



High-feed milling cutter

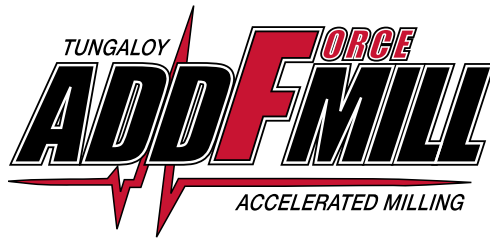
MILLQ^{UAD}FEED

Tungaloy Report No. 502-G

A new generation of high feed milling cutter
with versatility and long life
New flat top inserts for increased fracture resistance







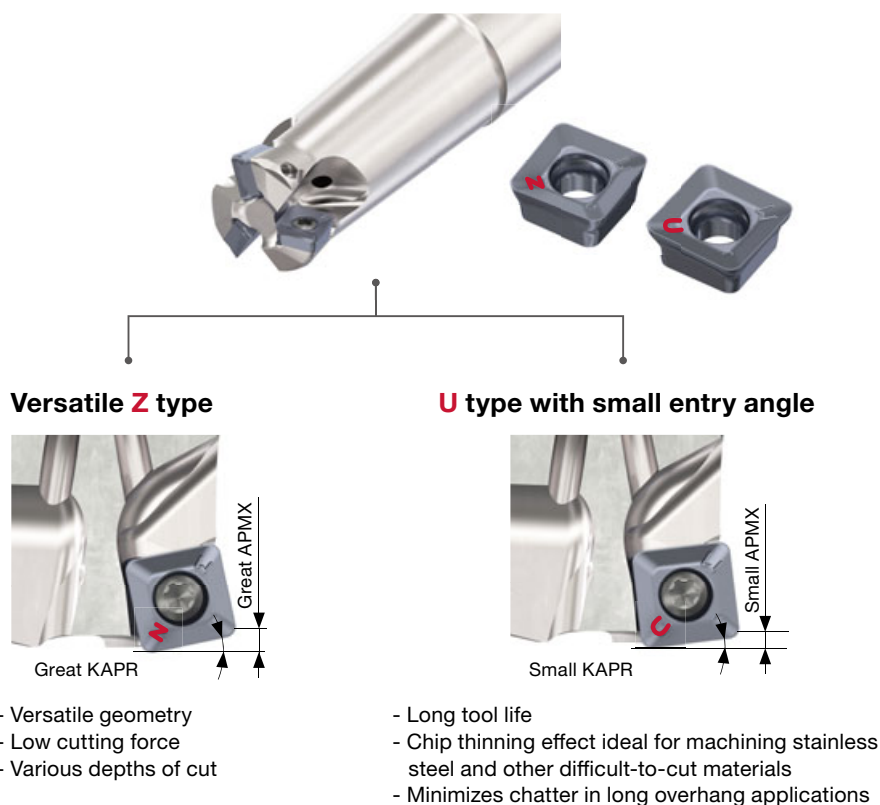
MILL Q^{UAD} FEED



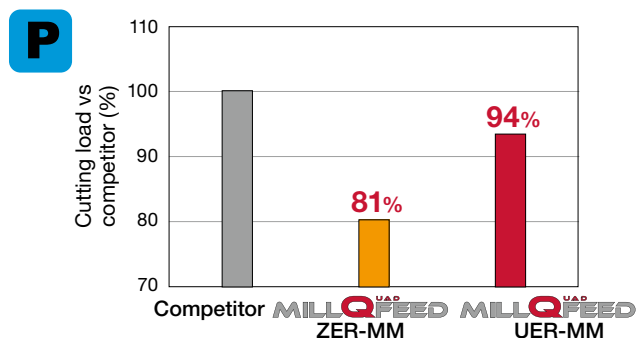
The unique insert design **allows for changing entry angles**.
The optimal depth of cut (D.O.C.) can be selected when machining
various work materials.

HFM cutter with **maximum versatility and efficiency**

■ 2 types of inserts can fit one cutter body providing two different entry angles

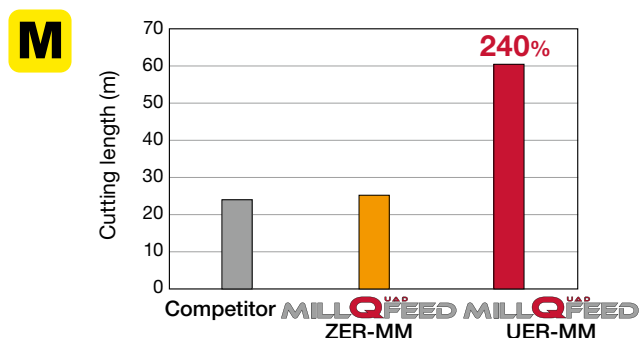


Low cutting force - Z type



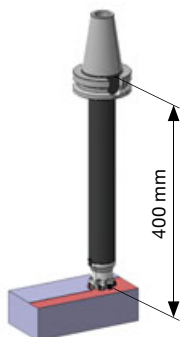
Cutter : TXSW09M050B22.0R07 ($\phi = 50$ mm, $z = 7$)
 Insert : SWMT0904ZER-MM AH3135,
 SWMT0904UER-MM AH3135
 Workpiece material: S55C / C55 (180HB)
 Cutting speed : $V_c = 150$ m/min
 Feed per tooth : $f_z = 1.5$ mm/t
 Depth of cut : $a_p = 0.8$ mm
 Depth of width : $a_e = 32$ mm
 Number of teeth : 1
 Coolant : Dry
 Machine : Vertical M/C, BT50

Long tool life - U type



Cutter : TXSW09M050B22.0R07 ($\phi = 50$ mm, $z = 7$)
 Insert : SWMT0904ZER-MM AH3135,
 SWMT0904UER-MM AH3135
 Workpiece material: SUS630 / X5CrNiCuNb16-4 (40HRC)
 Cutting speed : $V_c = 100$ m/min
 Feed per tooth : $f_z = 0.6$ mm/t
 Depth of cut : $a_p = 0.8$ mm
 Depth of width : $a_e = 32$ mm
 Number of teeth : 1
 Coolant : Wet
 Machine : Vertical M/C, BT50

■ Superior chatter stability



Tool diameter	Number of teeth	fz (mm/t)		
		1	1.2	1.5
MILLQFEED	7	OK	OK	OK
Competitor	7	Chatter	Chatter	OK
Competitor	5	Chatter	Chatter	OK

