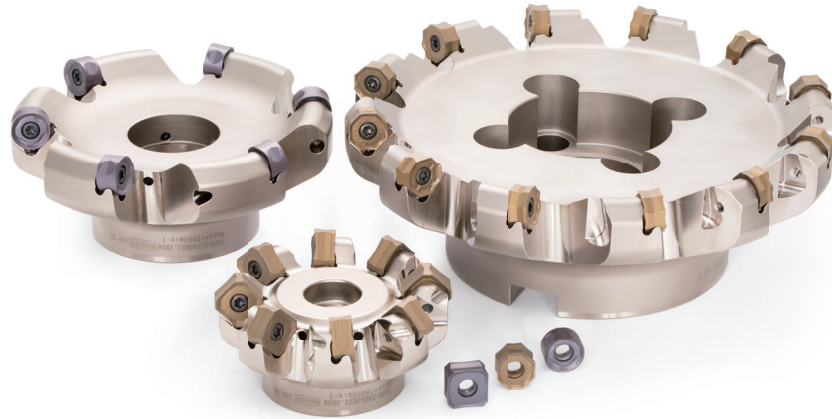




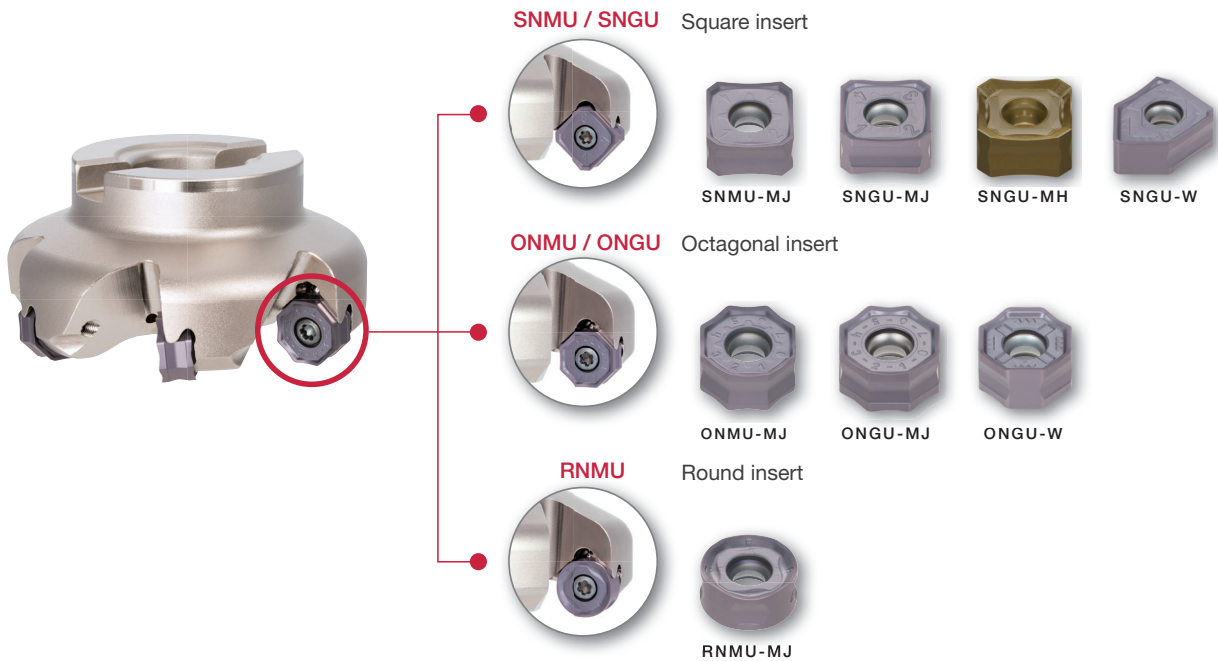
# DO <sup>TRIPLE</sup> MILL



**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



## High efficiency with close pitch cutter/Extra-close pitch type available in addition to regular close pitch type

Tool line-up includes extra close pitch cutter maximizing efficiency in cast iron machining.



Standard pitch



Close pitch



Extra-close pitch

Reference pages: **H060 - H062**



## Super high density PCD cutter for efficient finishing of aluminum

### Super high density cutter

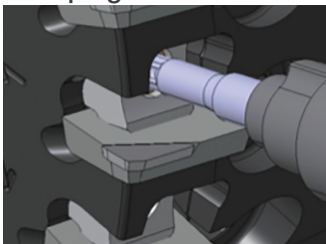


Super high density design  
High speed cutting more than  $V_c = 3,000$  m/min is possible.

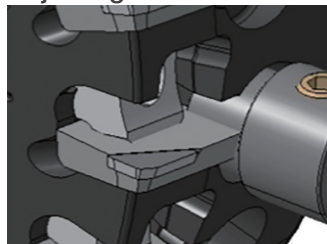
Cutter diameter (mm)	Max num. of teeth	Max. rotation number (min <sup>-1</sup> )	Cutter weight (kg)
50	8	20,000	0.86
63	10	19,000	0.53
80	16	17,000	1.18
100	22	15,000	1.66
125	26	14,000	3.44
160	34	12,000	5.15

### CamAdjust - super simple adjusting mechanism

Clamping insert

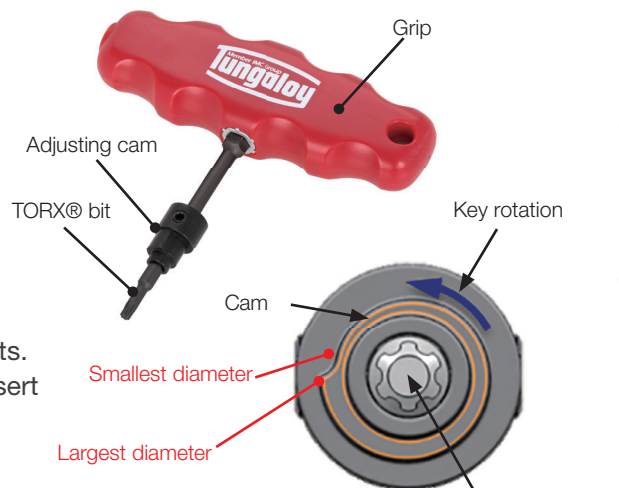


Adjusting axial runout



The same key is used for mounting and adjusting the inserts. The key wrench is operated in a single direction making insert adjustment easy on the pre-setter.

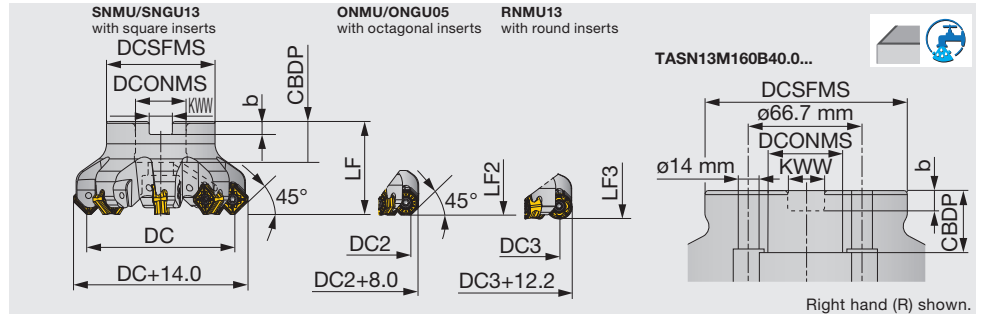
### Special key wrench with adjusting cam



Insert's axial runout is adjusted with the eccentric cam profile.

45° face mill, with screw clamp system, for double sided square, octagonal and round inserts

GAMP=+6.0°, GAMF=-6.8°~-6.3°



- High Feed Milling
- Face Milling
- Shoulder Milling
- Slot Milling
- Profile Milling
- Approach angle
- 10°-20°
- 45°
- 70°
- 85°
- 88°
- 90°
- Others

Designation	DC	DC2	DC3	CICT	DCSFMS	LF	LF2	LF3	DCONMS	CBDP	KWW	b	WT(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**

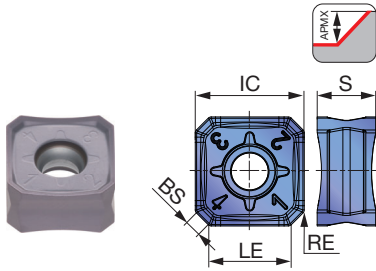
Designation	Clamping screw	Grip	Lubricant	Shell locking bolt 1	Shell locking bolt 2	Torx bit
TASN13M0**B22.0R0*	CSPB-4	H-TB2W	M-1000	-	CM10X30H	BLDIP15/S7
TASN13*080B2**R0*	CSPB-4	H-TB2W	M-1000	-	CM12X30H	BLDIP15/S7
TASN13*100B3**R0*	CSPB-4	H-TB2W	M-1000	TMBA-M16H	-	BLDIP15/S7
TASN13*125B**R**	CSPB-4	H-TB2W	M-1000	TMBA-M20H	-	BLDIP15/S7
TASN13*160B*0*R**	CSPB-4	H-TB2W	M-1000	-	-	BLDIP15/M7

\*Recommended clamping torque (N·m): CSPB-4=3.5

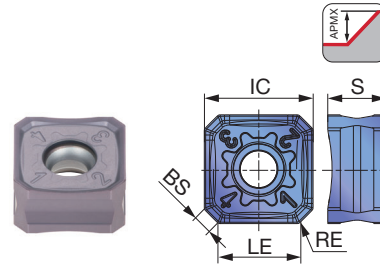
Reference pages: Inserts → **H061**, Standard cutting conditions → **H062**

# INSERT

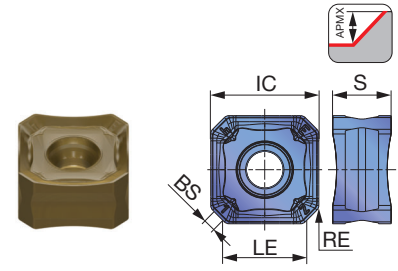
## SNMU-MJ



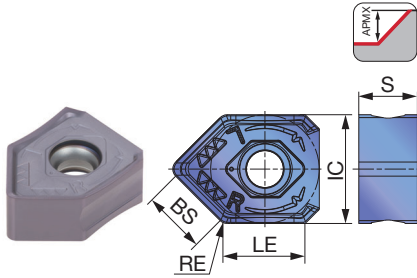
## SNGU-MJ



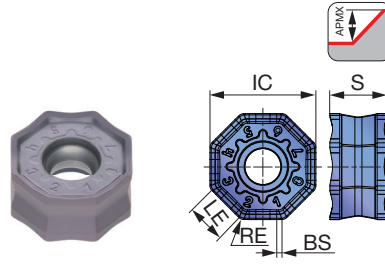
## SNGU-MH



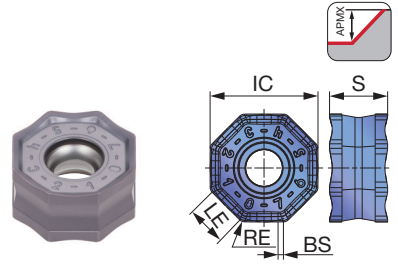
## SNGU-W



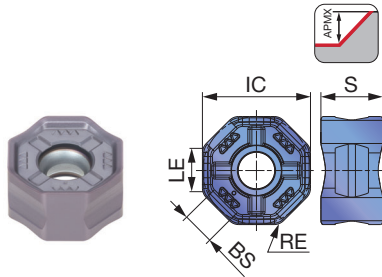
## ONMU-MJ



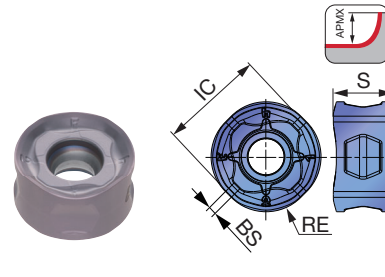
## ONGU-MJ



## ONGU-W



## RNMU-MJ



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

★ : First choice  
☆ : Second choice

Designation	RE	APMX	Coated				LE	IC	S	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

● : Line up

Grade  
Insert  
Ext. Toolholder  
Int. Toolholder  
Threading  
Grooving  
Miniature tool  
Milling cutter  
Endmill  
Drilling tool  
Tooling System  
User's Guide  
Index



# STANDARD CUTTING CONDITIONS

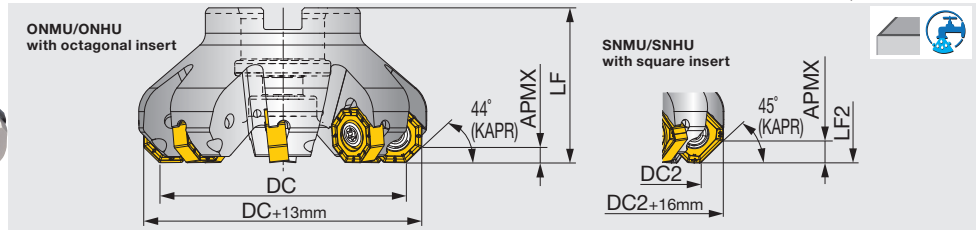
## SNMU / SNGU / ONMU / ONGU

ISO	Workpiece materials	Hardness	Priority	Grades	Chip-breaker	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)	
P	Low carbon steel S15C, etc. C15, etc.	200 - 300HB	First choice	AH3135	MJ	100 - 250	0.1 - 0.5	
			Wear resistance	T3225	MJ	200 - 350	0.1 - 0.4	
	High carbon and alloy steel S55C, SCM440, etc. C55, 42CrMo4, etc.	150 - 300HB	First choice	AH3135	MJ	100 - 250	0.1 - 0.4	
			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		
		Wear resistance	T3225	MJ	150 - 250	0.1 - 0.4		
M	Stainless steel SUS304, SUS316, etc. X5CrNi18-9, X5CrNiMo17-12-3, etc.	- 200HB	First choice	AH3135	MJ	100 - 200	0.1 - 0.35	
			Wear resistance	T3225	MJ	100 - 250	0.1 - 0.3	
	Stainless cast steel SCH20XNb, etc. GX40NiCrSiNb38-19, etc.	-	First choice	T3225	MH	60 - 120	0.1 - 0.3	
Low cutting force			AH3135	MJ	60 - 120	0.1 - 0.3		
K	Gray cast iron FC250, etc. 250, etc.	150 - 250 HB	First choice	T1215	MJ	100 - 300	0.1 - 0.4	
				AH120	MJ	100 - 250	0.1 - 0.5	
K	Ductile cast iron FCD400, FCD600, etc. 400-15, 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, etc. X40CrMoV5-1, etc.	40 - 50 HRC	First choice	AH3135	MJ	80 - 130	0.1 - 0.2
		SKD11, etc. X153CrMoV12, etc.	50 - 60 HRC	First choice	AH120	MJ	50 - 70	0.03 - 0.1

## RNMU

ISO	Workpiece materials	Hardness	Priority	Grades	Chip-breaker	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)	
P	Low carbon steel S15C, etc. 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	
			Wear resistance	T3225	MJ	200 - 350		
	High carbon and alloy steel S55C, SCM440, etc. C55, 42CrMo4, etc.	150 - 300 HB	First choice	AH3135	MJ	100 - 250		
			Wear resistance	T3225	MJ	180 - 300		
Prehardened steel NAK80, PX5, etc.	30 - 40 HRC	First choice	AH3135	MJ	100 - 200	ap=1mm: 0.15 - 0.8		
		Wear resistance	T3225	MJ	150 - 250			
M	Stainless steel SUS304, SUS316, etc. X5CrNi18-9, X5CrNiMo17-12-3, etc.	- 200 HB	First choice	AH3135	MJ	100 - 200	※ap = 6 mm : 0.1 - 0.25	
			Wear resistance	T3225	MJ	100 - 250	※ap = 2 mm : 0.3 - 0.7 ※ap = 1 mm : 0.6 - 1.3	
	Stainless cast steel SCH20XNb, etc. GX40NiCrSiNb38-19, etc.	-	First choice	T3225	MJ	60 - 120	※ap = 2mm: 0.2 - 0.4	
Fracture resistance			AH3135	MJ	60 - 120	※ap = 1mm: 0.3 - 0.8		
K	Gray cast iron FC250, etc. 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		
K	Ductile cast iron FCD400, FCD600, etc. 400-15, 600-3, etc.	150 - 250 HB	First choice	AH120	MJ	100 - 300	ap=1mm: 0.15 - 0.8	
				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, etc. X40CrMoV5-1, etc.	40 - 50 HRC	First choice	AH3135	MJ	80 - 130	ap=1mm: 0.1 - 0.25
		SKD11, etc. 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.



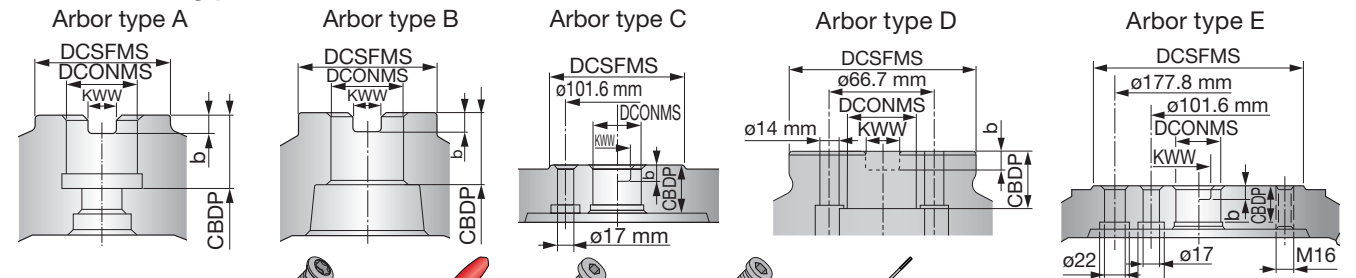
Designation	DC	DC2	CICT	DCSFMS	LF	LF2	DCONMS	CBDP	KWW	b	WT(kg)	Air hole	Insert	Arbor type
TAN07R063M22.0E05	63	60.3	5	41	40	41.4	22	20	10.4	6.3	0.5	with	SN*U/ON*U/OWMT...	A
TAN07R063M22.0E06	63	60.3	6	41	40	41.4	22	20	10.4	6.3	0.5	with	SN*U/ON*U/OWMT...	A
TAN07R080M25.4-06	80	77.3	6	50	50	51.4	25.4	26	9.5	6	1	with	SN*U/ON*U/OWMT...	A
TAN07R080M25.4-08	80	77.3	8	50	50	51.4	25.4	26	9.5	6	1	with	SN*U/ON*U/OWMT...	A
TAN07R080M27.0E06	80	77.3	6	50	50	51.4	27	22	12.4	7	1	with	SN*U/ON*U/OWMT...	A
TAN07R080M27.0E08	80	77.3	8	50	50	51.4	27	22	12.4	7	1	with	SN*U/ON*U/OWMT...	A
TAN07R100M31.7-07	100	97.3	7	60	50	51.4	31.75	32	12.7	8	1.5	with	SN*U/ON*U/OWMT...	B
TAN07R100M31.7-10	100	97.3	10	60	50	51.4	31.75	32	12.7	8	1.5	with	SN*U/ON*U/OWMT...	B
TAN07R100M32.0E07	100	97.3	7	60	50	51.4	32	28.5	14.4	8	1.5	with	SN*U/ON*U/OWMT...	B
TAN07R100M32.0E10	100	97.3	10	60	50	51.4	32	28.5	14.4	8	1.5	with	SN*U/ON*U/OWMT...	B
TAN07R125M38.1-08	125	122.3	8	80	63	64.4	38.1	38	15.9	10	2.5	with	SN*U/ON*U/OWMT...	B
TAN07R125M38.1-12	125	122.3	12	80	63	64.4	38.1	38	15.9	10	2.5	with	SN*U/ON*U/OWMT...	B
TAN07R125M40.0E08	125	122.3	8	71	63	64.4	40	29	16.4	9	2.5	with	SN*U/ON*U/OWMT...	B
TAN07R125M40.0E12	125	122.3	12	71	63	64.4	40	29	16.4	9	2.5	with	SN*U/ON*U/OWMT...	B
TAN07R160M40.0E10	160	157.3	10	100	63	64.4	40	29	16.4	9	4	without	SN*U/ON*U/OWMT...	D
TAN07R160M40.0E15	160	157.3	15	100	63	64.4	40	29	16.4	9	4	without	SN*U/ON*U/OWMT...	D
TAN07R160M50.8-10	160	157.3	10	100	63	64.4	50.8	38	19	11	4	without	SN*U/ON*U/OWMT...	B
TAN07R160M50.8-15	160	157.3	15	100	63	64.4	50.8	38	19	11	4	without	SN*U/ON*U/OWMT...	B
TAN07R200M47.6-12	200	197.3	12	130	63	64.4	47.625	38	25.4	14	6.6	without	SN*U/ON*U/OWMT...	C
TAN07R200M47.6-18	200	197.3	18	130	63	64.4	47.625	38	25.4	14	6.7	without	SN*U/ON*U/OWMT...	C
TAN07R200M60.0E12	200	197.3	12	135	63	64.4	60	38	25.7	14	6.5	without	SN*U/ON*U/OWMT...	C
TAN07R200M60.0E18	200	197.3	18	135	63	64.4	60	38	25.7	14	6.5	without	SN*U/ON*U/OWMT...	C
TAN07R250M47.6-15	250	247.3	15	130	63	64.4	47.625	38	25.4	14	9.3	without	SN*U/ON*U/OWMT...	C
TAN07R250M47.6-21	250	247.3	21	130	63	64.4	47.625	38	25.4	14	9.4	without	SN*U/ON*U/OWMT...	C
TAN07R250M60.0E15	250	247.3	15	130	63	64.4	60	38	25.7	14	9	without	SN*U/ON*U/OWMT...	C
TAN07R250M60.0E21	250	247.3	21	130	63	64.4	60	38	25.7	14	9	without	SN*U/ON*U/OWMT...	C
TAN07R315M47.6-18	315	312.3	18	220	63	64.4	47.625	38	25.4	14	17.9	without	SN*U/ON*U/OWMT...	C
TAN07R315M47.6-24	315	312.3	24	220	63	64.4	47.625	38	25.4	14	18	without	SN*U/ON*U/OWMT...	C
TAN07R315M60.0E18	315	312.3	18	220	80	81.4	60	38	25.7	14	18	without	SN*U/ON*U/OWMT...	E
TAN07R315M60.0E24	315	312.3	24	220	80	81.4	60	38	25.7	14	18	without	SN*U/ON*U/OWMT...	E

**Dimension when using positive type inserts (OWMT)**

Designation	OWMT-ML			OWMT-HJ			
	DC3	DCX3	LF3	DC4	DC4-2	DCX4	LF4
TAN07R063M...	63.5	76	41	55.7	67.2	76.4	41.4
TAN07R080M...	80.5	93	51	72.7	84.2	93.4	51.4
TAN07R100M...	100.5	113	51	92.7	104.2	113.4	51.4
TAN07R125M...	125.5	138	64	117.7	129.2	138.4	64.4
TAN07R160M...	160.5	173	64	152.7	164.2	173.4	64.4
TAN07R200M...	200.5	213	64	192.7	204.2	213.4	64.4
TAN07R250M...	250.5	263	64	242.7	254.2	263.4	64.4
TAN07R315M...	315.5	328	64	307.7	319.2	328.4	64.4

Note: OWMT08 inserts can be only used with screw on type cutters.

**Arbor type**



**SPARE PARTS**

Designation	Clamping screw	Grip	Shell locking bolt 1	Shell locking bolt 2	Torx bit
TAN07R063M22.0...	SRM5X0.8IP20X+ACROLYTE	H-TB	-	CM10X30H	BLDIP20/S7
TAN07R080M25.4...	SRM5X0.8IP20X+ACROLYTE	H-TB	-	CM12X30H	BLDIP20/S7
TAN07R100M31.7...	SRM5X0.8IP20X+ACROLYTE	H-TB	TMBA-M16H	-	BLDIP20/S7
TAN07R125M38.1...	SRM5X0.8IP20X+ACROLYTE	H-TB	TMBA-M20H	-	BLDIP20/S7
TAN07R160 - 315...	SRM5X0.8IP20X+ACROLYTE	H-TB	-	-	BLDIP20/M7

\*Recommended clamping torque (N·m): SRM5X0.8IP20X+ACROLYTE=7.5

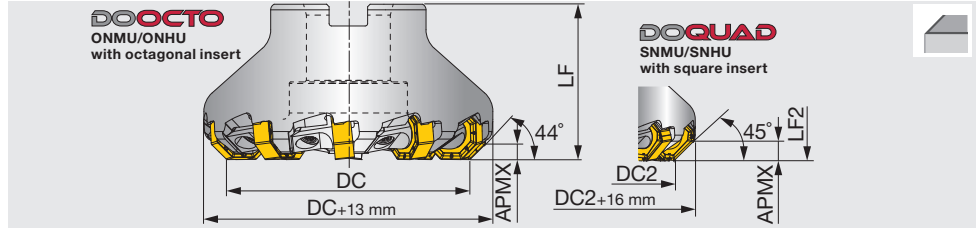


- High Feed Milling
- Face Milling
- Shoulder Milling
- Slot Milling
- Profile Milling

# DOOCTO

## TAN07-W

High density 45° face mill, with wedge clamp system, for double sided square and octagonal inserts

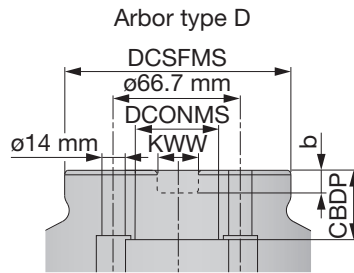
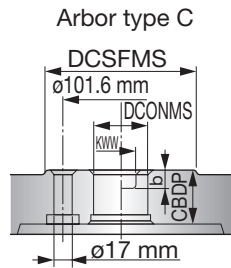
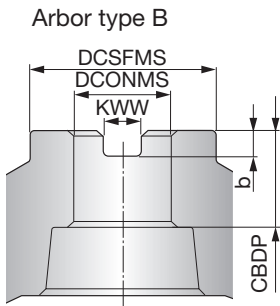


Designation	DC	DC2	CICT	DCSFMS	LF	LF2	DCONMS	CBDP	KWW	b	WT(kg)	Air hole	Insert	Arbor type
TAN07R063M22.0E08W	63	60.3	8	41	40	41.4	22	20	10.4	6.3	0.6	Without	SN*U/ON*U/OWMT...	B
TAN07R080M25.4-10W	80	77.3	10	50	50	51.4	25.4	26	9.5	6	1	Without	SN*U/ON*U/OWMT...	B
TAN07R080M27.0E10W	80	77.3	10	50	50	51.4	27	25	12.4	7	1.1	Without	SN*U/ON*U/OWMT...	B
TAN07R100M31.7-14W	100	97.3	14	60	50	51.4	31.75	32	12.7	8	1.3	Without	SN*U/ON*U/OWMT...	B
TAN07R100M32.0E14W	100	97.3	14	60	50	51.4	32	28.5	14.4	8	1.6	Without	SN*U/ON*U/OWMT...	B
TAN07R125M38.1-18W	125	122.3	18	80	63	64.4	38.1	38	15.9	10	2.8	Without	SN*U/ON*U/OWMT...	B
TAN07R125M40.0E18W	125	122.3	18	71	63	64.4	40	29	16.4	9	2.5	Without	SN*U/ON*U/OWMT...	B
TAN07R160M50.8-22W	160	157.3	22	100	63	64.4	50.8	38	19	11	4	Without	SN*U/ON*U/OWMT...	B
TAN07R160M40.0E22W	160	157.3	22	100	63	64.4	40	29	16.4	9	3.6	Without	SN*U/ON*U/OWMT...	D
TAN07R200M60.0E28W	200	197.3	28	135	63	64.4	60	39	25.7	14	5.8	Without	SN*U/ON*U/OWMT...	C

Note: OWMT insert cannot be used with a wedge clamp type cutter.

