

Three times the selection,
more than a triple advantage





ACCELERATED MACHINING

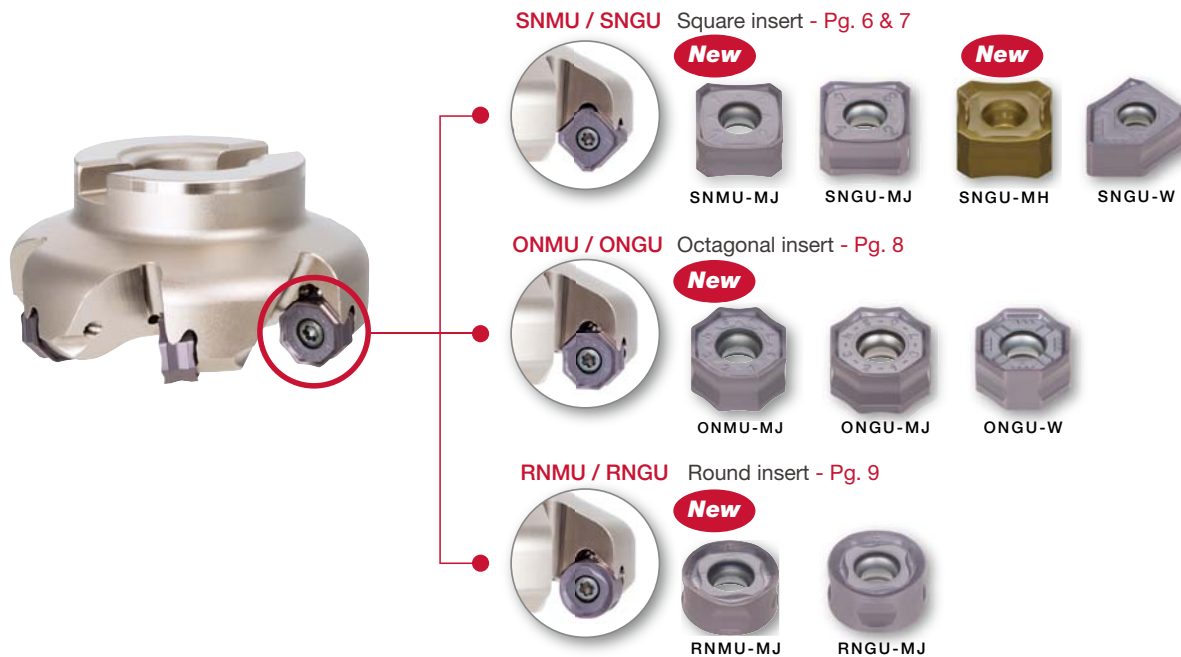


DoTriple-Mill features an improved dovetail clamping structure and offers **triple advantage of using square, octagonal, and round inserts** in the same pocket.

Brings a top performance in every operation:
from high feed milling, scale removing,
finish milling ... to stainless steel milling

Versatility

3 types of double sided inserts fit in the same pocket



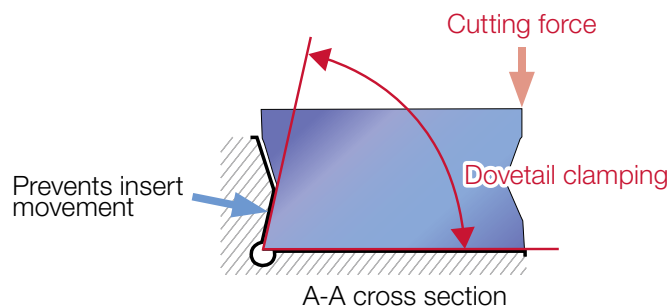
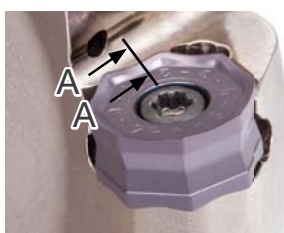
- Three different pitches are available: standard, close, and extra-close pitches



Rigid clamping

Dovetail structure provides high clamping rigidity with only one screw

- Improved performance especially in machining high-temperature materials
- Extended tool life



Rich grade lineup for every kind of material

- A total of four grades, including two new CVD grades

AH3135
P
M

Steel Stainless

- PVD grade for high fracture resistance
- Most suitable for steel and stainless steel in general cutting parameters

AH120
P
K

Steel Cast Iron

- PVD grade with a well-balanced wear and fracture resistance
- Ideal for general machining of steel and stainless steel

New
T1215
K

Cast Iron

- CVD grade with outstanding wear and chipping resistance
- Best for cast iron at high-speed machining

New
T3225
P
M

Steel Stainless

- CVD grade with excellent chipping and fracture resistance
- Most suited for steel and stainless steel at high-speed machining

PREMIUMTEC

TUNGALOY

Special Surface Technology

Enhanced coating resistance to chipping and peeling

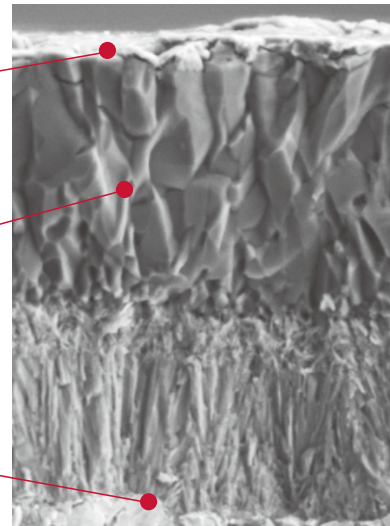
- Special surface post-treatment technology improves surface smoothness