Cutter : TXSW09M050B22.0R07
 (ø = 50 mm, z = 7)
 Insert : SWMT0904UER-MM
 Workpiece material : S55C / C55
 Cutting speed : $V_c = 120$ m/min
 Depth of cut : $a_p = 0.5$ mm
 Depth of width : $a_e = 32$ mm
 Number of teeth : 7
 Coolant : Dry
 Machine : Vertical M/C, BT50

Stable operation is possible due to the UER-MM geometry, which provides a small entry angle, even with 7 cutting edges in an 8xD tool length

■ Close-pitch design for high efficiency

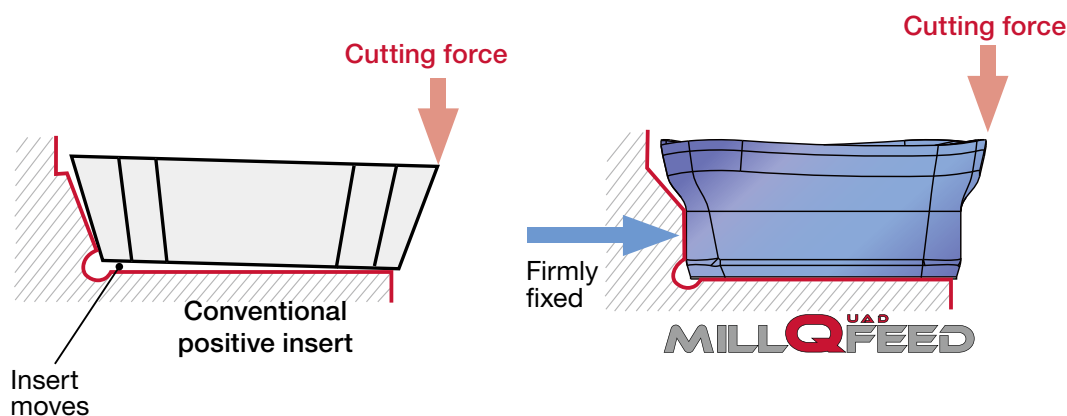
Tool diameter	MILLQFEED	A leading competitor	MillQuadFeed's insert density vs competitor
ø25	3 flutes	2 flutes	150 %
ø32	4 flutes	3 flutes	133 %
ø40	5 flutes	4 flutes	125 %
ø50	7 flutes	5 flutes	140 %



■ A hybrid positive+negative configuration enables low cutting force and high insert rigidity

The insert's straight sides secure it in the pocket against cutting forces

- Ensures reliability in heavy machining
- Replaces top clamp with simple screw clamping



New



■ Flat top inserts with high load resistant cutting edges

■ Enhanced cutting edge preparations



Conventional
(ZER/UER-MM)



New

Flat top
(ZSR/USR)

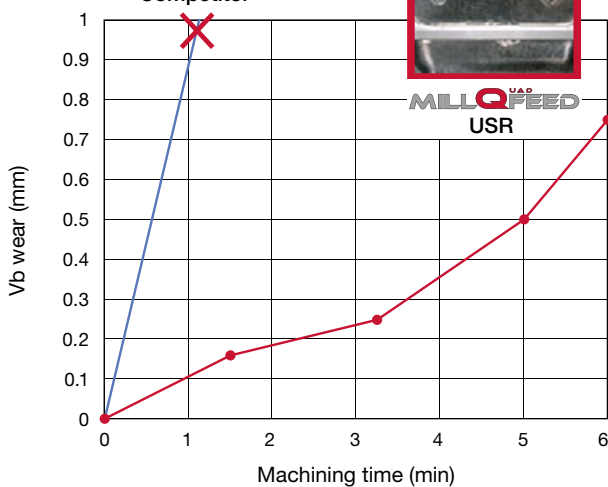


Nose radii & main cutting-edge with increased fracture resistance and extended tool life.

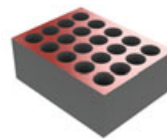
■ Excellent defect resistance



Competitor



MILLQFEED
USR



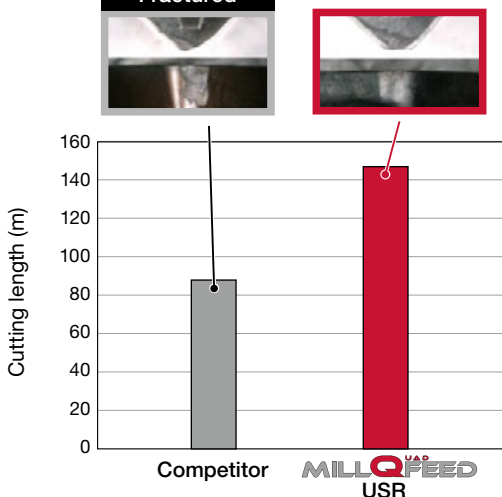
P

Cutter : TXSW15M080B27.0R05 (ø80 mm)
 Insert : SWMW1506USR AH3225
 Workpiece material : NAK80 (43.5HRC)
 Cutting speed : $V_c = 80$ m/min
 Feed per tooth : $f_z = 1.5$ mm/t
 Depth of cut : $a_p = 1.5$ mm
 Depth of width : $a_e = 50$ mm
 Overhang length : $L/D = 3.3$
 Number of teeth : 1
 Coolant : Dry
 Machine : Vertical M/C, BT50

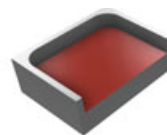
5 times tool life increase was achieved during heavy interrupted cutting of pre-hardened steel



Fractured



MILLQFEED
USR



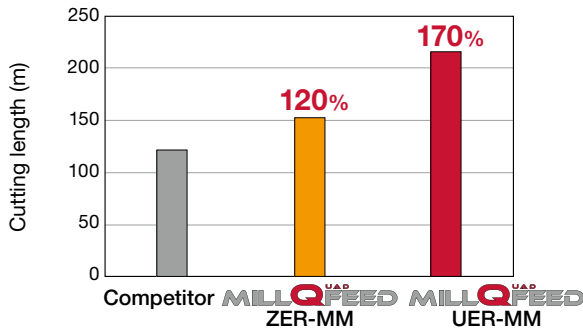
P

Cutter : TXSW15M080B27.0R05 (ø80 mm)
 Insert : SWMW1506USR AH3225
 Workpiece material : SCM440 / 42CrMo4 (270HB)
 Cutting speed : $V_c = 150$ m/min
 Feed per tooth : $f_z = 1.5$ mm/t
 Depth of cut : $a_p = 1.5$ mm
 Depth of width : $a_e = 50$ mm
 Overhang length : $L/D = 3.3$
 Number of teeth : 1
 Coolant : Dry
 Machine : Vertical M/C, BT50

In wall processing, there are no sudden defects due to chip entrapment. Achieves tool life 1.6 times longer than competitor products.