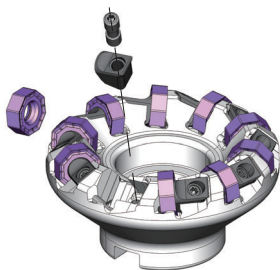
- Approach angle
- 10°-20°
- 45°
- 70°
- 85°
- 88°
- 90°
- Others

### Arbor type



### SPARE PARTS

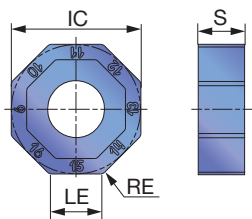
Designation	Grip	Wedge	Wedge fixing screw	Torx bit
TAN07-W	H-TBS	CLARM-10-TUNG1	DS-6P	BLDIP15/S7



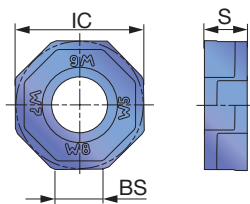
Reference pages: Inserts → **H065**, Standard cutting conditions → **H066**

## INSERT

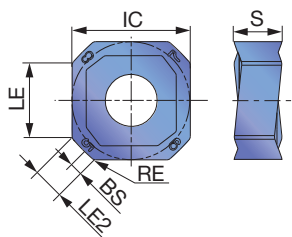
### ONMU/ONHU0705-MJ / -ML



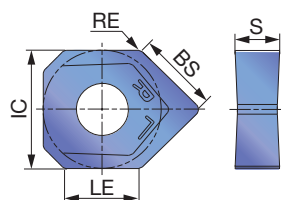
### ONHU0705-W



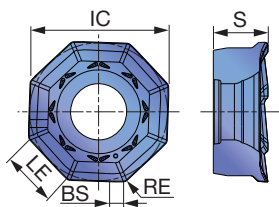
### SNMU/SNHU1706 -MJ / -ML



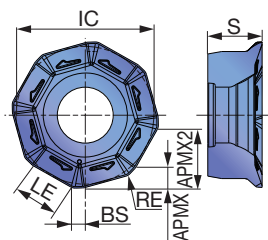
### SNHU1706-W



### OWMT0807-ML



### OWMT0807-HJ



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

★ : First choice  
☆ : Second choice

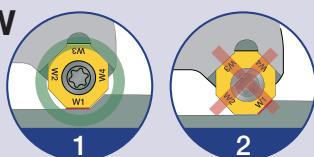
Designation	RE	APMX	Coated							LE	S	LE2	IC	BS	APMX2							
			AH120	AH130	AH140	AH725	AH3135	T1115	T1215							T3225						
ONMU0705ANPN-MJ	0.8	4.75			●	●	●	●	●	●							7.2	6.2	-	17.3	-	-
ONHU0705ANPN-MJ	0.8	4.75			●	●											7.2	6.2	-	17.3	-	-
ONMU0705ANPN-ML	0.8	4.75	●				●										7.2	6.2	-	17.3	-	-
ONHU0705ANTN-ML	0.8	4.75	●		●	●											7.2	6.2	-	17.3	-	-
ONHU0705ANPR-W *	-	4.75	●														7.2	5.8	-	17.5	6.4	-
OWMT0807ZNER-HJ	1.2	1.5					●										-	7.4	-	19	1	7.5
OWMT0807AAER-ML	0.8	3.5		●			●										5.2	7.4	-	-	1.2	-
SNMU1706ANPR-MJ	0.8	7.5			●	●	●				●	●					11	6.98	4.4	17.3	1.8	-
SNHU1706ANPR-MJ	0.8	7.5			●	●											11	6.98	4.4	17.3	1.8	-
SNMU1706ANTR-ML	0.8	7.5	●				●										11	6.98	4.4	17.3	1.8	-
SNHU1706ANTR-ML	0.8	7.5	●														11	6.98	4.4	17.3	1.8	-
SNHU1706ANFN-W *	0.4	7.5	●														17.3	6.5	-	17.3	11	-

\* Pay attention to the wiper insert installation procedure below.

●: Line up

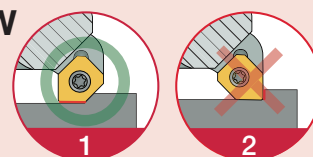
## Attention for wiper inserts

### ONHU0705ANPR-W



Attach only one wiper insert on the cutter and make sure the wiper edge faces the machining surface.  
Feed rate:  $f < 5.5$  mm/rev

### SNHU1706ANFN-W



Attach only one wiper insert on the cutter and make sure the wiper edge faces the machining surface.  
Feed rate:  $f < 9.5$  mm/rev



# STANDARD CUTTING CONDITIONS

## Negative type

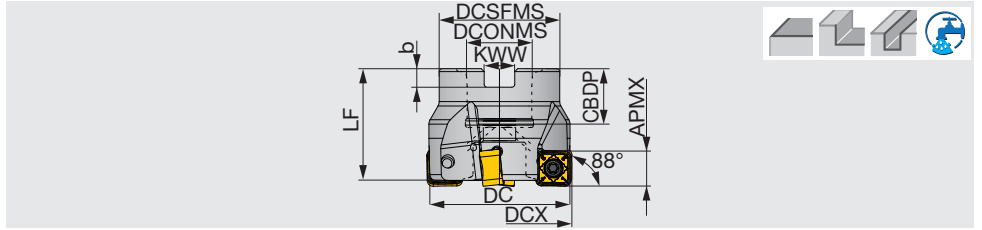
ISO	Workpiece material	Hardness	Priority	Recommendation		Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)
				Grade	Chipbreaker		
P	Low carbon steel S15C, SS400, etc. C15E, etc.	- 200 HB	First choice	AH3135	MJ	100 - 250	0.2 - 0.5
		- 200 HB	Wear resistance	T3225	MJ	200 - 350	0.2 - 0.4
		- 200 HB	Low cutting force	AH3135	ML	100 - 250	0.2 - 0.4
		200 - 300 HB	First choice	AH3135	MJ	100 - 230	0.2 - 0.4
	High carbon steel S45C, S55C, etc. C45E, C55E, etc.	200 - 300 HB	Wear resistance	T3225	MJ	180 - 300	0.2 - 0.4
		200 - 300 HB	Low cutting force	AH3135	ML	100 - 230	0.2 - 0.4
		150 - 330 HB	First choice	AH3135	MJ	100 - 200	0.2 - 0.4
		150 - 330 HB	Wear resistance	T3225	MJ	150 - 250	0.2 - 0.4
Alloy steel SCM440, SCr415, etc. 42CrMo4, 17Cr3, etc.	150 - 330 HB	Low cutting force	AH3135	ML	100 - 200	0.2 - 0.4	
M	Stainless steel SUS304, etc. X5CrNi18-9, etc.	- 200 HB	First choice	AH3135	MJ	100 - 200	0.1 - 0.3
		- 200 HB	Wear resistance	T3225	MJ	100 - 250	0.1 - 0.3
K	Grey cast iron FC350, FC450 etc. GG35, GG45, etc.	150 - 250 HB	First choice	T1215	MJ	150 - 300	0.1 - 0.5
		150 - 250 HB	Fracture resistance	AH725	MJ	100 - 250	0.1 - 0.5
		150 - 250 HB	Low cutting force	AH120	ML	100 - 250	0.1 - 0.5
	Ductile cast iron FCD600, etc. GGG60, etc.	150 - 300 HB	First choice	T1215	MJ	100 - 300	0.1 - 0.5
		150 - 300 HB	Fracture resistance	AH725	MJ	80 - 200	0.1 - 0.5
		150 - 300 HB	Low cutting force	AH120	ML	80 - 200	0.1 - 0.5
H	Hardened steel	40 - 50 HRC	First choice	AH725	MJ	80 - 130	0.1 - 0.2
		50 - 60 HRC	First choice	AH725	MJ	50 - 70	0.05 - 0.1

## Positive type

ISO	Workpiece material	Hardness	Priority	Grade	Cutting speed Vc (m/min)	Feed per tooth : fz (mm/t)	
						ML	HJ*
P	Low carbon steel S15C, SS400, etc. C15E, etc.	- 200 HB	First choice	AH3135	100 - 300	0.1 - 0.4	0.5 - 1.5
		- 200 HB	Fracture resistance	AH130	100 - 300	0.1 - 0.4	-
	High carbon steel S45C, S55C, etc. C45E, C55E, etc.	200 - 300 HB	First choice	AH3135	100 - 230	0.1 - 0.3	0.5 - 1.5
		200 - 300 HB	Fracture resistance	AH130	100 - 230	0.1 - 0.3	-
	Alloy steel SCM440, SCr415, etc. 42CrMo4, 17Cr3, etc.	150 - 330 HB	First choice	AH3135	100 - 200	0.1 - 0.3	0.5 - 1.5
		150 - 330 HB	Fracture resistance	AH130	100 - 200	0.1 - 0.3	-
M	Stainless steel SUS304, etc. X5CrNi18-9, etc.	- 200 HB	First choice	AH3135	100 - 150	0.1 - 0.3	0.3 - 0.7
		- 200 HB	Fracture resistance	AH130	100 - 150	0.1 - 0.3	-
K	Grey cast iron FC350, FC450 etc. GG35, GG45, etc.	150 - 250 HB	First choice	AH3135	100 - 250	0.1 - 0.4	0.5 - 1.5
		150 - 250 HB	Fracture resistance	AH130	100 - 250	0.1 - 0.4	-
	Ductile cast iron FCD600, etc. GGG60, etc.	150 - 250 HB	First choice	AH3135	80 - 200	0.1 - 0.3	0.5 - 1.5
		150 - 250 HB	Fracture resistance	AH130	80 - 200	0.1 - 0.3	-
S	Titanium alloy Ti-6Al-4V, etc.	- HRC 40	First choice	AH3135	30 - 60	0.1 - 0.3	0.3 - 0.7
		- HRC 40	Fracture resistance	AH130	30 - 60	0.1 - 0.3	-
	Heat resistant alloy Inconel718, etc.	- HRC 40	First choice	AH3135	10 - 40	0.05 - 0.15	0.1 - 0.3
		- HRC 40	Fracture resistance	AH130	10 - 40	0.05 - 0.15	-
H	Hardened steel	40 - 50 HRC	First choice	AH3135	80 - 130	-	0.1 - 0.3
		50 - 60 HRC	First choice	AH3135	50 - 70	-	0.03 - 0.07

\* Apply 20% of recommended feed when using HJ insert with ap over 1.5 mm.

88° face mill, with screw clamp system, for double sided square inserts



GAMP = +3°, GAMF = -11°

Designation	APMX	DC	DCX	CICT	DCSEMS	LF	DCONMS	CBDP	KWW	b	WT(kg)	Air hole	Insert
THSN12M050B22.0R04	9.5	50	50.6	4	41	40	22	20	10.4	6.3	0.32	With	SNMU1206...
THSN12M050B22.0R05	9.5	50	50.6	5	41	40	22	20	10.4	6.3	0.32	With	SNMU1206...
THSN12M063B22.0R04	9.5	63	63.6	4	47	40	22	20	10.4	6.3	0.54	With	SNMU1206...
THSN12M063B22.0R06	9.5	63	63.6	6	47	40	22	20	10.4	6.3	0.52	With	SNMU1206...
THSN12J080B25.4R05	9.5	80	80.6	5	58	50	25.4	26	8.5	6	1.13	With	SNMU1206...
THSN12J080B25.4R08	9.5	80	80.6	8	58	50	25.4	26	8.5	6	1.15	With	SNMU1206...
THSN12M080B27.0R05	9.5	80	80.6	5	58	50	27	22	12.4	7	1.17	With	SNMU1206...
THSN12M080B27.0R08	9.5	80	80.6	8	58	50	27	22	12.4	7	1.14	With	SNMU1206...
THSN12J100B31.7R06	9.5	100	100.6	6	60	50	31.75	32	12.7	8	1.43	With	SNMU1206...
THSN12J100B31.7R08	9.5	100	100.6	8	60	50	31.75	32	12.7	8	1.39	With	SNMU1206...
THSN12M100B32.0R06	9.5	100	100.6	6	60	50	32	28.5	14.4	8	1.4	With	SNMU1206...
THSN12M100B32.0R08	9.5	100	100.6	8	60	50	32	28.5	14.4	8	1.38	With	SNMU1206...

**SPARE PARTS**



Designation	Clamping screw	Torx bit	Grip	Shell locking bolt
THSN12M050...	CSPB-4	BLDIP15/S7	H-TB2W	CM10x30H
THSN12M063...	CSPB-4	BLDIP15/S7	H-TB2W	CM10x30H
THSN12J080...	CSPB-4	BLDIP15/S7	H-TB2W	CM12X30H
THSN12M080...	CSPB-4	BLDIP15/S7	H-TB2W	CM12X30H
THSN12J100...	CSPB-4	BLDIP15/S7	H-TB2W	TMBA-M16H
THSN12M100...	CSPB-4	BLDIP15/S7	H-TB2W	TMBA-M16H

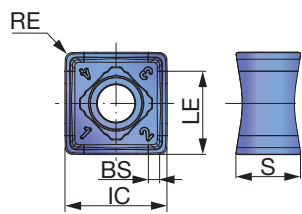
\*Recommended clamping torque (N·m): CSPB-4=3.5



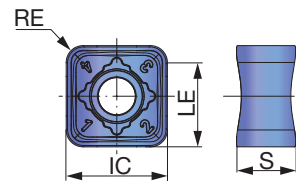
- High Feed Milling
- Face Milling
- Shoulder Milling
- Slot Milling
- Profile Milling
- Approach angle
- 10°-20°
- 45°
- 70°
- 85°
- 88°
- 90°
- Others

# INSERT

## SNMU120608HNEN-MM



## SNMU120612/20EN-MM



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

★ : First choice  
☆ : Second choice

Designation	RE	APMX	Coated				LE	S	IC	BS
			AH120	AH3135	T1215	T3225				
SNMU120608HNEN-MM	0.8	9.5	●	●	●	●	9.8	7.5	12	1.4
SNMU120612EN-MM	1.2	9.5		●	●		10.8	7.25	12	-
SNMU120620EN-MM	2.0	9.5		●	●		10	7	12	-

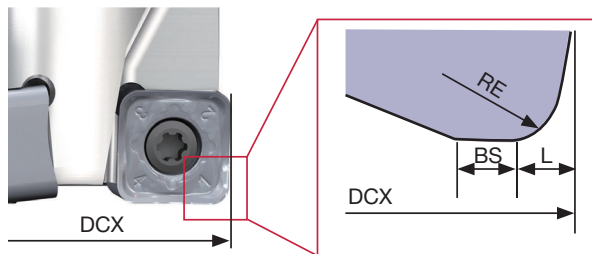
● : Line up

# STANDARD CUTTING CONDITIONS

ISO	Workpiece materials	Hardness HB	Selection criteria	Recommended grade	Chip-breaker	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)
P	Low carbon steels S15C, etc. C15E4, etc.	- 200 HB	First choice	AH3135	MM	100 - 250	0.06 - 0.3
		- 200 HB	Wear resistance	T3225	MM	200 - 350	0.06 - 0.25
	High carbon steels, alloyed steels S55C, SCM440, etc. C55, 42CrMo4, etc.	- 300 HB	First choice	AH3135	MM	100 - 250	0.06 - 0.3
		- 300 HB	Wear resistance	T3225	MM	180 - 300	0.06 - 0.25
	Prehardened steel NAK80, PX5, etc.	30 - 40 HRC	First choice	AH3135	MM	100 - 200	0.06 - 0.25
		30 - 40 HRC	Wear resistance	T3225	MM	150 - 250	0.06 - 0.2
M	Austenitic stainless steel SUS304, SUS316, etc. X5CrNi18-9, X5CrNiMo17-12-3, etc.	- 200 HB	First choice	AH3135	MM	100 - 200	0.06 - 0.25
		- 200 HB	Wear resistance	T3225	MM	100 - 250	0.06 - 0.2
	Stainless cast steel SCH20XNb, etc. 1.4849, etc.	-	First choice	T3225	MM	60 - 120	0.06 - 0.2
		-	Fracture resistance	AH3135	MM	60 - 120	0.06 - 0.2
K	Grey cast iron FC250, etc. 250, etc.	150 - 250 HB	First choice	T1215	MM	100 - 350	0.06 - 0.3
		150 - 250 HB	Fracture resistance	AH120	MM	100 - 250	0.06 - 0.3
	Ductile cast iron FCD600, etc. 600-3, etc.	150 - 250 HB	First choice	T1215	MM	100 - 350	0.06 - 0.25
		150 - 250 HB	Fracture resistance	AH120	MM	80 - 200	0.06 - 0.3
S	Titanium alloy Ti-6Al-4V, etc.	- 40 HRC	First choice	AH3135	MM	30 - 60	0.06 - 0.2
	Heat resistant alloy Inconel718, etc.	- 40 HRC	First choice	AH120	MM	10 - 40	0.04 - 0.16
H	Hardened steel SKD61, etc. X40CrMoV5-1, etc. Hardened steel SKD11, etc. X153CrMoV12, etc.	40 - 50 HRC	First choice	AH3135	MM	80 - 130	0.04 - 0.16
		50 - 60 HRC	First choice	AH120	MM	50 - 70	0.02 - 0.08

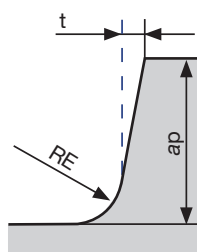
## Tool offset

To eliminate uncut amount in face milling operation, adjust the programming according to the offset (L) listed below.



Designation	RE	BS	L
SNMU120608HNEN-MM	0.8	1.4	1.3
SNMU120612EN-MM	1.2	-	1.7
SNMU120620EN-MM	2	-	2.5

The following table shows the amount left over cut (t) when the cutter is considered as a shoulder milling cutter.



Designation / ap (mm)	1	2	3	4	5	6	7	8	9	9.5
SNMU120608HNEN-MM	0.01	0.04	0.05	0.05	0.07	0.09	0.14	0.2	0.27	0.27
SNMU120612EN-MM	-	0	0	0.01	0.02	0.05	0.09	0.15	0.22	0.25
SNMU120620EN-MM	-	0	0	0	0.02	0.05	0.09	0.15	0.22	0.25



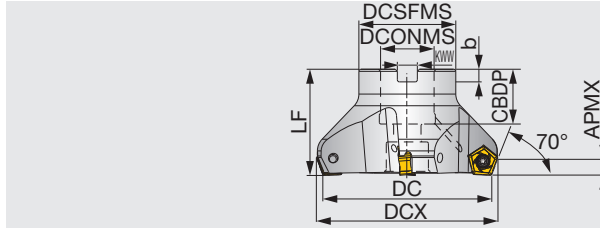
- High Feed Milling
- Face Milling
- Shoulder Milling
- Slot Milling
- Profile Milling
- Approach angle
- 10°-20°
- 45°
- 70°
- 85°
- 88°
- 90°
- Others

# DOPEM

## TEN09R/L

70° face mill, with screw clamp system, for double sided pentagonal inserts

GAMP=-6°, GAMF=-10°--2°



Right hand (R) shown.

Designation	APMX	DC	CICT	DCX	DCSFMS	LF	DCONMS	CBDP	KWW	b	WT(kg)	Air hole	Insert
TEN09R050M22.0-03	6.4	50	3	56	41	40	22	20	10	6	0.3	with	PN*U0905...
TEN09R050M22.0-04	6.4	50	4	56	41	40	22	20	10	6	0.3	with	PN*U0905...
TEN09R050M22.0-06	6.4	50	6	56	41	40	22	20	10	6	0.3	with	PN*U0905...
TEN09R050M22.0E04	6.4	50	4	56	41	40	22	20	10.4	6.3	0.3	with	PN*U0905...
TEN09R050M22.0E06	6.4	50	6	56	41	40	22	20	10.4	6.3	0.3	with	PN*U0905...
TEN09R063M22.0-04	6.4	63	4	69	41	40	22	20	10	6	0.5	with	PN*U0905...
TEN09R063M22.0-06	6.4	63	6	69	41	40	22	20	10	6	0.5	with	PN*U0905...
TEN09R063M22.0-08	6.4	63	8	69	41	40	22	20	10	6	0.5	with	PN*U0905...
TEN09R063M22.0E06	6.4	63	6	69	41	40	22	20	10.4	6.3	0.5	with	PN*U0905...
TEN09R063M22.0E08	6.4	63	8	69	41	40	22	20	10.4	6.3	0.5	with	PN*U0905...
TEN09R080M25.4-04	6.4	80	4	86	46	50	25.4	26	9.5	6	0.9	with	PN*U0905...
TEN09R080M25.4-07	6.4	80	7	86	46	50	25.4	26	9.5	6	0.9	with	PN*U0905...
TEN09R080M25.4-10	6.4	80	10	86	46	50	25.4	26	9.5	6	0.9	with	PN*U0905...
TEN09R080M27.0E07	6.4	80	7	86	50	50	27	22	12.4	7	0.9	with	PN*U0905...
TEN09R080M27.0E10	6.4	80	10	86	50	50	27	22	12.4	7	1	with	PN*U0905...
TEN09R100M31.7-05	6.4	100	5	106	60	50	31.75	32	12.7	8	1.3	with	PN*U0905...
TEN09R/L100M31.7-08*	6.4	100	8	106	60	50	31.75	32	12.7	8	1.3	with	PN*U0905...
TEN09R100M31.7-12	6.4	100	12	106	60	50	31.75	32	12.7	8	1.4	with	PN*U0905...
TEN09R/L100M32.0E08*	6.4	100	8	106	60	50	32	28.5	14.4	8	1.3	with	PN*U0905...
TEN09R100M32.0E12	6.4	100	12	106	60	50	32	28.5	14.4	8	1.4	with	PN*U0905...
TEN09R125M38.1-06	6.4	125	6	131	80	63	38.1	38	15.9	10	2.6	with	PN*U0905...
TEN09R/L125M38.1-10*	6.4	125	10	131	80	63	38.1	38	15.9	10	2.7	with	PN*U0905...
TEN09R125M38.1-16	6.4	125	16	131	80	63	38.1	43	15.9	10	2.9	with	PN*U0905...
TEN09R/L125M40.0E10*	6.4	125	10	131	71	63	40	32	16.4	9	2.3	with	PN*U0905...
TEN09R/L125M40.0E16	6.4	125	16	131	71	63	40	32	16.4	9	2.5	with	PN*U0905...
TEN09R160M50.8-07	6.4	160	7	166	100	63	50.8	46	19	11	4.4	without	PN*U0905...
TEN09R/L160M40.0E12*	6.4	160	12	166	100	63	40	29	16.4	9	4	without	PN*U0905...
TEN09R160M40.0E20	6.4	160	20	166	100	63	40	29	16.4	9	4.3	without	PN*U0905...
TEN09R/L160M50.8-12*	6.4	160	12	166	100	63	50.8	46	19	11	4.6	without	PN*U0905...
TEN09R160M50.8-20	6.4	160	20	166	100	63	50.8	46	19	11	4.9	without	PN*U0905...

\*Please use neutral hand inserts for TEN09L (left hand cutter).

### SPARE PARTS

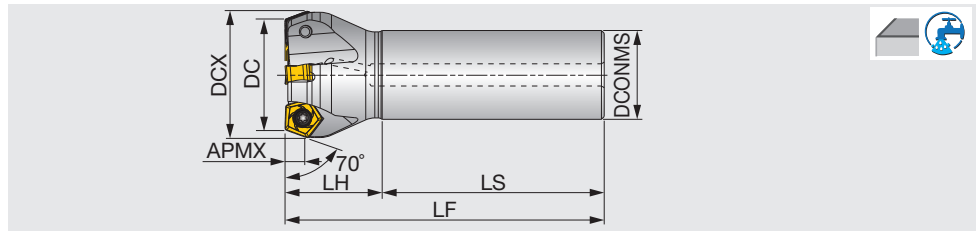
Designation	Clamping screw	Grip	Lubricant	Shell locking bolt 1	Shell locking bolt 2	Torx bit
TEN09R050 - 063...	CSTR-4L100	H-TBS	M-1000	-	CM10X30H	BT15S
TEN09R080...	CSTR-4L100	H-TBS	M-1000	-	CM12X30H	BT15S
TEN09R/L100...	CSTR-4L100	H-TBS	M-1000	TMBA-M16H	-	BT15S
TEN09R125...06	CSTR-4L100	H-TBS	M-1000	TMBA-M20H	-	BT15M
TEN09R/L125M...10	CSTR-4L100	H-TBS	M-1000	TMBA-M20H	-	BT15M
TEN09R125M...16	CSTR-4L100	H-TBS	M-1000	TMBA-M20H	-	BT15S
TEN09R160M...07	CSTR-4L100	H-TBS	M-1000	-	-	BT15M
TEN09R/L160M...12	CSTR-4L100	H-TBS	M-1000	-	-	BT15M
TEN09R160M...20	CSTR-4L100	H-TBS	M-1000	-	-	BT15S

\*Recommended clamping torque (N·m): CSTR-4L100=3.5

Reference pages: Inserts → **H071**, Standard cutting conditions → **H072**

70° face endmill, shank type, with screw clamp system, for double sided pentagonal inserts

GAMP=-6°, GAMF=-2°~-10°

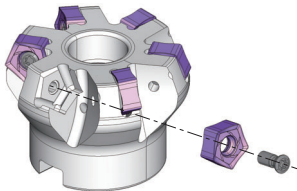


Designation	APMX	DC	DCX	CICT	DCONMS	LS	LH	LF	WT(kg)	Air hole	Insert
EEN09R032M32.0-03	6.4	32	38	3	32	80	35	115	0.7	With	PN*U0905...
EEN09R040M32.0-04	6.4	40	46	4	32	80	35	115	0.7	With	PN*U0905...
EEN09R050M32.0-04	6.4	50	56	4	32	80	40	120	0.9	With	PN*U0905...
EEN09R063M32.0-06	6.4	63	69	6	32	80	40	120	1	With	PN*U0905...
EEN09R080M32.0-07	6.4	80	86	7	32	80	40	120	1.3	With	PN*U0905...

