Tungaloy
Member IMC Group

Keeping the Customer First

Tungaloy Report No. 414-G

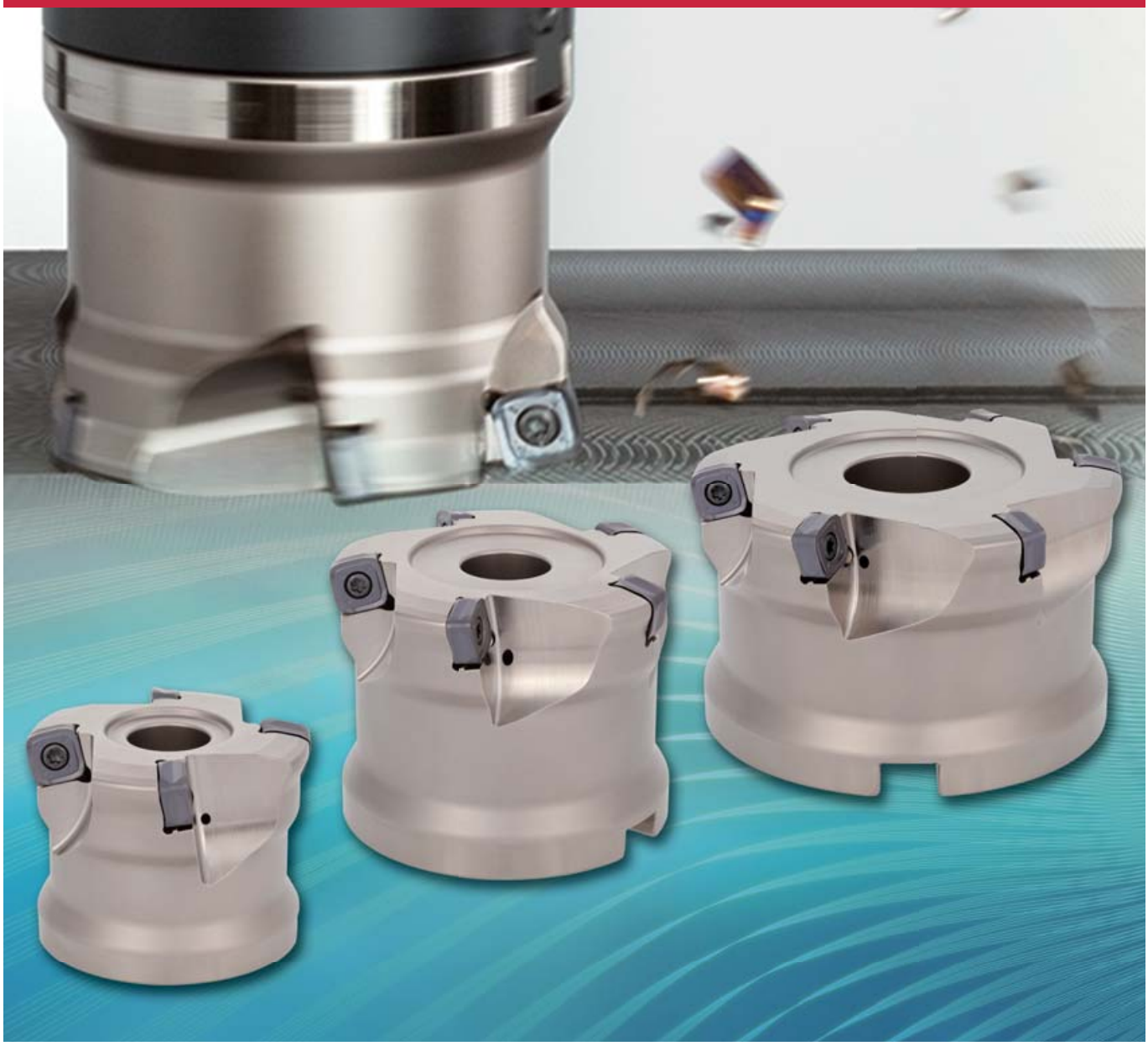
MILLLINE Super high feed face milling cutter