Superior wear resistance in high speed cutting

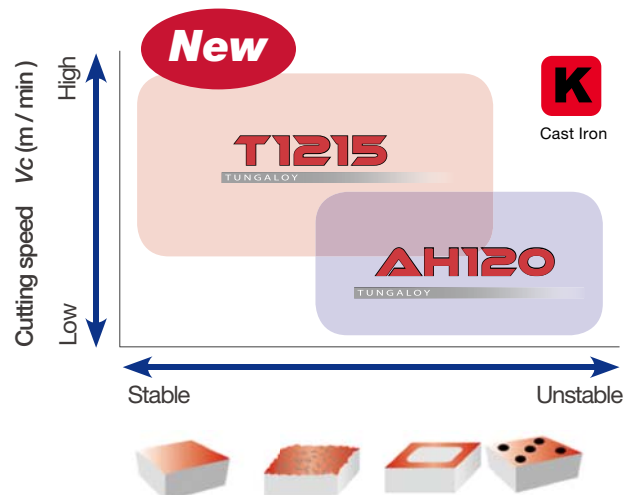
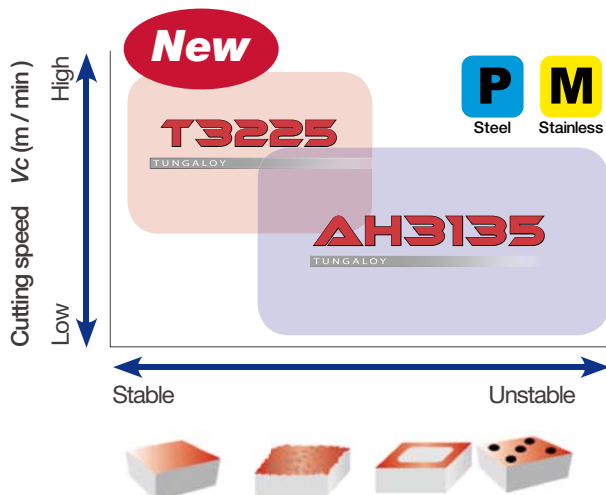
- A thick alumina (Al_2O_3) layer improves insert life in a high cutting temperature generated during high speed machining

Enhanced coating resistance to peeling

- Strong adhesion between the carbide substrate and the coating layer improves coating resistance to peeling



Application Area

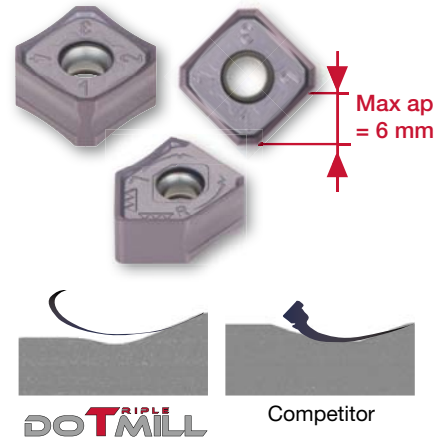


Features of SNMU and SNGU inserts

Double-sided, square inserts with eight cutting edges

- most suitable for a large depth of cut
- Free cutting inserts with excellent chip control

The optimized cutting edge height allows smooth chips flow in cutting smearing materials like stainless steel. Due to a large rake angle, less cutting force is produced, making the insert optimal for use even on a less rigid spindle like BT40.



Chip formation in stainless steel milling

DOTRIPLE



Chips are formed in optimal large curls for smooth evacuation.

Competitor
A

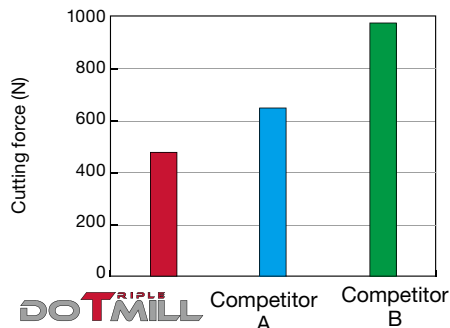


Small curls are formed, causing heavy load on the insert

M
Stainless

Cutter : TASN13J080B25.4R05 ($\phi D_c = 80\text{mm}$, $z=1$)
Insert : SNMU1307ANEN-MJ AH3135
Workpiece material : SUS304
Cutting speed : $V_c = 150\text{ m/min}$
Feed per tooth : $f_z = 0.3\text{ mm/t}$
Depth of cut : $a_p = 3\text{ mm}$
Width of cut : $a_e = 51\text{ mm}$
Coolant : Dry

Cutting force



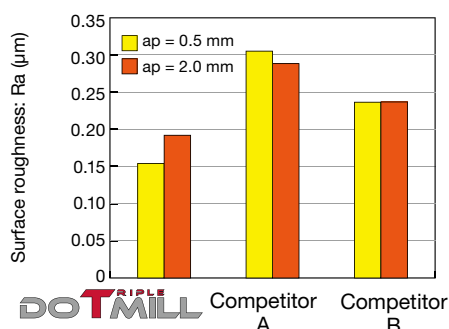
P
Steel

Cutter : TASN13M100B32.0R08 ($\phi D_c = 100\text{ mm}$, $z = 1$)
Insert : SNGU1307ANEN-MJ
Workpiece material : S55C / C55
Cutting speed : $V_c = 200\text{ m/min}$
Feed per tooth : $f_z = 0.2\text{ mm/t}$
Depth of cut : $a_p = 2.0\text{ mm}$
Width of cut : $a_e = 75\text{ mm}$
Coolant : Dry

- Superior surface finish quality

The insert incorporates built-in wipers of for improved surface quality.

Surface roughness



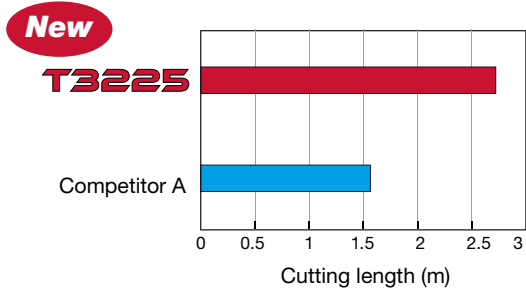
P
Steel

Cutter : TASN13M100B32.0R08 ($\phi D_c = 100\text{mm}$, $z=8$)
Insert : SNMU1307ANEN-MJ AH3135 $\times 7$
/ SNGU1307ANEN-W AH3135 $\times 1$
Workpiece material : S55C
Cutting speed : $V_c = 250\text{ m/min}$
Feed per tooth : $f_z = 0.1\text{ mm/t}$
Depth of cut : $a_p = 0.5 / 2.0\text{ mm}$
Width of cut : $a_e = 75\text{ mm}$
Coolant : Dry

- Stable tool life

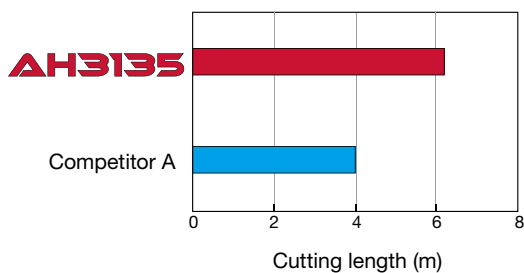
The MJ chipbreaker is most suitable for steel and stainless steel milling. The MH chipbreaker with an enhanced cutting edge delivers long, predictable insert life in removing scales from cast stainless steel.