### SPARE PARTS

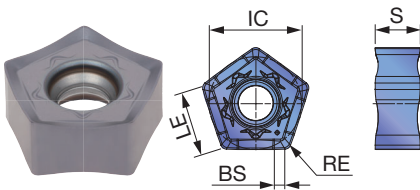
Designation	Clamping screw	Lubricant	Wrench
EEN09	CSTR-4L100	M-1000	T-15D

\*Recommended clamping torque (N·m): CSTR-4L100=3.5

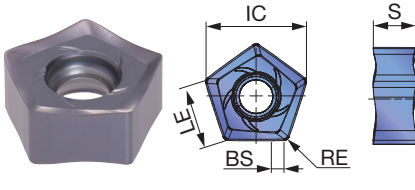


### INSERT

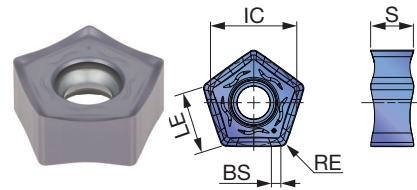
#### PN\*U0905GNEN-MJ (Neutral)



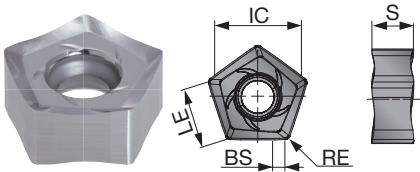
#### PNCU0905GNER-MJ (Right hand)



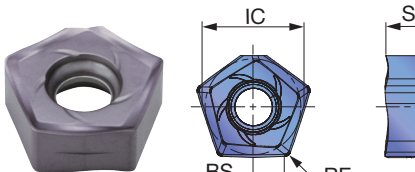
#### PNCU0905-ML (Neutral)



#### PNCU0905-AJ (Right hand)



#### PNCU0905-W (Right hand)



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

★ : First choice  
☆ : Second choice

Designation	RE	APMX	Coated							Cermet	Uncoated	LE	S	IC	BS	
			AH120	AH140	AH725	AH3135	T1115	T1215	T3130	T3225	NS740					TH10
PNMU0905GNEN-MJ	0.8	6.4	●			●		●								
PNCU0905GNEN-MJ	0.8	6.4	●			●		●								
PNCU0905GNER-MJ	0.8	6.4	●	●	●		●		●							
PNCU0905GNEN-ML	0.8	6.4				●										
PNCU0905GNFR-AJ	0.8	6.4								●						
PNCU0905GNER-W	0.8	2			●											

● : Line up

Reference pages: Standard cutting conditions → **H072**



# STANDARD CUTTING CONDITIONS

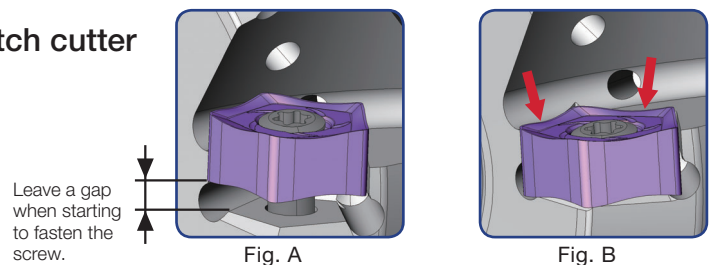
ISO	Workpiece materials	Hardness HB	Selection criteria	Recommended grade	Chip-breaker	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)
P	Low carbon steels S15C, etc. C15, etc.	200 - 300 HB	First choice	AH3135	MJ	100 - 250	0.1 - 0.4
		200 - 300 HB	Low cutting force	AH3135	ML	100 - 250	0.1 - 0.3
		200 - 300 HB	Wear resistance	T3225	MJ	200 - 350	0.1 - 0.3
		200 - 300 HB	Surface quality	NS740	MJ	100 - 250	0.1 - 0.3
	High carbon steels, alloyed steels S45C, SCM440, etc. C45, 42CrMo4, etc.	150 - 300 HB	First choice	AH3135	MJ	100 - 250	0.1 - 0.35
		150 - 300 HB	Low cutting force	AH3135	ML	100 - 250	0.1 - 0.3
		150 - 300 HB	Wear resistance	T3225	MJ	180 - 300	0.1 - 0.3
		150 - 300 HB	Surface quality	NS740	MJ	100 - 250	0.1 - 0.3
	Prehardened steel NAK80, PX5, etc.	30 - 40 HRC	First choice	AH3135	MJ	100 - 200	0.1 - 0.3
		30 - 40 HRC	Low cutting force	AH3135	ML	100 - 200	0.1 - 0.25
		30 - 40 HRC	Wear resistance	T3225	MJ	150 - 250	0.1 - 0.25
	M	Stainless steel SUS304, etc. X5CrNi18-9, etc.	- 200 HB	First choice	AH3135	ML	100 - 200
- 200 HB			Fracture resistance	AH3135	MJ	100 - 200	0.1 - 0.35
- 200 HB			Wear resistance	T3225	MJ	100 - 250	0.1 - 0.3
K	Grey cast irons FCD400, etc. 250, etc.	150 - 250 HB	First choice	T1215	MJ	100 - 300	0.1 - 0.35
		150 - 250 HB	Fracture resistance	AH120	MJ	100 - 250	0.1 - 0.4
	Ductile cast iron FCD400, etc. 400-15S, etc.	150 - 250 HB	First choice	T1215	MJ	100 - 300	0.1 - 0.35
		150 - 250 HB	Fracture resistance	AH120	MJ	80 - 200	0.1 - 0.4
N	Aluminium alloys Si < 13%	-	First choice	TH10	AJ	500 - 1500	0.1 - 0.5
	Aluminium alloys Si ≥ 13%	-	First choice	TH10	AJ	150 - 500	0.1 - 0.5
S	Titanium alloys Ti-6Al-4V, etc.	- 40 HRC	First choice	AH3135	ML	30 - 60	0.1 - 0.3
		- 40 HRC	Fracture resistance	AH3135	MJ	30 - 60	0.1 - 0.3
	Heat-resistance alloys Inconel 718, etc.	- 40 HRC	First choice	AH725	MJ	10 - 40	0.04 - 0.1

- Remove excessive chip with an air blast to prevent chip jamming.
- Use water-soluble coolant to avoid built-up edge in case extreme welding occurs on cutting edges. (ex. aluminium machining).
- For the operation with depth of cut which varies (ex. casting skin) and machining of workpiece materials with interrupted surface, the feed (fz) should be set to the lower recommended value shown in the above table.

- Cutting conditions may be limited depending on machine power, workpiece rigidity, and spindle output. When the cutting width, depth or overhang length is large, set Vc and fz to the lower recommended values and check the machine power and vibration.

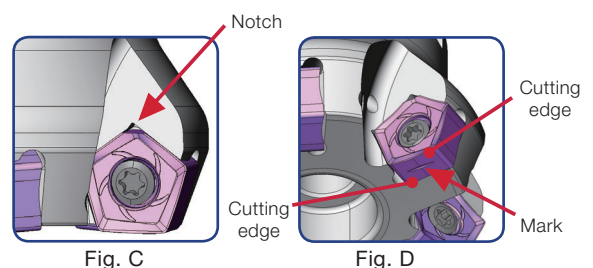
## Installation of inserts on an extra close-pitch cutter

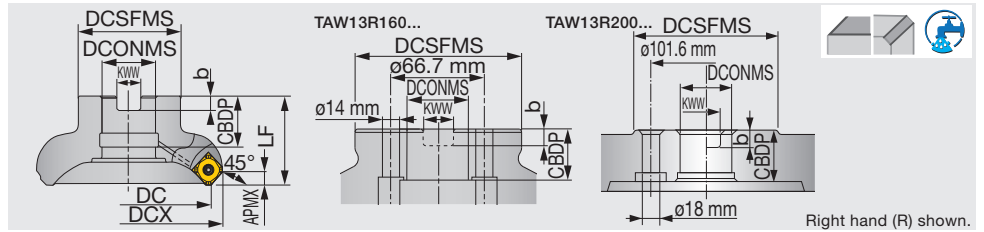
- On an extra close-pitch cutter, the screw hole of an insert pocket is placed at an angle.
- Leave a gap between the insert and pocket when starting to fasten the screw on the cutter body as shown in Fig. A.
- After fastening the screw, please ensure that there is no gap between the cutter body and insert. (Fig. B)



## Notes for using wiper inserts

- When fine surface finish is required, wiper insert PNCU0905GNER-W is recommended.
- Attach the insert with its notch on the top, as shown in Fig. C.
- Also, make sure that the mark of the insert is located at the bottom of the cutter body, as shown in Fig. D.
- The wiper insert has two corners available (Fig. D). Do not use the other corners as the cutter body may be broken.



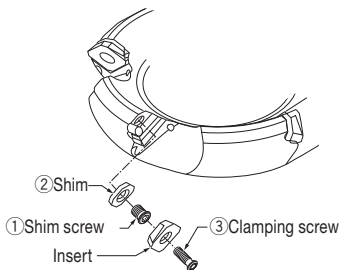


Designation	DC	DCX	CICT	DCSFMS	LF	DCONMS	CBDP	KWW	b	WT(kg)	Air hole	Insert
TAW13R050M22.0-03	50	63	3	41	40	22	20	10	6	0.4	With	SW*T13...
TAW13R050M22.0-04	50	63	4	41	40	22	20	10	6	0.4	With	SW*T13...
TAW13R050M22.0E04	50	63	4	41	40	22	20	10.4	6.3	0.4	With	SW*T13...
TAW13R050M22.0E05	50	63	5	41	40	22	20	10.4	6.3	0.4	With	SW*T13...
TAW13R063M22.0-04	63	76	4	41	40	22	20	10	6	0.5	With	SW*T13...
TAW13R063M22.0-05	63	76	5	41	40	22	20	10	6	0.6	With	SW*T13...
TAW13R063M22.0E05	63	76	5	41	40	22	20	10.4	6.3	0.6	With	SW*T13...
TAW13R063M22.0E06	63	76	6	41	40	22	20	10.4	6.3	0.6	With	SW*T13...
TAW13R080M25.4-04	80	94	4	50	50	25.4	26	9.5	6	1	With	SW*T13...
TAW13R080M25.4-06	80	94	6	50	50	25.4	26	9.5	6	1	With	SW*T13...
TAW13R080M27.0E06	80	94	6	50	50	27	22	12.4	7	1	With	SW*T13...
TAW13R080M27.0E08	80	94	8	50	50	27	22	12.4	7	1	With	SW*T13...
TAW13R100M31.7-05	100	114	5	60	50	31.75	32	12.7	8	1.5	With	SW*T13...
TAW13R100M31.7-07	100	114	7	60	50	31.75	32	12.7	8	1.5	With	SW*T13...
TAW13R100M32.0E07	100	114	7	60	50	32	28.5	14.4	8	1.5	With	SW*T13...
TAW13R100M32.0E10	100	114	10	60	50	32	28.5	14.4	8	1.5	With	SW*T13...
TAW13R125M38.1-06	125	139	6	80	63	38.1	38	15.9	10	2.8	With	SW*T13...
TAW13R125M38.1-08	125	139	8	80	63	38.1	38	15.9	10	2.7	With	SW*T13...
TAW13R125M40.0E08	125	139	8	80	63	40	32	16.4	9	2.7	With	SW*T13...
TAW13R125M40.0E12	125	139	12	80	63	40	32	16.4	9	3	With	SW*T13...
TAW13R160M40.0E10	160	174	10	100	63	40	29	16.4	9	4.4	Without	SW*T13...
TAW13R160M40.0E16	160	174	16	100	63	40	29	16.4	9	4.4	Without	SW*T13...
TAW13R160M50.8-07	160	174	7	100	63	50.8	40	19	11	4.4	Without	SW*T13...
TAW13R160M50.8-10	160	174	10	100	63	50.8	40	19	11	4.4	Without	SW*T13...
TAW13R200M47.6-08	200	213	8	130	63	47.625	38	25.4	14	8	Without	SW*T13...

\*Recommended clamping torque (N·m): CSPB-3.5=3.5

### SPARE PARTS

Designation	③ Clamping screw	Lubricant	① Shim screw	Shell locking bolt 1	Shell locking bolt 2	② Shim	Wrench	Wrench 1
TAW13R050 - 063...	CSPB-3.5	M-1000	DTS5-3.5SS	-	CM10X30H	FSSA1102	IP-15D	P-3.5
TAW13R080...	CSPB-3.5	M-1000	DTS5-3.5SS	-	CM12X30H	FSSA1102	IP-15D	P-3.5
TAW13R100...	CSPB-3.5	M-1000	DTS5-3.5SS	TMBA-M16H	-	FSSA1102	IP-15D	P-3.5
TAW13R125...	CSPB-3.5	M-1000	DTS5-3.5SS	TMBA-M20H	-	FSSA1102	IP-15D	P-3.5
TAW13R160...	CSPB-3.5	M-1000	DTS5-3.5SS	-	-	FSSA1102	IP-15D	P-3.5
TAW13R200...	CSPB-3.5	M-1000	DTS5-3.5SS	-	-	FSSA1102	IP-15D	P-3.5





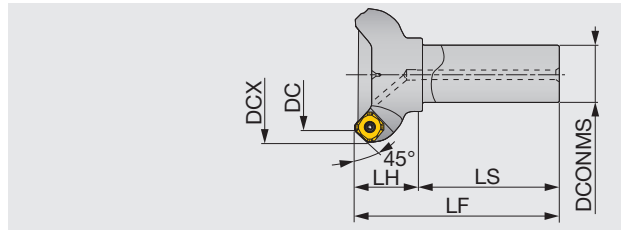
- High Feed Milling
- Face Milling
- Shoulder Milling
- Slot Milling
- Profile Milling
- Approach angle
- 10°-20°
- 45°
- 70°
- 85°
- 88°
- 90°
- Others

# TUNG MILL

## EAW13

30° - 45° face endmill, shank type, with screw clamp system, for SWMT/SWGT13 inserts

GAMP=+17°~+20°, GAMF=-16°~-11°



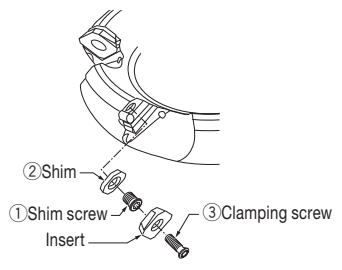
Right hand (R) shown.

Designation	DC	DCX	CICT	DCONMS	LS	LH	LF	WT(kg)	Air hole	Insert
EAW13R025M25.0-02	25	39	2	25	80	35	115	0.4	With	SW*T13...
EAW13R032M32.0-02	32	46	2	32	80	35	115	0.7	With	SW*T13...
EAW13R040M32.0-03	40	54	3	32	80	35	115	0.8	With	SW*T13...
EAW13R050M32.0-03	50	63	3	32	80	40	120	1	With	SW*T13...
EAW13R050M32.0-04	50	63	4	32	80	40	120	0.9	With	SW*T13...
EAW13R063M32.0-04	63	76	4	32	80	40	120	1.1	With	SW*T13...
EAW13R063M32.0-05	63	76	5	32	80	40	120	1.1	With	SW*T13...
EAW13R080M32.0-04	80	94	4	32	80	40	120	1.5	With	SW*T13...
EAW13R080M32.0-06	80	94	6	32	80	40	120	1.4	With	SW*T13...

### SPARE PARTS

Designation	③ Clamping screw	Lubricant	① Shim screw	② Shim	Wrench	Wrench 1
EAW13R025**-040**	CSPB-3.5	M-1000	-	-	IP-15D	-
EAW13R050**-080**	CSPB-3.5	M-1000	DTS5-3.5SS	FSSA1102	IP-15D	P-3.5

\*Recommended clamping torque (N·m): CSPB-3.5=3.5



Reference pages: Inserts → **H075**, Standard cutting conditions → **H076 - H077**



# STANDARD CUTTING CONDITIONS

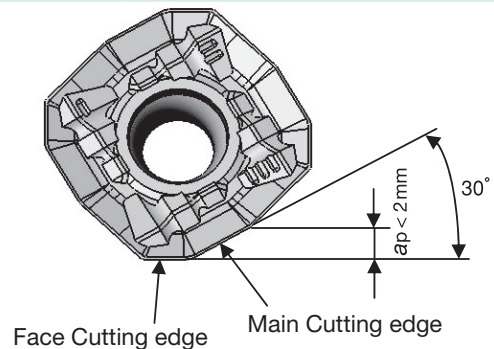
ISO	Workpiece materials	Priority	Grade	Cutting speed $v_c$ (m/min)	Roughing (Depth of cut: > 1.0 mm)					
					Feed per tooth: $f_z$ (mm/t)					
					MJ	ML	HJ	MS	Flat	AJ
P	Mild and low carbon steels SS400, etc. E275A, etc. < 180 HB	First choice	AH3135	100 - 270	0.05 - 0.3	0.05 - 0.25	0.2 - 0.6	-	0.05 - 0.3	-
		Wear resistance	T3225	150 - 300	0.05 - 0.3	-	0.2 - 0.6	-	0.05 - 0.3	-
		Surface quality	NS740	100 - 300	0.05 - 0.23	-	-	-	0.05 - 0.23	-
	Carbon and alloy steels S45C, SCM440, etc. C45, 42CrMo4, etc. < 300 HB	First choice	AH3135	100 - 230	0.05 - 0.25	0.05 - 0.2	0.2 - 0.5	-	0.05 - 0.25	-
		Wear resistance	T3225	150 - 280	0.05 - 0.25	-	0.2 - 0.5	-	0.05 - 0.25	-
		Surface quality	NS740	100 - 230	0.05 - 0.2	-	-	-	0.05 - 0.2	-
Die steels X96CrMoV12, etc. < 30 HRC	First choice	AH3135	100 - 180	0.05 - 0.2	0.05 - 0.2	0.2 - 0.4	-	0.05 - 0.2	-	
	Wear resistance	T3225	100 - 180	0.05 - 0.2	-	0.2 - 0.4	-	0.05 - 0.2	-	
M	Stainless steels SUS304, SUS316, etc. X5CrNi18-9, X5CrNiMo17-12-2, etc. < 250 HB	First choice	AH3135	80 - 200	0.1 - 0.25	0.1 - 0.2	0.2 - 0.5	0.1 - 0.2	-	-
		Wear resistance	T3225	150 - 250	0.1 - 0.25	0.1 - 0.2	0.2 - 0.5	-	0.1 - 0.25	-
K	Grey cast irons FC25, FC300, etc. 250, 300, etc.	First choice	T1215	180 - 300	0.05 - 0.25	-	0.2 - 0.6	-	0.05 - 0.25	-
		Fracture resistance	AH120	150 - 250	0.05 - 0.25	0.05 - 0.2	0.2 - 0.6	-	0.05 - 0.25	-
	Ductile cast irons FCD400, FCD600, etc. 400-15S, 600-3, etc.	First choice	T1215	120 - 200	0.05 - 0.25	-	0.2 - 0.6	-	0.05 - 0.25	-
		Fracture resistance	AH120	100 - 180	0.05 - 0.25	0.05 - 0.2	0.2 - 0.6	-	0.05 - 0.25	-
S	Titanium alloys Ti-6Al-4V, etc.	First choice	AH130	30 - 60	0.1 - 0.25	-	0.2 - 0.5	0.1 - 0.2	-	-
	Heat-resistance alloys Inconel 718, etc.	First choice	AH120	10 - 40	0.05 - 0.15	-	0.1 - 0.3	-	-	-
N	Aluminium alloys Si < 13 %	-	DS1100 KS05F	300 - 1000	-	-	-	-	-	0.05 - 0.2
	Aluminium alloys Si ≥ 13%	-	DS1100 KS05F	80 - 300	-	-	-	-	-	0.05 - 0.2
	Copper alloys	-	DS1100 KS05F	200 - 500	-	-	-	-	-	0.05 - 0.2

## Notes for use of HJ-type inserts

HJ-type inserts can be used for high feed machining.

When using the insert, care should be taken with the following:

- The maximum depth of cut is  $a_p = 2$  mm. Select feeds within the above value.
- Do not use the HJ-type inserts with other types (such as MJ- and MS-types) in the same body.
- The outer shape of the HJ-type insert is different from those of other types (such as MJ- and MS-types), but the insert can be held in the same insert pocket.



## Notes on use of wiper insert

- When requiring good surface finishes, use of a wiper insert (WWCW13T3AF\_R-W\_) is recommended. In general, installing one wiper insert delivers superior surface finishes.
- When using the wiper insert, install the insert as shown in Fig. A. If the insert is installed as shown in Fig. B, breakage of the insert is inevitable and normal surface finish can not be obtained.
- The wiper insert must not be used together with HJ-type inserts
- The wiper insert has one wiping corner.
- The peripheral cutting edge of the wiper insert is retracted from the edge of the normal inserts. Therefore, the feed per tooth ( $f_z$  mm/t) of the normal insert following the wiper insert is double that of other inserts.
- When using the wiper insert, depth of cut ( $a_p$ ) less than 1 mm is recommended.

Fig. A

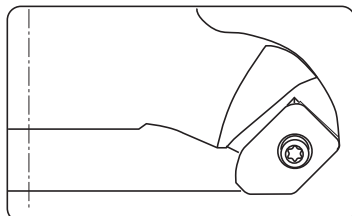
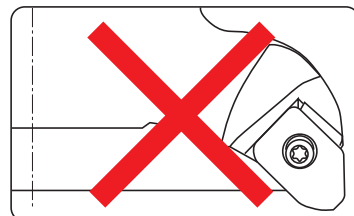


Fig. B



ISO	Workpiece materials	Priority	Grade	Cutting speed vc (m/min)	Light cutting to finishing (Depth of cut: ≤ 1.0 mm)					
					Feed per tooth: fz (mm/t)					
					MJ	ML	HJ	MS	Flat	AJ
P	Mild and low carbon steels SS400, etc. E275A, etc. < 180 HB	First choice	AH3135	100 - 270	0.05 - 0.25	0.05 - 0.2	0.2 - 0.6	-	0.05 - 0.25	-
		Wear resistance	T3225	150 - 300	0.05 - 0.25	-	0.2 - 0.6	-	0.05 - 0.25	-
		Surface quality	NS740	100 - 300	0.05 - 0.2	-	-	-	0.05 - 0.2	-
	Carbon and alloy steels S45C, SCM440, etc. C45, 42CrMo4, etc. < 300 HB	First choice	AH3135	100 - 230	0.05 - 0.2	0.05 - 0.15	0.2 - 0.5	-	0.05 - 0.2	-
		Wear resistance	T3225	150 - 280	0.05 - 0.2	-	0.2 - 0.5	-	0.05 - 0.2	-
		Surface quality	NS740	100 - 230	0.05 - 0.18	-	-	-	0.05 - 0.18	-
	Die steels X96CrMoV12, etc. < 30 HRC	First choice	AH3135	100 - 180	0.05 - 0.18	0.05 - 0.12	0.2 - 0.4	-	0.05 - 0.18	-
		Wear resistance	T3225	100 - 180	0.05 - 0.18	-	0.2 - 0.4	-	0.05 - 0.18	-
	M	Stainless steels SUS304, SUS316, etc. X5CrNi18-9, X5CrNiMo17-12-2, etc. < 250 HB	First choice	AH3135	80 - 200	0.1 - 0.2	0.1 - 0.18	0.2 - 0.5	0.1 - 0.18	-
Wear resistance			T3225	150 - 250	0.1 - 0.2	0.1 - 0.18	0.2 - 0.5	-	0.1 - 0.2	-
K	Grey cast irons FC25, FC300, etc. 250, 300, etc.	First choice	T1215	180 - 300	0.1 - 0.2	-	0.2 - 0.6	-	0.1 - 0.2	-
		Fracture resistance	AH120	150 - 250	0.1 - 0.2	0.05 - 0.18	0.2 - 0.6	-	0.1 - 0.2	-
	Ductile cast irons FCD400, FCD600, etc. 400-15S, 600-3, etc.	First choice	T1215	120 - 200	0.1 - 0.2	-	0.2 - 0.6	-	0.1 - 0.2	-
		Fracture resistance	AH120	100 - 180	0.1 - 0.2	0.05 - 0.18	0.2 - 0.6	-	0.1 - 0.2	-
S	Titanium alloys Ti-6Al-4V, etc.	-	AH130	30 - 60	0.1 - 0.2	-	0.2 - 0.5	0.1 - 0.2	-	-
	Heat-resistance alloys Inconel 718, etc.	-	AH120	10 - 40	0.05 - 0.15	-	0.1 - 0.3	-	-	-
N	Aluminium alloys Si < 13 %	-	DS1100 KS05F	300 - 1000	-	-	-	-	-	0.05 - 0.2
	Aluminium alloys Si ≥ 13%	-	DS1100 KS05F	80 - 300	-	-	-	-	-	0.05 - 0.2
	Copper alloys	-	DS1100 KS05F	200 - 500	-	-	-	-	-	0.05 - 0.2

Notes:

- When cutting at a large depth of cut or a large cutting width, the cutting speed (vc) and feed (fz) should be set to the lower side of the values shown in the above table.
- Dry cutting (or air-blowing) is generally recommended. However, when chips tend to excessively adhere to the cutting edges when machining

stainless steel, use a water soluble cutting fluid. In this case, use the AH130 grade at speeds lower than vc = 100 m/min.

- When wet machining mild steels, carbon steels and alloy steels, use T3130 at lower cutting conditions.
- TAW13 type TAC mills cannot be used for axial-feed cutting such as ramping, plunging and drilling.

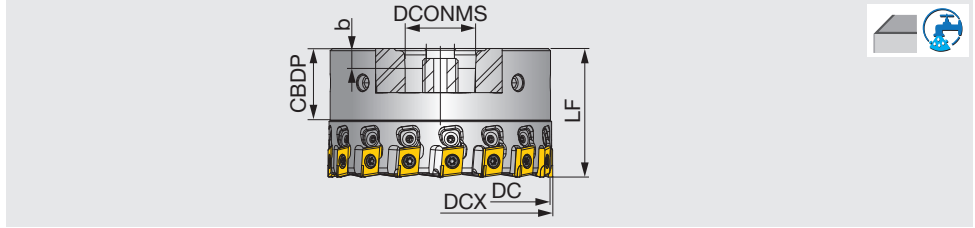
Grade  
Insert  
Ext. Toolholder  
Int. Toolholder  
Threading  
Grooving  
Miniature tool  
Milling cutter  
Endmill  
Drilling tool  
Tooling System  
User's Guide  
Index



- High Feed Milling
- Face Milling
- Shoulder Milling
- Slot Milling
- Profile Milling

# TUNGSMILL TPYP12

High speed PCD mill for non ferrous metal



Designation	DC	DCX	CICT	LF	DCONMS	CBDP	KWW	b	WT(kg)	Air hole	Insert
TPYP12M050B22.0R08	50	51.4	8	55	22	20	10.4	6.3	0.9	With	YPEB12X3-*P...
TPYP12M063B22.0R10	63	64.4	10	55	22	20	10.4	6.3	1.3	With	YPEB12X3-*A...
TPYP12M080B27.0R12	80	81.4	12	58	27	22	12.4	7	2.2	With	YPEB12X3-*A...
TPYP12J080B25.4R12	80	81.4	12	58	25.4	26	9.5	6	2.2	With	YPEB12X3-*A...
TPYP12M100B32.0R16	100	101.4	16	58	32	25	14.4	8	1.9	With	YPEB12X3-*A...
TPYP12J100B31.7R16	100	101.4	16	58	31.75	32	12.7	8	1.9	With	YPEB12X3-*A...
TPYP12M125B40.0R20	125	126.4	20	58	40	28	16.4	9	2.9	With	YPEB12X3-*A...
TPYP12J125B38.1R20	125	126.4	20	58	38.1	38	15.9	10	2.9	With	YPEB12X3-*A...