DOFEEDQUAD

NEW

TXQ type

High productivity and economical solution



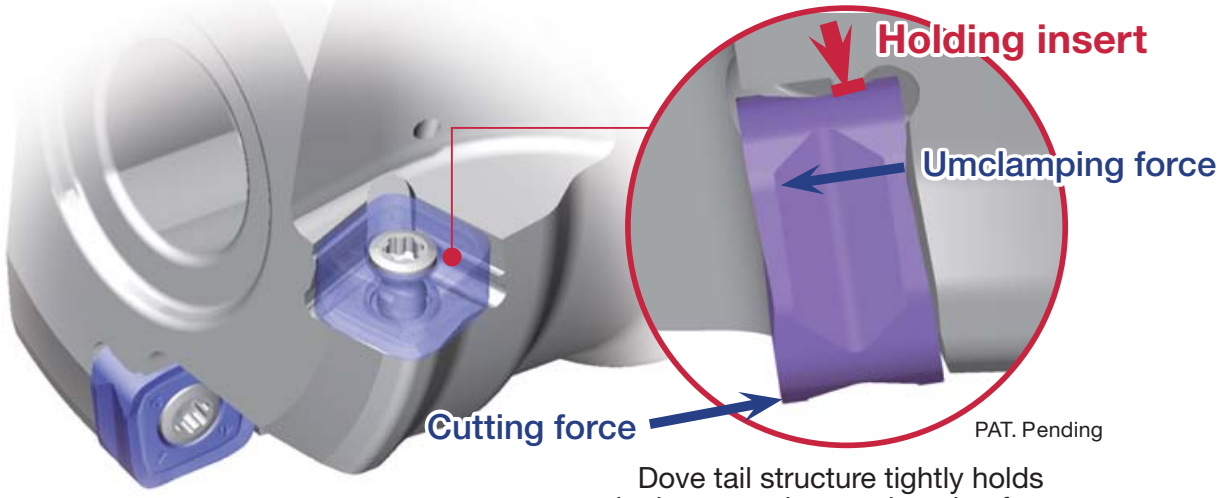
New super high feed cutter series with 8 corner type inserts !

Economical advantages

- Double sided insert with 8 corners for high feed milling.

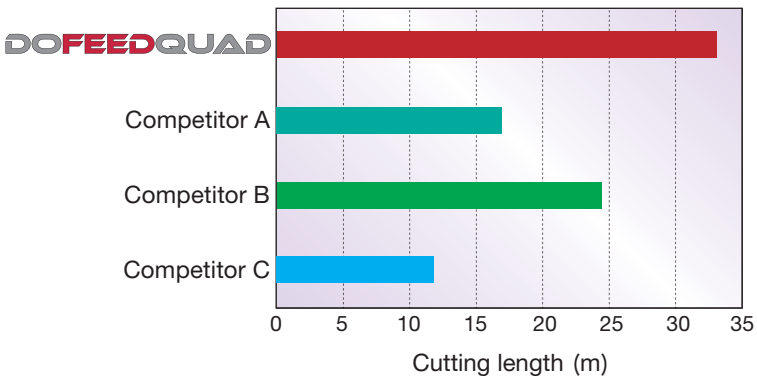
Remarkable reliability in high feed milling

- Dovetail structure improves the clamping strength by 50%*. * Calculated with Finite Element Analysis (FEA)
- Rigid clamping with one screw.
- Simple structure offers a high level of cutter body rigidity with easy operation.



Dove tail structure tightly holds the insert against unclamping force.

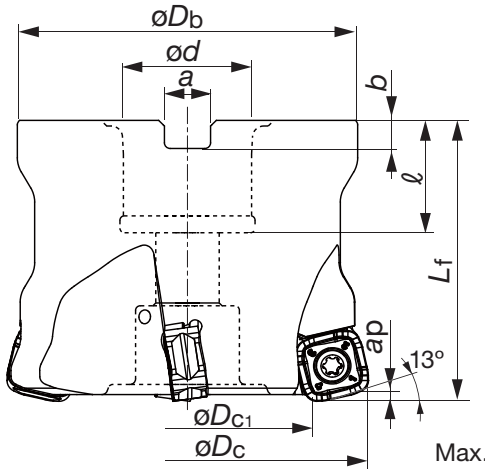
■ Comparison of reliability



Rigid clamping provides the high reliability and long tool life.

