutting speed : $V_c = 3281$ sfm
 Feed per tooth : $f_z = 0.006$ ipt
 Depth of cut : $a_p = 0.118''$
 Width of cut : $a_e = 1.378''$
 Coolant : Wet
 Machine : Vertical M/C, BT50

INSERT

XVCT16-AM



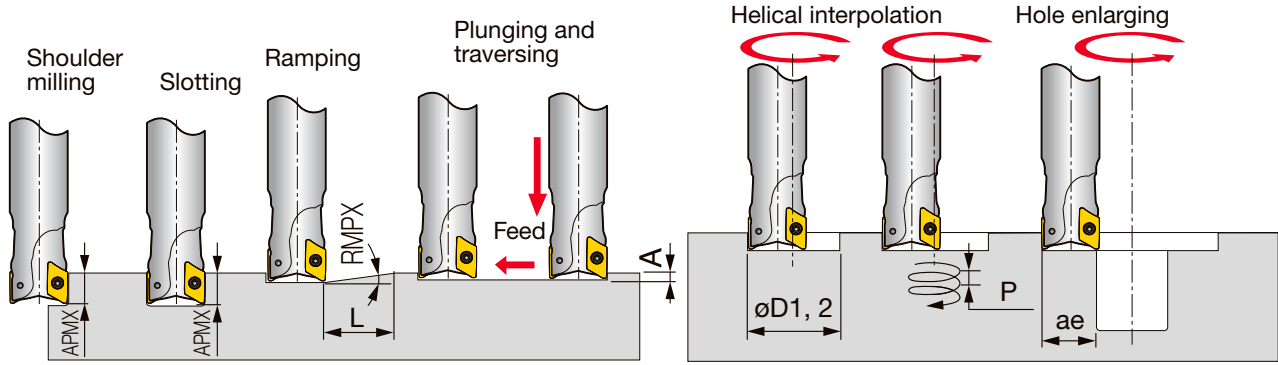
Material	Performance
P Steel	Good
M Stainless	Good
K Cast iron	Good
N Non-ferrous	★ (First choice)
S Superalloys	Good
H Hard materials	Good

Designation	RE (in)	APMX (in)	Uncoated								LE (in)	IC (in)	S (in)	BS (in)
			TH10											
XVCT160504PEFR-AM	0.016	0.630	●								0.874	0.441	0.217	0.059
XVCT160508PEFR-AM	0.032	0.630	●								0.874	0.441	0.217	0.043
XVCT160512PEFR-AM	0.047	0.630	●								0.858	0.441	0.217	0.043
XVCT160516PEFR-AM	0.063	0.630	●								0.835	0.441	0.217	0.043
XVCT160520PEFR-AM	0.079	0.610	●								0.819	0.441	0.213	0.043
XVCT160525PEFR-AM	0.098	0.571	●								0.795	0.442	0.210	0.039
XVCT160530PEFR-AM	0.118	0.571	●								0.772	0.441	0.205	0.039
XVCT160532PEFR-AM	0.126	0.571	●								0.756	0.441	0.205	0.043
XVCT160540PEFR-AM	0.158	0.571	●								0.728	0.441	0.205	0.059
XVCT160550PEFR-AM	0.197	0.571	●								0.720	0.441	0.201	0.024

* When using inserts with corner radius $RE \geq 0.126''$, standard cutter body has to be modified with "R". "R" = $RE - 0.012''$