Tool life comparison in alloy steel milling



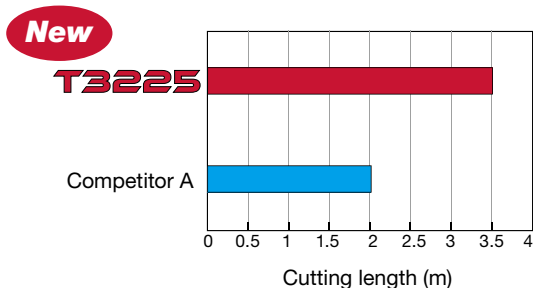
Cutter : TASN13J125B38.1R07 ($\phi D_c = 125\text{mm}, z=1$)
 Insert : SNMU1307ANEN-MJ T3225
 Workpiece material : SCM440 (290HB)
 Cutting speed : $V_c = 300 \text{ m/min}$
 Feed per tooth : $f_z = 0.2 \text{ mm/t}$
 Depth of cut : $a_p = 3 \text{ mm}$
 Width of cut : $a_e = 75 \text{ mm}$
 Coolant : Dry

Tool life comparison in stainless steel milling



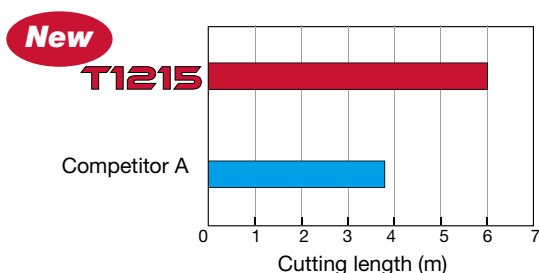
Cutter : TASN13M100B32.0R08 ($\phi D_c = 100 \text{ mm}, z = 1$)
 Insert : SNMU1307ANEN-MJ
 Workpiece material : SUS304 / X5CrNi18-9
 Cutting speed : $V_c = 150 \text{ m/min}$
 Feed per tooth : $f_z = 0.15 \text{ mm/t}$
 Depth of cut : $a_p = 3.0 \text{ mm}$
 Width of cut : $a_e = 75 \text{ mm}$
 Coolant : Dry

Tool life comparison in stainless steel milling



Cutter : TASN13M063B22.0R08 ($\phi D_c = 63\text{mm}, z=1$)
 Insert : SNGU1307ANEN-MH T3225
 Workpiece material : 1.4848
 Cutting speed : $V_c = 90 \text{ m/min}$
 Feed per tooth : $f_z = 0.28 \text{ mm/t}$
 Depth of cut : $a_p = 2.5 \text{ mm}$
 Width of cut : $a_e = 25 \text{ mm}$
 Coolant : Dry

Tool life comparison in ductile cast iron milling



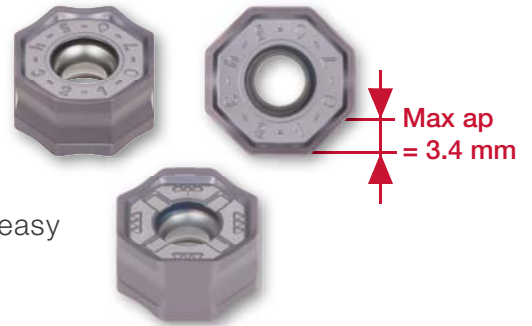
Cutter : TASN13J125B38.1R07 ($\phi D_c = 125\text{mm}, z=1$)
 Insert : SNMU1307ANEN-MJ T1215
 Workpiece material : FCD600 (160HB)
 Cutting speed : $V_c = 200 \text{ m/min}$
 Feed per tooth : $f_z = 0.35 \text{ mm/t}$
 Depth of cut : $a_p = 3.0 \text{ mm}$
 Width of cut : $a_e = 75 \text{ mm}$
 Coolant : Wet

Features of ONMU and ONGU inserts

Double-sided, octagonal insert with 16 cutting edges - high economy inserts

- Light cutting force due to excellent chip control

The optimized cutting edge creates barrel-formed chips for easy removal, allowing an operation at higher feed rate.



DOTRIPLE



Chip are formed in optimal curls for smooth evacuation, leading to superior surface quality.

Competitor A



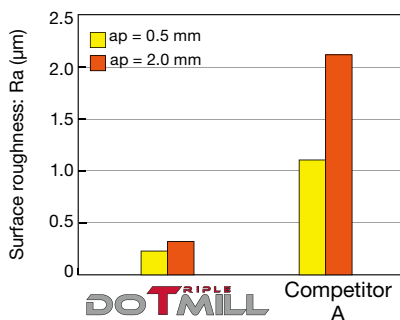
Chips are formed tightly curled, causing chip re-cutting.