\*D1: Outside diameter  
DCX: Diameter with 01 type insert

## SPARE PARTS

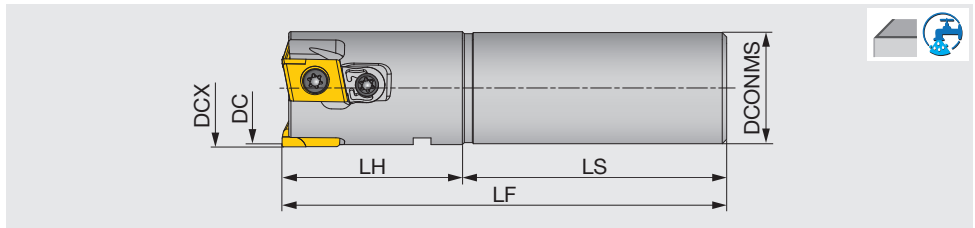
Designation	Clamping screw	Wrench	Wedge fixing screw	Wedge	Wrench	Cover	Shell locking bolt
TPYP12M050B22.0R08	VX040024A	T-15F	RSRGR5M40	RSFTC1008	T-8F	-	RSFTS-050M
TPYP12M063B22.0R10	VX040024A	T-15F	RSRGR5M40	RSFTC1008	T-8F	RSFTS6063M	VC004762110035F
TPYP12M080B27.0R12	VX040024A	T-15F	RSRGR5M40	RSFTC1008	T-8F	RSFTS6080	VC00TEDI12040F
TPYP12J080B25.4R12	VX040024A	T-15F	RSRGR5M40	RSFTC1008	T-8F	RSFTS6080	VC00TEDI12040F
TPYP12M100B32.0R16	VX040024A	T-15F	RSRGR5M40	RSFTC1008	T-8F	RSFTS6100	VC00TANG16040F
TPYP12J100B31.7R16	VX040024A	T-15F	RSRGR5M40	RSFTC1008	T-8F	RSFTS6100	VC00TANG16040F
TPYP12M125B40.0R20	VX040024A	T-15F	RSRGR5M40	RSFTC1008	T-8F	RSFTS6125	VC00TEDI20040F
TPYP12J125B38.1R20	VX040024A	T-15F	RSRGR5M40	RSFTC1008	T-8F	RSFTS6125	VC00TEDI20040F

\*Recommended clamping torque (N·m): VX040024A=4.5

- Approach angle
- 10°-20°
- 45°
- 70°
- 85°
- 88°
- 90°
- Others

# TUNGSMILL EPYP12

High speed PCD endmill for non ferrous metal



Designation	DC	DCX	CICT	DCONMS	LF	LH	LS	WT(kg)	Air hole	Insert
EPYP12M025C25.0R03	25	26.4	3	25	100	50	50	0.4	With	YPEB12X3-*P...
EPYP12M032C25.0R05	32	33.4	5	25	100	45	55	0.5	With	YPEB12X3-*P...

\*D1: Outside diameter  
DCX: Diameter with 01 type insert

## SPARE PARTS

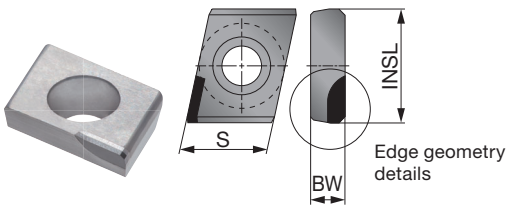
Designation	Clamping screw	Wrench	Wedge fixing screw	Wedge	Wrench
EPYP12M025C25.0R03	VX040024A	T-15F	VX040028A	RSFTC1011	T-8F
EPYP12M032C25.0R05	VX040024A	T-15F	RSRGR5M40	RSFTC1009	T-8F

\*Recommended clamping torque (N·m): VX040024A=4.5

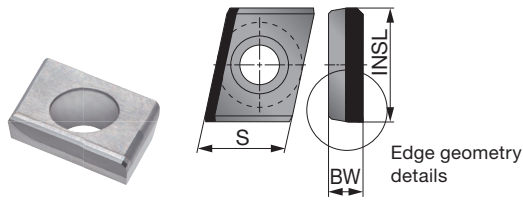
Reference pages: Inserts, Standard cutting conditions → [H079](#)

## INSERT

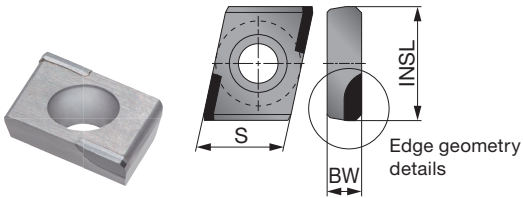
### YPEB12X3-1A



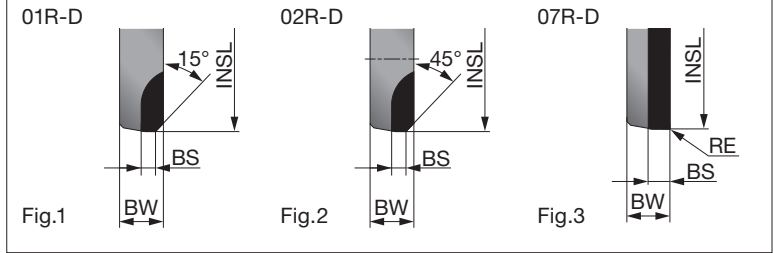
### YPEB12X-FP



### YPEB12X3-2A/P



### Edge geometry details



<b>P</b>	Steel		
<b>M</b>	Stainless		
<b>K</b>	Cast iron		
<b>N</b>	Non-ferrous	★	
<b>S</b>	Superalloys		
<b>H</b>	Hard materials		

★ : First choice  
☆ : Second choice

Designation	No. of corner	RE	APMX	PCD								INSL	S	BW	BS	Applicable cutter diameter	Fig.
				DX160													
YPEB12X3-1A01R-D	1	-	4	●							12.77	9.525	3.85	1.59	DC > ø50 mm	1	
YPEB12X3-1A02R-D	1	-	4	●							12.756	9.525	3.85	1.29	DC > ø50 mm	2	
YPEB12X3-1A07R-D	1	0.4	4	●							12.756	9.525	3.85	1.34	DC > ø50 mm	3	
YPEB12X3-1P02R-D	1	-	4	●							12.817	9.525	3.85	1.37	DC ≤ ø50 mm	2	
YPEB12X3-1P07R-D	1	0.4	4	●							12.817	9.525	3.85	1.37	DC ≤ ø50 mm	3	
YPEB12X3-FP02R-D	1	-	11	●							12.817	9.525	3.85	1.37	DC ≤ ø50 mm	2	
YPEB12X3-FP07R-D	1	0.4	11	●							12.817	9.525	3.85	1.37	DC ≤ ø50 mm	3	
YPEB12X3-2A01R-D	2	-	4	●							12.8	9.525	3.868	1.59	DC > ø50 mm	1	
YPEB12X3-2A02R-D	2	-	4	●							12.8	9.525	3.868	2.07	DC > ø50 mm	2	
YPEB12X3-2A07R-D	2	0.4	4	●							12.8	9.525	3.868	2.07	DC > ø50 mm	3	
YPEB12X3-2P07R-D	2	0.4	4	●							12.876	9.525	3.85	2.07	DC ≤ ø50 mm	3	

● : Line up  
2 pieces per package

## STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Cutting speed Vc (m/min)	Feed per tooth fz (mm/z)
<b>N</b>	Aluminum cast Si < 13%	DX160	≤ 6000	0.05 - 0.25
	Aluminum cast Si ≥ 13%	DX160	≤ 1500	0.05 - 0.25
	Copper, brass, etc.	DX160	≤ 2000	0.05 - 0.25
	Non metallic material	DX160	≤ 3000	0.05 - 0.25

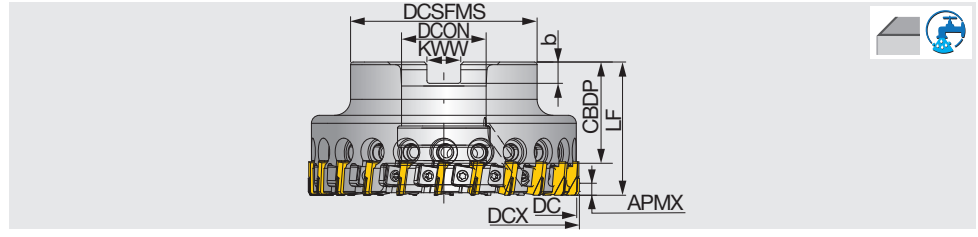


# TUNGSMILL

## TPYD06

Face mill for aluminium machining, for PCD inserts

GAMP = +9°, GAMF = +4°



Designation	APMX	DC	DCX	CICT	DCSFMS	LF	DCON	CBDP	KWW	b	WT(kg)	Air hole	RPMX	Insert
TPYD06M063B22.0R10	4.5	63	65	10	45	40	22	20	10.4	6.3	0.57	With	19,000	YDEN0603...
TPYD06M080B27.0R16	4.5	80	82	16	60	50	27	22	12.4	7	1.24	With	17,000	YDEN0603...
TPYD06J080B25.4R16	4.5	80	82	16	60	50	25.4	26	9.5	6	1.26	With	15,000	YDEN0603...
TPYD06M100B32.0R22	4.5	100	102	22	70	50	32	25	14.4	8	1.78	With	14,000	YDEN0603...
TPYD06J100B31.7R22	4.5	100	102	22	70	50	31.75	32	12.7	8	1.76	With	12,000	YDEN0603...
TPYD06M125B40.0R26	4.5	125	127	26	90	60	40	32	16.4	9	3.48	With	17,000	YDEN0603...
TPYD06J125B38.1R26	4.5	125	127	26	90	60	38.1	38	15.9	10	3.56	With	15,000	YDEN0603...
TPYD06M160B40.0R34	4.5	160	162	34	90	60	40	32	16.4	9	5.2	With	14,000	YDEN0603...
TPYD06J160B38.1R34	4.5	160	162	34	90	60	38.1	38	15.9	10	5.29	With	12,000	YDEN0603...

### SPARE PARTS

Designation	Clamping screw	Wedge fixing screw	Adjusting cam	Torx bit	Cam tightening screw	Wrench	Grip	Shell locking bolt
TPYD06M063B22.0R10	WF875N	DS-5T	AJC08	BLDT10/S7-A	SSHM4-4	P-2	H-TB2W	CM10X30H
TPYD06*080B2*.R16	WF875N	DS-5T	AJC08	BLDT10/S7-A	SSHM4-4	P-2	H-TB2W	CM12X30H
TPYD06*100B32.0R22	WF875N	DS-5T	AJC08	BLDT10/S7-A	SSHM4-4	P-2	H-TB2W	CM16X40H
TPYD06*100B31.7R22	WF875N	DS-5T	AJC08	BLDT10/S7-A	SSHM4-4	P-2	H-TB2W	TMBA-M16H
TPYD06*125B*.R26	WF875N	DS-5T	AJC08	BLDT10/S7-A	SSHM4-4	P-2	H-TB2W	TMBA-M20H
TPYD06*160B*.R34	WF875N	DS-5T	AJC08	BLDT10/S7-A	SSHM4-4	P-2	H-TB2W	TMBA-M20H

Approach angle



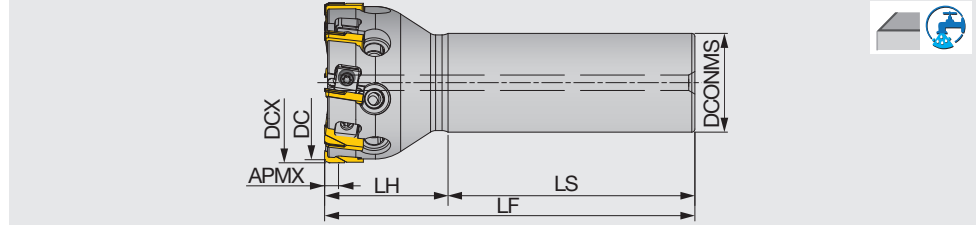
Others

# TUNGSMILL

## EPYD06

Face endmill for aluminium machining, shank type, for PCD inserts

GAMP = +9°, GAMF = +4°



Designation	APMX	DC	DCX	CICT	DCONMS	LF	LH	LS	WT(kg)	Air hole	RPMX	Insert
EPYD06M050C32.0R08	4.5	50	52	8	32	120	40	80	0.57	With	22,000	YDEN0603...

### SPARE PARTS

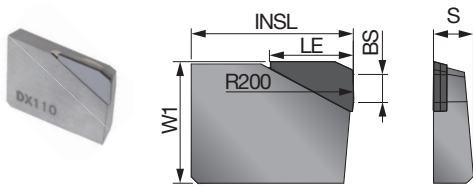
Designation	Clamping screw	Wedge fixing screw	Adjusting cam	Torx bit	Cam tightening screw	Wrench	Grip
EPYD06M050C32.0R08	WF875N	DS-5T	AJC08	BLDT10/S7-A	SSHM4-4	P-2	H-TB2W

Reference pages: Inserts, Standard cutting conditions → **H081**

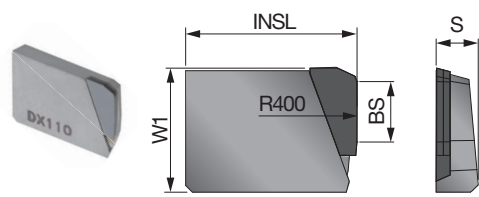


## INSERT

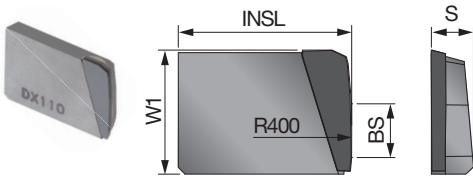
### YDEN0603PD(F/S)R-D



### YDEN0603PDFR-WD



### YDEN0603PDFR-BD



<b>P</b>	Steel										
<b>M</b>	Stainless										
<b>K</b>	Cast iron										
<b>N</b>	Non-ferrous		★								
<b>S</b>	Superalloys										
<b>H</b>	Hard materials										

★ : First choice  
☆ : Second choice

Designation	APMX	Edge prep.	PCD									W1	INSL	S	BS	LE
			DX110													
YDEN0603PDFR-D	4.5	Without	●									9.5	12.7	3.1	2.2	6.5
YDEN0603PDSR-D	4.5	With	●									9.5	12.7	3.1	2.2	6.5
YDEN0603PDFR-WD	-	Without	●									9.2	12.8	3.1	4.5	-
YDEN0603PDFR-BD	-	With	●									9.2	12.9	3.1	4	-

Note: Tungaloy provides refurbishing service for these inserts upon request.

● : Line up  
1 piece per package

## STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Designation	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)
<b>N</b>	Cast aluminum alloy / Die-cast Si < 13%	DX110	YDEN0603PDFR-D	500 - 4,000	0.05 - 0.20
	Cast aluminum alloy / Die-cast Si > 13%	DX110	YDEN0603PDFR-D	200 - 800	0.05 - 0.20
	Aluminum alloy	DX110	YDEN0603PDFR-D	500 - 4,000	0.05 - 0.20
	Copper alloy	DX110	YDEN0603PDFR-D	200 - 500	0.05 - 0.20

- The values in the above list are of standard recommendations and may require adjustments in consideration with cutting depths and/or workpiece/machine rigidity.
- Use wiper inserts (-WD) for better surface requirements and deburring inserts (-BD) to remove burrs.
- Always use wet cutting (emulsion coolant) for machining aluminum or copper alloys.



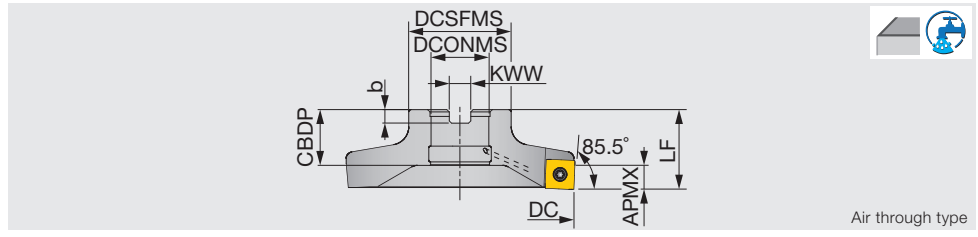
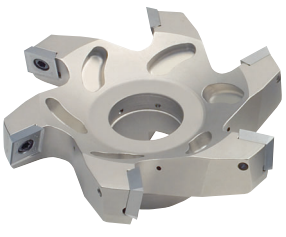
- High Feed Milling
- Face Milling
- Shoulder Milling
- Slot Milling
- Profile Milling

# TFE

## TFE12R

86° face mill for aluminium machining, with screw clamp system, for positive square inserts

GAMP = +13°, GAMF = +7°



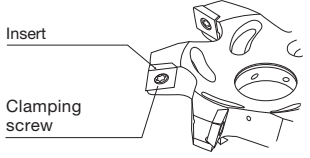
Designation	APMX	DC	CICT	DCSFMS	LF	DCONMS	CBDP	KWW	b	WT(kg)	Air hole	Insert
TFE12063R	8	63	3	45	35	22	19	10	6	0.34	With	SEG*12X4...
TFE12080R	8	80	4	50	35	25.4	24.5	9.5	6	0.45	With	SEG*12X4...
TFE12100R	8	100	6	50	35	25.4	24.5	9.5	6	0.59	With	SEG*12X4...
TFE12125R	8	125	6	50	35	25.4	24.5	9.5	6	0.9	With	SEG*12X4...

### SPARE PARTS

Designation	Clamping screw	Lubricant	Shell locking bolt 1	Shell locking bolt 2	Wrench
TFE12063R	CSPB-4S	M-1000	-	CM10X30H	IP-15D
TFE12080R	CSPB-4S	M-1000	TMBA-M12H	-	IP-15D
TFE12100R	CSPB-4S	M-1000	TMBA-M12H	-	IP-15D
TFE12125R	CSPB-4S	M-1000	TMBA-M12H	-	IP-15D

\*Recommended clamping torque (N·m): CSPB-4S=3.5

- Approach angle
- 10°-20°
- 45°
- 70°
- 85°
- 88°
- 90°
- Others

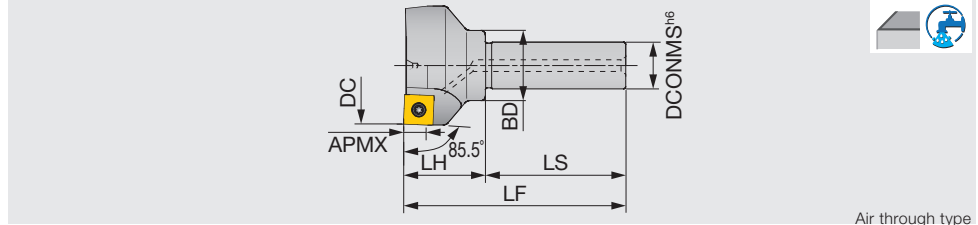


# EFE

## EFE12R

86° face endmill for aluminium machining, shank type, with screw clamp system, for positive square inserts

GAMP = +13°, GAMF = +7°



Designation	APMX	DC	CICT	DCONMS	BD	LS	LH	LF	WT(kg)	Air hole	Insert
EFE12050R	8	50	3	20	30	60	35	95	0.37	With	SEG*12X4...

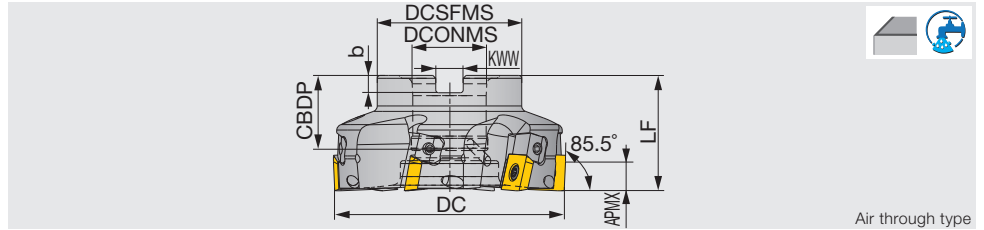
### SPARE PARTS

Designation	Clamping screw	Lubricant	Wrench
EFE12000R	CSPB-4S	M-1000	IP-15D

\*Recommended clamping torque (N·m): CSPB-4S=3.5



Reference pages: Inserts → [H084](#), Standard cutting conditions → [H085](#)

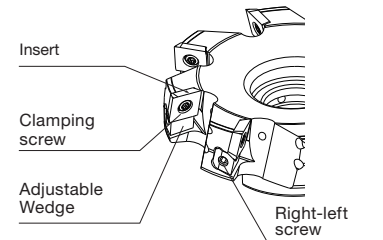


Designation	APMX	DC	CICT	DCSFMS	LF	DCONMS	CBDP	KWW	b	WT(kg)	Air hole	Insert
TFE12R080M25.4-06A	8	80	6	50	40	25.4	26	9.5	6	0.70	With	SEG*12X4...
TFE12R080M27.0E06A	8	80	6	55	40	27	22	12.4	7	0.69	With	SEG*12X4...
TFE12R100M25.4-08A	8	100	8	50	40	25.4	26	9.5	6	1.15	With	SEG*12X4...
TFE12R100M27.0E08A	8	100	8	55	40	27	22	12.4	7	1.11	With	SEG*12X4...
TFE12R125M31.7-10A	8	125	10	70	50	31.7	32	12.7	8	2.24	With	SEG*12X4...
TFE12R125M32.0E10A	8	125	10	70	50	32	28.5	14.4	8	2.14	With	SEG*12X4...

### SPARE PARTS

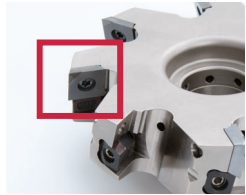
Designation	Clamping screw	Adjustable Wedge	Lubricant	Shell locking bolt	Right-left screw	Wrench	Wrench
TFE12R**A	CSTB-4	FW-701R	M-1000	TMBA-M12H	MCS520-2.5	P-2.5T	T-15LB

\*Recommended clamping torque (N·m): CSTB-4=3.5



### Insert setting procedure – adjustable-type TFE face milling cutter

#### 1 Cleaning insert pockets



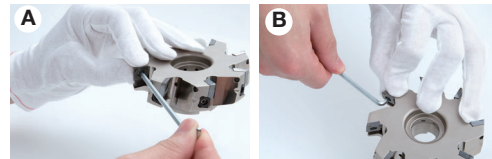
Remove all the inserts. Use air pressure to thoroughly clean the pockets of dust and chips.

#### 2 Loosening wedges



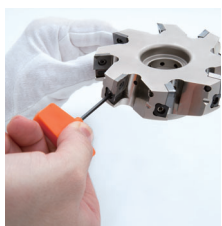
Use the included key for wedge adjustment to loosen all the wedges so that they do not exceed the cutter's outer diameter.

#### 3 Clamping inserts for adjustments



Place the insert in the pocket and lightly tighten the clamping screw with the included key. Suggested method: Tighten the screw first with the straight end of the key (Fig A) until finger tight, then use the angled end to further tighten the screw for insert steadiness (Fig B). Do NOT fully tighten the screw at this moment as this procedure is prior to insert adjustment. Repeat the procedure for all inserts.

#### 4 Axial height adjustment of inserts



Mount the cutter in Step ③ on the setting fixture of the pre-setter. Determine the highest insert, and, while carefully monitoring each insert's axial position, rotate the wedge screw in the CW direction to raise the insert in the axial direction, as close as possible to that of the highest insert. Repeat this procedure for all inserts.

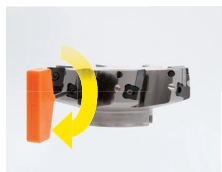
**Note:** Since the insert is clamped, loosening the wedge screw will not bring down the insert. To lower insert height, both the insert and wedge screws need to be loosened. Start the adjusting procedure for this insert again from Step 1.

#### 5 Tighten insert screws



Tighten the insert clamping screw at 3.5 Nm, using the key as shown to the left. Repeat the procedure for all inserts.

#### 6 Final adjustments



After final tightening of all insert screws, measure to ensure all inserts are at the desired axial heights. If necessary, further tighten any wedge screws in the CW direction for the final few microns. For inserts exceeding the required runout, re-start the adjustment procedure from Step ①.

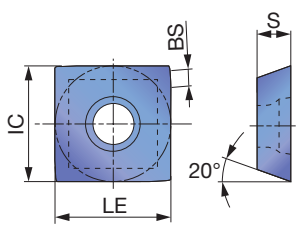
**Note:** Do not re-tighten the insert screw after insert adjustment is completed. Additional tightening may weaken wedge clamping torque.

#### Cautions:

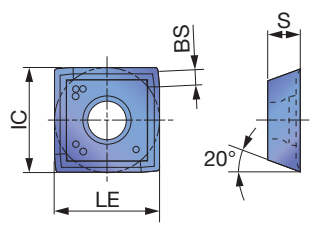
- Always clean all the insert pockets thoroughly of dust and chips. Any objects present in the pocket may shift the insert's position during machining and cause poor surface finishing quality.
- Always loosen the wedge screw before installing the insert as described in Step ②. If the wedge is left tightened in the cutter, the adjustment range of the wedge will be limited, and insert height may not be as freely adjustable as possible.
- With a finger, firmly press and hold the insert into the wedge while tightening the insert screw. If the insert is not in contact, the wedge has to be driven until the gap in between is closed, with no actual insert movement.
- Loosening the wedge will not lower the insert. When the insert height exceeds the desired setting during adjustment, loosen both the insert and wedge screws and re-start the adjustment procedure from Step ①. If the insert slides downward when the wedge screw is loosened, the clamping torque of the insert screw is too low. Tighten the insert screw with a slightly higher torque. Suggested clamping method: First use the straight end of the key to tighten the screw until finger tight, then switch the key to the angled side and turn an additional 45°.
- Do not exceed the recommended clamping torque when fixing the insert. This may damage or fracture the insert screw.

- High Feed Milling
- Face Milling
- Shoulder Milling
- Slot Milling
- Profile Milling
- Approach angle
- 10°-20°
- 45°
- 70°
- 85°
- 88°
- 90°
- Others

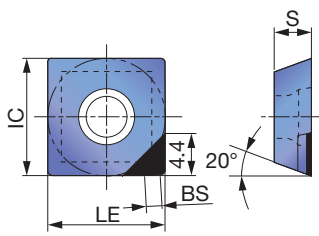
## INSERT SEGW12X4ZEPR / ZEFR



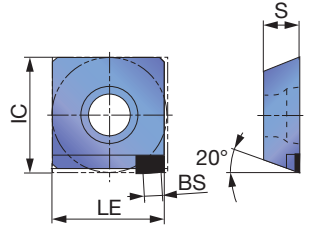
## SEGT12X4-AJ



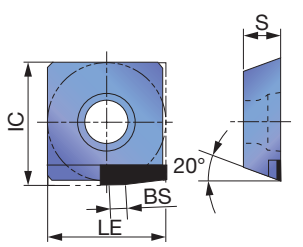
## SEGW12X4ZEFR-D



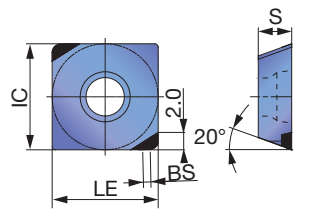
## SEGW12X4ZEFR-WD



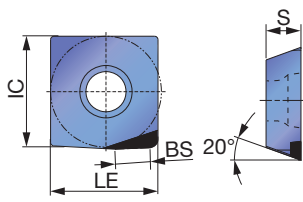
## SEGW12X4ZEFR-BD



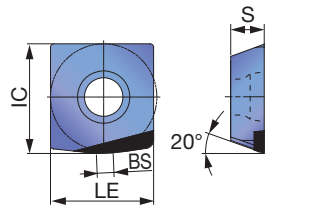
## 2QP-SECW12X412ZETR



## 1QP-SECW12X4ZETR-W



## 1QP-SECW12X4ZETR-B



<b>P</b>	Steel	★			★													
<b>M</b>	Stainless		★															
<b>K</b>	Cast iron	★																★
<b>N</b>	Non-ferrous			★			★	★										
<b>S</b>	Superalloys																	
<b>H</b>	Hard materials																	

★ : First choice

Designation	Max. ap	Coated			Cermet	Uncoated	PCD	CBN	IC	LE	S	BS
		AH120	AH140	DS1100	NS740	KS05F	DX140	BX480				
SEGW12X4ZEFR	8					●			12.7	12.7	4	1.8
SEGW12X4ZEPR	8	●	●		●				12.7	12.7	4	1.4
SEGT12X4ZEFR-AJ	8			●		●			12.7	12.7	4	1.8
SEGW12X4ZEFR-D	3.5						●		12.7	12.7	4	1.8
SEGW12X4ZEFR-WD	-						●		12.8	12.4	4	2
SEGW12X4ZEFR-BD	-						●		13.1	12.4	4	1.8
2QP-SECW12X412ZETR	1.5						●		12.7	12.7	4	0.9
1QP-SECW12X4ZETR-W	-						●		12.9	12.3	4	4
1QP-SECW12X4ZETR-B	-						●		13.1	12.3	4	2

● : Line up  
 DX140: 2 pieces per package  
 BX480: 1 piece per package

## How to put each insert together

		For general	Accuracy of machining surface priority	Burr reduction priority
Applicable insert	General insert	SEGW12X4ZEFR-D DX140	◎	◎
		2QP-SECW12X412ZETR BX480		
	Wiper insert	SEGW12X4ZEFR-WD DX140	-	-
		1QP-SECW12X4ZETR-W BX480		
Wiper insert for burr reduction	SEGW12X4ZEFR-BD DX140	-	◎	
	1QP-SECW12X4ZETR-B BX480			
Number of Inserts by type		All general	1 or 2 wiper inserts in cutter body	General insert : Burr wiper insert = 1 : 1
Accuracy of machining surface (roughness and undulation)		△	◎	○
Burr of machining surface		△	○	◎

## STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Designation	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)
<b>P</b>	Carbon steels and alloy steels < 300HB	AH120	SEGW12X4ZEPR	100 - 180	0.03 - 0.15
		NS740	SEGW12X4ZEPR	100 - 180	0.03 - 0.15
<b>M</b>	Stainless steels < 250HB	AH140	SEGW12X4ZEPR	80 - 180	0.03 - 0.15
<b>K</b>	Grey and ductile cast irons	AH120	SEGW12X4ZEPR	100 - 200	0.03 - 0.15
	Grey cast iron	BX480	2QP-SECW12X412ZETR	800 - 1500	0.05 - 0.3
	Ductile cast irons	BX480	2QP-SECW12X412ZETR	500 - 800	0.05 - 0.2
<b>N</b>	Cast aluminium alloy / Die-cast Si < 13%	KS05F	SEGT12X4ZEFR-AJ	200 - 1500	0.05 - 0.2
		DX140	SEGW12X4ZEFR-D	200 - 1500	0.05 - 0.2
	Cast aluminium alloy / Die-cast Si ≥ 13%	KS05F	SEGT12X4ZEFR-AJ	80 - 200	0.05 - 0.2
		DX140	SEGW12X4ZEFR-D	200 - 500	0.05 - 0.2
	Aluminium alloy Tensile strength < 350 N/mm <sup>2</sup>	KS05F	SEGT12X4ZEFR-AJ	200 - 1500	0.05 - 0.2
		DX140	SEGW12X4ZEFR-D	200 - 1500	0.05 - 0.2
Aluminium alloy Tensile strength > 350 N/mm <sup>2</sup>	KS05F	SEGW12X4ZEFR	200 - 1500	0.05 - 0.2	
Copper alloy	KS05F	SEGT12X4ZEFR-AJ	200 - 500	0.05 - 0.2	
	DX140	SEGW12X4ZEFR-D	200 - 500	0.05 - 0.2	

**Notes:**

- In milling aluminium and copper alloys:
  - For improved surface finish, use together with wiper insert SEGW12X4ZEFR-WD
  - For reducing burr occurrence, use together with deburring inserts SEGW12X4ZEFR-BD
- When milling aluminium and copper alloys, use of a water soluble cutting fluid is recommended. When milling steels, cast irons, and stainless steels, dry cutting is recommended.
- When the length-to-diameter overhang ratio of the tool (L/D) exceeds 3, reduce cutting speed and feed to 70 to 80% of the values given in the table.