TOOL LIFE

09 Insert

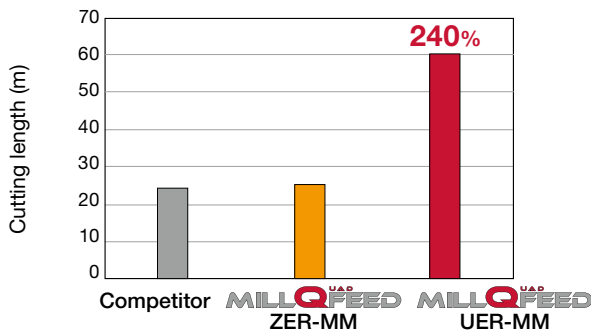


P

Cutter : EXSW09M025C25.0R03 ($\phi = 25$ mm, $z = 3$)
 Insert : SWMT0904ZER-MM AH3135
 : SWMT0904UER-MM AH3135
 Workpiece material : S55C / C55 (180HB)
 Cutting speed : $V_c = 150$ m/min
 Feed per tooth : $f_z = 1.5$ mm/t
 Depth of cut : $a_p = 0.8$ mm
 Depth of width : $a_e = 9$ mm
 Number of teeth : 1
 Coolant : Dry
 Machine : Vertical M/C, BT50

Wear-resistant MM geometry with sharp cutting edges has increased the tool life by 1.7x

09 Insert

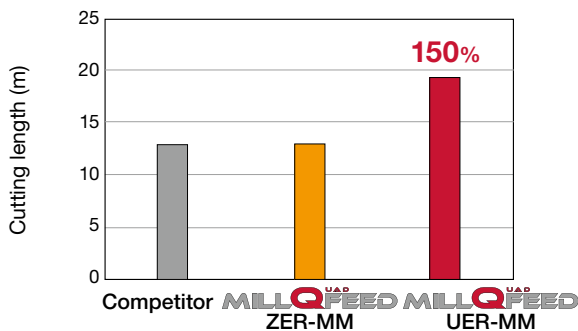


M

Cutter : TXSW09M050B22.0R07 ($\phi = 50$ mm, $z = 7$)
 Insert : SWMT0904ZER-MM AH3135
 : SWMT0904UER-MM AH3135
 Workpiece material : SUS630 / X5CrNi18-9 (40HRC)
 Cutting speed : $V_c = 100$ m/min
 Feed per tooth : $f_z = 0.6$ mm/t
 Depth of cut : $a_p = 0.8$ mm
 Depth of width : $a_e = 32$ mm
 Number of teeth : 1
 Coolant : Wet
 Machine : Vertical M/C, BT50

UER-MM geometry extends insert life by 2.4x thanks to low cutting temperatures generated by a small entry angle

15 Insert



M

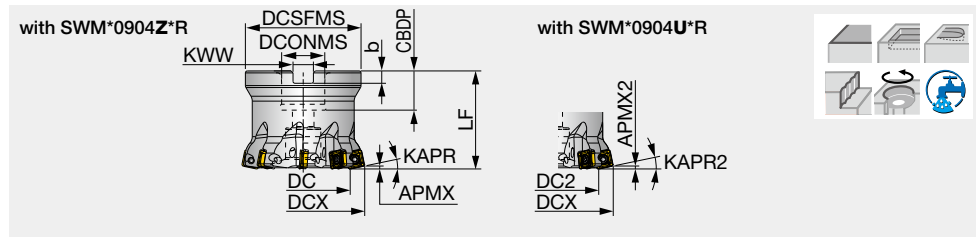
Cutter : TXSW15J080B31.7R05 ($\phi = 80$ mm, $z = 5$)
 Insert : SWMT1506ZER-MM AH3135
 : SWMT1506UER-MM AH3135
 Workpiece material : SUS630 / X5CrNi18-9 (40HRC)
 Cutting speed : $V_c = 100$ m/min
 Feed per tooth : $f_z = 0.6$ mm/t
 Depth of cut : $a_p = 1$ mm
 Depth of width : $a_e = 45$ mm
 Number of teeth : 1
 Coolant : Wet
 Machine : Vertical M/C, BT50

UER-MM geometry extends insert life by 1.5x thanks to its small entry angle generating low cutting temperatures

TXSW09

High feed milling, bore type cutter with screw-on system

GAMP = +3.8°, GAMF = -3.5°

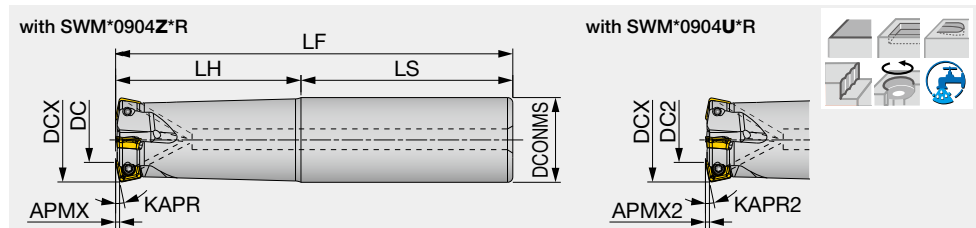


Designation	APMX	APMX2	DCX	CICT	DC	DC2	DCSFMS	DCONMS	CBDP	LF	KWW	b	KAPR	KAPR2	WT(kg)	Air hole	Insert
TXSW09M040B16.0R04	1.5	1	40	4	25	24	38	16	18	40	8.4	5.6	12°	7°	0.2	With	SWM*09...
TXSW09M040B16.0R05	1.5	1	40	5	25	24	38	16	18	40	8.4	5.6	12°	7°	0.2	With	SWM*09...
TXSW09M042B16.0R05	1.5	1	42	5	27	26	38	16	18	40	8.4	5.6	12°	7°	0.2	With	SWM*09...
TXSW09M050B22.0R05	1.5	1	50	5	35	34	47	22	20	50	10.4	6.3	12°	7°	0.37	With	SWM*09...
TXSW09M050B22.0R07	1.5	1	50	7	35	34	47	22	20	50	10.4	6.3	12°	7°	0.38	With	SWM*09...
TXSW09M052B22.0R05	1.5	1	52	5	37	36	49	22	20	50	10.4	6.3	12°	7°	0.42	With	SWM*09...
TXSW09M052B22.0R07	1.5	1	52	7	37	36	49	22	20	50	10.4	6.3	12°	7°	0.38	With	SWM*09...
TXSW09M063B22.0R06	1.5	1	63	6	48	47	59	22	20	50	10.4	6.3	12°	7°	0.69	With	SWM*09...
TXSW09M063B22.0R08	1.5	1	63	8	48	47	59	22	20	50	10.4	6.3	12°	7°	0.7	With	SWM*09...
TXSW09M066B27.0R06	1.5	1	66	6	51	50	60	27	22	50	12.4	7	12°	7°	0.7	With	SWM*09...