M
Stainless

Cutter : TASN13J080B25.4R05 ($\phi D_c = 80\text{mm}, z=5$)
Insert : ONMU0507ANEN-MJ AH3135
Workpiece material : SUS304
Cutting speed : $V_c = 150\text{ m/min}$
Feed per tooth : $f_z = 0.3\text{ mm/t}$
Depth of cut : $a_p = 3\text{ mm}$
Width of cut : $a_e = 51\text{ mm}$
Coolant : Dry

- Superior surface finish

The wiper insert with eight cutting edges assures a superior finish on the machined surface

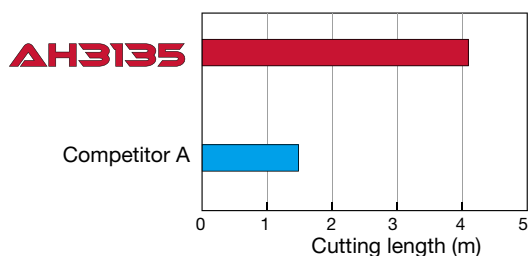


P
Steel

Cutter : TASN13M063B22.0R06 ($\phi D_c = 63\text{mm}, z=6$)
Insert : ONMU0507ANEN-MJ AH3135 x5 / ONGU0507ANEN-W AH3135 x1
Workpiece material : S55C
Cutting speed : $V_c = 250\text{ m/min}$
Feed per tooth : $f_z = 0.2\text{ mm/t}$
Depth of cut : $a_p = 0.5 / 1\text{ mm}$
Width of cut : $a_e = 50\text{ mm}$
Coolant : Dry

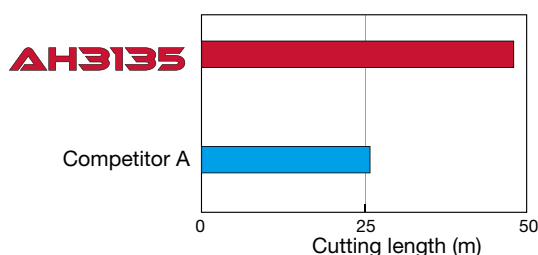
- Stability in insert life

Ensures tool life stability in milling stainless steel



M
Stainless

Cutter : TASN13M100B32.0R08 ($\phi D_c = 100\text{mm}, z=1$)
Insert : ONMU0507ANEN-MJ AH3135
Workpiece material : SUS304
Cutting speed : $V_c = 150\text{ m/min}$
Feed per tooth : $f_z = 0.15\text{ mm/t}$
Depth of cut : $a_p = 2.0\text{ mm}$
Width of cut : $a_e = 75\text{ mm}$
Coolant : Dry



P
Steel

Cutter : TASN13M100B32.0R08 ($\phi D_c = 100\text{ mm}, z = 1$)
Insert : ONMU0507ANEN-MJ AH3135
Workpiece material : S55C / C55
Cutting speed : $V_c = 200\text{ m/min}$
Feed per tooth : $f_z = 0.2\text{ mm/t}$
Depth of cut : $a_p = 2.0\text{ mm}$
Width of cut : $a_e = 75\text{ mm}$
Coolant : Dry

Features of RNMU and RNGU inserts

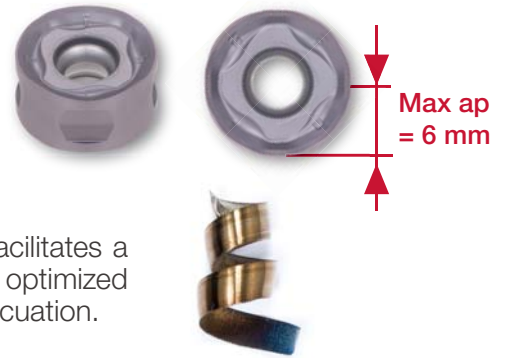
Double-sided, round inserts with eight cutting edges - an ideal insert for a roughing operation

- Can be used either in a high feed milling or in an operation with a large depth of cut

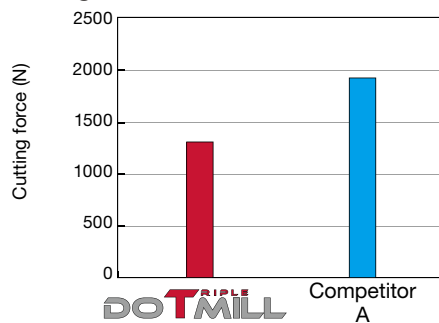
The robust cutting edge design of the RNMU and RNGU inserts facilitates a reliable rough milling even on an unstable surface. The chipbreaker is optimized for a high feed rate assists to form large-curl chips for easy chip evacuation.

- Lower cutting force

The helical cutting edge on the insert lowers the cutting load. Thermal damage to the cutting edge is thus reduced, leading to longer insert life.

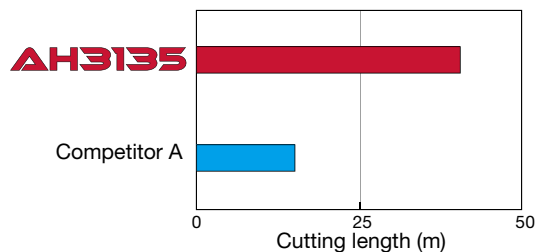


Cutting force



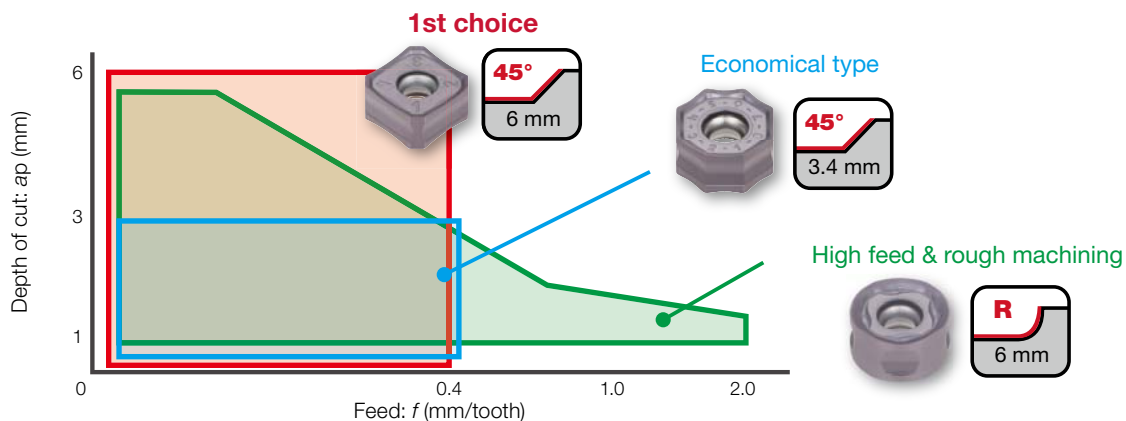
Cutter : TASN13M100B32.0R08 ($\phi D_c = 100$ mm, $z = 1$)
 Insert : RNMU1307ANEN-MJ
 Workpiece material : S55C / C55
 Cutting speed : $V_c = 200$ m/min
 Feed per tooth : $f_z = 0.2$ mm/t
 Depth of cut : $a_p = 2.0$ mm
 Width of cut : $a_e = 75$ mm
 Coolant : Dry