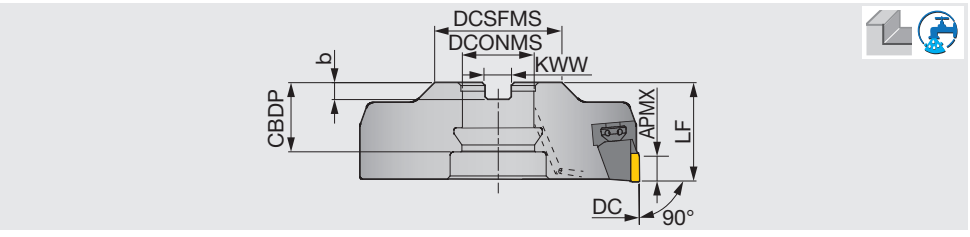
- High Feed Milling
- Face Milling
- Shoulder Milling
- Slot Milling
- Profile Milling

# DPD

## DPD09

Light weight mill for aluminium machining, for PCD inserts

GAMP = +8.5°, GAMF = +3° ~ +5°



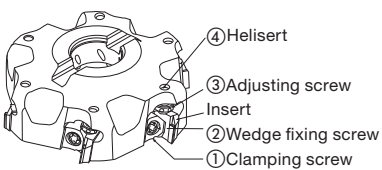
Designation	APMX	DC	CICT	DCSFMS	LF	DCONMS	CBDP	KWW	b	WT(kg)	Air hole	Insert
DPD09080R	7	80	4	50	41	25.4	23	9.5	6	0.8	With	YDEN0905...
DPD09080RB	7	80	6	50	41	25.4	28.5	9.5	6	0.82	With	YDEN0905...
DPD09100R	7	100	6	50	35	25.4	24.5	9.5	6	1.13	With	YDEN0905...
DPD09100RB	7	100	8	50	35	25.4	24.5	9.5	6	1.17	With	YDEN0905...
DPD09125R	7	125	6	50	35	25.4	24.5	9.5	6	1.7	With	YDEN0905...
DPD09125RB	7	125	10	50	35	25.4	24.5	9.5	6	1.77	With	YDEN0905...
DPD09160R	7	160	8	60	52	31.75	40	12.7	8	3.28	With	YDEN0905...
DPD09160RB	7	160	12	60	52	31.75	40	12.7	8	3.25	With	YDEN0905...

### SPARE PARTS

Designation	① Clamping screw	② Wedge fixing screw	③ Adjusting screw	④ Helisert	Shell locking bolt 1	Shell locking bolt 2	Wrench1	Wrench 2
DPD09080R*	FW-304R-T	FDS-8ST-18	AJM5	LM5-0.8X1DNS	-	CM12X30H	T-27T	T-7F
DPD09100R*	FW-304R-T	FDS-8ST-18	AJM5	LM5-0.8X1DNS	TMBA-M12H	-	T-27T	T-7F
DPD09125R*	FW-304R-T	FDS-8ST-18	AJM5	LM5-0.8X1DNS	TMBA-M12H	-	T-27T	T-7F
DPD09160R*	FW-304R-T	FDS-8ST-18	AJM5	LM5-0.8X1DNS	TMBA-M16H	-	T-27T	T-7F

\*Recommended clamping torque (N·m): FDS-8ST-18=10

- Approach angle
- 10°-20°
- 45°
- 70°
- 85°
- 88°
- 90°
- Others

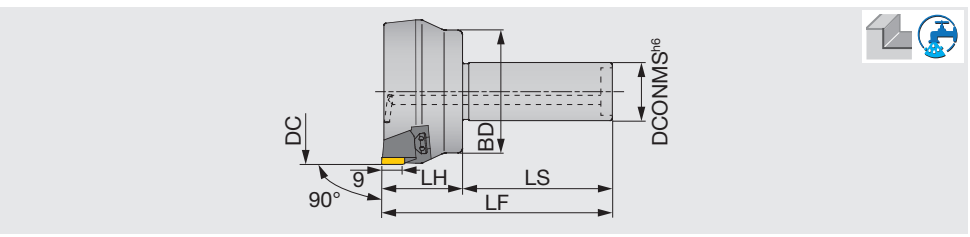


# EDPD

## EDPD09

Light weight endmill for aluminium machining, shank type, for PCD inserts

GAMP = +8.5°, GAMF = +3°

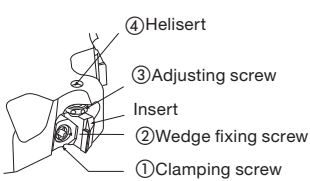


Designation	APMX	DC	CICT	DCONMS	BD	LS	LH	LF	WT(kg)	Air hole	Insert
EDPD09063R	7	63	3	25	37	60	40	100	0.75	With	YDEN0905...

### SPARE PARTS

Designation	① Clamping screw	② Wedge fixing screw	③ Adjusting screw	④ Helisert	Wrench1	Wrench 2
EDPD09063R	FW-304R-T	FDS-8SST	AJM5	LM5-0.8X1DNS	T-27T	T-7F

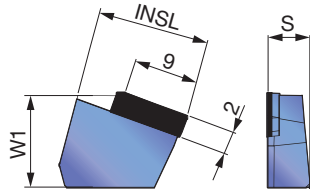
\*Recommended clamping torque (N·m): FDS-8SST=10



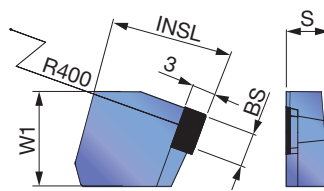
Reference pages: Inserts, Standard cutting conditions → **H087**

# INSERT

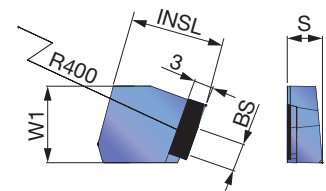
## YDEN0905PDFR-D



## YDEN0905PDFR-WD



## YDEN0905PDFR-BD



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

★ : First choice  
☆ : Second choice

Designation	APMX	PCD								W1	INSL	S	BS
		DX140											
YDEN0905PDFR-D	7	●								12.4	15.1	5.7	-
YDEN0905PDFR-WD	-	●								12.4	15.2	5.7	4.5
YDEN0905PDFR-BD	-	●								12.4	15.2	5.7	4.5

Note: Tungaloy provides refurbishing service for these inserts upon request.

● : Line up  
1 piece per package

# STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Designation	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)
N	Aluminium alloy castings & die castings Si < 13%	DX140	YDEN0905PDFR-D	500 ~ 4000	0.05 ~ 0.2
	Aluminium alloy castings & die castings Si ≥ 13%	DX140	YDEN0905PDFR-D	200 ~ 500	0.05 ~ 0.2
	Rolled aluminium alloys	DX140	YDEN0905PDFR-D	500 ~ 4000	0.05 ~ 0.2
	Copper alloys	DX140	YDEN0905PDFR-D	200 ~ 500	0.05 ~ 0.2

Notes:

- When requiring improved surface finish, use the wiper insert together with regular inserts YDEN0905PDFR-WD.
- When requiring reduced burr occurrence, use the deburring inserts together with regular inserts YDEN0905PDFR-BD.
- When using the cutter at speeds over 1500m/min, use an arbor or tool-holder balanced to within G16.
- Wet cutting, using a water soluble cutting fluid, is recommended.
- When the length-to-diameter overhang ratio of the tool (L/D) exceeds 3, reduce cutting speed and feed to 70 to 80% of the values given in the table.

# How to put each insert together

		For general	Accuracy of machining surface priority	Burr reduction priority
Applicable insert	General insert YDEN0905PDFR-D	◎	◎	◎
	Wiper insert YDEN0905PDFR-WD	-	◎	-
	Wiper insert for burr reduction YDEN0905PDFR-BD	-	-	◎
Number of Inserts by type		All general	1 or 2 wiper inserts in cutter body	General insert : Burr wiper insert = 1 : 1
Specification of insert setting				
Accuracy of machining surface (roughness and undulation)		△	◎	○
Burr of machining surface		△	○	◎

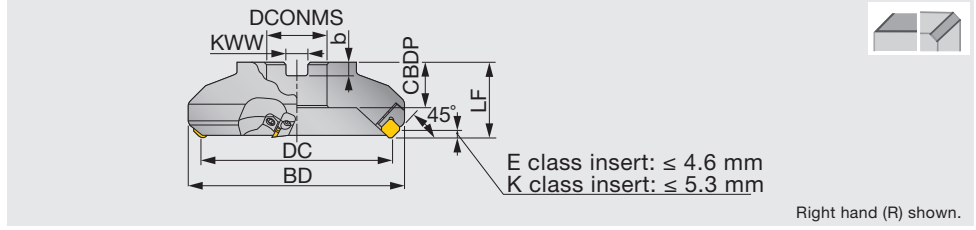
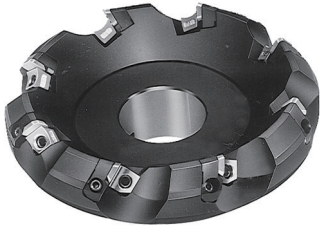


- High Feed Milling
- Face Milling
- Shoulder Milling
- Slot Milling
- Profile Milling
- Approach angle
- 10°-20°
- 45°
- 70°
- 85°
- 88°
- 90°
- Others

# TME4400R/LI

45° face mill, with wedge clamp system, for positive square inserts

GAMP = +24°, GAMF = -8° ~ -6°

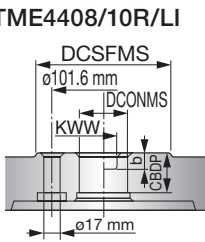


Designation	APMX	DC	CICT	BD	LF	DCONMS	CBDP	KWW	b	WT(kg)	Insert
TME4403R/LI	4	80	4	101.5	50	25.4	26	9.5	6	1.43	SE*N1203
TME4403RI-E	4	80	4	101.5	50	27	26	12.4	7	1.43	SE*N1203
TME4404R/LI	4	100	5	120.2	63	31.75	32	12.7	8	2.74	SE*N1203
TME4404RI-E	4	100	5	120.2	63	32	32	14.4	8	2.74	SE*N1203
TME4405R/LI	4	125	6	145.2	63	38.1	38	15.9	10	4.04	SE*N1203
TME4405RI-E	4	125	6	145.2	63	40	32	16.4	9	4.04	SE*N1203
TME4406R/LI	4	160	8	181.2	63	50.8	38	19	11	5.82	SE*N1203
TME4406RI-E	4	160	8	181.2	63	40	29	16.4	9	5.82	SE*N1203
TME4408R/LI	4	200	10	220.5	63	47.625	38	25.4	14	9.18	SE*N1203
TME4410R/LI	4	250	12	269.8	63	47.625	38	25.4	14	16.64	SE*N1203
TME4412RI	4	315	14	334.4	63	47.625	38	25.4	14	25.72	SE*N1203

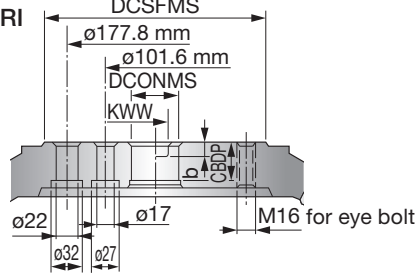
Note: Cutting edge height (LF) is for when SEEN1203AG\*N type inserts are used.

## Arbor type

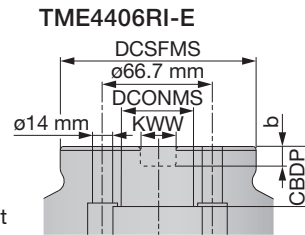
TME4408/10R/LI



TME4412RI



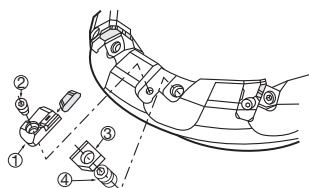
TME4406RI-E



## SPARE PARTS

Designation	① Locator	④ Wedge fixing screw	② Locator fixing screw	③ Wedge	Wrench
TME4403RI	LE444R	FDS-8S	CM4X0.7X14	WF444R	TP-4
TME4403LI	LE444L	FDS-8S	CM4X0.7X14	WF444L	TP-4
TME4403RI-E	LE444R	FDS-8S	CM4X0.7X14	WF444R	TP-4
TME4404RI	LE444R	FDS-8S	CM4X0.7X14	WF444R	TP-4
TME4404LI	LE444L	FDS-8S	CM4X0.7X14	WF444L	TP-4
TME4404RI-E	LE444R	FDS-8S	CM4X0.7X14	WF444R	TP-4
TME4405RI	LE444R	FDS-8S	CM4X0.7X14	WF444R	TP-4
TME4405LI	LE444L	FDS-8S	CM4X0.7X14	WF444L	TP-4
TME4405RI-E	LE444R	FDS-8S	CM4X0.7X14	WF444R	TP-4
TME4406RI	LE446R	FDS-8S	CM4X0.7X14	WF444R	TP-4
TME4406LI	LE446L	FDS-8S	CM4X0.7X14	WF444L	TP-4
TME4406RI-E	LE446R	FDS-8S	CM4X0.7X14	WF444R	TP-4
TME4408RI	LE446R	FDS-8S	CM4X0.7X14	WF444R	TP-4
TME4408LI	LE446L	FDS-8S	CM4X0.7X14	WF444L	TP-4
TME4410RI	LE446R	FDS-8S	CM4X0.7X14	WF444R	TP-4
TME4410LI	LE446L	FDS-8S	CM4X0.7X14	WF444L	TP-4
TME4412RI	LE446R	FDS-8S	CM4X0.7X14	WF444R	TP-4

\*Recommended clamping torque (N·m): FDS-8S=10

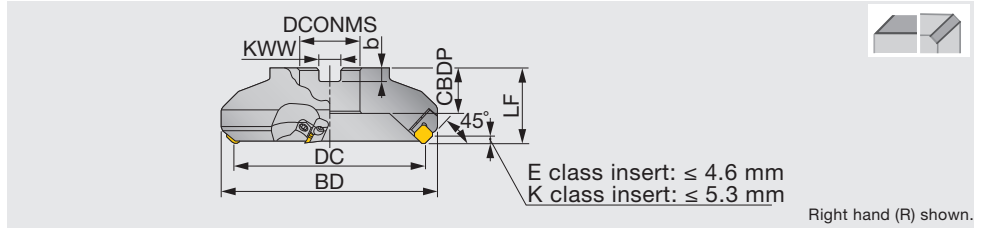
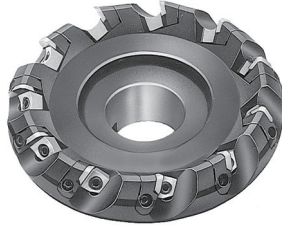


Reference pages: Inserts → [H091](#), Standard cutting conditions → [H092](#)

# TME4400RB

High density 45° face mill, with wedge clamp system, positive square inserts

GAMP = +24°, GAMF = -8° ~ -6°



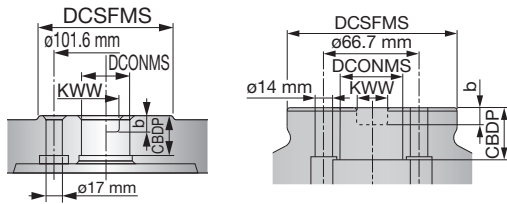
Designation	APMX	DC	CICT	BD	LF	DCONMS	CBDP	KWW	b	WT(kg)	Insert
TME4463RB-E	4	63	5	87.2	40	22	20	10.4	6.3	1.0	SE*N1203
TME4403RB	4	80	6	101.5	50	25.4	26	9.5	6	1.43	SE*N1203
TME4403RB-E	4	80	6	101.5	50	27	26	12.4	7	1.43	SE*N1203
TME4404RB	4	100	7	120.2	63	31.75	32	12.7	8	2.77	SE*N1203
TME4404RB-E	4	100	7	120.2	50	32	28.5	14.4	8	2.77	SE*N1203
TME4405RB	4	125	9	145.2	63	38.1	38	15.9	10	4.06	SE*N1203
TME4405RB-E	4	125	9	145.2	63	40	32	16.4	9	4.06	SE*N1203
TME4406RB	4	160	12	181.2	63	50.8	38	19	11	5.86	SE*N1203
TME4406RB-E	4	160	12	181.2	63	40	29	16.4	9	5.86	SE*N1203
TME4408RB	4	200	15	220.5	63	47.625	38	25.4	14	9.24	SE*N1203

Note: Cutting edge height (LF) is the value when using SEEN1203AG\*N inserts.

## Arbor type

### TME4408RB

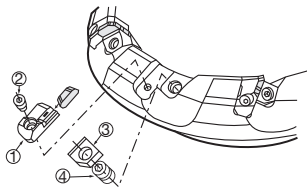
### TME4406RB-E



## SPARE PARTS

Designation	① Locator	④ Wedge fixing screw	② Locator fixing screw	③ Wedge	Wrench
TME4463RB-E	LE444R	DS-8	CM4X0.7X14	WT402R	TP-4
TME4403RB	LE444R	FDS-8S	CM4X0.7X14	WF444R	TP-4
TME4404RB	LE444R	FDS-8S	CM4X0.7X14	WF444R	TP-4
TME4405RB	LE444R	FDS-8S	CM4X0.7X14	WF444R	TP-4
TME4406RB	LE446R	FDS-8S	CM4X0.7X14	WF444R	TP-4
TME4403 - 06RB-E	LE446R	FDS-8S	CM4X0.7X14	WF444R	TP-4
TME4408RB	LE446R	FDS-8S	CM4X0.7X14	WF444R	TP-4

\*Recommended clamping torque (N·m): DS-8/FDS-8S=8



Reference pages: Inserts → **H091**, Standard cutting conditions → **H092**



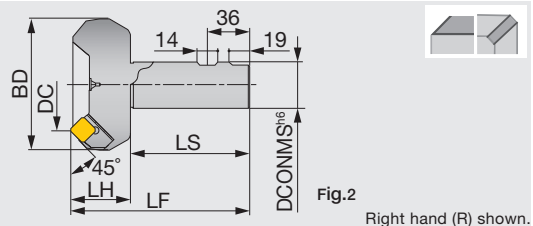
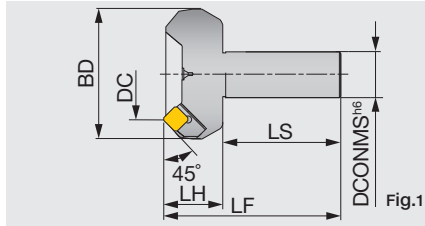
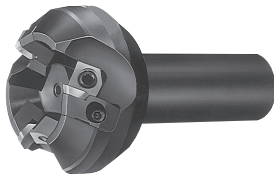


- High Feed Milling
- Face Milling
- Shoulder Milling
- Slot Milling
- Profile Milling

# EME4400

45° face endmill, shank type, with wedge clamp system, for positive square inserts

GAMP = +24°, GAMF = -13° ~ -8°



Right hand (R) shown.

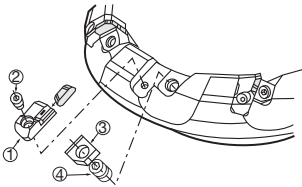
Designation	APMX	DC	CICT	BD	DCONMS	LS	LH	LF	Fig.	Insert
EME4450R	4	50	3	73.4	32	80	40	120	1	SE*N1203...
EME4463R	4	63	4	87.2	32	80	40	120	1	SE*N1203...
EME4403RI	4	80	5	101.5	32	80	40	120	2	SE*N1203...
EME4404RI	4	100	5	120.2	32	80	40	120	2	SE*N1203...

## SPARE PARTS

Designation	① Locator	④ Wedge fixing screw	② Locator fixing screw	③ Wedge	Wrench
EME4400	LE444R	FDS-8S	CM4X0.7X14	WF444R	TP-4

\*Recommended clamping torque (N·m): FDS-8S=8

- Approach angle
- 10°-20°
- 45°
- 70°
- 85°
- 88°
- 90°
- Others

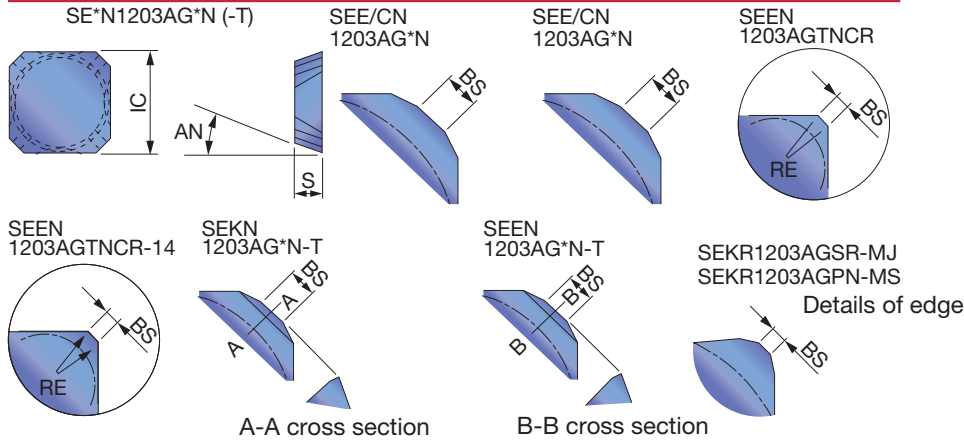


Reference pages: Inserts → [H091](#), Standard cutting conditions → [H092](#)



# INSERT

## SECN/SEEN/SEKN /SEKR 1203



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

★ : First choice  
☆ : Second choice

Designation	APMX	Coated						Cermet	Uncoated		IC	S	AN	BS
		AH120	AH130	AH140	AH330	GH330	T1115	T3130	NS740	UX30				
SECN1203AGFN	4									●	12.7	3.18	20	2.4
SEEN1203AGFN	4									●	12.7	3.18	20	2.4
SEEN1203AGTN	4	●	●	●		●	●	●	●		12.7	3.18	20	2.4
SEEN1203AGTN-T	4						●				12.7	3.18	20	2.4
SEEN1203AGTNCR	4	●	●	●	●		●				12.7	3.18	20	1.6
SEEN1203AGTNCR-14	4						●				12.7	3.18	20	1.4
SEKN1203AGFN-T	4								●		12.7	3.18	20	1.6
SEKN1203AGTN	4	●	●	●	●	●	●	●	●		12.7	3.18	20	1.6
SEKN1203AGTN-T	4				●	●	●	●	●		12.7	3.18	20	1.6
SEKN1203AGTNCR	4						●				12.7	3.18	20	1.6
SEKR1203AGSR-MJ	4	●			●	●	●				12.7	3.18	20	1.6
SEKR1203AGPN-MS	4		●	●							12.7	3.18	20	1.6

● : Line up

# STANDARD CUTTING CONDITIONS

Roughing (Depth of cut: APMX 1.5 ~ 4 mm) Finishing (Depth of cut: APMX 0.3 ~ 0.7 mm)

ISO	Workpiece material	Grade	Roughing (Depth of cut: APMX 1.5 ~ 4 mm)		Finishing (Depth of cut: APMX 0.3 ~ 0.7 mm)	
			Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)
P	Mild steels Unhardened steels < 180 HB	NS740	150 ~ 250	0.1 ~ 0.2	150 ~ 250	0.1 ~ 0.25
		AH330	150 ~ 400	0.1 ~ 0.25	150 ~ 400	0.1 ~ 0.28
		AH120	150 ~ 250	0.1 ~ 0.25	150 ~ 250	0.1 ~ 0.28
		T3130	150 ~ 300	0.1 ~ 0.28	180 ~ 300	0.1 ~ 0.3
		AH130 · AH140	100 ~ 180	0.1 ~ 0.28	130 ~ 200	0.1 ~ 0.3
	Carbon steels Alloy steels < 300 HB	T3130	150 ~ 280	0.1 ~ 0.25	180 ~ 280	0.1 ~ 0.28
		NS740	100 ~ 180	0.1 ~ 0.18	150 ~ 200	0.1 ~ 0.23
		AH330	100 ~ 320	0.1 ~ 0.23	150 ~ 320	0.1 ~ 0.25
		AH120	100 ~ 200	0.1 ~ 0.23	150 ~ 200	0.1 ~ 0.25
		Die steels < 30 HRC	AH120 · T3130	100 ~ 150	0.1 ~ 0.15	100 ~ 150
AH330	100 ~ 250		0.1 ~ 0.15	100 ~ 250	0.1 ~ 0.2	
M	Stainless steels < 250 HB	AH130 · AH140	80 ~ 180	0.15 ~ 0.25	100 ~ 200	0.15 ~ 0.28
		AH120 · GH330	150 ~ 230	0.15 ~ 0.23	200 ~ 250	0.15 ~ 0.25
K	Cast irons Ductile cast irons	T1115	100 ~ 200	0.1 ~ 0.2	100 ~ 200	0.1 ~ 0.25
		AH120	100 ~ 200	0.1 ~ 0.2	100 ~ 200	0.1 ~ 0.25
S	Titanium alloys Ti-6Al-4V, etc.	AH130	30 ~ 60	0.1 ~ 0.2	30 ~ 60	0.1 ~ 0.2
	Superalloys Inconel718, etc.	AH120	10 ~ 40	0.05 ~ 0.15	10 ~ 40	0.05 ~ 0.1
N	Aluminium alloys Si < 13%	TH10	200 ~ 1000	0.05 ~ 0.2	350 ~ 1000	0.1 ~ 0.3
	Copper alloy	TH10	200 ~ 500	0.1 ~ 0.2	200 ~ 500	0.1 ~ 0.25

Note: The above are the values for dry cutting of all materials except aluminium alloy.

