

MillLine

MILLQ^{UAD}FEED

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Tungaloy Report No. 502S1-US



Expanded cutter and grade options for maximum high feed milling performance



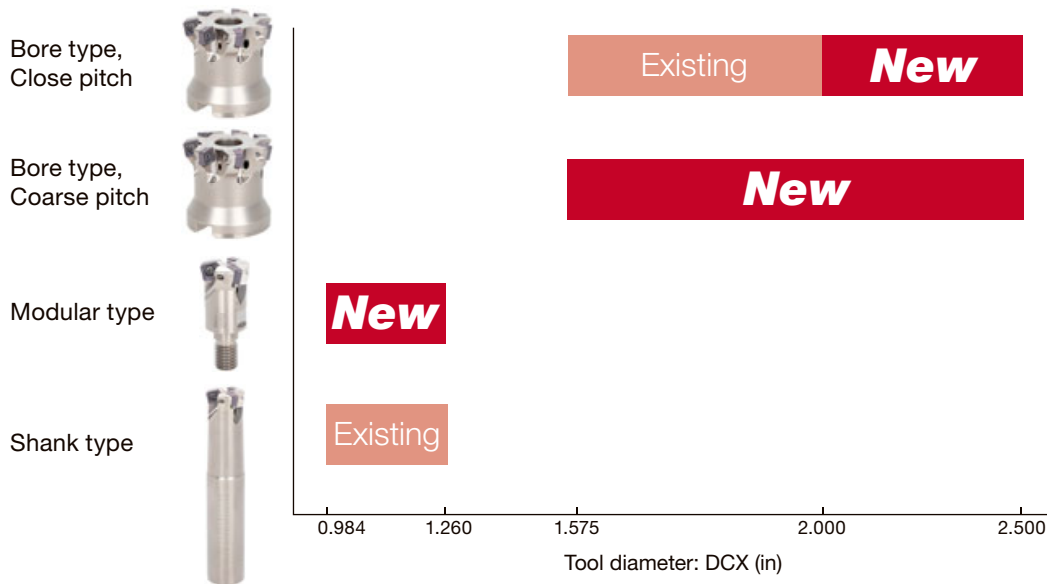
INDUSTRY 4.0
FEED the SPEED!



For more information

MillQuadFeed-09 offers expanded application coverage

In addition to a new modular style cutter head, additional cutter diameter options are available for up to 2.500" in a close or coarse pitch design for chatter solutions

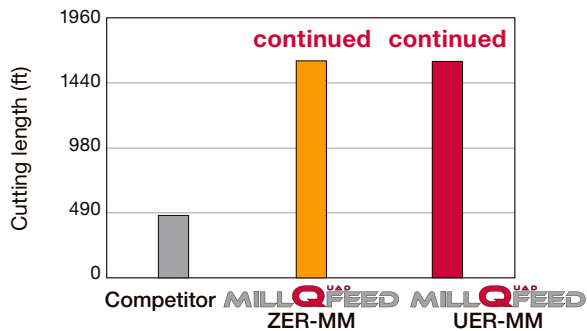


Expanded insert grade options for expanded materials coverage



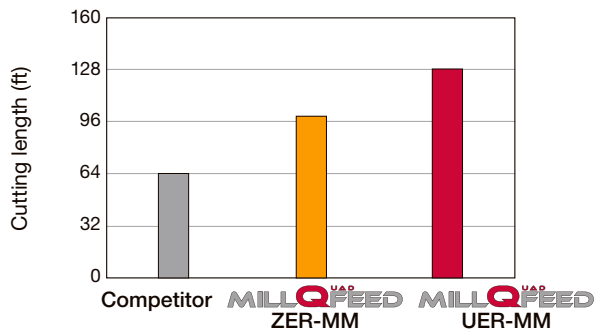
CUTTING PERFORMANCE

Comparisons of tool life



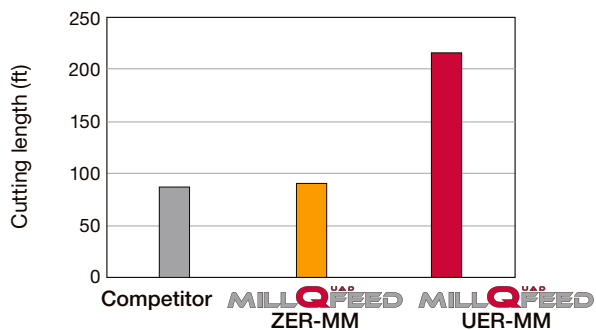
P Cutter : EXSW09U1.00C1.00R03 ($\phi 1"$, z = 3)
 Insert : SWMT0904ZER-MM AH3225
 : SWMT0904UER-MM AH3225
 Workpiece material : 1055 (180HB)
 Cutting speed : $V_c = 492$ sfm
 Feed per tooth : $f_z = 0.059$ ipt
 Depth of cut : $a_p = 0.031"$
 Depth of width : $a_e = 0.354"$
 Number of teeth : 1
 Coolant : Dry
 Machine : Vertical M/C, BT50