Tool life comparison in steel milling



Cutter : TASN13M100B32.0R08 ($\phi D_c = 100$ mm, $z = 1$)
 Insert : RNMU1307ANEN-MJ
 Workpiece material : SCM440 / 42CrMo4
 Cutting speed : $V_c = 160$ m/min
 Feed per tooth : $f_z = 0.2$ mm/t
 Depth of cut : $a_p = 2.0$ mm
 Width of cut : $a_e = 105$ mm
 Coolant : Dry

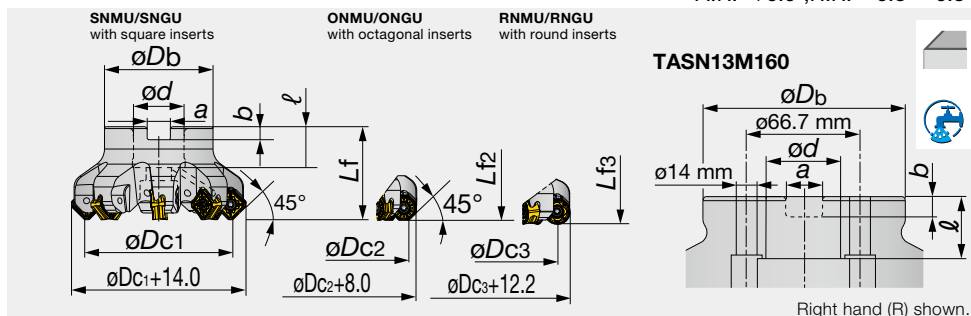
APPLICATION AREA



TASN13

45° face milling cutter to seat double sided square, octagonal, round insert

A.R.=+6.0°,R.R.=-6.8°~-6.3°



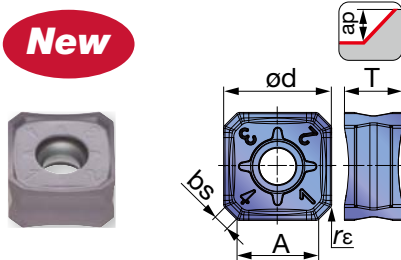
Designation	øDc1	øDc2	øDc3	z	øDb	Lf1	Lf2	Lf3	ød	ℓ	a	b	Kg	Air hole
TASN13M050B22.0R04	50	53	48.7	4	41	40	38.5	38.5	22	20	10.4	6.3	0.4	with
TASN13M050B22.0R05	50	53	48.7	5	41	40	38.5	38.5	22	20	10.4	6.3	0.4	with
TASN13M063B22.0R05	63	66	61.7	5	47	40	38.5	38.5	22	20	10.4	6.3	0.7	with
TASN13M063B22.0R06	63	66	61.7	6	47	40	38.5	38.5	22	20	10.4	6.3	0.6	with
TASN13M063B22.0R08	63	66	61.7	8	47	40	38.5	38.5	22	20	10.4	6.3	0.6	with
TASN13M080B27.0R05	80	83	78.7	5	58	50	48.5	48.5	27	22	12.4	7	1.1	with
TASN13M080B27.0R08	80	83	78.7	8	58	50	48.5	48.5	27	22	12.4	7	1.1	with
TASN13M080B27.0R10	80	83	78.7	10	58	50	48.5	48.5	27	22	12.4	7	1.2	with
TASN13J080B25.4R05	80	83	78.7	5	58	50	48.5	48.5	25.4	26	9.5	6	1.2	with
TASN13J080B25.4R08	80	83	78.7	8	58	50	48.5	48.5	25.4	26	9.5	6	1.1	with
TASN13J080B25.4R10	80	83	78.7	10	58	50	48.5	48.5	25.4	26	9.5	6	1.2	with
TASN13M100B32.0R06	100	103	98.7	6	60	50	48.5	48.5	32	28.5	14.4	8	1.4	with
TASN13M100B32.0R08	100	103	98.7	8	60	50	48.5	48.5	32	28.5	14.4	8	1.4	with
TASN13M100B32.0R12	100	103	98.7	12	60	50	48.5	48.5	32	28.5	14.4	8	1.4	with
TASN13J100B31.7R06	100	103	98.7	6	60	50	48.5	48.5	31.75	32	12.7	8	1.4	with
TASN13J100B31.7R08	100	103	98.7	8	60	50	48.5	48.5	31.75	32	12.7	8	1.4	with
TASN13J100B31.7R12	100	103	98.7	12	60	50	48.5	48.5	31.75	32	12.7	8	1.4	with
TASN13M125B40.0R07	125	128	123.7	7	71	63	61.5	61.5	40	32	16.4	9	2.2	with
TASN13M125B40.0R10	125	128	123.7	10	71	63	61.5	61.5	40	32	16.4	9	2.3	with
TASN13M125B40.0R14	125	128	123.7	14	71	63	61.5	61.5	40	32	16.4	9	2.5	with
TASN13J125B38.1R07	125	128	123.7	7	80	63	61.5	61.5	38.1	38	15.9	10	2.6	with
TASN13J125B38.1R10	125	128	123.7	10	80	63	61.5	61.5	38.1	38	15.9	10	2.7	with
TASN13J125B38.1R14	125	128	123.7	14	80	63	61.5	61.5	38.1	38	15.9	10	2.9	with
TASN13M160B40.0R08	160	163	158.7	8	100	63	61.5	61.5	40	29	16.4	9	4.1	without
TASN13M160B40.0R12	160	163	158.7	12	100	63	61.5	61.5	40	29	16.4	9	4.2	without
TASN13J160B50.8R08	160	163	158.7	8	100	63	61.5	61.5	50.8	38	19	11	4.1	without
TASN13J160B50.8R12	160	163	158.7	12	100	63	61.5	61.5	50.8	38	19	11	4.2	without