EXSW09

High feed mill for 4-corner, single sided inserts

GAMP = +3.9°, GAMF = -3.5°

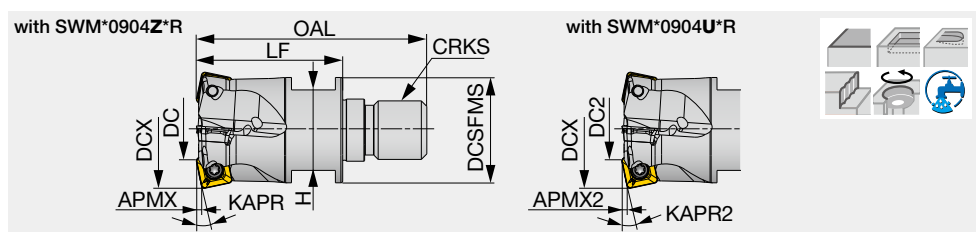


Designation	APMX	APMX2	DCX	CICT	DC	DC2	DCONMS	LF	LH	LS	KAPR	KAPR2	WT(kg)	Air hole	Insert
EXSW09M025C25.0R03	1.5	1.0	25	3	10	9	25	140	60	80	12°	7°	0.45	With	SWM*09...
EXSW09M025C25.0R03L	1.5	1.0	25	3	10	9	25	180	100	80	12°	7°	0.57	With	SWM*09...
EXSW09M032C32.0R04	1.5	1.0	32	4	17	16	32	150	70	80	12°	7°	0.81	With	SWM*09...
EXSW09M032C32.0R04L	1.5	1.0	32	4	17	16	32	200	120	80	12°	7°	1.07	With	SWM*09...

HXSW09

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

GAMP = +3.8°, GAMF = -3.5°



Designation	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	SWM*09...
HXSW09M032M16R04	1.5	1	32	4	17	16	63	40	22	28.8	12°	7°	M16	0.18	With	SWM*09...

SPARE PARTS

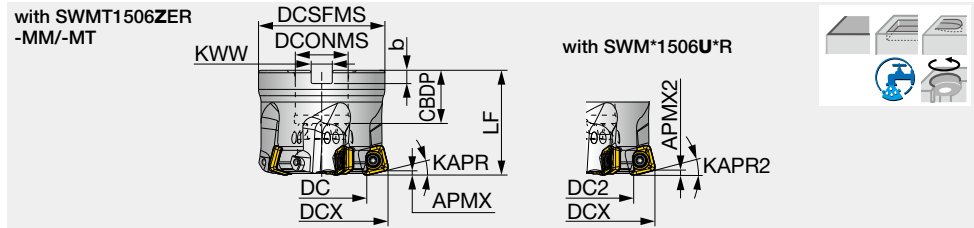
Designation	Clamping screw	Grip	Mono block wrench	Lubricant	Shell locking bolt	Torx bit
TXSW09M04...	CSPD-3	H-TB2W	-	M-1000	FSHM8-30H	BLDIP10/S7
TXSW09M05...	CSPD-3	H-TB2W	-	M-1000	FSHM10-40H	BLDIP10/S7
TXSW09M063...	CSPD-3	H-TB2W	-	M-1000	CM10X30H	BLDIP10/S7
TXSW09M066...	CSPD-3	H-TB2W	-	M-1000	CM12X30H	BLDIP10/S7
EXSW09..., HXSW09...	CSPD-3	-	IP-10D	-	-	-

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

TXSW15

High feed mill for 4-corner, single sided inserts

GAMP = +5°, GAMF = 0°



Designation	APMX	APMX2	DCX	CICT	DC	DC2	DCSFMS	LF	DCONMS	CBDP	KWW	b	KAPR	KAPR2	WT(kg)	Air hole	Insert
TXSW15M050B22.0R03	2.5	2	50	3	24.1	22.2	47	50	22	20	10.4	6.3	14°	10°	0.4	With	SWM*15...
TXSW15M063B22.0R04	2.5	2	63	4	37.1	35.2	59	50	22	20	10.4	6.3	14°	10°	0.66	With	SWM*15...
TXSW15J080B31.7R05	2.5	2	80	5	54.1	52.2	76	63	31.75	32	12.7	8	14°	10°	1.31	With	SWM*15...
TXSW15M080B27.0R05	2.5	2	80	5	54.1	52.2	76	63	27	22	12.4	7	14°	10°	1.41	With	SWM*15...
TXSW15J100B31.7R06	2.5	2	100	6	74.1	72.2	96	63	31.75	32	12.7	8	14°	10°	2.25	With	SWM*15...
TXSW15M100B32.0R06	2.5	2	100	6	74.1	72.2	96	63	32	25	14.4	8	14°	10°	2.26	With	SWM*15...
TXSW15J125B38.1R07	2.5	2	125	7	99.1	97.2	100	63	38.1	43	15.9	10	14°	10°	2.91	With	SWM*15...
TXSW15M125B40.0R07	2.5	2	125	7	99.1	97.2	100	63	40	37	16.4	9	14°	10°	2.83	With	SWM*15...
TXSW15J160B50.8R08	2.5	2	160	8	134.1	132.2	100	63	50.8	46	19	11	14°	10°	3.93	With	SWM*15...
TXSW15M160B40.0R08	2.5	2	160	8	134.1	132.2	100	63	40	37	16.4	9	14°	10°	4.23	With	SWM*15...