Cutter	: TXQ12R050M22.0E03 (Single insert cutting)
Insert	: SQMU1206ZSR-MJ
Grade	: AH725
Work material	: Prehardened steels (40HRC)
Cutting speed	: *Vc* = 100 m/min
Feed per tooth	: *fz* = 1.0 mm/t
Depth of cut	: *ap* = 1.0 mm
Width of cut	: *ae* = 28 mm
Overhang length	: 188 mm
Coolant	: Dry
Machine	: Vertical M/C, BT50

Cutter



Max. *ap* = 2.0 mm

Replacement parts

Description		Parts Cat. No.
Clamping screw		**CSPB-4**
Wrench	Bit	**BLD IP15/S7**
	Handle	**H-TBS**

Bore type

JIS

Cat. No.	Stock	No. of inserts	Dimensions (mm)								Weight (kg)	Air hole	Center bolt	Insert
			øDc	*øDc1*	*øDb*	*ød*	*ℓ*	*Lf*	*b*	*a*				
TXQ12R050M22.2-03	●	3	50	33.8	47	22.225	20	50	5	8	0.4	with	FSHM10-40H	**SQMU1206 ZSR-MJ**
TXQ12R063M22.2-04	●	4	63	46.8	59	22.225	20	50	5	8	0.8		CM10X30H	
TXQ12R080M31.7-05	●	5	80	63.8	76	31.75	32	63	8	12.7	1.5		CM16X40H	
TXQ12R100M31.7-06	●	6	100	83.8	96	31.75	32	63	8	12.7	2.6		CM16X40H	
TXQ12R125M38.1-07	●	7	125	108.8	98	38.1	44	63	10	15.9	3.3		TMBA-M20H	

● : Stocked items

Standard cutting conditions

Work material	Hardness	Priority	Grades	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
High carbon steels (S45C / C45 etc.)	~ 300HB	First choice	**AH725**	100 - 300	0.5 - 2.0
		For wear resistance	**T3130**		
		For impact resistance	**AH130**		
Alloyed steels (SCM440 / 42CrMo4 etc.)	~ 300HB	First choice	**AH725**	100 - 200	0.5 - 1.5
		For wear resistance	**T3130**		
		For impact resistance	**AH130**		
Prehardened steels (PX5, NAK80 etc.)	30 ~ 40HRC	-	**AH725**	100 - 200	0.5 - 1.0
Stainless steel (SUS304 / X5CrNi18-9 etc.)	~ 200HB	-	**AH130**	100 - 150	0.3 - 0.8
Grey cast iron (FC250 / GG250 / 250 etc.)	-	-	**AH120**	100 - 300	0.5 - 2.0
Ductile cast irons (FCD600 / GGG60 / 600-3 etc.)	-	-	**AH120**	80 - 200	0.5 - 2.0
Titanium alloy (Ti-6Al-4V etc.)	~ 40HRC	-	**AH725**	30 - 60	0.3 - 0.7
Hardened steels (SKD61 / X40CrMoV5-1 etc.)	40 ~ 50HRC	-	**AH725**	80 - 130	0.1 - 0.3
	50 ~ 60HRC			50 - 70	0.03 - 0.07

· Slot or pocket milling is not recommended, since the chip re-cutting easily occurs.
· Tool overhang length must be as short as possible to avoid chatter. When the tool overhang length is long, decrease the number of revolutions and feed.
· Cutting conditions are generally limited by the rigidity and power of the machine and the rigidity of the workpiece. When setting the conditions, start from half of the values of the standard cutting conditions and then increase the value gradually while making sure the machine is running normally.