SPARE PARTS

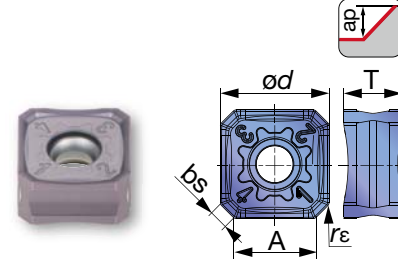
Designation	Clamping screw	Grip	Lubricant	Shell locking bolt	Shell locking bolt 1	Torx bit
TASN13M0**B22.0R0*	CSPB-4	H-TB2W	M-1000	-	CM10X30H	BLDIP15/S7
TASN13*080B2*.R0*	CSPB-4	H-TB2W	M-1000	-	CM12X30H	BLDIP15/S7
TASN13*100B3*.R0*	CSPB-4	H-TB2W	M-1000	TMBA-M16H	-	BLDIP15/S7
TASN13*125B**.R**	CSPB-4	H-TB2W	M-1000	TMBA-M20H	-	BLDIP15/S7
TASN13*160B0*.R**	CSPB-4	H-TB2W	M-1000	-	-	BLDIP15/M7

INSERT

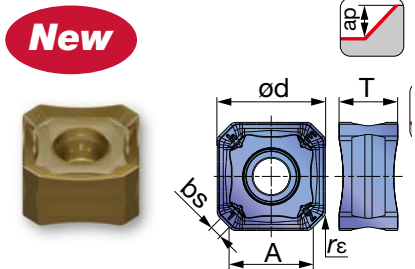
SNMU-MJ



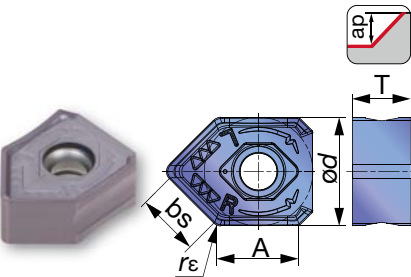
SNGU-MJ



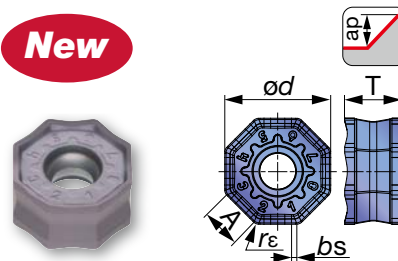
SNGU-MH



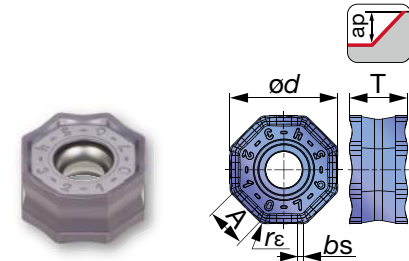
SNGU-W



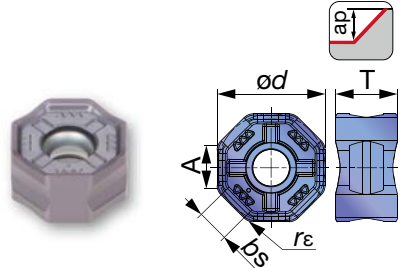
ONMU-MJ



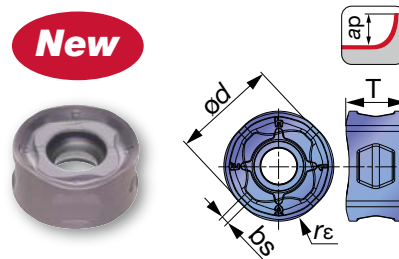
ONGU-MJ



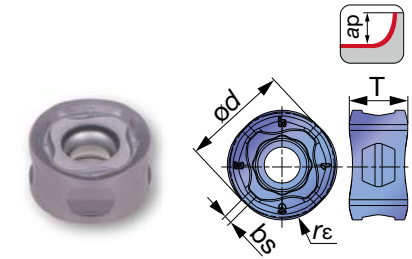
ONGU-W



RNMU-MJ



RNGU-MJ



P Steel	☆	★	★	
M Stainless		★	★	
K Cast iron	★			★
N Non-ferrous				
S Superalloys	★	☆		
H Hard materials				

★ : First choice
☆ : Second choice

Designation	rε	Max. ap	Coated				A	ød	T	bs
			AH120	AH3135	T3225	T1215				
SNMU1307ANEN-MJ	0.5	6	●	●	●	●	9.4	13	7	2
SNGU1307ANEN-MJ	0.5	6	●	●	●		9.4	13	7	2
SNGU1307ANEN-MH	0.8	6			●		9	13	7	2
SNGU1307ANEN-W	1.2	6	●	●			9.6	13	7	7.5
ONMU0507ANEN-MJ	0.8	3.4	●	●	●	●	4.9	13	7	0.7
ONGU0507ANEN-MJ	0.8	3.4	●	●	●		4.9	13	7	0.7
ONGU0507ANEN-W	1.6	3.4	●	●			5	13	7.44	3.9
RNMU1307ZNER-MJ	6	6	●	●	●	●	-	13	7.1	1
RNGU1307ZNER-MJ	6	6	●	●			-	13	7.1	1