SPARE PARTS

Designation	Clamping screw	Grip	Lubricant	Shell locking bolt 1	Shell locking bolt 2	Shell locking bolt 3	Torx bit
TXSW15M050B22.0R03	TS50115I	H-TB2W	M-1000	-	-	SRPS118-0273	BT20S
TXSW15M063B22.0R04	TS50115I	H-TB2W	M-1000	-	FSHM10-40H	-	BT20S
TXSW15J080B31.7R05	TS50115I	H-TB2W	M-1000	-	CM16X40H	-	BT20S
TXSW15M080B27.0R05	TS50115I	H-TB2W	M-1000	-	CM12X30H	-	BT20S
TXSW15*100B...	TS50115I	H-TB2W	M-1000	-	CM16X40H	-	BT20S
TXSW15*125B...	TS50115I	H-TB2W	M-1000	TMBA-M20H	-	-	BT20M
TXSW15J160B50.8R08	TS50115I	H-TB2W	M-1000	TMBA-M24H	-	-	BT20M
TXSW15M160B40.0R08	TS50115I	H-TB2W	M-1000	TMBA-M20H	-	-	BT20M

*Recommended clamping torque (N·m): TS50115I = 5

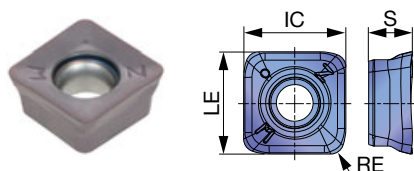
When installing TXSW15M050B22.0R03 on the arbor

- Always use the dedicated shell locking bolt (part code: SRPS118-0273) included in the package.
- Thoroughly read the installation manual included in the package before installation.

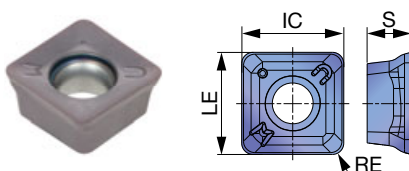


INSERTS

SWMT09/15ZER-MM

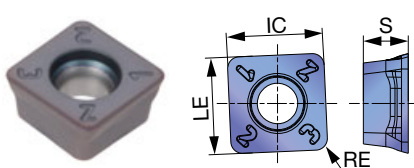


SWMT09/15UER-MM



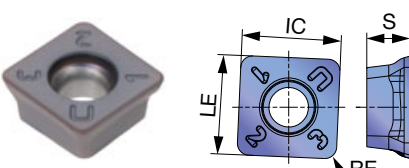
New

SWMW09ZSR

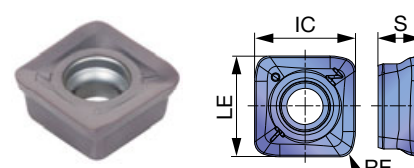


New

SWMW09/15USR



SWMT15ZER-MT



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	1	1.5	●	●	●	●	●	8.605	8.605	4
SWMT0904UER-MM	1	1	●	●	●	●	●	9.05	9.05	4
New SWMW0904ZSR	1	1.5			●		●	8.605	8.605	4
New SWMW0904USR	1	1			●		●	9.05	9.05	4
SWMT1506ZER-MM	2	2.5		●		●		16.01	16.01	6.8
SWMT1506UER-MM	2	2		●				16.27	16.27	6.8
New SWMW1506USR	2	2			●		●	16.14	16.14	6.8
SWMT1506ZER-MT	2	2.5		●		●		15.925	15.925	6.8

● : New product
● : Line up

STANDARD CUTTING CONDITIONS

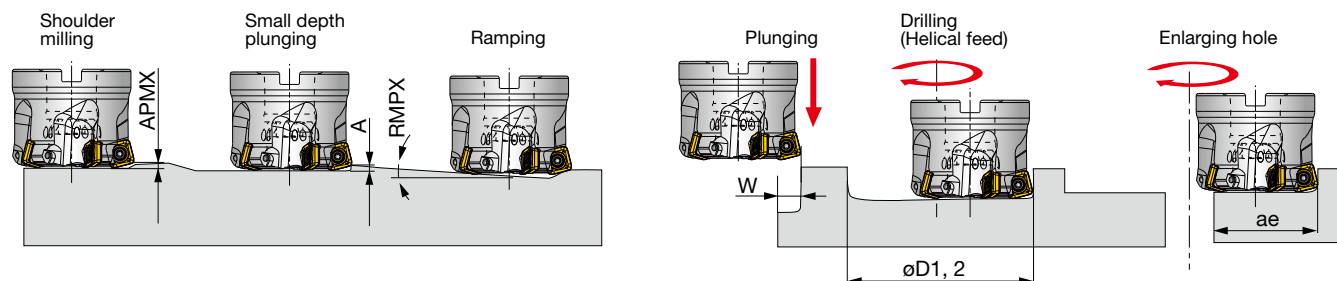
09 type

ISO	Workpiece material	Hardness	Priority	Insert type	Grade	Chip-breaker	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)
P	Carbon steel S45C, S55C, etc. C45, C55, etc.	- 300HB	First choice	ZER	AH3225	MM	100 - 300	0.5 - 1.5
			Fracture resistance	ZSR	AH3225	Flat top	100 - 300	0.5 - 1.5
			Wear resistance	UER	AH3225	MM	100 - 300	0.5 - 1.5
	Alloy steel SCM440, etc. 42CrMo4, etc.	- 300HB	First choice	ZER	AH3225	MM	100 - 200	0.5 - 1.5
			Fracture resistance	ZSR	AH3235	Flat top	100 - 200	0.5 - 1.5
			Wear resistance	UER	AH3225	MM	100 - 200	0.5 - 1.5
	Prehardened steel NAK80, PX5, etc.	30 - 40HRC	First choice	ZER	AH3225	MM	100 - 200	0.5 - 1.2
			Fracture resistance	ZSR	AH3235	Flat top	100 - 200	0.5 - 1.2
			Wear resistance	USR	AH3225	Flat top	100 - 200	0.5 - 1.2
M	Austenitic stainless steel SUS304, etc. X5CrNi18-9, etc.	- 200HB	First choice	UER	AH3135	MM	100 - 150	0.5 - 1.2
			Fracture resistance	UER	AH130	MM	100 - 150	0.5 - 1.2
			Low cutting force	ZER	AH3135	MM	100 - 150	0.5 - 1.2
	Precipitation hardening stainless steel SUS630, etc. X20CrNiCuNb-16-4, etc.	28HRC - (H1150)	First choice	UER	AH3135	MM	80 - 150	0.3 - 1.2
			Fracture resistance	UER	AH130	MM	80 - 150	0.3 - 1.2
			Low cutting force	ZER	AH3135	MM	80 - 150	0.3 - 1.2
		40HRC - (H900)	First choice	UER	AH3135	MM	80 - 120	0.3 - 0.8
			Fracture resistance	UER	AH130	MM	80 - 120	0.3 - 0.8
			Low cutting force	ZER	AH3135	MM	80 - 120	0.3 - 0.8
K	Gray cast iron FC250, FC300, etc., 250, 300, etc.	150 - 250HB	First choice	ZSR	AH8015	Flat top	100 - 300	0.5 - 2
			Fracture resistance	ZSR	AH3225	Flat top	100 - 300	0.5 - 2
	Ductile cast iron FCD600, etc., 600-3, etc.	150 - 250HB	First choice	ZSR	AH8015	Flat top	80 - 200	0.5 - 2
			Fracture resistance	ZSR	AH3225	Flat top	80 - 200	0.5 - 2
S	Titanium alloys Ti-6Al-4V, etc.	- 40HRC	First choice	UER	AH130	MM	30 - 60	0.3 - 0.7
			Wear resistance	UER	AH8015	MM	30 - 60	0.3 - 0.7
			Low cutting force	ZER	AH130	MM	30 - 60	0.3 - 0.7
	Heat-resistant alloys Inconel, Hastelloy, etc.	- 40HRC	First choice	UER	AH8015	MM	20 - 50	0.1 - 0.3
			Fracture resistance	USR	AH8015	Flat top	20 - 50	0.1 - 0.3
			Low cutting force	ZER	AH8015	MM	20 - 50	0.1 - 0.3
H	Hardened steel	40 - 50HRC	First choice	USR	AH8015	Flat top	80 - 130	0.1 - 0.3
			Fracture resistance	USR	AH3225	Flat top	80 - 130	0.1 - 0.3
			Low cutting force	ZSR	AH8015	Flat top	80 - 130	0.1 - 0.3
	SKD11, etc. X153CrMoV12, etc.	50 - 60HRC	First choice	USR	AH8015	Flat top	50 - 70	0.05 - 0.2