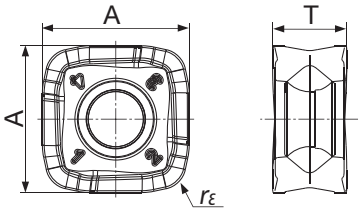
● Bore type

ISO

Cat. No.	Stock	No. of inserts	Dimensions (mm)								Weight (kg)	Air hole	Center bolt	Insert
			øD_c	*ø*D_{c1}	*ø*D_b	*ø*d	ℓ	L_f	b	a				
TXQ12R050M22.0E03	●	3	50	33.8	47	22	20	50	6.3	10.4	0.4	with	FSHM10-40H	**SQMU1206 ZSR-MJ**
TXQ12R052M22.0E03	●	3	52	35.8	49	22	20	50	6.3	10.4	0.5		FSHM10-40H	
TXQ12R063M22.0E04	●	4	63	46.8	59	22	20	50	6.3	10.4	0.8		CM10X30H	
TXQ12R066M27.0E04	●	4	66	49.8	63	27	22	50	7	12.4	0.9		CM12X30H	
TXQ12R080M27.0E05	●	5	80	63.8	76	27	22	63	7	12.4	1.6		CM12X30H	
TXQ12R100M32.0E06	●	6	100	83.8	96	32	25	63	8	14.4	3.0		CM16X40H	
TXQ12R125M40.0E07	●	7	125	108.8	98	40	32	63	9	16.4	3.2		TMBA-M20H	

● : Stocked items

Insert



Cat. No.	Accuracy	Honing	Grades PREMIUMTEC				Dimensions (mm)		
			AH725	**AH130**	**AH120**	**T3130**	A	T	r_ε
SQMU1206ZSR-MJ	M	with	●	●	●	●	11.7	6	2

■ Grade selection

Grades	P Steel	M Stainless	K Cast Iron	S Superalloys	H Hard Materials
AH725	◎		○	◎	◎
AH130	○ For impact resistance	◎			
AH120			◎		
T3130	◎ For wear resistance				

◎ : First choice
○ : Applicable

Tool dia.: *ø*D_c (mm), Number of revolutions: n (min^{-1}), Feed speed: V_f (mm/min), Max. depth of cut: a_p = 2 mm									
ø50		ø63		ø80		ø100		ø125	
n	V_f	n	V_f	n	V_f	n	V_f	n	V_f
1,270	4,570	1,010	4,850	790	4,740	630	4,540	500	4,200
V_c = 200 m/min, f_z = 1.2 mm/t									
950	2,850	750	3,000	590	2,950	470	2,820	380	2,660
V_c = 150 m/min, f_z = 1.0 mm/t									
950	2,280	750	2,400	590	2,360	470	2,260	380	2,130
V_c = 150 m/min, f_z = 0.8 mm/t									
760	1,140	600	1,200	470	1,180	380	1,140	300	1,050
V_c = 120 m/min, f_z = 0.5 mm/t									
1,270	4,570	1,010	4,850	790	4,740	630	4,540	500	4,200
V_c = 200 m/min, f_z = 1.2 mm/t									
950	3,420	750	3,600	590	3,540	470	3,380	380	3,190
V_c = 150 m/min, f_z = 1.2 mm/t									
250	370	200	400	150	380	120	360	100	350
V_c = 40 m/min, f_z = 0.5 mm/t									
630	380	500	400	390	390	310	370	250	350
V_c = 100 m/min, f_z = 0.2 mm/t									
380	60	300	60	235	60	190	60	150	50
V_c = 60 m/min, f_z = 0.05 mm/t									

Ideal insert for high productivity

Low cutting force even in high feed cutting

· Large rake angle
· Optimum land width

High fracture resistance

· Thickness of insert: 6 mm
· Tough cutting edge

Excellent chip control

Large inclination provides optimum chip flow

Wiper edge

Grade

PREMIUMTEC TUNGALOY

AH725

P Steel S Superalloys H Hard Materials

· Newly developed coating layer with a unique substrate
· Well balanced with excellent wear and chipping resistance
· Suitable for steels

AH130

M Stainless

· Unique substrate
· Well balanced grade with hardness and toughness
· First choice for stainless steels