● : New product
● : Line up

STANDARD CUTTING CONDITIONS

SNMU / SNGU / ONMU / ONGU

ISO	Workpiece materials	Hardness	Priority	Grades	Chip-breaker	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)	
P	Low carbon steel (C15, etc.)	200 - 300HB	First choice	AH3135	MJ	100 - 250	0.1 - 0.5	
			For wear resistance	T3225	MJ	200 - 350	0.1 - 0.4	
	High carbon and alloy steel (S55C / C55, SCM440 / 42CrMo4, etc.)	150 - 300HB	First choice	AH3135	MJ	100 - 250	0.1 - 0.4	
			For wear resistance	T3225	MJ	180 - 300	0.1 - 0.4	
	Prehardened steel (NAK80, PX5, etc.)	30 - 40HRC	First choice	AH3135	MJ	100 - 200	0.1 - 0.4	
			For wear resistance	T3225	MJ	150 - 250	0.1 - 0.4	
M	Stainless steel (SUS304 / X5CrNi18-9, SUS316 / X5CrNiMo17-12-3, etc.)	- 200HB	First choice	AH3135	MJ	100 - 200	0.1 - 0.35	
			For wear resistance	T3225	MJ	100 - 250	0.1 - 0.3	
	Stainless cast steel (SCH20XNb / 1.4849, etc.)	-	First choice	T3225	MH	60 - 120	0.1 - 0.3	
			For low cutting force	AH3135	MJ	60 - 120	0.1 - 0.3	
	K	Gray cast iron (FC250 / 250, etc.)	150 - 250 HB	First choice	T1215	MJ	100 - 300	0.1 - 0.4
					AH120	MJ	100 - 250	0.1 - 0.5
Ductile cast iron (FCD400 / 400-15, FCD600 / 600-3, etc.)		150 - 250 HB	First choice	T1215	MJ	100 - 300	0.1 - 0.4	
				AH120	MJ	80 - 200	0.1 - 0.5	
S	Titanium alloys (Ti-6Al-4V, etc.)	- 40HRC	First choice	AH3135	MJ	30 - 60	0.1 - 0.3	
	Heat-resistant alloys (Inconel718, etc.)	- 40HRC	First choice	AH120	MJ	10 - 40	0.05 - 0.15	
H	Hardened steel	(SKD61/ X40CrMoV5-1, etc.)	40 - 50 HRC	First choice	AH3135	MJ	80 - 130	0.1 - 0.2
		(SKD11/ X153CrMoV12, etc.)	50 - 60 HRC	First choice	AH120	MJ	50 - 70	0.03 - 0.1

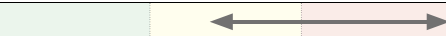
RNMU / RNGU

ISO	Workpiece materials	Hardness	Priority	Grades	Chip-breaker	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)	
P	Low carbon steel (C15 etc.)	200 - 300 HB	First choice	AH3135	MJ	100 - 250	※ap=6mm: 0.1 - 0.3 ※ap=2mm: 0.4 - 0.8 ※ap=1mm: 0.8 - 1.5	
			For wear resistance	T3225	MJ	200 - 350		
	High carbon and alloy steel (S55C / C55, SCM440 / 42CrMo4, etc.)	150 - 300 HB	First choice	AH3135	MJ	100 - 250		
			For wear resistance	T3225	MJ	180 - 300		
	Prehardened steel (NAK80, PX5 etc.)	30 - 40 HRC	First choice	AH3135	MJ	100 - 200		
			For wear resistance	T3225	MJ	150 - 250		
M	Stainless steel (SUS304 / X5CrNi18-9, SUS316 / X5CrNiMo17-12-3, etc.)	- 200 HB	First choice	AH3135	MJ	100 - 200	※ap = 6 mm : 0.1 - 0.25 ※ap = 2 mm : 0.3 - 0.7 ※ap = 1 mm : 0.6 - 1.3	
			For wear resistance	T3225	MJ	100 - 250		
	Stainless cast steel (SCH20XNb / 1.4849, etc.)	-	First choice	T3225	MJ	60 - 120	※ap = 2mm: 0.2 - 0.4 ※ap = 1mm: 0.3 - 0.8	
			For fracture resistance	AH3135	MJ	60 - 120		
	K	Gray cast iron (FC250 / 250, etc.)	150 - 250 HB	First choice	AH120	MJ	100 - 300	※ap=6mm: 0.1 - 0.3 ※ap=2mm: 0.4 - 0.8 ※ap=1mm: 0.8 - 1.5
					T1215	MJ	100 - 250	
Ductile cast iron (FCD400 / 400-15, FCD600 / 600-3, etc.)		150 - 250 HB	First choice	AH120	MJ	100 - 300		
				T1215	MJ	80 - 200		
S	Titanium alloys (Ti-6Al-4V, etc.)	- 40 HRC	First choice	AH3135	MJ	30 - 60	ap=1mm: 0.15 - 0.8	
	Heat-resistant alloys (Inconel718, etc.)	- 40 HRC	First choice	AH120	MJ	10 - 40	ap=1mm: 0.05 - 0.3	
H	Hardened steel	(SKD61 / X40CrMoV5-1, etc.)	40 - 50 HRC	First choice	AH3135	MJ	80 - 130	ap=1mm: 0.1 - 0.25
		(SKD11 / X153CrMoV12, etc.)	50 - 60 HRC	First choice	AH120	MJ	50 - 70	ap=0.5mm: 0.03-0.1

※When using T3225 or T1215, decrease the feed per tooth (fz) to 80% of the abovementioned value.

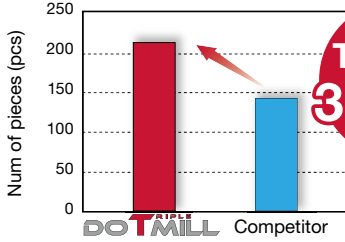
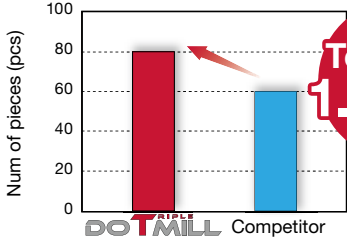
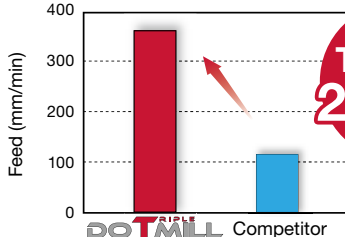
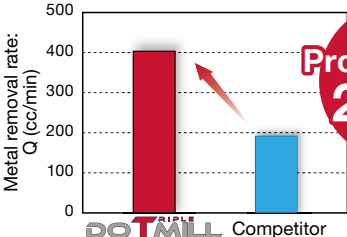
Selection guide for face milling cutters