High Feed Milling

Face Milling

Shoulder Milling

Slot Milling

Profile Milling

Approach angle

10°-20°

45°

70°

85°

88°

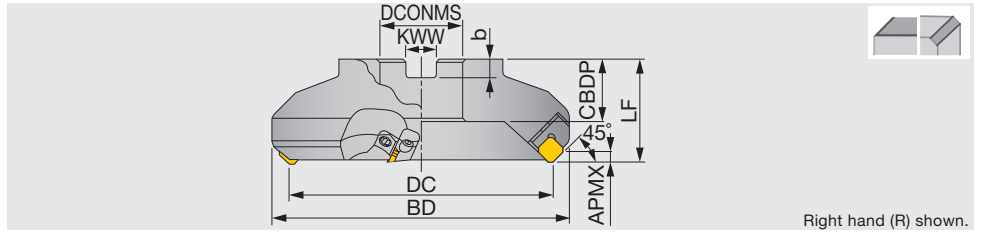
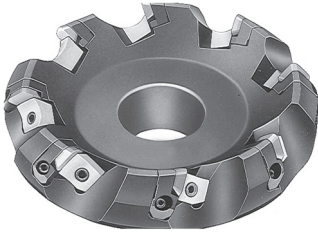
90°

Others

# TME5400RI

45° face mill, with wedge clamp system, for positive square inserts

GAMP = +24°, GAMF = -8° ~ -6°

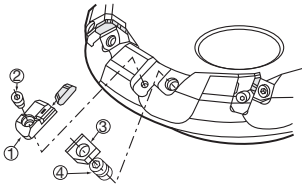


Designation	APMX	DC	CICT	BD	LF	DCONMS	CBDP	KWW	b	WT(kg)	Insert
TME5404RI	6	100	5	123.6	63	31.75	32	12.7	8	2.82	SE**1504...
TME5405RI	6	125	6	148.6	63	38.1	38	15.9	10	4.08	SE**1504...
TME5406RI	6	160	8	183	63	50.8	38	19	11	5.99	SE**1504...
TME5408RI	6	200	10	223	63	47.625	38	25.4	14	9.23	SE**1504...
TME5410RI	6	250	12	273	63	47.625	38	25.4	14	16.94	SE**1504...
TME5412RI	6	315	14	338	63	47.625	38	25.4	14	25.94	SE**1504...

## SPARE PARTS

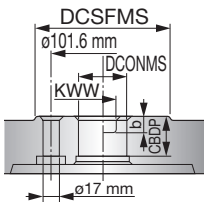
Designation	① Locator	④ Wedge fixing screw	② Locator fixing screw	③ Wedge	Wrench
TME5400RI	LE540R	FDS-8S	CM4X0.7X14	WF540R	TP-4

\*Recommended clamping torque (N·m): FDS-8S=8

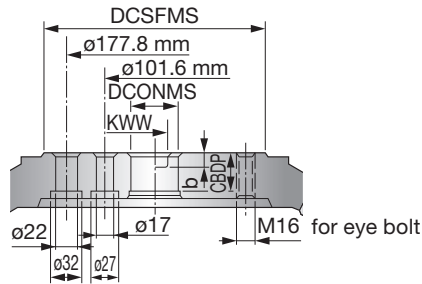


## Arbor type

### TME5408/10RI



### TME5412RI



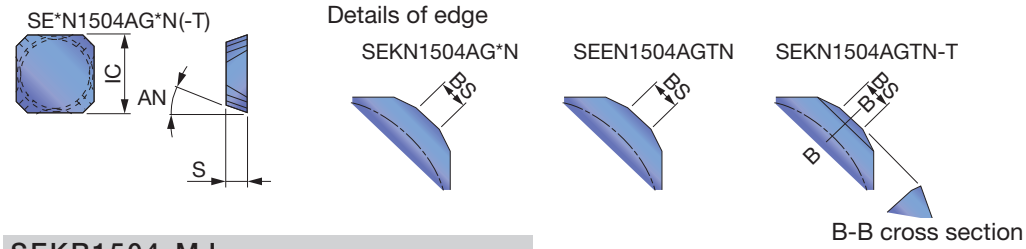
Reference pages: Inserts, Standard cutting conditions → [H094](#)



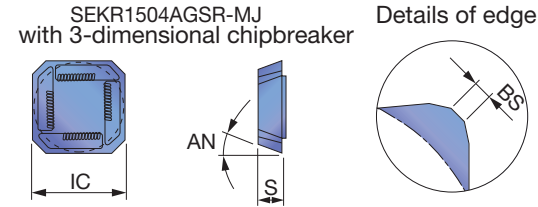


## INSERT

### SECN/SEEN/SEKN 1504



### SEKR1504-MJ



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

★ : First choice  
☆ : Second choice

Designation	APMX	Coated				Cermet	Uncoated		IC	S	AN	BS
		AH120	AH140	GH330	T3130	NS740	TH10	UX30				
SEEN1504AGTN	6					●		●	15.875	4.76	20°	2.4
SEKN1504AGFN	6							●	15.875	4.76	20°	1.6
SEKN1504AGTN	6	●	●	●	●	●		●	15.875	4.76	20°	1.6
SEKN1504AGTN-T	6				●	●			15.875	4.76	20°	1.6
SEKR1504AGSR-MJ	6			●	●				15.875	4.76	20°	1.6

● : Line up



## STANDARD CUTTING CONDITIONS

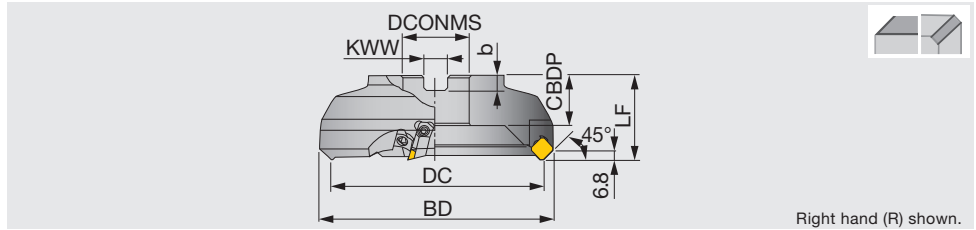
ISO	Workpiece material	Grade	Roughing (Depth of cut: APMX 1.5 ~ 6 mm)		Finishing (Depth of cut: APMX 0.3 ~ 0.7 mm)	
			Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)
P	Mild steels Unhardened steels < 180 HB	NS740	150 ~ 250	0.1 ~ 0.25	150 ~ 250	0.1 ~ 0.3
		AH120	150 ~ 250	0.1 ~ 0.3	150 ~ 250	0.1 ~ 0.33
		T3130	150 ~ 300	0.1 ~ 0.35	180 ~ 300	0.1 ~ 0.35
	Carbon steels Alloy steels < 300 HB	T3130	150 ~ 280	0.1 ~ 0.35	180 ~ 280	0.1 ~ 0.35
		AH120 · GH330	100 ~ 200	0.1 ~ 0.3	150 ~ 250	0.1 ~ 0.33
Die steels < 30 HRC	NS740	100 ~ 180	0.1 ~ 0.25	150 ~ 200	0.1 ~ 0.3	
M	Stainless steels < 250 HB	T3130 · AH120	100 ~ 150	0.1 ~ 0.2	100 ~ 150	0.1 ~ 0.2
		AH140	80 ~ 180	0.15 ~ 0.3	100 ~ 200	0.15 ~ 0.33
K	Cast irons Ductile cast irons	AH120	150 ~ 230	0.15 ~ 0.3	200 ~ 250	0.15 ~ 0.3
		AH120	100 ~ 200	0.1 ~ 0.3	100 ~ 200	0.1 ~ 0.3
N	Aluminium alloys Si < 13%	TH10	200 ~ 1000	0.05 ~ 0.3	350 ~ 1000	0.1 ~ 0.3
	Copper alloy	TH10	200 ~ 500	0.1 ~ 0.2	200 ~ 500	0.1 ~ 0.25
S	Titanium alloys Ti-6Al-4V, etc.	AH140	20 ~ 60	0.05 ~ 0.15	20 ~ 60	0.05 ~ 0.15
	Superalloys Inconel718, etc.	AH120	20 ~ 40	0.05 ~ 0.1	20 ~ 40	0.05 ~ 0.1

Note: The above are the values for dry cutting of all materials except aluminium alloy.

# TMD4400R/LI

45° face mill, with wedge clamp system, for positive square inserts

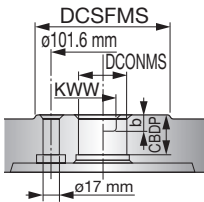
GAMP = +15°, GAMF = -3°



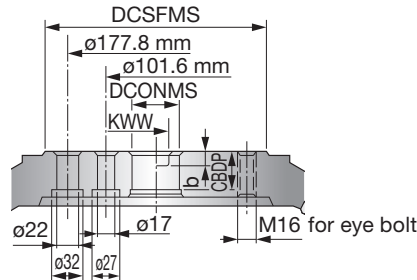
Designation	APMX	DC	CICT	BD	LF	DCONMS	CBDP	KWW	b	WT(kg)	Insert
TMD4403R/LI	4	80	4	96	50	25.4	26	9.5	6	1.4	SD*N42.../SD*R1203.../WDCN42ZFR-DIA
TMD4404R/LI	4	100	5	115	63	31.75	32	12.7	8	2.5	SD*N42.../SD*R1203.../WDCN42ZFR-DIA
TMD4405R/LI	4	125	6	139	63	38.1	38	15.9	10	3.60	SD*N42.../SD*R1203.../WDCN42ZFR-DIA
TMD4406R/LI	4	160	8	173	63	50.8	38	19	11	5.6	SD*N42.../SD*R1203.../WDCN42ZFR-DIA
TMD4408R/LI	4	200	10	213	63	47.625	38	25.4	14	8.7	SD*N42.../SD*R1203.../WDCN42ZFR-DIA
TMD4410R/LI	4	250	12	263	63	47.625	38	25.4	14	16.3	SD*N42.../SD*R1203.../WDCN42ZFR-DIA
TMD4412RI	4	315	14	327	63	47.625	38	25.4	14	25.2	SD*N42.../SD*R1203.../WDCN42ZFR-DIA

## Arbor type

TMD4408/10R/LI



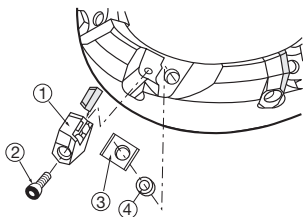
TMD4412RI



## SPARE PARTS

Designation	① Locator	④ Wedge fixing screw	② Locator fixing screw	③ Wedge	Wrench
TMD4403RI	LD440R	FDS-8S	CM4X0.7X14	WP440R	TP-4
TMD4403LI	LD440L	FDS-8S	CM4X0.7X14	WP440L	TP-4
TMD4404RI	LD440R	FDS-8S	CM4X0.7X14	WP440R	TP-4
TMD4404LI	LD440L	FDS-8S	CM4X0.7X14	WP440L	TP-4
TMD4405RI	LD440R	FDS-8S	CM4X0.7X14	WP440R	TP-4
TMD4405LI	LD440L	FDS-8S	CM4X0.7X14	WP440L	TP-4
TMD4406RI	LD440R	FDS-8S	CM4X0.7X14	WP440R	TP-4
TMD4406LI	LD440L	FDS-8S	CM4X0.7X14	WP440L	TP-4
TMD4408RI	LD440R	FDS-8S	CM4X0.7X14	WP440R	TP-4
TMD4408LI	LD440L	FDS-8S	CM4X0.7X14	WP440L	TP-4
TMD4410RI	LD440R	FDS-8S	CM4X0.7X14	WP440R	TP-4
TMD4410LI	LD440L	FDS-8S	CM4X0.7X14	WP440L	TP-4
TMD4412RI	LD440R	FDS-8S	CM4X0.7X14	WP440R	TP-4

\*Recommended clamping torque (N·m): FDS-8S=8



Reference pages: Inserts → **H097**, Standard cutting conditions → **H098**

Grade  
Insert  
Ext. Toolholder  
Int. Toolholder  
Threading  
Grooving  
Miniature tool  
Milling cutter  
Endmill  
Drilling tool  
Tooling System  
User's Guide  
Index



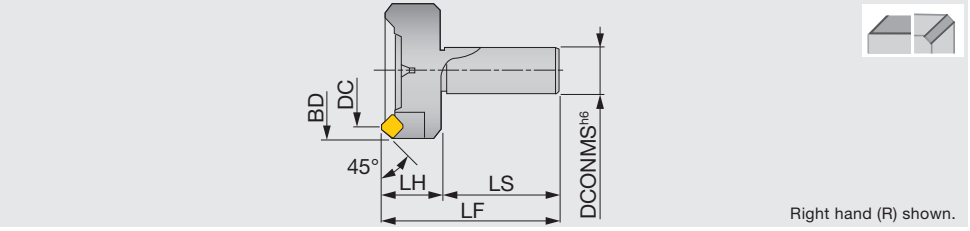
High Feed Milling

# EMD4400RI

45° endmill, shank type, with wedge clamp system, for positive square inserts

GAMP = +15°, GAMF = -3°

Face Milling



Right hand (R) shown.

Shoulder Milling

Slot Milling

Designation	APMX	DC	CICT	BD	DCONMS	LS	LH	LF	WT(kg)	Insert
EMD4403RI-S32	4	80	4	95	32	80	40	120	2	SD*N42.../SD*R1203.../WDCN42ZFR-DIA

Profile Milling

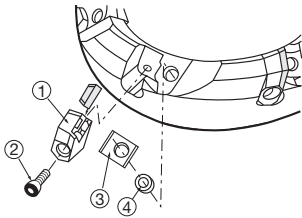
## SPARE PARTS

Designation	① Locator	④ Wedge fixing screw	② Locator fixing screw	③ Wedge	Wrench
EMD4403RI-S32	LD440R	FDS-8S	CM4X0.7X14	WP440R	TP-4

\*Recommended clamping torque (N·m): FDS-8S=8

Approach angle

- 10°-20°
- 45°
- 70°
- 85°
- 88°
- 90°
- Others



Reference pages: Inserts → **H097**, Standard cutting conditions → **H098**





# STANDARD CUTTING CONDITIONS

Roughing (Depth of cut: APMX 1.5 ~ 4 mm) Finishing (Depth of cut: APMX 0.3 ~ 0.7 mm)

ISO	Workpiece material	Grade	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)	
<b>P</b>	Mild steels Unhardened steels < 180 HB	NS740	150 ~ 250	0.1 ~ 0.2	150 ~ 250	0.1 ~ 0.25	
		T3225	150 ~ 350	0.1 ~ 0.25	150 ~ 350	0.1 ~ 0.28	
		AH3135	150 ~ 300	0.1 ~ 0.28	180 ~ 300	0.1 ~ 0.3	
	Carbon steels Alloy steels < 300 HB	NS740	100 ~ 180	0.1 ~ 0.18	150 ~ 200	0.1 ~ 0.23	
		T3225	100 ~ 320	0.1 ~ 0.23	150 ~ 320	0.1 ~ 0.25	
		AH3135	100 ~ 200	0.1 ~ 0.25	150 ~ 200	0.1 ~ 0.3	
	Die steels < 30 HRC	AH3135	100 ~ 150	0.1 ~ 0.15	100 ~ 150	0.1 ~ 0.2	
		T3225	100 ~ 250	0.1 ~ 0.15	100 ~ 250	0.1 ~ 0.2	
	<b>M</b>	Stainless steels < 250 HB	AH3135	80 ~ 180	0.15 ~ 0.25	100 ~ 200	0.15 ~ 0.28
			T3225	150 ~ 230	0.15 ~ 0.23	200 ~ 250	0.15 ~ 0.25
<b>K</b>	Cast irons Ductile cast irons	T1215	100 ~ 250	0.1 ~ 0.2	100 ~ 250	0.1 ~ 0.25	
		AH120	100 ~ 200	0.1 ~ 0.25	100 ~ 200	0.1 ~ 0.3	
<b>S</b>	Titanium alloys Ti-6Al-4V, etc.	AH130	30 ~ 60	0.1 ~ 0.2	30 ~ 60	0.1 ~ 0.2	
	Superalloys Inconel718, etc.	AH120	10 ~ 40	0.05 ~ 0.15	10 ~ 40	0.05 ~ 0.1	
<b>N</b>	Aluminium alloys Si < 13%	TH10	200 ~ 1000	0.05 ~ 0.2	350 ~ 1000	0.1 ~ 0.3	
		DX140	200 ~ 1000	0.05 ~ 0.18	350 ~ 1000	0.1 ~ 0.2	
	Copper alloy	TH10	200 ~ 500	0.1 ~ 0.2	200 ~ 500	0.1 ~ 0.25	

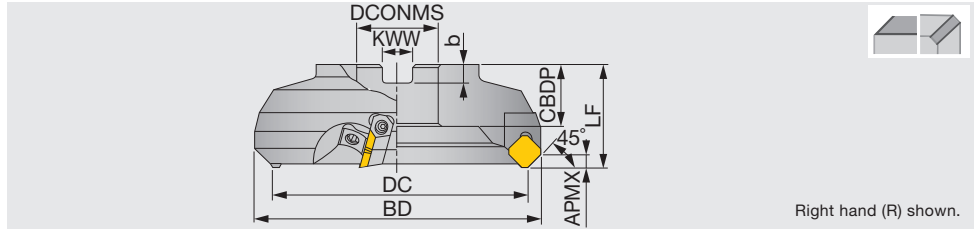
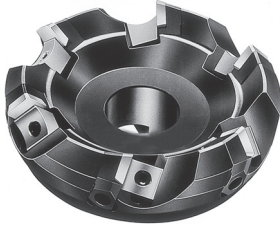
Note: The above are the values for dry cutting of all materials except aluminium alloy.  
Maximum depth of cut for DX140 SDCN42ZFN-DIA is 2 mm.

- High Feed Milling
- Face Milling
- Shoulder Milling
- Slot Milling
- Profile Milling
- Approach angle
- 10°-20°
- 45°
- 70°
- 85°
- 88°
- 90°
- Others

# TMD5400RI

45° face mill, with wedge clamp system, for positive square inserts

GAMP = +15°, GAMF = -3°



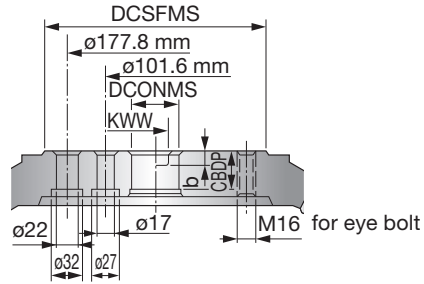
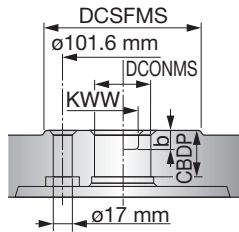
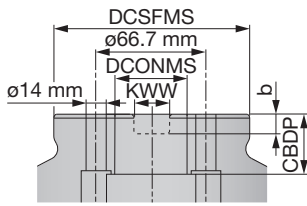
Designation	APMX	DC	CICT	BD	LF	DCONMS	CBDP	KWW	b	WT(kg)	Insert
TMD5404RI	6	100	4	118	63	31.75	32	12.7	8	2.5	SD*N53Z...
TMD5404RI-E	6	100	4	118	50	32	28.5	14.4	8	2.5	SD*N53Z...
TMD5405RI	6	125	6	142	63	38.1	38	15.9	10	2.5	SD*N53Z...
TMD5405RI-E	6	125	6	142	63	40	32	16.4	9	3.7	SD*N53Z...
TMD5406RI	6	160	6	176	63	50.8	38	19	11	5.8	SD*N53Z...
TMD5406RI-E	6	160	6	176	63	40	29	16.4	9	5.8	SD*N53Z...
TMD5408RI	6	200	8	216	63	47.625	38	25.4	14	9	SD*N53Z...
TMD5408RI-E	6	200	8	216	63	60	38	25.7	14	9	SD*N53Z...
TMD5410RI	6	250	10	265	63	47.625	38	25.4	14	16.3	SD*N53Z...
TMD5410RI-E	6	250	10	265	63	60	38	25.7	14	16.3	SD*N53Z...
TMD5412RI	6	315	12	330	63	47.625	38	25.4	14	25.2	SD*N53Z...
TMD5412RI-E	6	315	12	330	63	60	38	25.7	14	25.2	SD*N53Z...

## Arbor type

TMD5406RI-E

TMD5408/10...

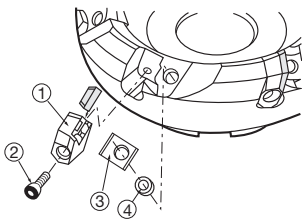
TMD5412RI



## SPARE PARTS

Designation	① Locator	④ Wedge fixing screw	② Locator fixing screw	③ Wedge	Wrench
TMD54**RI*	LD540R	FDS-8S	CM4X0.7X20	WF500R	TP-4

\*Recommended clamping torque (N·m): FDS-8S=8



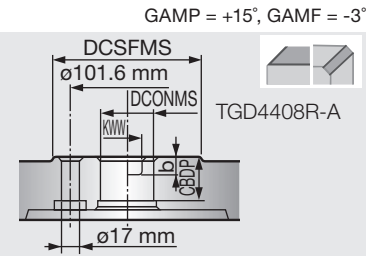
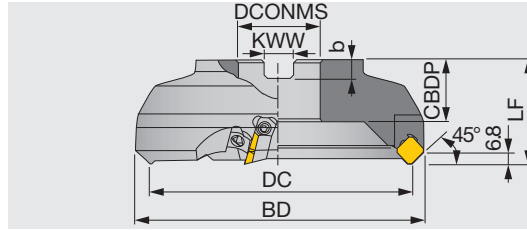
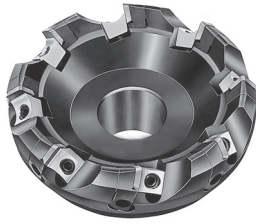
Reference pages: Inserts, Standard cutting conditions → **H100**





## TGD4400-A

45° face mill, with wedge clamp system, for positive square inserts

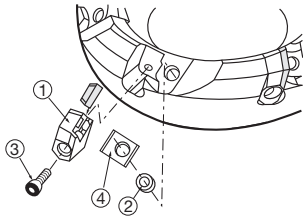


Designation	APMX	DC	CICT	BD	LF	DCONMS	CBDP	KWW	b	WT(kg)	Insert
TGD4403R-A	4	80	6	96	50	25.4	26	9.5	6	1.4	SD*N42.../SD*R1203.../WDCN42ZFR-DIA
TGD4404R-A	4	100	6	115	63	31.75	32	12.7	8	2.5	SD*N42.../SD*R1203.../WDCN42ZFR-DIA
TGD4405R-A	4	125	8	139	63	38.1	38	15.9	10	3.6	SD*N42.../SD*R1203.../WDCN42ZFR-DIA
TGD4406R-A	4	160	8	173	63	50.8	38	19	11	5.6	SD*N42.../SD*R1203.../WDCN42ZFR-DIA
TGD4408R-A	4	200	10	213	63	47.625	38	25.4	14	8.7	SD*N42.../SD*R1203.../WDCN42ZFR-DIA

### SPARE PARTS

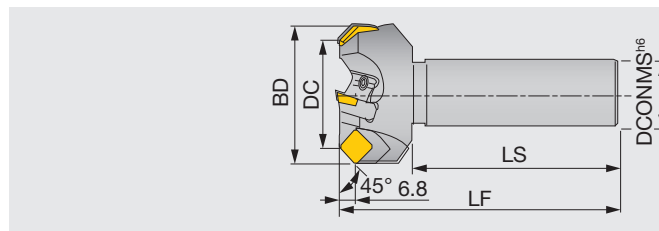
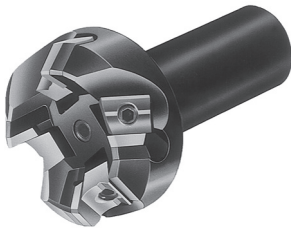
Designation	① Locator	② Wedge fixing screw	③ Locator fixing screw	④ Wedge	Wrench
TGD4400-A	LD440R	FDS-8S	CM4X0.7X14	WP440R	TP-4

\*Recommended clamping torque (N·m): FDS-8S=8



## EGD4400

45° face endmill, shank type, with wedge clamp system, for positive square inserts



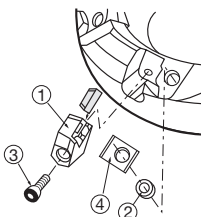
GAMP = +15°, GAMF = -3°

Designation	APMX	DC	CICT	BD	DCONMS	LS	LH	LF	WT(kg)	Insert
EGD4450R	4	50	4	67	32	80	35	115	1.1	SD*N42.../SD*R1203.../WDCN42ZFR-DIA
EGD4463R	4	63	4	79	32	80	35	115	1.4	SD*N42.../SD*R1203.../WDCN42ZFR-DIA

### SPARE PARTS

Designation	① Locator	② Wedge fixing screw	③ Locator fixing screw	④ Wedge	Wrench
EGD4400	LD442R	DS-8	BM3X0.5X6	WP193TR	TP-4

\*Recommended clamping torque (N·m): DS-8=8



Reference pages: Inserts → [H102](#), Standard cutting conditions → [H103](#)



# STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Roughing (Depth of cut: APMX 1.5 ~ 4 mm)		Finishing (Depth of cut: APMX 0.3 ~ 0.7 mm)	
			Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)
<b>P</b>	Mild steels Unhardened steels < 180 HB	NS740	150 ~ 250	0.1 ~ 0.2	150 ~ 250	0.1 ~ 0.25
		T3225	150 ~ 350	0.1 ~ 0.25	150 ~ 350	0.1 ~ 0.28
		AH3135	150 ~ 300	0.1 ~ 0.28	180 ~ 300	0.1 ~ 0.3
	Carbon steels Alloy steels < 300 HB	NS740	100 ~ 180	0.1 ~ 0.18	150 ~ 200	0.1 ~ 0.23
		T3225	100 ~ 320	0.1 ~ 0.23	150 ~ 320	0.1 ~ 0.25
		AH3135	100 ~ 200	0.1 ~ 0.25	150 ~ 200	0.1 ~ 0.3
Die steels < 30 HRC	AH3135	100 ~ 150	0.1 ~ 0.15	100 ~ 150	0.1 ~ 0.2	
	T3225	100 ~ 250	0.1 ~ 0.15	100 ~ 250	0.1 ~ 0.2	
<b>M</b>	Stainless steels < 250 HB	AH3135	80 ~ 180	0.15 ~ 0.25	100 ~ 200	0.15 ~ 0.28
		T3225	150 ~ 230	0.15 ~ 0.23	200 ~ 250	0.15 ~ 0.25
<b>K</b>	Cast irons Ductile cast irons	T1215	100 ~ 250	0.1 ~ 0.2	100 ~ 250	0.1 ~ 0.25
		AH120	100 ~ 200	0.1 ~ 0.25	100 ~ 200	0.1 ~ 0.25
<b>S</b>	Titanium alloys Ti-6Al-4V, etc.	AH130	30 ~ 60	0.1 ~ 0.2	30 ~ 60	0.1 ~ 0.2
	Superalloys Inconel718, etc.	AH120	10 ~ 40	0.05 ~ 0.15	10 ~ 40	0.05 ~ 0.1
<b>N</b>	Aluminium alloys Si < 13%	TH10	200 ~ 1000	0.05 ~ 0.2	350 ~ 1000	0.1 ~ 0.3
		DX140	200 ~ 1000	0.05 ~ 0.18	350 ~ 1000	0.1 ~ 0.2
	Copper alloy	TH10	200 ~ 500	0.1 ~ 0.2	200 ~ 500	0.1 ~ 0.25

Note: The above are the values for dry cutting of all materials except aluminium alloy.  
Maximum depth of cut for DX140 SDCN42ZFN-DIA is 2 mm.