● : New

APPLICATION RANGE



Inch	Tool DC	Corner radius RE	Straight ramp down			Step down	Helical ramp down			Hole enlarging	
			Max. depth of cut APMX	Max. ramping angle RMPX	Min. length L	Max. plunging depth A	Min. machining $\phi D1$	Max. pitch/rev P	Max. machining $\phi D2$	Max. pitch/rev P	Max. width ae
EPV16R100...	1.000	0.016, 0.031	0.630	22°	1.570	0.166	1.150	0.173	1.970	0.535	0.886
EPV16R100...	1.000	0.047	0.610	22°	1.570	0.166	1.150	0.173	1.970	0.535	0.886
EPV16R100...	1.000	0.063	0.591	22°	1.500	0.146	1.150	0.173	1.970	0.520	0.886
EPV16R100...	1.000	0.079	0.571	22°	1.500	0.146	1.150	0.173	1.970	0.520	0.886
EPV16R100...	1.000	0.118, 0.126	0.551	21°	1.500	0.098	1.150	0.165	1.970	0.484	0.886
EPV16R100...	1.000	0.157, 0.197	0.512	18.5°	1.570	0.090	1.150	0.146	1.970	0.484	0.886
EPV16R125...	1.250	0.016, 0.031	0.630	16.5°	2.130	0.158	1.690	0.346	2.520	0.535	1.134
EPV16R125...	1.250	0.047	0.610	16.5°	2.130	0.158	1.690	0.346	2.520	0.535	1.134
EPV16R125...	1.250	0.063	0.591	16°	2.130	0.138	1.690	0.335	2.520	0.520	1.134
EPV16R125...	1.250	0.079	0.571	16°	2.130	0.138	1.690	0.335	2.520	0.520	1.134
EPV16R125...	1.250	0.118, 0.126	0.551	15°	2.130	0.118	1.700	0.311	2.520	0.484	1.134
EPV16R125...	1.250	0.157, 0.197	0.512	13.5°	2.200	0.098	1.700	0.280	2.520	0.484	1.134
T/EPV16R150...	1.500	0.016, 0.031	0.630	11.5°	3.110	0.158	2.330	0.409	3.150	0.535	1.417
T/EPV16R150...	1.500	0.047	0.610	11.5°	3.110	0.158	2.330	0.409	3.150	0.535	1.417
T/EPV16R150...	1.500	0.063	0.591	11°	3.150	0.138	2.330	0.390	3.150	0.520	1.417
T/EPV16R150...	1.500	0.079	0.571	11°	3.150	0.138	2.330	0.390	3.150	0.520	1.417
T/EPV16R150...	1.500	0.118, 0.126	0.551	10°	3.230	0.118	2.330	0.354	3.150	0.484	1.417
T/EPV16R150...	1.500	0.157, 0.197	0.512	8.5°	3.540	0.098	2.330	0.299	3.150	0.484	1.417
TPV16R200...	2.000	0.016, 0.031	0.630	9.5°	3.780	0.158	3.110	0.512	3.940	0.535	1.772
TPV16R200...	2.000	0.047	0.610	9.5°	3.780	0.158	3.110	0.512	3.940	0.535	1.772
TPV16R200...	2.000	0.063	0.591	9°	3.860	0.138	3.110	0.484	3.940	0.520	1.772
TPV16R200...	2.000	0.079	0.571	9°	3.860	0.138	3.110	0.484	3.940	0.520	1.772
TPV16R200...	2.000	0.118, 0.126	0.551	8°	4.060	0.118	3.110	0.429	3.940	0.484	1.772
TPV16R200...	2.000	0.157, 0.197	0.512	7°	4.330	0.098	3.110	0.374	3.940	0.484	1.772
TPV16R250...	2.500	0.016, 0.031	0.630	7°	5.120	0.158	4.130	0.535	4.960	0.535	2.232
TPV16R250...	2.500	0.047	0.610	7°	5.120	0.158	4.130	0.535	4.960	0.535	2.232
TPV16R250...	2.500	0.063	0.591	6.5°	5.350	0.138	4.130	0.504	4.960	0.520	2.232
TPV16R250...	2.500	0.079	0.571	6.5°	5.350	0.138	4.130	0.504	4.960	0.520	2.232
TPV16R250...	2.500	0.118, 0.126	0.551	6°	5.350	0.118	4.140	0.465	4.960	0.484	2.232
TPV16R250...	2.500	0.157, 0.197	0.512	5.5°	5.510	0.098	4.140	0.425	4.960	0.484	2.232
TPV16R300...	3.000	0.016, 0.031	0.630	5°	7.200	0.158	5.470	0.535	6.300	0.535	2.835
TPV16R300...	3.000	0.047	0.610	5°	7.200	0.158	5.470	0.535	6.300	0.535	2.835
TPV16R300...	3.000	0.063	0.591	4.5°	7.760	0.138	5.470	0.488	6.300	0.520	2.835
TPV16R300...	3.000	0.079	0.571	4.5°	7.760	0.138	5.470	0.488	6.300	0.520	2.835
TPV16R300...	3.000	0.118, 0.126	0.551	4°	8.150	0.118	5.480	0.433	6.300	0.484	2.835
TPV16R300...	3.000	0.157, 0.197	0.512	3.5°	8.700	0.098	5.480	0.378	6.300	0.484	2.835
TPV16R400...	4.000	0.016, 0.031	0.630	3.5°	10.310	0.158	7.040	0.508	7.870	0.535	3.543
TPV16R400...	4.000	0.047	0.610	3.5°	10.310	0.158	7.040	0.508	7.870	0.535	3.543
TPV16R400...	4.000	0.063	0.591	3°	11.650	0.138	7.040	0.437	7.870	0.520	3.543
TPV16R400...	4.000	0.079	0.571	3°	11.650	0.138	7.040	0.437	7.870	0.520	3.543
TPV16R400...	4.000	0.118, 0.126	0.551	2.5°	13.070	0.118	7.050	0.362	7.870	0.484	3.543
TPV16R400...	4.000	0.157, 0.197	0.512	2.5°	12.170	0.098	7.050	0.362	7.870	0.457	3.543
TPV16R500...	5.000	0.016, 0.031	0.630	2.5°	14.450	0.158	9.020	0.476	9.840	0.535	4.429
TPV16R500...	5.000	0.047	0.610	2.5°	14.450	0.158	9.020	0.476	9.840	0.535	4.429
TPV16R500...	5.000	0.063	0.591	2°	17.480	0.138	9.020	0.382	9.840	0.520	4.429
TPV16R500...	5.000	0.079	0.571	2°	17.480	0.138	9.020	0.382	9.840	0.520	4.429
TPV16R500...	5.000	0.118, 0.126	0.551	1.5°	21.810	0.118	9.020	0.287	9.840	0.343	4.429
TPV16R500...	5.000	0.157, 0.197	0.512	1.5°	20.310	0.098	9.020	0.287	9.840	0.343	4.429