For workpiece configuration and spindle power

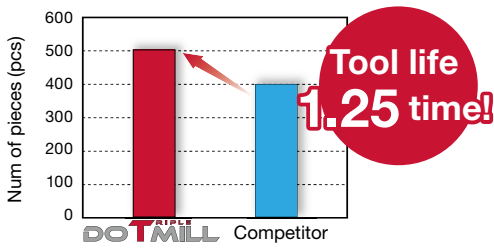
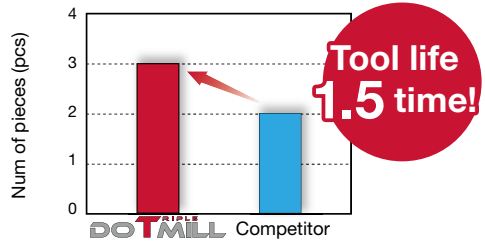
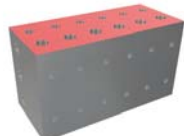
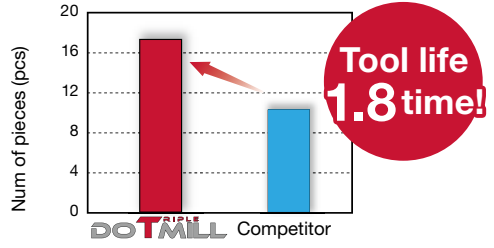
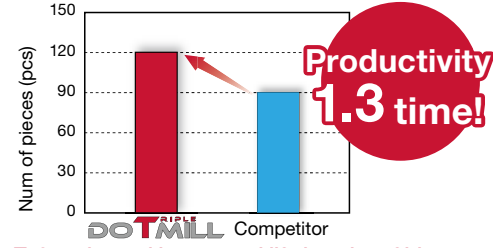
Spindle power			light interrupted cuts	Edging of thin sections	Thin plates / hollow structure	Heavy interrupted cuts / scale or unstable surface
BT40 (≥15kW)	BT50 (≥22kW)	BT50/ BT60 (≥30kW)				
DOPENT						
						
DO^{TRIPLE}MILL						
						
DOOCTO DOQUAD						
						



PRACTICAL EXAMPLES

Workpiece type		Turbine blade	Turbine housing
Cutter		TASN13J100B31.7R08 (ø100, z = 8)	TASN13M100B32.0R08 (ø100, z = 8)
Insert		ONGU0507ANEN-MJ	SNGU1307ANEN-MJ
Grade		AH3135	AH3135
Workpiece material		10705BU (Stainless steel)	GX40CrNiSiNb22-10
		 M	 M
Cutting conditions	Cutting speed: Vc (m/min)	79	94
	Feed per tooth: fz (mm/t)	0.10	0.17
	Feed speed: Vf (m/min)	201	408
	Depth of cut: ap (mm)	2.0	3.5
	Width of cut: ae (mm)	-	80
	Machining	Face milling (Roughing)	Face milling
	Coolant	External	External
Machine		Horizontal M/C, BT50	Vertical M/C
Results		 With DoTripleMill, the tool life is increased by 34% compared to the competitor.	 DoTripleMill extends tool life by 1.3 times compared with the competitor.
Workpiece type		Turbine housing	Pallette
Cutter		TASN13M125B40.0R10 (ø125, z = 10)	TASN13J160B50.8R08 (ø160, z = 8)
Insert		SNGU1307ANEN-MJ	RNGU1307ZNER-MJ
Grade		AH3135	AH120
Workpiece material		Hi Si FCD	FC300
		 K	 K
Cutting conditions	Cutting speed: Vc (m/min)	196	200
	Feed per tooth: fz (mm/t)	0.08	0.3
	Feed speed: Vf (m/min)	400	955
	Depth of cut: ap (mm)	1.3	5
	Width of cut: ae (mm)	100	84
	Machining	Face milling (Roughing)	Face milling (Roughing)
	Coolant	External	Dry
Machine		Vertical M/C, BT50	Horizontal M/C, BT50
Results		 Due to DoTripleMill's low cutting force, the feed rate is maximized despite the weak fixture setting of the component.	 Tough RNGU insert offers stable and highly efficient machining even on the cast surface.

PRACTICAL EXAMPLES

Workpiece type		Flange yoke	Bogie truck
Cutter		TASN13J080B25.4R08 (ø80, z = 8)	TASN13J160B50.8R08 (ø160, z = 8)
Insert		SNMU1307ANEN-MJ	SNMU1307ANEN-MJ
Grade		T3225	T3225
Workpiece material		S45C (DIN C45 / AISI 1045 / GB 45)	SM 490 A (DIN St52-3 / A573-81)
		 P	 P
Cutting conditions	Cutting speed: Vc (m/min)	200	200
	Feed per tooth: fz (mm/t)	0.10	0.3
	Feed speed: Vf (m/min)	637	955
	Depth of cut: ap (mm)	2.0	3
	Width of cut: ae (mm)	-	-
	Machining	Face milling (Roughing)	Face milling (Roughing)
	Coolant	External coolant	External coolant
		Horizontal M/C, BT40	Vertical M/C, BT50
Results		 Criteria of tool life was burr. T3225 was long tool life due to less chipping and fracture on the cutting edge.	 DoTriple-Mill had high productivity and long tool life due to tougher chipbreaker than that of competitor.
Workpiece type		Bulb body	Pump housing
Cutter		TASN13J125B38.1R10 (ø125, z = 10)	TASN13J125B38.1R07 (ø125, z = 7)
Insert		SNMU1307ANEN-MJ	SNMU1307ANEN-MJ
Grade		T1215	T1215
Workpiece material		FCV410 (DIN GJV450)	FCD600 (GGG60)
		 K	 K
Cutting conditions	Cutting speed: Vc (m/min)	180	196
	Feed per tooth: fz (mm/t)	0.12	0.4
	Feed speed: Vf (m/min)	550	1398
	Depth of cut: ap (mm)	2.7	5.5
	Width of cut: ae (mm)	-	65
	Machining	Face milling (Roughing)	Face milling (Roughing)
	Coolant	Air	Air
		Horizontal M/C, BT50	Horizontal M/C, BT50
Results		 Criteria of tool life was burr. T1215 showed stable tool life in machining vermicular cast iron because T1215 had good chipping resistance.	 T1215 showed longer tool life in spite of bigger depth of cut than competitor. T1215 has both good wear resistance and toughness.

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