Grade  
Insert  
Ext. Toolholder  
Int. Toolholder  
Threading  
Grooving  
Miniature tool  
Milling cutter  
Endmill  
Drilling tool  
Tooling System  
User's Guide  
Index

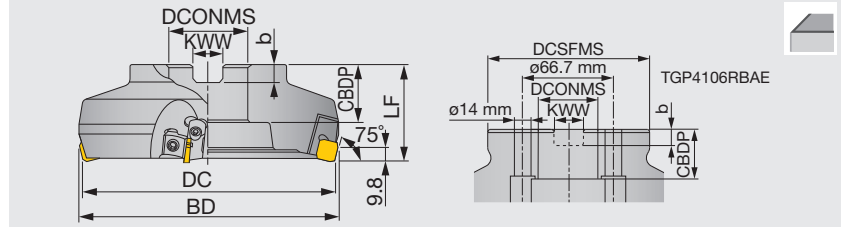
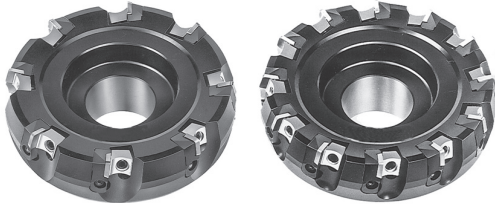


- High Feed Milling
- Face Milling
- Shoulder Milling
- Slot Milling
- Profile Milling
- Approach angle
- 10°-20°
- 45°
- 70°
- 85°
- 88°
- 90°
- Others

# TGP4100RIA/BAA/RBAE

75° face mill, with wedge clamp system, for positive square inserts

GAMP = +7°, GAMF = +1°



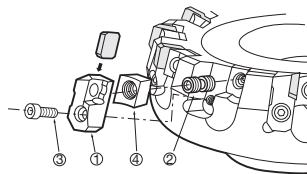
Designation	APMX	DC	CICT	BD	LF	DCONMS	CBDP	KWW	b	WT(kg)	Insert
TGP4103RIA	7	80	5	89	50	25.4	26	9.5	6	1.3	SP*N42.../ WPAN42...
TGP4104RIA	7	100	6	108	63	31.75	32	12.7	8	2.4	SP*N42.../ WPAN42...
TGP4104RBA	7	100	8	108	63	31.75	32	12.7	8	2.4	SP*N42.../ WPAN42...
TGP4104RBAE	7	100	8	108	63	32	25	14.4	8	2.4	SP*N42.../ WPAN42...
TGP4105RIA	7	125	8	132	63	38.1	38	15.9	10	3.6	SP*N42.../ WPAN42...
TGP4105RBA	7	125	10	132	63	38.1	38	15.9	10	3.6	SP*N42.../ WPAN42...
TGP4105RBAE	7	125	10	132	63	40	32	16.4	9	3.6	SP*N42.../ WPAN42...
TGP4106RIA	7	160	8	167	63	50.8	38	19	11	5.9	SP*N42.../ WPAN42...
TGP4106RBA	7	160	12	167	63	50.8	38	19	11	5.8	SP*N42.../ WPAN42...
TGP4106RBAE	7	160	12	167	63	40	29	16.4	9	5.8	SP*N42.../ WPAN42...

## SPARE PARTS



Designation	① Locator	② Wedge fixing screw	③ Locator fixing screw	④ Wedge	Wrench
TGP4103RIA	LP413R	FDS-8S	CM4X0.7X14	WF310R	TP-4
TGP4104, 05, 06RIA	LP413R	FDS-8S	CM4X0.7X14	WP440R	TP-4
TGP4104, 05, 06RBA	LP413R	FDS-8S	CM4X0.7X14	WF310R	TP-4
TGP4104, 05, 06RBAE	LP413R	FDS-8S	CM4X0.7X14	WF310R	TP-4

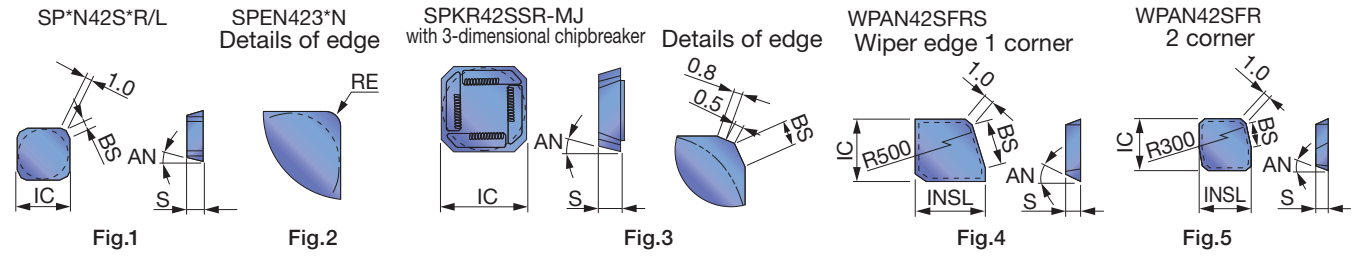
\*Recommended clamping torque (N·m): FDS-8S=8



Reference pages: Inserts, Standard cutting conditions → **H105**

# INSERT

## SPCN/SPEN/SPKN 42S



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

★ : First choice  
☆ : Second choice

Designation	RE	APMX	Coated					Cermets		Ceramic	Uncoated		IC	INSL	S	AN	BS	Fig.
			AH120	AH140	GH330	T1115	T3130	NS740	N308	FX105	UX30	TH10						
SPCN42STR	0	7						●	●		●		12.7	-	3.18	11°	1.4	1
SPCN42SFR	0	7									●		12.7	-	3.18	11°	1.4	1
SPEN42STR	0	7						●					12.7	-	3.18	11°	1.4	1
SPKN42STR	0	7	●	●	●	●	●	●	●	●*	●		12.7	-	3.18	11°	1.4	1
SPKN42STL	0	7						●			●		12.7	-	3.18	11°	1.4	1
SPKN42SFR	0	7									●		12.7	-	3.18	11°	1.4	1
SPKN42SFL	0	7									●		12.7	-	3.18	11°	1.4	1
SPKR42SSR-MJ	0	7		●	●	●							12.7	-	3.18	11°	0	3
WPAN42SFRS	0	-									●		12.4	14.9	3.18	11°	9.7	4
WPAN42SFR	0	-							●		●		12.4	13.8	3.18	11°	5.2	5
SPGN120312TN	1.2	7								●*			12.7	-	3.18	11°	-	2
SPEN423TN	1.2	7				●		●			●		12.7	-	3.18	11°	-	2
SPEN423FN	1.2	7									●		12.7	-	3.18	11°	-	2

Note: Insert marked with \* and a wiper insert should not be used together.

● : Line up

## STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Roughing (Depth of cut: APMX 1.5 ~ 4 mm)		Finishing (Depth of cut: APMX 0.3 ~ 0.7 mm)	
			Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)
<b>P</b>	Mild steels Unhardened steels < 180 HB	NS740 · N308	150 ~ 250	0.1 ~ 0.18	150 ~ 250	0.1 ~ 0.23
		AH120 · GH330	150 ~ 250	0.1 ~ 0.23	150 ~ 250	0.1 ~ 0.25
		T3130	150 ~ 300	0.1 ~ 0.25	180 ~ 300	0.1 ~ 0.28
		UX30	100 ~ 180	0.1 ~ 0.25	130 ~ 200	0.1 ~ 0.28
	Carbon steels Alloy steels < 300 HB	T3130	150 ~ 280	0.1 ~ 0.23	180 ~ 280	0.1 ~ 0.25
		NS740 · N308	100 ~ 180	0.1 ~ 0.18	150 ~ 200	0.1 ~ 0.23
		AH330 · AH120	100 ~ 200	0.1 ~ 0.2	150 ~ 200	0.1 ~ 0.23
		UX30	80 ~ 130	0.1 ~ 0.23	100 ~ 150	0.1 ~ 0.25
	Carbon steels Alloy steels < 300 HB	T3130 · GH330	150 ~ 230	0.1 ~ 0.23	180 ~ 280	0.1 ~ 0.25
		NS740 · N308	100 ~ 180	0.1 ~ 0.18	150 ~ 200	0.1 ~ 0.23
UX30		80 ~ 130	0.1 ~ 0.23	100 ~ 150	0.1 ~ 0.25	
Die steels < 30 HRC	T3130	100 ~ 150	0.1 ~ 0.15	100 ~ 150	0.1 ~ 0.2	
	UX30	80 ~ 130	0.1 ~ 0.15	80 ~ 130	0.1 ~ 0.2	
<b>M</b>	Stainless steels < 250 HB	AH120 · AH140	150 ~ 230	0.15 ~ 0.2	200 ~ 250	0.15 ~ 0.23
		UX30	150 ~ 180	0.15 ~ 0.2	180 ~ 200	0.15 ~ 0.23
<b>K</b>	Cast irons Ductile cast irons	T1115	100 ~ 200	0.1 ~ 0.2	100 ~ 200	0.1 ~ 0.23
		TH10 · UX30	80 ~ 130	0.1 ~ 0.2	80 ~ 130	0.1 ~ 0.23
		FX105	200 ~ 500	0.1 ~ 0.2	200 ~ 600	0.1 ~ 0.3

Note: Dry cutting is recommended for the above materials.

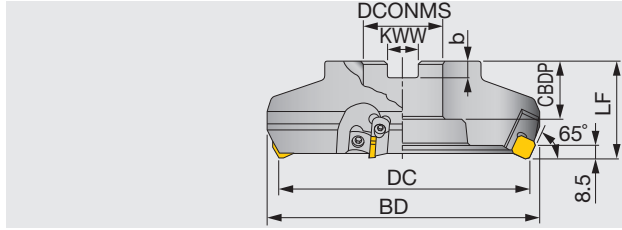
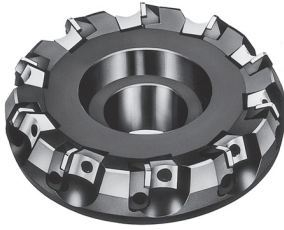


- High Feed Milling
- Face Milling
- Shoulder Milling
- Slot Milling
- Profile Milling

# TGP4200R-A

65° face mill, with wedge clamp system, for positive square inserts

GAMP = +5°, GAMF = +1°



Right hand (R) shown.

Designation	APMX	DC	CICT	BD	LF	DCONMS	CBDP	KWW	b	WT(kg)	Insert
TGP4203R-A	6	80	5	95	50	25.4	26	9.5	6	1.4	SP*N42.../ WPAN42ZFR
TGP4204R-A	6	100	6	114	63	31.75	32	12.7	8	2.4	SP*N42.../ WPAN42ZFR
TGP4205R-A	6	125	8	139	63	38.1	38	15.9	10	3.9	SP*N42.../ WPAN42ZFR
TGP4206R-A	6	160	10	174	63	50.8	38	19	11	6.1	SP*N42.../ WPAN42ZFR

## SPARE PARTS

Designation	Locator	Wedge fixing screw	Locator fixing screw	Wedge	Wrench
TGP42**R-A	LP413R	FDS-8S	CM4X0.7X14	WP440R	TP-4

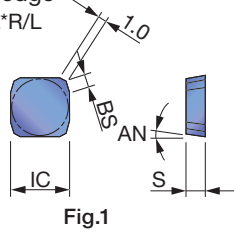
\*Recommended clamping torque (N·m): FDS-8S=8

- Approach angle
- 10°-20°
- 45°
- 70°
- 85°
- 88°
- 90°
- Others

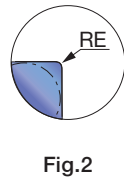
## INSERT

### SPAN/SPCN/SPEN/SPKN 42Z

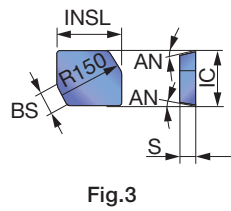
Regular edge  
SP\*N42Z\*R/L



SPEN423\*N



Wiper edge 2 corners  
WPAN42Z\*R/L



Right hand (R) shown.

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

★ : First choice  
☆ : Second choice

Designation	APMX	Coated		Cermet			Uncoated		IC	INSL	S	AN	BS	RE	Fig.
		T1115	T3130	NS740	X407	N308	UX30	TH10							
SPAN42ZFR	6							●	12.7	-	3.18	11°	2	-	1
SPCN42ZFL	6							●	12.7	-	3.18	11°	2	-	1
SPCN42ZFR	6							●	12.7	-	3.18	11°	2	-	1
SPCN42ZTR	6							●	12.7	-	3.18	11°	2	-	1
SPEN423TN	6		●					●	12.7	-	3.18	11°	-	1.2	2
SPEN423FN	6							●	12.7	-	3.18	11°	-	1.2	2
SPEN42ZTR	6							●	12.7	-	3.18	11°	2	-	1
SPKN42ZFL	6							●	12.7	-	3.18	11°	2	-	1
SPKN42ZFR	6							●	12.7	-	3.18	11°	2	-	1
SPKN42ZTR	6	●	●					●	12.7	-	3.18	11°	2	-	1
WPAN42ZFR	6							●	12.2	14.28	3.18	11°	4.5	-	3

● : Line up

Reference pages: Standard cutting conditions → **H107**

## STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Roughing (Depth of cut: APMX 1.5 ~ 4 mm)		Finishing (Depth of cut: APMX 0.3 ~ 0.7 mm)	
			Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)
<b>P</b>	Mild steels Unhardened steels < 180 HB	T3130	150 ~ 250	0.1 ~ 0.25	180 ~ 250	0.1 ~ 0.28
		NS740	100 ~ 250	0.1 ~ 0.18	150 ~ 250	0.1 ~ 0.23
	Carbon steels Alloy steels < 300 HB	T3130	130 ~ 250	0.1 ~ 0.23	150 ~ 250	0.1 ~ 0.25
		NS740	100 ~ 180	0.1 ~ 0.18	150 ~ 200	0.1 ~ 0.23
<b>K</b>	Cast irons Ductile cast irons	T1115	100 ~ 200	0.1 ~ 0.2	100 ~ 200	0.1 ~ 0.23
<b>M</b>	Stainless steels < 250 HB	T3130	150 ~ 250	0.15 ~ 0.2	200 ~ 250	0.15 ~ 0.23
		UX30	150 ~ 180	0.15 ~ 0.2	180 ~ 200	0.15 ~ 0.23

Note: Dry cutting is recommended for the above materials.

Grade  
Insert  
Toolholder  
Ext. Toolholder  
Int. Toolholder  
Threading  
Grooving  
Miniature tool  
Milling cutter  
Endmill  
Drilling tool  
Tooling System  
User's Guide  
Index

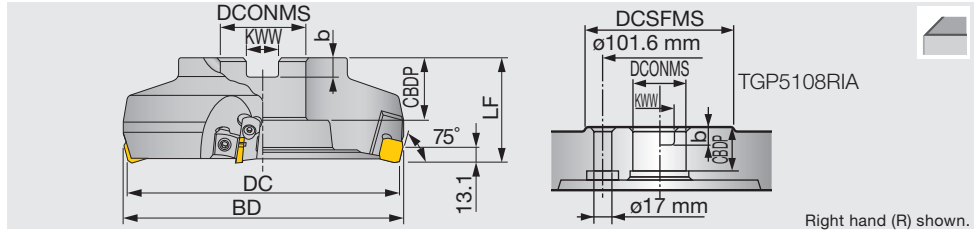
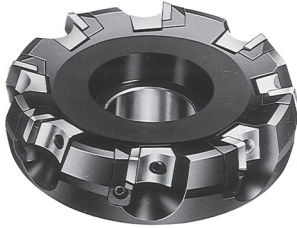




# TGP5100RIA

75° face mill, with wedge clamp system, for positive square inserts

GAMP = +7°, GAMF = +1°



Designation	APMX	DC	CICT	BD	LF	DCONMS	CBDP	KWW	b	WT(kg)	Insert
TGP5104RIA	10	100	5	109	63	31.75	32	12.7	8	2.3	SP*N53...
TGP5105RIA	10	125	6	133	63	38.1	38	15.9	10	3.5	SP*N53...
TGP5106RIA	10	160	8	167	63	50.8	38	19	11	5.7	SP*N53...
TGP5108RIA	10	200	10	207	63	47.625	38	25.4	14	8.4	SP*N53...

## SPARE PARTS

Designation	Locator	Wedge fixing screw	Locator fixing screw	Wedge	Wrench
TGP51**RIA	LP514R	FDS-8S	CM4X0.7X14	WF500R	TP-4

\*Recommended clamping torque (N·m): FDS-8S=8

## INSERT

### SPCN/SPKN 53S



SP\*N53S\*R/L

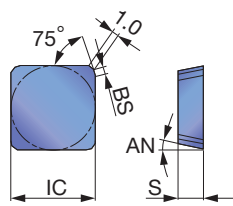


Fig.1

SPKN53STR20

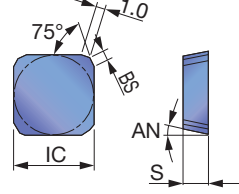


Fig.2

SPKR53SSR-MJ with 3-dimensional chipbreaker

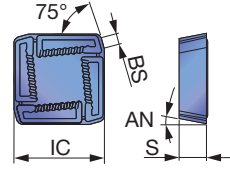


Fig.3

Right hand (R) shown.

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

★ : First choice  
☆ : Second choice

Designation	APMX	Coated			Cermet		Uncoated		IC	S	AN	BS	Fig.
		GH330	T1115	T3130	NS740	N308	UX30	TH10					
SPCN53SFR	10						●		15.875	4.76	11°	1.2	1
SPCN53STR	10				●		●		15.875	4.76	11°	1.2	1
SPKN53SFR	10						●		15.875	4.76	11°	1.2	1
SPKN53STL	10						●		15.875	4.76	11°	1.2	1
SPKN53STR	10	●	●		●		●		15.875	4.76	11°	1.2	1
SPKN53STR20	10			●					15.875	4.76	11°	2	2
SPKR53SSR-MJ	10	●	●						15.875	4.76	11°	2	3

● : Line up

Reference pages: Standard cutting conditions → H109

# STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Roughing (Depth of cut: APMX 1.5 ~ 8 mm)		Finishing (Depth of cut: APMX 0.3 ~ 0.7 mm)	
			Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)
<b>P</b>	Mild steels Unhardened steels < 180 HB	T3130	150 ~ 300	0.1 ~ 0.35	180 ~ 300	0.1 ~ 0.35
		NS740 · N308	100 ~ 250	0.1 ~ 0.3	150 ~ 250	0.1 ~ 0.3
		GH330	150 ~ 250	0.1 ~ 0.3	150 ~ 250	0.1 ~ 0.33
	Carbon steels Alloy steels < 300 HB	T3130	150 ~ 280	0.1 ~ 0.3	180 ~ 280	0.1 ~ 0.35
		NS740 · N308	100 ~ 180	0.1 ~ 0.25	150 ~ 200	0.1 ~ 0.3
		GH330	100 ~ 200	0.1 ~ 0.28	150 ~ 200	0.1 ~ 0.33
<b>K</b>	Cast irons Ductile cast irons	TH10	80 ~ 130	0.1 ~ 0.3	80 ~ 130	0.1 ~ 0.3
		T1115	100 ~ 200	0.1 ~ 0.3	100 ~ 200	0.1 ~ 0.3
<b>M</b>	Stainless steels < 250 HB	T3130	150 ~ 250	0.15 ~ 0.25	200 ~ 250	0.15 ~ 0.28
		GH330	150 ~ 230	0.15 ~ 0.3	200 ~ 250	0.15 ~ 0.3

Note: Dry cutting is recommended for the above materials.

Grade  
Insert  
Ext. Toolholder  
Int. Toolholder  
Threading  
Grooving  
Miniature tool  
Milling cutter  
Endmill  
Drilling tool  
Tooling System  
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# S-TAQ System

The world's highest level repeatability

## S-TAQ System

### ● Improved surface quality and increased tool life

- Two-face restricted (1/10 short taper and flange face) coupling.
- High-level coupling performance contributes to high accuracy and excellent rigidity.
- Excellent dynamic balance reduces vibration, chatter, and cutting noise at high speeds.

### ● Improved productivity

- High speed machining can reduce machining time.
- High repeatability can eliminate trial cut.



### ● Labor-saving tool change

- Can eliminate detaching the toolholder from the main spindle.
- Can eliminate the brakes for the main spindle.
- Labor-saving clamping by only one T-wrench.

## Performance

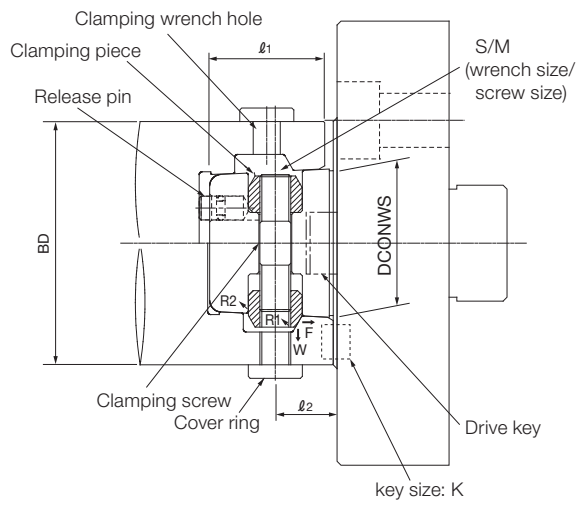
Original clamp system provides high rigidity, accuracy and operating speed.

### ● Clamping force (Strong clamp system)

- Lubricant coating on clamping piece.
- 4-points balancing clamp.
- Sufficient clamping for the smaller diameter part of taper.

Designation	Dimensions (mm)				S/M	K	Recommend clamping torque (N-m)	Clamping force (N)
	DCONWS	BD	ℓ 1	ℓ 2				
TAQ32	19	32	18	8.5	3/M6	8	3	4×10 <sup>3</sup>
TAQ40	24	40	21	10	3/M6	10	5	5.5×10 <sup>3</sup>
TAQ50	30	50	25	12	4/M8	12	8	9×10 <sup>3</sup>
TAQ63	38	63	32	15	4/M8	16	10	12×10 <sup>3</sup>
TAQ80	48	80	40	18	5/M10	18	20	18×10 <sup>3</sup>
TAQ100	60	100	50	22	6/M12	20	30	23×10 <sup>3</sup>

## Part assembly



W: Driving force by clamping screw  
 F: Clamping force  
 R1 = R2: Receiving force of clamping piece

## DATA

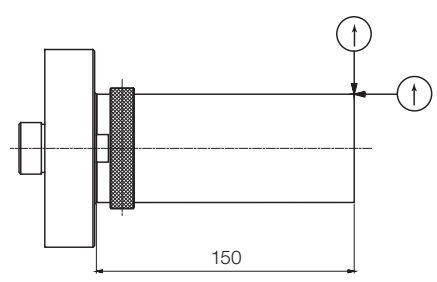
Comparison of clamping force

	Taper	Taper dia.(mm) / holder dia.(mm)	Recommend clamping torque (N/m)	Draw-in force (N)	Draw-in force / Torque (m-1)
TAQ63	1 / 10	38 / 63	10	12×10 <sup>3</sup>	1200
QC adapter	10°	35 / 70	20	9.8×10 <sup>3</sup>	490
Other makes A	4°	35 / 62	22.5	9.8×10 <sup>3</sup>	436

### ● Repeatability for accuracy

Radial run out	Within 0.003 mm
Axial run out	Within 0.002 mm

Note: Measured at 150 mm far from end face.

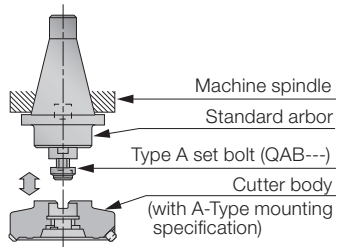


# QC system for TAC Mills

TAC mills QC system facilitate easy and quick mounting of the cutter body (face milling cutter, etc.) to the machine tools.

## Small dia. TAC mills QC system Dia. $\phi 80 \sim 160$

### Type A QC system



#### Features

- Cutter body replacement is possible without removing the bolt.
- A QC system is made up only by installing the Type A set bolt to our standard arbor. (The cutter body is made to A-Type mounting specification.)
- Standard arbor used ensures superior economy and rigidity.

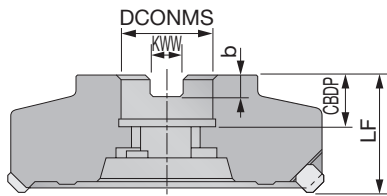
#### Replacement method

**Mounting** - Direct the set bolt direction to align with the cutter spot facing hole, then mount the cutter. Turn the set bolt one to two turns for tightening.

**Removal** - Loosen the bolt one turn, press the cutter to the spindle, and turn the set bolt one to two turns. The cutter can now be removed.

### A-type QC Mounting System for Small Diameter TAC Mills

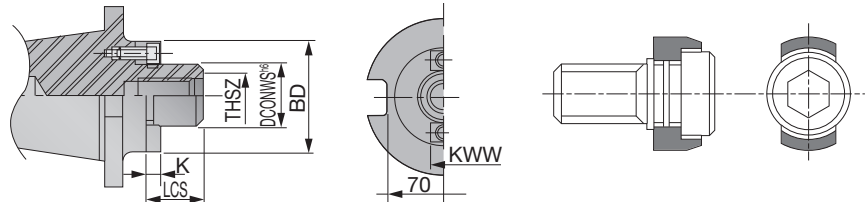
#### Dimensional details of mount (For $\phi 80$ to $\phi 160$ dia. TAC mills)



Cutter dia. (mm)	Dimensions (mm)				
	DCONMS	b	KWW	CDBP	LF
$\phi 80$	25.4	6	9.5	20	50
$\phi 100$	31.75	8	12.7	22	50
$\phi 125$	38.1	10	15.9	27	63
$\phi 160$	50.8	11	19	27	63

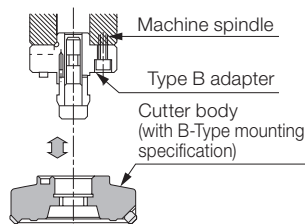
#### Arbors

Standard arbors (FMA, FMC type) can't be used. Special arbors applicable for below dimensions can be made to order on request.