Over 300% tool life with AH3225 grade



M Cutter : TXSW09U2.00U0.75R07 ($\phi 2"$, z = 7)
 Insert : SWMT0904ZER-MM AH130
 : SWMT0904UER-MM AH130
 Workpiece material : 304SS
 Cutting speed : $V_c = 394$ sfm
 Feed per tooth : $f_z = 0.031$ ipt
 Depth of cut : $a_p = 0.031"$
 Depth of width : $a_e = 1.260"$
 Number of teeth : 1
 Coolant : Wet
 Machine : Vertical M/C, BT50

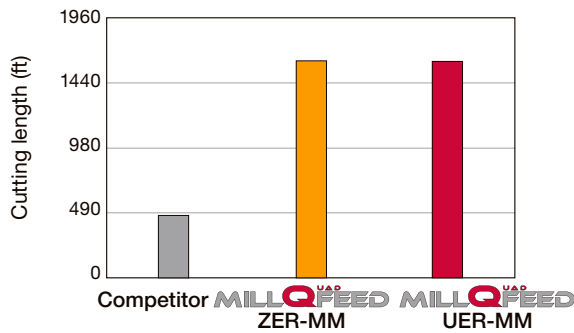
200% tool life with AH130 grade and UER insert



M Cutter : TXSW09U2.00U0.75R07 ($\phi 2"$, z = 7)
 Insert : SWMT0904ZER-MM AH130
 : SWMT0904UER-MM AH130
 Workpiece material : 174 (40HRC)
 Cutting speed : $V_c = 328$ sfm
 Feed per tooth : $f_z = 0.024$ ipt
 Depth of cut : $a_p = 0.031"$
 Depth of width : $a_e = 1.260"$
 Number of teeth : 1
 Coolant : Wet
 Machine : Vertical M/C, BT50

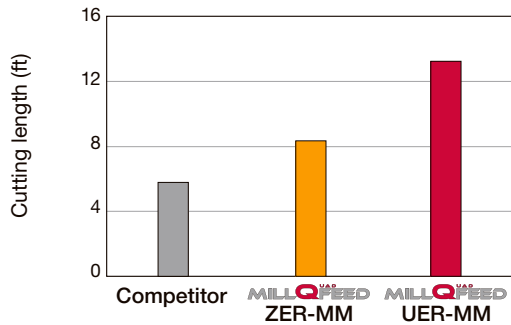
240% tool life with AH130 grade and UER insert

Comparisons of tool life



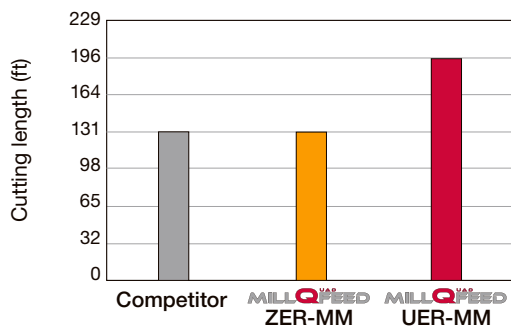
S Cutter : TXSW09U2.00B0.75R07 ($\phi 2''$, z = 7)
 Insert : SWMT0904ZER-MM AH130
 : SWMT0904UER-MM AH130
 Workpiece material : Ti-6Al-4V (42HRC)
 Cutting speed : $V_c = 197$ sfm
 Feed per tooth : $f_z = 0.028$ ipt
 Depth of cut : $a_p = 0.031''$
 Depth of width : $a_e = 1.260''$
 Number of teeth : 1
 Coolant : Wet
 Machine : Vertical M/C, BT50

320% tool life with AH130 grade and UER insert



S Cutter : TXSW09U2.00B0.75R07 ($\phi 2''$, z = 7)
 Insert : SWMT0904ZER-MM AH8015
 : SWMT0904UER-MM AH8015
 Workpiece material : Inconel718 (40HRC)
 Cutting speed : $V_c = 131$ sfm
 Feed per tooth : $f_z = 0.016$ ipt
 Depth of cut : $a_p = 0.031''$
 Depth of width : $a_e = 1.260''$
 Number of teeth : 1
 Coolant : Wet
 Machine : Vertical M/C, BT50