AH120

K Cast Iron

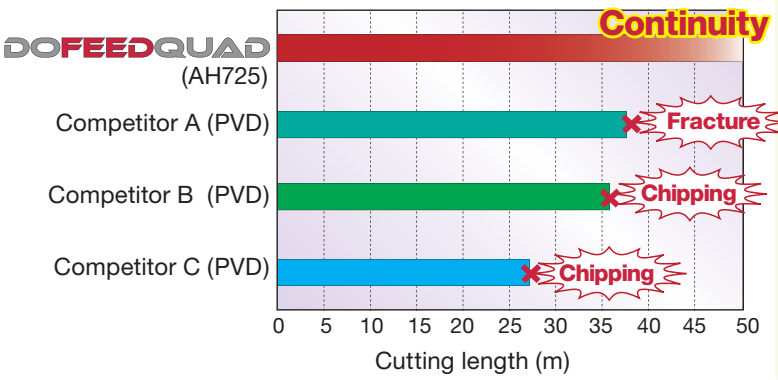
· Tough substrate with high reliability
· Outstanding wear resistance
· Ideal grade for cast iron milling

T3130

P Steel

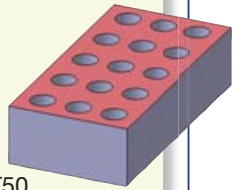
· Tough substrate with a highly adhered coating
· Thick coating for exceptional wear resistance
· Suitable for steels in high speed cutting

■ Comparison of fracture resistance

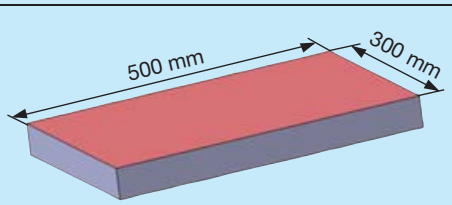
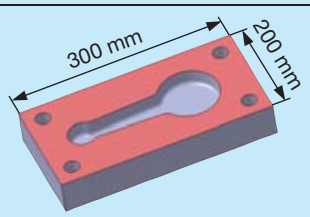
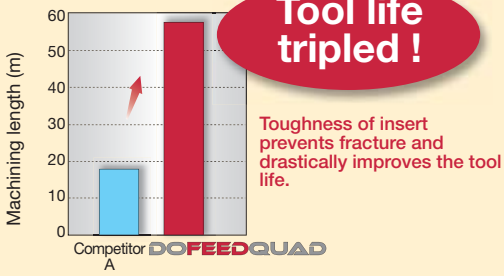
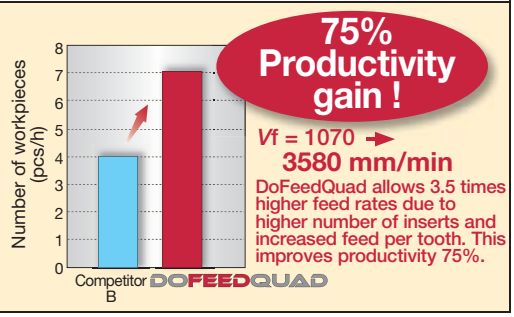


Low cutting force and tough edges provide exceptional stability.

Cutter	: TXQ12R050M22.0E03 (Single insert cutting)
Insert	: SQMU1206ZSR-MJ
Grade	: AH725
Work material	: Prehardened steels (33HRC)
Cutting speed	: *Vc* = 150 m/min
Feed per tooth	: *fz* = 1.5 mm/t
Depth of cut	: *ap* = 1.0 mm
Width of cut	: *ae* = 28 mm
Overhang length	: 188 mm
Coolant	: Dry
Machine	: Vertical M/C, BT50



Practical examples

Workpiece type		Plate	Machine part
Cutter		TXQ12R125M38.1-07 (ø125, z = 7)	TXQ12R80M31.7-05 (ø80, z = 5)
Insert		SQMU1206ZSR-MJ	SQMU1206ZSR-MJ
Grade		AH725	AH725
Work material		Prehardened steels (40HRC)	SS400 / E275A
			
Cutting conditions	Cutting speed: *Vc* (m/min)	80	180
	Feed per tooth: *fz* (mm/t)	0.7	1.0
	Depth of cut: *ap* (mm)	1.0 ~ 2.0	1.0
	Width of cut: *ae* (mm)	75	75
	Process	Face milling	Face milling
	Coolant	Dry	Dry
	Machine	Vertical M/C, BT50	Vertical M/C, BT50
Results			

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