Dimensions (mm)						Cutter fixing screw for A-type	Hex wrench size(mm)
DCONWS	BD	THSZ	LCS	KWW	K		
25.4	50	M12	18	9.5	5	QAB-3 (R/L)	Hex. Socket-head screw M12 x 30
31.75	60	M16	20	12.7	7	QAB-4 (R/L)	Hex. Socket-head screw M12 x 30
38.1	80	M20	25	15.9	9	QAB-5 (R/L)	17
50.8	100	M24	25	19.05	10	QAB-6 (R/L)	19

### Type B QC system



#### Features

- Cutter body replacement is possible without removing the bolt.
- Loosening of the adapter is not enough to remove the cutter. This is to prevent the cutter from falling.
- Type B QC adapter and Type B cutter installation are necessary.
- It is not necessary to set the set bolt direction with that of the cutter hole. The cutter is fit into the adapter only by aligning the match marks.

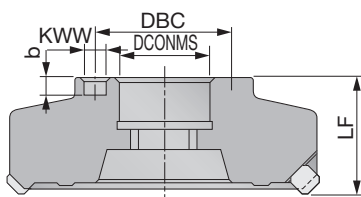
#### Replacement method

**Mounting** - Set the cutter into the adapter. Direct the cutter match mark to align with that of adapter, then the cutter enters the adapter. Turn the cutter by 90° and turn adapter bolt one to two turns for tightening.

**Removal** - Loosen adapter bolt by one or two turns and turn the cutter by 90°. The cutter can now be removed.

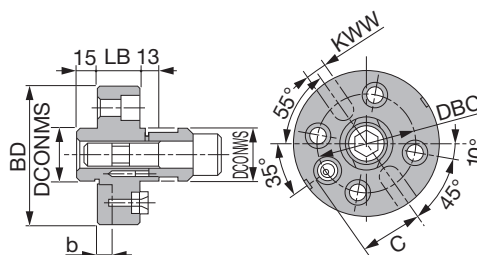
### B-type QC Mounting System for Small Diameter TAC Mills

#### Dimensional details of mount (For $\phi 80$ to $\phi 160$ dia. TAC mills)



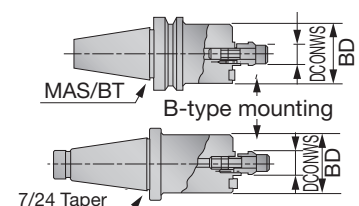
Cutter dia. (mm)	Dimensions (mm)				
	DCONMS	b	KWW	LF	DBC
$\phi 80$	25.4	7	10	50	45
$\phi 100$	31.75	7	12	63	55
$\phi 125$	38.1	7	15	63	70
$\phi 160$	50.8	7	18	63	85

#### Dimensional details of B-type adapters



Cutter dia. (mm)	Dimensions (mm)								
	DCONWS	c	BD	DCONMS	KWW	b	DBC	S	LB
$\phi 80$	25.4	22.5	80	25.4	9.5	7	45	M10	25
$\phi 100$	31.75	27.5	100	31.75	12.7	8	55	M10	25
$\phi 125$	38.1	35	100	38.1	15.9	10	70	M12	30
$\phi 160$	50.8	42.5	125	50.8	19	11	85	M16	30

Instead of the above B-type adapters, BT- and T-type arbors can be also used for B-type QC mount cutters. These arbors are made to order on request.

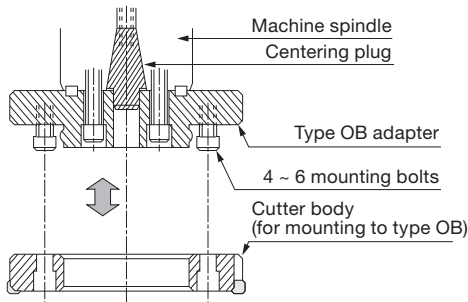




# QC system for TAC Mills

## Large dia. TAC mills QC system Dia. $\phi 200 \sim$

### Type OB QC system (Elongated mounting hole type)



#### Features

- The cutter body can be replaced without removing bolt.
- Cutter does not fall when only the bolt is removed.
- The cutter body weight is about one half of usual cutter.
- The cutter bolt is fixed to the adapter with four to six large bolts, ensuring high rigidity.

#### Replacement method

**Mounting** - Align the adapter tightening bolts (4 ~ 6) to the cutter mounting holes, turn the cutter whilst pressing it against the adapter, and turn the bolt to tighten.

**Removal** - Loosen the bolt slightly, and by one turn, turn the cutter to remove it from the adapter.

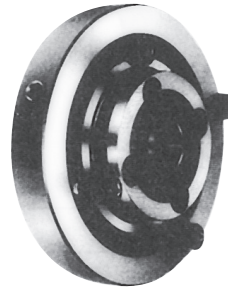
### OB-type QC Mounting System for Large Diameter TAC Mills (Elongated mounting hole type)

#### Cutter body ( $\phi 200 \sim \phi 400$ mm)

This system is applied to "flush edge-top" Standard type TAC mills with OB mount.

For the details of the OB-type cutter bodies.

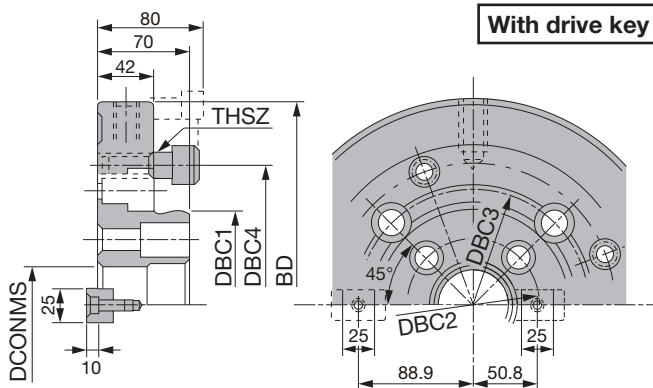
#### OB type adapter



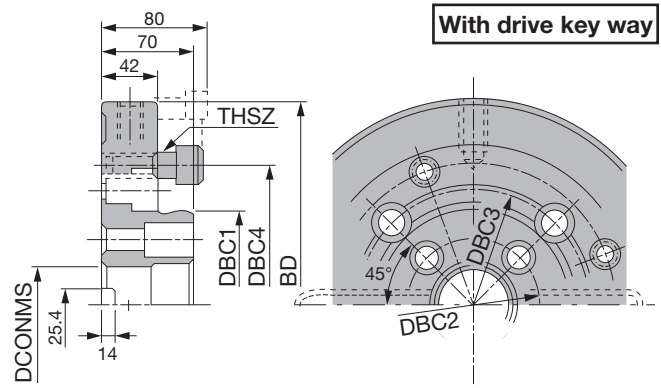
#### OB type cutter body



#### Dimensional details of mount of OB-type adapters



QA12K to QA16K type shown.



QA12M to QA16M type shown.

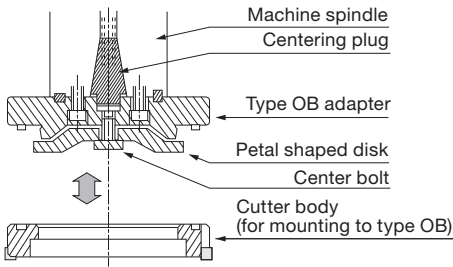
Adapter Designation	Dimensions (mm)							
	BD	DCONMS	DBC1	DBC2	DBC3	DBC4	THSZ	Bolts
QA08K/M	198	47.625	63.5	101.6	-	114.3	M16×40	4
QA10K/M	248	60	133.35	101.6	-	177.8	M16×50	4
QA12K/M	313	60	146.05	101.6	177.8	215.9	M20×50	4
QA14K/M	353	60	215.9	101.6	177.8	260.4	M20×50	6
QA16K/M	398	60	254	101.6	177.8	304.8	M20×50	6

- Notes:
- Dimension  $\phi d$  can be made to customer's specifications.
  - Special centering plugs for  $\phi 60$  mm hole are made to order.

Notes: In Designation, K indicates "with drive key" type, and M indicates "with drive key way" type. ("N" shows number of tapped holes.)

# Large dia. TAC mills QC system Dia. $\phi$ 200 ~

## Type CB QC system (Center bolt type)



### Features

- Move the petal-shaped disk up and down with one center bolt in the adapter, removing the cutter. Since only one bolt is used, replacement takes only one half of the time required by Type CB.
- The cutter body is lighter by 20% than that of OB type and easy to handle.
- Compatible with auto clamp unit.
- The cutter does not fall when the center bolt only is loosened.

### Replacement method

- Mounting** - Align the cutter notch with the adapter clamber and turn the cutter whilst pressing it against the adapter. Tighten with the center bolt.
- Removal** - Loosen the center bolt once and lift the cutter upward in the spindle direction. Turn the cutter further slightly, and the cutter can be removed from the adapter.

## CB-type QC Mounting System for Large Diameter TAC Mills (Center bolt type)

### Cutter body ( $\phi$ 200 ~ $\phi$ 400 mm)

This system is applied to "flush edge-top" type TAC mills with CB mount.

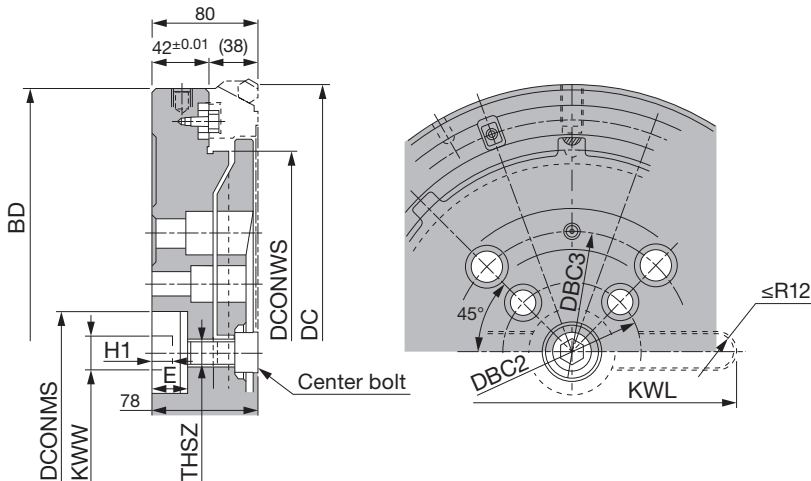
### CB type adapter



### CB type cutter body



## Dimensional details of mount of CB-type adapters



### Dimensions (mm)

Adapter Designation	DC	DCONMS	BD	DCONWS	DBC2	DBC3	KWW	H1	KWL	THSZ	E	Center bolt
QACB-08MR/L	200	47.625	195	119.97	101.6	-	25.4	14	150	M20	25	TMBA-M20
QACB-10MR/L	250	60	245	159.97	101.6	-	25.4	14	150	M20	25	TMBA-M20
QACB-12MR/L	315	60	310	214.97	101.6	-	25.4	14	150	M20	25	TMBA-M20
QACB-14MR/L	355	60	350	254.97	-	177.8	25.4	14	245	M20	25	TMBA-M20
QACB-16MR/L	400	60	395	299.95	-	177.8	25.4	14	245	M20	25	TMBA-M20

Note: • Dimension  $\phi$ d can be made to customer's specifications.

- Because of the dimensional restriction of "E", standard CO- type centering plugs can not be used for the adapters shown in the above table. Special centering plugs applicable for the above adapters can be made to order on request.

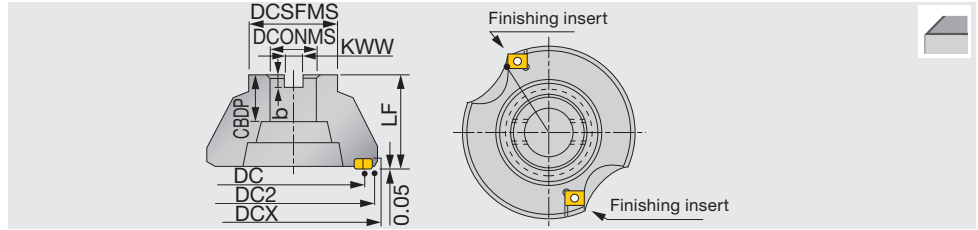


- High Feed Milling
- Face Milling
- Shoulder Milling
- Slot Milling
- Profile Milling

## NMS09

High precision finishing face mill, for negative rectangular inserts

GAMP = 10°, GAMF = -30°



Designation	APMX	DC	CICT	DC2	DCX	LF	DCONMS	CBDP	KWW	b	WT(kg)	Insert
NMS09080R	0.2	80	2	92	100.7	50	25.4	26	9.5	6	1.49	LNCQ0906...
NMS09100R	0.2	100	2	112	120.7	50	31.75	32	12.7	8	2.1	LNCQ0906...
NMS09125R	0.2	125	2	137	145.7	63	38.1	38	15.9	10	4.07	LNCQ0906...
NMS09160R	0.2	160	2	172	180.7	63	50.8	38	19	11	6.15	LNCQ0906...
NMS09200R	0.2	200	2	212	220.7	63	47.625	38	25.4	14	9.67	LNCQ0906...

### SPARE PARTS

Designation	Clamping screw	Wedge
NMS09...	CSTB-4	T-15D

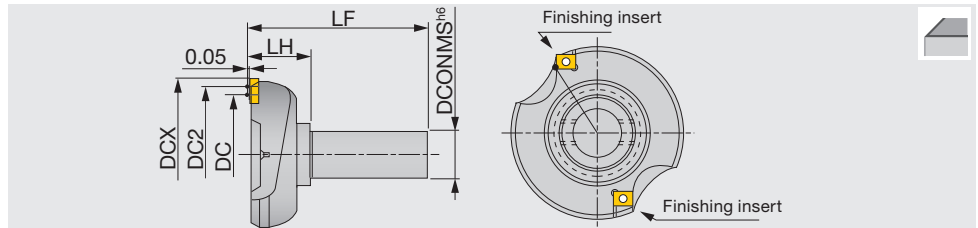
\*Recommended clamping torque (N·m): CSTB-4=3.5

- Approach angle
- 10°-20°
- 45°
- 70°
- 85°
- 88°
- 90°
- Others

## EMS09

High precision finishing endmill, shank type, for negative rectangular inserts

GAMP = +10°, GAMF = -30°



Designation	APMX	DC	CICT	DC2	DCX	DCONMS	LH	LF	Insert
EMS09080R	0.2	80	2	92	100.7	32	40	120	LNCQ0906...

### SPARE PARTS

Designation	Clamping screw	Wedge
EMS09080R	CSTB-4	T-15D

\*Recommended clamping torque (N·m): CSTB-4=3.5

Reference pages: Inserts, Standard cutting conditions → [H115](#)

## INSERT

### LNCQ0906N-100(50)L

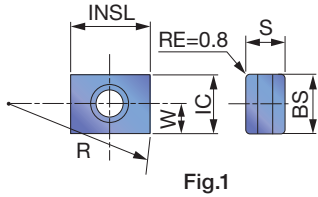


Fig.1

### LNCQ0906-50S

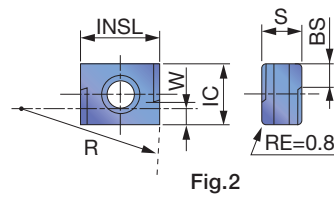


Fig.2

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

★ : First choice  
☆ : Second choice

Designation	APMX	Coated		Cermet		IC	INSL	S	R	W	BS	Fig.
		AH120	GH110	NS740								
LNCQ0906N-100L	0.2	●	●	●		9.525	12.7	6.35	100	4.763	7.9	1
LNCQ0906N-50L	0.2	●	●	●		9.525	12.7	6.35	50	4.763	7.9	1
LNCQ0906R-50S	0.2	●	●	●		-	12.7	6.35	50	2.3	4	2

● : Line up

## STANDARD CUTTING CONDITIONS

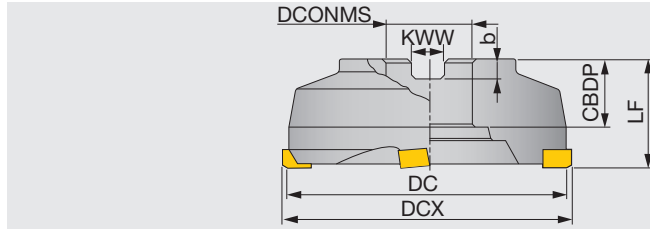
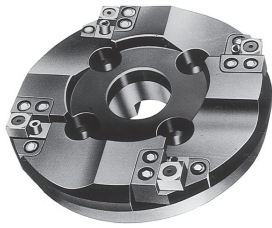
ISO	Workpiece material	Grade	Cutting speed Vc (m/min)	LNCQ0906N-100(50)L		LNCQ0906R-50S	
				Depth of cut APMX (mm)	Feed per tooth f (mm/rev)	Depth of cut APMX (mm)	Feed per tooth f (mm/rev)
P	Mild steels SS400, etc. E275A, etc. < 180 HB	NS740	200 ~ 300	< 0.2	2 ~ 6	≤ 0.2	1 ~ 2.5
	Carbon steels S55C, etc. C55, etc. < 300 HB	NS740	150 ~ 250				
	Alloy steels SCM440, etc. 42CrMo4, etc. < 300 HB	NS740	120 ~ 200				
	Die steels SKD61, etc. X40CrMoV5-1, etc. < 300 HB	NS740	100 ~ 150				
M	Stainless steels SUS304, SUS316, etc. X5CrNi18-9, X5CrNiMo17-12-3, etc.	AH120 NS740	150 ~ 220	< 0.2	2 ~ 6	≤ 0.2	1 ~ 2.5
	K	Cast irons FC250, etc. 250, etc.	GH110 AH120	120 ~ 200	< 0.2	2 ~ 6	≤ 0.2

- High Feed Milling
- Face Milling
- Shoulder Milling
- Slot Milling
- Profile Milling

# MS

High precision finishing face mill, with adjustable structure

GAMP = -5°, GAMF = -30°



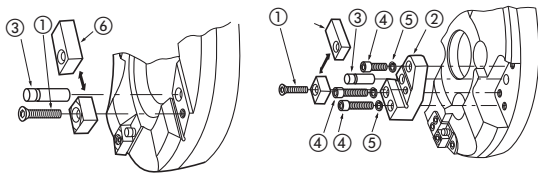
Right hand (R) shown.

Designation	APMX	DC	CICT	DCX	LF	DCONMS	CBDP	KWW	b	WT(kg)	Insert
MS04R/L	0.1	100	2	105	55	31.75	32	12.7	8	3	SN**56...
MS05R/L	0.1	125	2	130	60	38.1	38	15.9	10	4	SN**56...
MS06R/L	0.1	150	4	155	60	50.8	38	19	11	5	SN**56...
MS08R/L	0.1	200	4	205	60	47.625	38	25.4	14	8.5	SN**56...
MS10R/L	0.1	250	4	255	60	47.625	38	25.4	14	14	SN**56...
MS12R/L	0.1	300	4	305	60	47.625	38	25.4	14	23	SN**56...

## SPARE PARTS

Designation	① Clamping screw	② Locator	③ Pin	④ Locator fixing screw	⑤ Washer	⑥ Protector	Wrench
MS04R/L	CST-5	-	SP-8	-	-	PMS4R/L	T-25D
MS05R/L, MS06R/L	CST-5	-	SP-8	-	-	PMS5R/L	T-25D
MS08R/L, MS12R/L	CST-5	LMS56R/L	SP-8	CM6x25, CM6x16	VA6	PMS5R/L	T-25D

\*Recommended clamping torque (N·m): CST-5=3.5

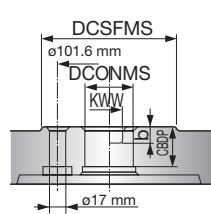


Approach angle

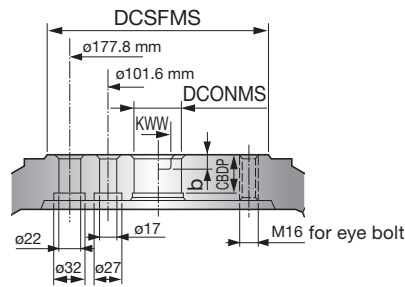
- 10°-20°
- 45°
- 70°
- 85°
- 88°
- 90°
- Others

## Arbor type

MS08, 10R/L



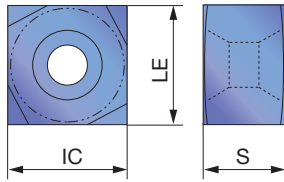
MS12R/L



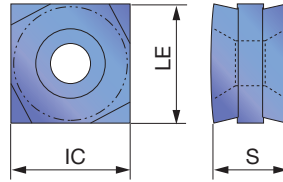
Reference pages: Inserts, Standard cutting conditions → [H117](#)

## INSERT

### SNAA/SNCC56FTR



### SNAG/SNCJ56FTR



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

★ : First choice  
☆ : Second choice

Designation	APMX	Cermet						LE	IC	S
		X407								
SNAA56FTR	0.1	●						7.85	15.875	9.52
SNAG56FTR	0.1							7.85	15.875	9.52
SNCC56FTR	0.1							7.85	15.875	9.52
SNCJ56FTR	0.1							7.85	15.875	9.52

● : Line up

## STANDARD CUTTING CONDITIONS

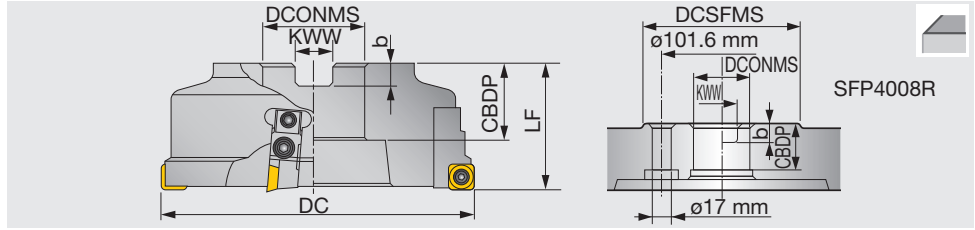
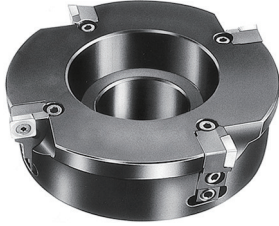
ISO	Workpiece material	Grade	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)	Depth of cut APMX (mm)
<b>P</b>	Mild steels	X407	260 ~ 300	≤ 6	≤ 0.1
	Carbon steels	X407	120 ~ 180	≤ 6	≤ 0.1
	Alloy steels	X407	120 ~ 180	≤ 6	≤ 0.1
	Die steels	X407	120 ~ 180	≤ 6	≤ 0.1
<b>H</b>	Carbon steel (> 40HRC)	X407	150 ~ 200	≤ 3	≤ 0.05

- High Feed Milling
- Face Milling
- Shoulder Milling
- Slot Milling
- Profile Milling

## SFP4000R

High precision finishing face mill, with adjustable structure

GAMP = +5°, GAMF = -20°



Designation	APMX	DC	CICT	LF	DCONMS	CBDP	KWW	b	WT(kg)	Insert
SFP4004R	0.1	100	2	63	31.75	32	12.7	8	2.3	SPHA435FNW
SFP4005R	0.1	125	2	63	38.1	38	15.9	10	3.5	SPHA435FNW
SFP4006R	0.1	160	4	63	50.8	38	19	11	5.8	SPHA435FNW
SFP4008R	0.1	200	4	63	47.625	38	25.4	14	9	SPHA435FNW
SFP4004R-E	0.1	100	2	63	32	32	14.4	8	2.3	SPHA435FNW
SFP4005R-E	0.1	125	2	63	40	32	16.4	9	3.5	SPHA435FNW
SFP4006R-E	0.1	160	4	63	40	29	16.4	9	5.8	SPHA435FNW

### SPARE PARTS



Designation	Clamping screw	Locator	Adjusting screw	Locator fixing screw1	Locator fixing screw2	Wedge	Wrench	Washer1	Washer2	Wrench
SFP40...	CSTA-5S	LW400R	FDS-8S	CM5X0.8X16	CM5X0.8X8	FW-305	T-15D	5S	L5	P-4

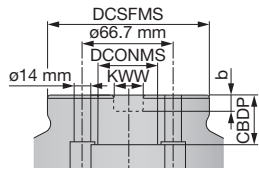
\*Recommended clamping torque (N·m): CSTA-5S=3.5

Approach angle

- 10°-20°
- 45°
- 70°
- 85°
- 88°
- 90°

### Arbor type

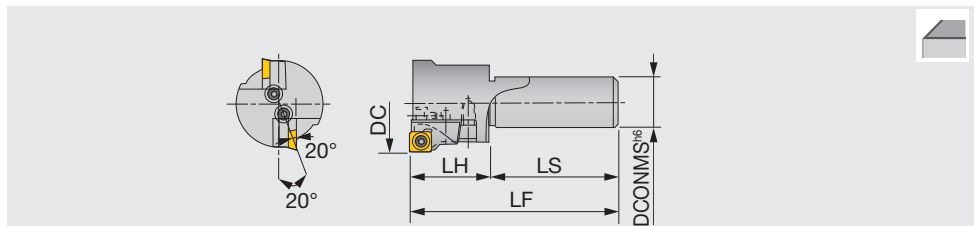
#### SFP4006R-E



## EFP4000R

High precision finishing endmill, shank type, with adjustable structure

GAMP = +5°, GAMF = -20°



Designation	APMX	DC	CICT	DCONMS	LS	LF	LH	Insert
EFP4050R	0.1	50	1	32	80	120	40	SPHA435FNW
EFP4063R	0.1	63	2	32	80	130	50	SPHA435FNW

Note: EFP4050R does not have the adjustable structure.

### SPARE PARTS



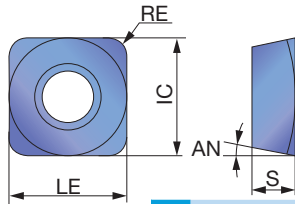
Designation	Clamping screw	Locator	Adjusting screw	Locator fixing screw1	Locator fixing screw2	Wedge	Wrench	Washer1	Washer2	Wrench
EFP4050R	CSTA-5S	LW402R	-	CM5X0.8X16	-	-	T-15D	-	-	-
EFP4063R	CSTA-5S	LW400R	FDS-8S	CM5X0.8X16	CM5X0.8X18	FW-305	T-15D	5S	L5	P-4

\*Recommended clamping torque (N·m): CSTA-5S=3.5

Reference pages: Inserts, Standard cutting conditions → [H119](#)

# INSERT

**SPHA435**



<b>P</b> Steel	★									
<b>M</b> Stainless	★									
<b>K</b> Cast iron			★							
<b>N</b> Non-ferrous			★							
<b>S</b> Superalloys										
<b>H</b> Hard materials										

★ : First choice  
☆ : Second choice

Designation	RE	APMX	Cermets		Uncoated							IC	LE	S	AN		
			N308	TH10													
SPHA435FNW	2	0.1	●	●										12.7	12.7	4.76	11°

● : Line up

## STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Cutting speed Vc (m/min)	Feed per revolution: f (mm/rev)		Depth of cut APMX (mm)
				SFP	EFP	
<b>P</b>	Mild steels	N308	180 ~ 250	≤ 6	≤ 4	≤ 0.1
	Carbon steels	N308	150 ~ 200	≤ 6	≤ 4	≤ 0.1
	Alloy steels	N308	150 ~ 200	≤ 6	≤ 4	≤ 0.1
<b>M</b>	Stainless steels	N308	160 ~ 200	≤ 4	≤ 3	≤ 0.1
<b>K</b>	Cast irons	TH10	100 ~ 150	≤ 5	≤ 3	≤ 0.2
<b>N</b>	Non-ferrous metals	TH10	200 ~ 500	≤ 6	≤ 4	≤ 0.1

Note: Under the above conditions, attainable surface roughness is 3 to 4 µm RzJIS for steel and 6 to 12 µm RzJIS for cast iron.

Grade  
Insert  
Ext. Toolholder  
Int. Toolholder  
Threading  
Grooving  
Miniature tool  
Milling cutter  
Endmill  
Drilling tool  
Tooling System  
User's Guide  
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