220% tool life with AH8015 grade and UER insert



H Cutter : TXSW09U2.00B0.75R07 ($\phi 2''$, z = 7)
 Insert : SWMT0904ZER-MM AH8015
 : SWMT0904UER-MM AH8015
 Workpiece material : H13 (52HRC)
 Cutting speed : $V_c = 262$ sfm
 Feed per tooth : $f_z = 0.020$ ipt
 Depth of cut : $a_p = 0.031''$
 Depth of width : $a_e = 1.260''$
 Number of teeth : 1
 Coolant : Dry
 Machine : Vertical M/C, BT50

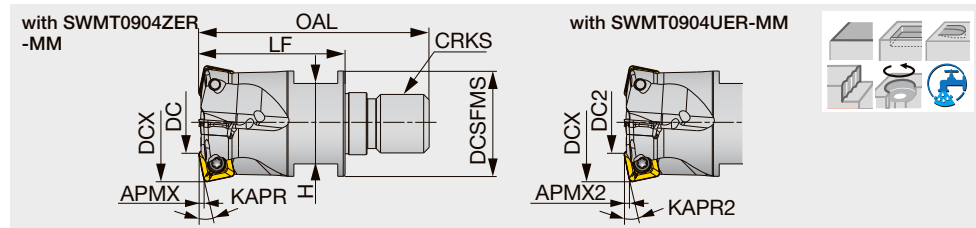
150% tool life with AH8015 grade and UER insert

New

HXSW09

High feed mill, modular type, for 4-corner single sided inserts

GAMP = +3.8°, GAMF = -3.5°



Metric	APMX	APMX2	DCX	CICT	DC	DC2	OAL	LF	H	DCSFMS	KAPR	KAPR2	CRKS	WT (kg)	Air hole	Insert
HXSW09M025M12R03	1.5	1	25	3	10	9	57	35	17	20.8	12°	7°	M12	0.09	With	SWMT09...
HXSW09M032M16R04	1.5	1	32	4	17	16	63	40	22	28.8	12°	7°	M16	0.18	With	SWMT09...

SPARE PARTS

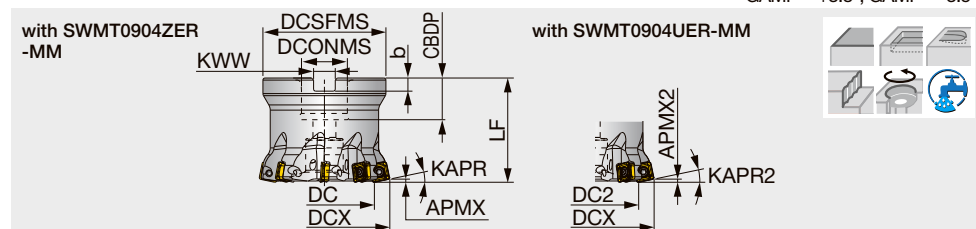
Designation	Clamping screw	Mono block wrench	Lubricant
HXSW09...	CSPD-3	IP-10D	M-1000