15 type

ISO	Workpiece material	Hardness	Priority	Insert type	Grade	Chip-breaker	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)
P	Carbon steel S45C, S55C, etc. C45, C55, etc.	- 300HB	First choice	ZER	AH3135	MM	100 - 300	0.5 - 1.5
			Wear resistance	ZER	AH120	MM	100 - 300	0.5 - 1.5
			Fracture resistance	USR	AH3225	Flat top	100 - 300	0.5 - 2
	Alloy steel SCM440, etc. 42CrMo4, etc.	- 300HB	First choice	ZER	AH3135	MM	100 - 200	0.5 - 1.5
			Wear resistance	ZER	AH120	MM	100 - 200	0.5 - 1.5
			Fracture resistance	USR	AH3225	Flat top	100 - 200	0.5 - 2
	Prehardened steel NAK80, PX5, etc.	30 - 40HRC	First choice	ZER	AH3135	MM	100 - 200	0.5 - 1.2
			Wear resistance	ZER	AH120	MM	100 - 200	0.5 - 1.2
			Fracture resistance	USR	AH3225	Flat top	100 - 200	0.5 - 1.5
M	Austenitic stainless steel SUS304, etc., X5CrNi18-9, etc.	- 200HB	First choice	UER	AH3135	MM	100 - 150	0.5 - 1.2
			Low cutting force	ZER	AH3135	MM	100 - 150	0.5 - 1.2
	Precipitation hardening stainless steel SUS630, etc. X20CrNiCuNb-16-4, etc.	28HRC - (H1150)	First choice	UER	AH3135	MM	80 - 150	0.3 - 1.2
			Low cutting force	ZER	AH3135	MM	80 - 150	0.3 - 1.2
		40HRC - (H900)	First choice	UER	AH3135	MM	80 - 120	0.3 - 0.8
			Low cutting force	ZER	AH3135	MM	80 - 120	0.3 - 0.8
K	Gray cast iron FC250, FC300, etc. 250, 300, etc.	150 - 250HB	First choice	ZER	AH120	MT	100 - 300	0.5 - 2
			Fracture resistance	USR	AH3225	Flat top	100 - 300	0.5 - 2
			Low cutting force	ZER	AH120	MM	100 - 300	0.5 - 1.5
	Ductile cast iron FCD600, etc. 600-3, etc.	150 - 250HB	First choice	ZER	AH120	MT	80 - 200	0.5 - 2
			Fracture resistance	USR	AH3225	Flat top	80 - 200	0.5 - 2
			Low cutting force	ZER	AH120	MM	80 - 200	0.5 - 1.5
S	Titanium alloys Ti-6Al-4V, etc.	- 40HRC	First choice	UER	AH3135	MM	30 - 60	0.3 - 0.7
			Low cutting force	ZER	AH3135	MM	30 - 60	0.3 - 0.7
			Fracture resistance	USR	AH3225	Flat top	30 - 60	0.3 - 0.7
	Heat-resistant alloys Inconel, Hastelloy, etc.	- 40HRC	First choice	UER	AH3135	MM	20 - 50	0.1 - 0.3
			Wear resistance	ZER	AH120	MM	20 - 50	0.1 - 0.3
			Low cutting force	ZER	AH120	MM	20 - 50	0.1 - 0.3
H	Hardened steel	40 - 50HRC	First choice	USR	AH3225	Flat top	80 - 130	0.1 - 0.3
			Wear resistance	USR	AH8015	Flat top	80 - 130	0.1 - 0.3
	SKD11, etc. X153CrMoV12, etc.	50 - 60HRC	First choice	USR	AH8015	Flat top	50 - 70	0.05 - 0.2

APPLICATION RANGE



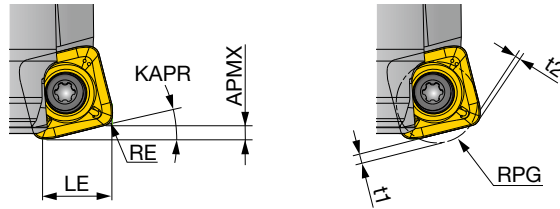
09 Insert

Designation	Tool dia. DCX	Max. depth of cut		Max. plunging depth	Max. ramping angle	Max. cutting width in plunging		Min. machining dia.	Max. machining dia.	Max. cutting width in enlarging				
		APMX		A	RMPX		W		øD1		øD2		ae	
		SWM* 0904Z*R	SWM* 0904U*R		SWM* 0904Z*R	SWM* 0904U*R	SWM* 0904Z*R	SWM* 0904U*R	SWM* 0904Z*R	SWM* 0904U*R	SWM* 0904Z*R	SWM* 0904U*R	SWM* 0904Z*R	SWM* 0904U*R
E/HXSW09M025...	25	1.5	1	0.3	4.8	6	7	7.5	34	33	47	47	16.5	16
E/HXSW09M032...	32	1.5	1	0.3	2.7	3.2	7	7.5	48	47	61	61	23.5	23
TXSW09M040...	40	1.5	1	0.3	1.8	2.1	7	7.5	64	63	77	77	31.5	31
TXSW09M042...	42	1.5	1	0.3	1.6	1.9	7	7.5	68	67	81	81	33.5	33
TXSW09M050...	50	1.5	1	0.3	1.2	1.4	7	7.5	84	83	97	97	41.5	41
TXSW09M052...	52	1.5	1	0.3	1.2	1.4	7	7.5	88	87	101	101	43.5	43
TXSW09M063...	63	1.5	1	0.3	0.8	1.1	7	7.5	110	109	123	123	54.5	54
TXSW09M066...	66	1.5	1	0.3	0.7	0.9	7	7.5	116	115	129	129	57.5	57