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Hardness HB	Grade	Chip-breaker	Cutting speed Vc (sfm)	Feed per revolution fz (ipt)
N	Aluminum alloy	60	TH10	AM	1800 - 2300	0.006 - 0.014
		100	TH10	AM	1970 - 2460	0.004 - 0.010
	Cast aluminum alloy Si ≤ 12%	75	TH10	AM	2620 - 2950	0.006 - 0.012
		90	TH10	AM	2130 - 2620	0.004 - 0.010
	Cast aluminum alloy Si > 12%	130	TH10	AM	820 - 1050	0.003 - 0.006
	Copper alloys Pb > 1%	110	TH10	AM	980 - 1310	0.003 - 0.006
		90	TH10	AM	980 - 1310	0.004 - 0.006
	Copper alloys	100	TH10	AM	690 - 920	0.004 - 0.006
		-	TH10	AM	490 - 820	0.004 - 0.006
	Duroplastics, fiber plastics	-	TH10	AM	490 - 820	0.004 - 0.006
Hard rubber	-	TH10	AM	490 - 820	0.004 - 0.006	

Safety guidelines

1. Use only the original inserts, cutters and spare parts.
2. Insert pocket must be cleaned before clamping the insert.
3. Clamp torque of screw should be 3.32 lbf.ft.
4. For safety reasons, use a new screw when changing the insert.
5. Maximum RPM values are determined based on the burst test. Using RPM beyond maximum values may cause insert breakage, machine damage or personal injury.
6. XVCT insert has sharp cutting edges. Always wear gloves for protection from injury when handling.



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