·Recommended clamping torque (N·m): CSPD-3=2.5

TXSW09

High feed mill, for 4-corner single sided inserts

GAMP = +3.8°, GAMF = -3.5°



	Inch	APMX	APMX2	DCX	CICT	DC	DC2	DCSFMS	DCONMS	CBDP	LF	KWW	b	KAPR	KAPR2	WT (lb)	Air hole	Insert
New	TXSW09U1.50B0.50R04	0.059	0.039	1.500	4	0.909	0.870	1.378	0.500	0.630	1.575	0.258	0.157	12°	7°	0.40	With	SWMT09...
	TXSW09U1.50B0.50R05	0.059	0.039	1.500	5	0.909	0.870	1.378	0.500	0.630	1.575	0.258	0.157	12°	7°	0.40	With	SWMT09...
New	TXSW09U2.00B0.75R05	0.059	0.039	2.000	5	1.406	1.366	1.772	0.750	0.750	1.969	0.315	0.197	12°	7°	0.82	With	SWMT09...
	TXSW09U2.00B0.75R07	0.059	0.039	2.000	7	1.406	1.366	1.772	0.750	0.750	1.969	0.315	0.197	12°	7°	0.84	With	SWMT09...
New	TXSW09U2.50B0.75R06	0.059	0.039	2.500	6	1.906	1.866	2.323	0.750	0.750	1.969	0.315	0.197	12°	7°	1.59	With	SWMT09...
New	TXSW09U2.50B0.75R08	0.059	0.039	2.500	8	1.906	1.866	2.323	0.750	0.750	1.969	0.315	0.197	12°	7°	1.61	With	SWMT09...
New	TXSW09U3.00B1.00R07	0.059	0.039	3.000	7	2.406	2.366	2.835	1.000	1.024	2.480	0.374	0.236	12°	7°	3.00	With	SWMT09...
New	TXSW09U3.00B1.00R10	0.059	0.039	3.000	10	2.406	2.366	2.835	1.000	1.024	2.480	0.374	0.236	12°	7°	3.06	With	SWMT09...
New	TXSW09U4.00B1.50R08	0.059	0.039	4.000	8	3.406	3.366	3.819	1.500	1.181	2.480	0.626	0.394	12°	7°	4.67	With	SWMT09...

SPARE PARTS

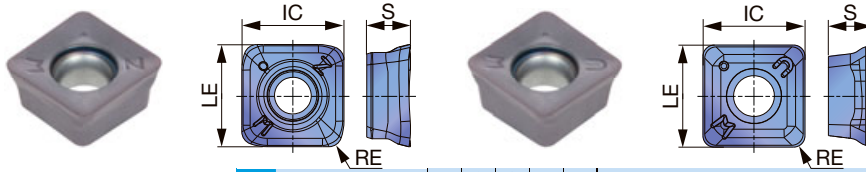
Designation	Clamping screw	Torx bit	Grip	Lubricant
TXSW09U...	CSPD-3	BLDIP10/S7	H-TB2W	M-1000

·Recommended clamping torque (lb·ft): CSPD-3=1.84

INSERTS

SWMT0904ZER-MM

SWMT0904UER-MM



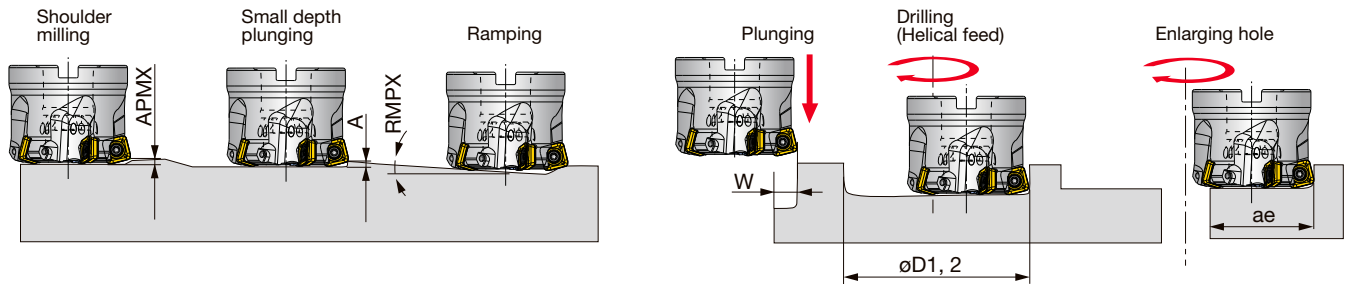
P Steel		☆	★															
M Stainless	★	☆	☆															
K Cast iron		☆	☆	★														
N Non-ferrous																		
S Titanium	★	☆																
S Heat resistant alloy					☆	★												
H Hard materials			☆	☆	★													

★ : First choice
☆ : Second choice

Designation	RE	APMX	Coated					LE	IC	S
			AH130	AH3135	AH3225	AH120	AH8015			
SWMT0904ZER-MM	0.0393	0.059	●	●	●	●	●	0.339	0.339	0.157
SWMT0904UER-MM	0.0394	0.039	●	●	●	●	●	0.356	0.356	0.157