15 Insert

Designation	Tool dia. DCX	Max. depth of cut		Max. plunging depth	Max. ramping angle	Max. cutting width in plunging		Min. machining dia.	Max. machining dia.	Max. cutting width in enlarging	
		APMX		A	RMPX	W		øD1	øD2	ae	
		SWMT 1506ZER	SWMT* 1506U*R			SWMT 1506ZER	SWMT* 1506U*R			SWMT 1506ZER	SWMT* 1506U*R
TXSW15M050B...	50	2.5	2	0.7	4.8°	12.5	13.5	70	95	36	35
TXSW15M063B...	63	2.5	2	0.7	2.9°	12.5	13.5	96	121	49	48
TXSW15J, M080B...	80	2.5	2	0.7	2°	12.5	13.5	130	155	66	65
TXSW15J, M100B...	100	2.5	2	0.7	1.4°	12.5	13.5	170	195	86	85
TXSW15J, M125B...	125	2.5	2	0.7	1°	12.5	13.5	220	245	111	110
TXSW15J, M160B...	160	2.5	2	0.7	0.7°	12.5	13.5	290	315	146	145

TOOL GEOMETRY ON PROGRAM



09 type

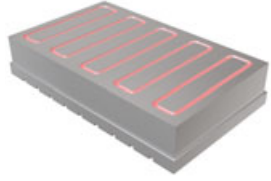
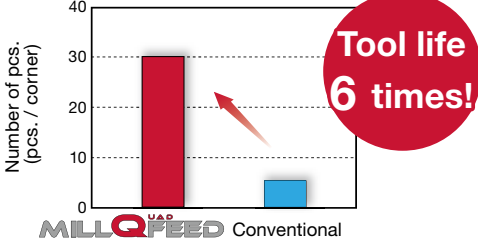
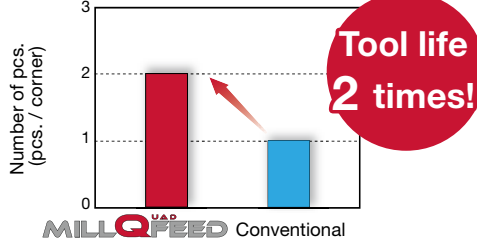
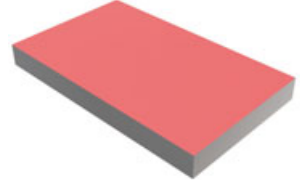
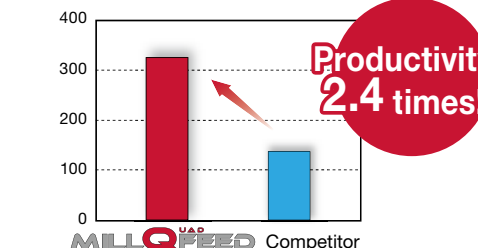
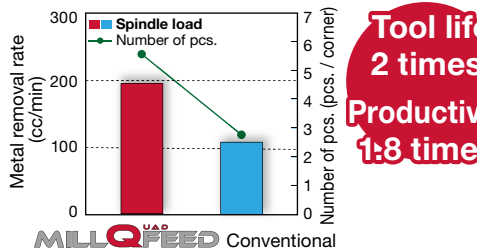
APMX (mm)		Actual corner radius RE (mm)	LE (mm)		KAPR		Programmed corner radius RPG	Uncut amount: t1 (mm)		Overcut amount: t2 (mm)	
SWM* 0904Z*R	SWM* 0904U*R		SWM* 0904Z*R	SWM* 0904U*R	SWM* 0904Z*R	SWM* 0904U*R		SWM* 0904Z*R	SWM* 0904U*R	SWM* 0904Z*R	SWM* 0904U*R
1.5	1	1	7.4	7.9	12°	7°	1	1.3	0.81	-	-
1.5	1	1	7.4	7.9	12°	7°	1.5	1.21	0.76	-	-
1.5	1	1	7.4	7.9	12°	7°	2	1.12	0.7	-	0.02
1.5	1	1	7.4	7.9	12°	7°	2.5	1.03	0.65	0.01	0.15
1.5	1	1	7.4	7.9	12°	7°	3	0.94	0.59	0.11	0.33

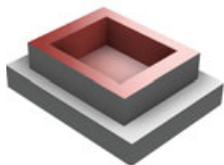
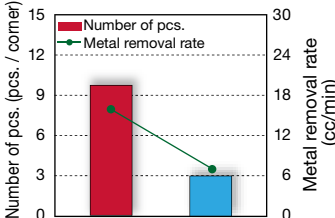
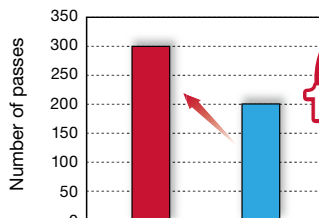
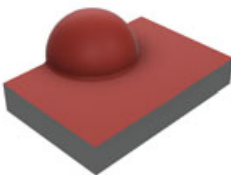
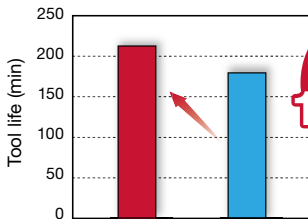
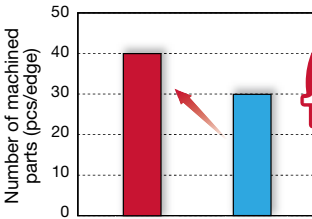
15 type

APMX (mm)		Actual corner radius RE (mm)	LE (mm)		KAPR		Programmed corner radius RPG	Uncut amount: t1 (mm)		Overcut amount: t2 (mm)	
SWMT 1506ZER	SWMT* 1506U*R		SWMT 1506ZER	SWMT* 1506U*R	SWMT 1506ZER	SWMT* 1506U*R		SWMT 1506ZER	SWMT* 1506U*R	SWMT 1506ZER	SWMT* 1506U*R
2.5	2	2	12.7	13.8	14°	10°	3.5	2.1	1.85	-	-
2.5	2	2	12.7	13.8	14°	10°	4	1.99	1.77	-	-
2.5	2	2	12.7	13.8	14°	10°	4.5	1.88	1.69	-	0.03
2.5	2	2	12.7	13.8	14°	10°	5	1.78	1.61	0.01	0.13

The above table shows the uncut (t1) and overcut (t2) amounts for the programmed corner radius.