● : New lineup

APPLICATION RANGE



09 type

Designation	Tool dia. DCX	Max. depth of cut		Max. plunging depth A	Max. ramping angle		Max. cutting width in plunging		Min. machining dia.		Max. machining dia.		Max. cutting width in enlarging	
		APMX			RMPX		W		øD1		øD2		ae	
		SWMT 09**ZER	SWMT 09**UER	SWMT 09**ZER	SWMT 09**UER	SWMT 09**ZER	SWMT 09**UER	SWMT 09**ZER	SWMT 09**UER	SWMT 09**ZER	SWMT 09**UER	SWMT 09**ZER	SWMT 09**UER	SWMT 09**ZER
TXSW09U1.50B0.50R04	0.157	0.059	0.039	0.012	1.9	2.2	0.276	0.295	2.370	2.331	2.882	2.882	1.165	1.146
TXSW09U2.00B0.75R05	0.197	0.059	0.039	0.012	1.2	1.4	0.276	0.295	3.370	3.331	3.882	3.882	1.665	1.646
TXSW09U2.50B0.75R06	0.197	0.059	0.039	0.012	0.9	0.9	0.276	0.295	4.370	4.331	4.882	4.882	2.165	2.146
TXSW09U2.50B0.75R08	0.197	0.059	0.039	0.012	0.9	0.9	0.276	0.295	4.370	4.331	4.882	4.882	2.165	2.146
New TXSW09U3.00B1.00R07	0.236	0.059	0.039	0.012	0.7	0.8	0.276	0.295	5.370	5.331	5.882	5.882	2.665	2.646
New TXSW09U3.00B1.00R10	0.236	0.059	0.039	0.012	0.4	0.6	0.276	0.295	5.370	5.331	5.882	5.882	2.665	2.646
TXSW09U4.00B1.50R08	0.394	0.059	0.039	0.012	0.5	0.6	0.276	0.295	7.370	7.331	7.882	7.882	3.665	3.646

STANDARD CUTTING CONDITIONS

09 type

ISO	Workpiece material		Hardness	Priority	Insert type	Grade	Chip-breaker	Cutting speed Vc (sfm)	Feed per tooth fz (ipt)
P	Carbon steel 1045, 1055, etc.		- 300HB	First choice	ZER	AH3225	MM	328 - 984	0.02 - 0.059
				Fracture resistance	ZER	AH3135	MM	328 - 984	0.02 - 0.059
				Wear resistance	UER	AH3225	MM	328 - 984	0.02 - 0.059
	Alloy steel 4140, etc.		- 300HB	First choice	ZER	AH3225	MM	328 - 656	0.02 - 0.059
				Fracture resistance	ZER	AH3135	MM	328 - 656	0.02 - 0.059
				Wear resistance	UER	AH3225	MM	328 - 656	0.02 - 0.059
	Prehardened steel NAK80, PX5, etc.		30 - 40HRC	First choice	ZER	AH3225	MM	328 - 656	0.02 - 0.047
				Fracture resistance	ZER	AH3135	MM	328 - 656	0.02 - 0.047
				Wear resistance	UER	AH3225	MM	328 - 656	0.02 - 0.047
M	Austenitic stainless steel 304SS, etc.		- 200HB	First choice	UER	AH3135	MM	328 - 492	0.02 - 0.047
				Fracture resistance	UER	AH130	MM	328 - 492	0.02 - 0.047
				Low cutting force	ZER	AH3135	MM	328 - 492	0.02 - 0.047
	Precipitation hardening stainless steel 17-4 PH, etc.		28HRC - (H1150)	First choice	UER	AH3135	MM	262 - 492	0.012 - 0.047
				Fracture resistance	UER	AH130	MM	262 - 492	0.012 - 0.047
				Low cutting force	ZER	AH3135	MM	262 - 492	0.012 - 0.047
			40HRC - (H900)	First choice	UER	AH3135	MM	262 - 394	0.012 - 0.031
				Fracture resistance	UER	AH130	MM	262 - 394	0.012 - 0.031
				Low cutting force	ZER	AH3135	MM	262 - 394	0.012 - 0.031
K	Gray cast iron Class 25, Class 30, etc.		150 - 250HB	First choice	ZER	AH8015	MM	328 - 984	0.02 - 0.079
				Fracture resistance	ZER	AH120	MM	328 - 984	0.02 - 0.079
				Low cutting force	ZER	AH120	MM	328 - 984	0.02 - 0.079
	Ductile cast iron 80-55-06, etc.		150 - 250HB	First choice	ZER	AH8015	MM	262 - 656	0.02 - 0.079
				Fracture resistance	ZER	AH120	MM	262 - 656	0.02 - 0.079
				Low cutting force	ZER	AH120	MM	262 - 656	0.02 - 0.079
S	Titanium alloys Ti-6Al-4V, etc.		- 40HRC	First choice	UER	AH130	MM	98 - 197	0.012 - 0.028
				Wear resistance	UER	AH8015	MM	98 - 197	0.012 - 0.028
				Low cutting force	ZER	AH130	MM	98 - 197	0.012 - 0.028
	Heat-resistance alloys Inconel, Hastelloy, etc.		- 40HRC	First choice	UER	AH8015	MM	66 - 164	0.004 - 0.012
				Fracture resistance	UER	AH130	MM	66 - 164	0.004 - 0.012
				Low cutting force	ZER	AH8015	MM	66 - 164	0.004 - 0.012
H	Hardened steel	H13, etc.	40 - 50HRC	First choice	UER	AH8015	MM	262 - 427	0.004 - 0.012
				Fracture resistance	UER	AH130	MM	262 - 427	0.004 - 0.012
				Low cutting force	ZER	AH8015	MM	262 - 427	0.004 - 0.012

15 type

ISO	Workpiece material		Hardness	Priority	Insert type	Grade	Chip-breaker	Cutting speed Vc (sfm)	Feed per tooth fz (ipt)
P	Carbon steel 1045, 1055, etc.		- 300HB	First choice	ZER	AH3135	MM	328 - 984	0.02 - 0.059
				Wear resistance	ZER	AH120	MM	328 - 984	0.02 - 0.059
				Fracture resistance	ZER	AH3135	MT	328 - 984	0.02 - 0.079
	Alloy steel 4140, etc.		- 300HB	First choice	ZER	AH3135	MM	328 - 656	0.02 - 0.059
				Wear resistance	ZER	AH120	MM	328 - 656	0.02 - 0.059
				Fracture resistance	ZER	AH3135	MT	328 - 656	0.02 - 0.079
	Prehardened steel NAK80, PX5, etc.		30 - 40HRC	First choice	ZER	AH3135	MM	328 - 656	0.02 - 0.047
				Wear resistance	ZER	AH120	MM	328 - 656	0.02 - 0.047
				Fracture resistance	ZER	AH3135	MT	328 - 656	0.02 - 0.059
M	Austenitic stainless steel 304SS, etc.		- 200HB	First choice	UER	AH3135	MM	328 - 492	0.02 - 0.047
				Low cutting force	ZER	AH3135	MM	328 - 492	0.02 - 0.047
				Fracture resistance	ZER	AH3135	MM	328 - 492	0.02 - 0.047
	Precipitation hardening stainless steel 17-4 PH, etc.		28HRC - (H1150)	First choice	UER	AH3135	MM	262 - 492	0.012 - 0.047
				Low cutting force	ZER	AH3135	MM	262 - 492	0.012 - 0.047
				Fracture resistance	ZER	AH3135	MM	262 - 492	0.012 - 0.047
			40HRC - (H900)	First choice	UER	AH3135	MM	262 - 394	0.012 - 0.031
				Low cutting force	ZER	AH3135	MM	262 - 394	0.012 - 0.031
				Fracture resistance	ZER	AH3135	MM	262 - 394	0.012 - 0.031
K	Gray cast iron Class 25, Class 30, etc.		150 - 250HB	First choice	ZER	AH120	MT	328 - 984	0.02 - 0.079
				Fracture resistance	ZER	AH3135	MT	328 - 984	0.02 - 0.079
				Low cutting force	ZER	AH120	MM	328 - 984	0.02 - 0.059
	Ductile cast iron 80-55-06, etc.		150 - 250HB	First choice	ZER	AH120	MT	262 - 656	0.02 - 0.079
				Fracture resistance	ZER	AH3135	MT	262 - 656	0.02 - 0.079
				Low cutting force	ZER	AH120	MM	262 - 656	0.02 - 0.059
S	Titanium alloys Ti-6Al-4V, etc.		- 40HRC	First choice	UER	AH3135	MM	98 - 197	0.012 - 0.028
				Low cutting force	ZER	AH3135	MM	98 - 197	0.012 - 0.028
				Fracture resistance	ZER	AH3135	MT	98 - 197	0.012 - 0.028
	Heat-resistance alloys Inconel, Hastelloy, etc.		- 40HRC	First choice	UER	AH3135	MM	66 - 164	0.004 - 0.012
				Wear resistance	ZER	AH120	MM	66 - 164	0.004 - 0.012
				Fracture resistance	ZER	AH120	MM	66 - 164	0.004 - 0.012
H	Hardened steel	H13, etc.	40 - 50HRC	First choice	ZER	AH3135	MT	262 - 427	0.004 - 0.012
				Wear resistance	ZER	AH120	MT	262 - 427	0.004 - 0.012
		D2, etc.		50 - 60HRC	First choice	ZER	AH120	MT	164 - 230

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