PRACTICAL EXAMPLES

Workpiece type		Rod end bearing part	Magnetic chuck
Cutter		EXSW09M032C32.0R04 (ø32, z=4)	EXSW09M025C25.0R03 (ø25, z=3)
Insert		SWMT0904UER-MM	SWMT0904UER-MM
Grade		AH3135	AH3135
Workpiece material		17-4PH (PH stainless steel, 38HRC)	SS400 / E275A
		 M	 P
Cutting conditions	Cutting speed : Vc (m/min)	200	274
	Feed per tooth : fz (mm/t)	0.75	0.83
	Depth of cut : ap (mm)	0.6	0.7
	Width of cut : ae (mm)	13	25
	Machining	Face milling	Grooving
	Coolant	Wet	Wet
Machine		Multi task machine	Horizontal M/C, BT50
Results		 UER-MM has provided 6x the tool life in difficult-to-cut material over the competitor's insert.	 The competitor's tool chattered when machining corners. The UER-MM eliminated chatter while doubling tool life in long reach areas.
Workpiece type		Joint for thermal power part	Plate
Cutter		TXSW15J100B31.7R06 (ø100, z = 6)	TXSW15J125B38.1R07 (ø125, z=7)
Insert		SWMT1506ZER-MT	SWMT1506UER-MM
Grade		AH3135	AH3135
Workpiece material		High chromium steel	SUS304 / X5CrNi18-9
		 P	 M
Cutting conditions	Cutting speed : Vc (m/min)	120 (Competitor: Vc = 100)	150
	Feed per tooth : fz (mm/t)	1	1.2
	Depth of cut : ap (mm)	2 (Competitor: ap = 1)	0.5
	Width of cut : ae (mm)	70	97
	Machining	Face milling	Face milling
	Coolant	Air	Dry
Machine		Vertical M/C, BT40	Vertical M/C, BT50, 22kW
Results		 Outstanding cutting performance of MillQuadFeed allows depth of cut to be increased even in high-feed machining.	 Thanks to UER-MM's chip thinning effect and low cutting temperature generation, MRR has increased by 1.8x with less thermal deflection of the workpiece. Tool life has also doubled.

Workpiece type		Power generation seals	Hot forging die
Cutter		TXSW09M063B22.0R08 (ø63, z = 8, competitor: ø63, z = 7)	TXSW15J080B31.7R05 (ø80, z = 5, competitor: ø80, z = 5)
Insert		SWMT0904UER-MM	SWMW1506USR
Grade		AH8015	AH3225
Workpiece material		Hastelloy X	SKT4 (HRC50)
		 S	 H
Cutting conditions	Cutting speed : Vc (m/min)	40 (competitor: Vc = 33)	125
	Feed per tooth : fz (mm/t)	0.4 (competitor: fz = 0.14)	1.8
	Depth of cut : ap (mm)	0.6 (competitor: ap = 1.2)	0.8
	Width of cut : ae (mm)	40	55
	Machining	Face milling	Face and pocket milling
	Coolant	Wet	Dry
Machine		Vertical M/C, BT40	Vertical M/C, BT50
Results		 Tool life 3.3 times! Productivity 2 times! UER inserts featured a small entry angle that created chip-thinning effect, reducing the cutting load to the cutting edge. As the result, 3.3 times tool life and double M.R.R. were achieved.	 Tool life 1.5 times! MQF provided a 1.5 times increase in tool life when machining the as-forged surface with varying D.O.C., while the competitor's square positive inserts fractured prematurely, unable to complete the operation.
Workpiece type		Plastic injection mold	Housing
Cutter		TXSW15J080B31.7R05 (ø80, z = 5, competitor: ø80, z = 5)	TXSW09M050B22.0R05 (ø50, z = 5, competitor: ø50, z = 5)
Insert		SWMW1506USR	SWMW0904ZSR
Grade		AH8015	AH8015
Workpiece material		Pre-hardened steel (HRC40)	FCD500 / 500-7
		 P	 K
Cutting conditions	Cutting speed : Vc (m/min)	120	157
	Feed per tooth : fz (mm/t)	2.2	1.4
	Depth of cut : ap (mm)	1	1
	Width of cut : ae (mm)	55	10
	Machining	Waterline milling	Face and helical interpolation milling
	Coolant	Dry	Dry
Machine		Horizontal M/C, BT50	Vertical M/C, BT40
Results		 Tool life 1.2 times! With high load resistant cutting edges, new MQF flat top inserts demonstrated little edge chipping. As the result, tool life increased by 1.2 times over the competitor square positive inserts.	 Tool life 1.3 times! With high load-resistant cutting edges, the new MQF flat-top inserts provided a 1.3 times increase in tool life during the machining of uneven, as-cast surfaces. The conventional inserts fractured prematurely, unable to complete the operation.

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-NTK 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-NTK 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-NTK 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-NTK Germany GmbH.

Katzbergstr. 3a
D-40764 Langenfeld, Germany
Phone: +49-2173-90420-0
Fax: +49-2173-90420-19
www.tungaloy.com/de

Tungaloy France s.a.s

Les Fjords
19 avenue de Norvège
91140 Villebon Sur Yvette, 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
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
Wrocławskie, Poland
Phone: +48 607 907 237
www.tungaloy.com/pl

Tungaloy-NTK UK Ltd.

Suite 3, Pioneer House, Mill Street,
Cannock, WS11 0EF, 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-NTK 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.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/singapore

Tungaloy-NTK Vietnam LLC

3rd Floor, Licogi 13 Tower, 164 Khuat Duy
Tien, Nhan Chinh, Thanh Xuan District,
Hanoi, Vietnam
Phone: +84 24 63282086
www.tungaloy.com/vn

Tungaloy India Pvt. Ltd.

One International Center,
Unit # 902-A, 9th Floor,
Tower 1, Senapati Bapat Marg,
Elphinstone Road (West),
Mumbai 400013, India
Phone: +91-22-6124-8803
Fax: +91-22-6124-8899
www.tungaloy.com/in

Tungaloy Korea Co., Ltd

#1312, Byucksan Digital Valley 5-cha
Beotkot-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

Ruko Blok AA.10 No3&5, Grand Wisata,
Lembangjaya, Tambun Selatan, Bekasi,
17510 Indonesia
Phone: +62-21-8261-5808
Fax: +62-21-8261-5809
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