

MillLine



TUNG^{IGHT}**E****MILL**

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Tungaloy Report No. 531-G

Economical 8 edged inserts with light cutting face milling cutter



INDUSTRY 4.0
FEED the SPEED!



9216539

ACCELERATED MACHINING



Low cutting force cutters ensure effective machining
of low rigidity workpieces

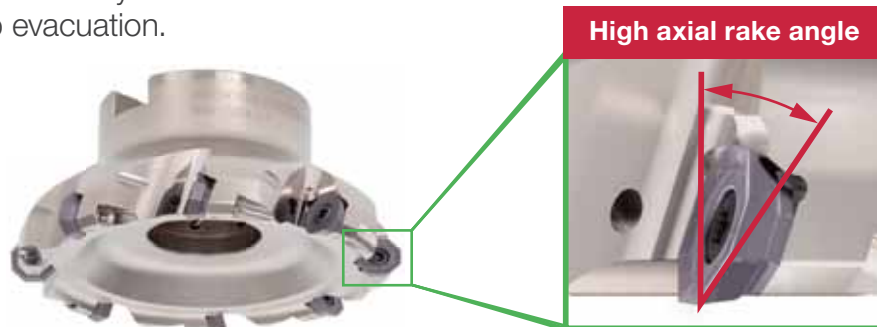
Light cutting & optimal chip forming insert

featuring 8 cutting edges
with high positive rake angle

High positive rake face mill

■ Inserts with a high positive rake provide light cutting actions

- Ensures smooth cutter entry to the work material as well as free chip evacuation.



- Three types of economical inserts are available, each equipped with a wiper and numbered for easy identification.



MM geometry, M class
8 cutting edges



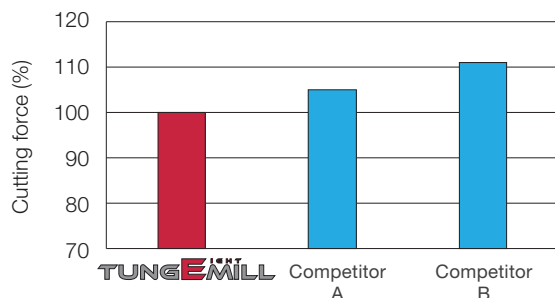
MM geometry, H class
8 cutting edges



Wiper insert
4 cutting edges

■ Cutting force comparison (calculated)

Cutting force is 5-10% lower than the competitors' inserts.



Cutter	: TAOW05M100B32.0R08 (ø100 mm, z = 8)
Insert	: OWHT05T3C07AFER-MM AH3135
Workpiece material	: S55C / C55 (200HB)
Cutting speed	: Vc = 200 m/min
Feed per tooth	: fz = 0.3 mm/t
Depth of cut	: ap = 2 mm
Width of cut	: ae = 80 mm
Coolant	: Dry
Number of inserts	: z = 1

Designed to ensure machining stability

Ideal chip forming

Provides an ideal chip shape in steel, stainless steel and other gummy materials. Chips can be cleaned out of the machine easily.

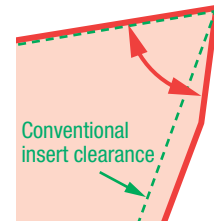
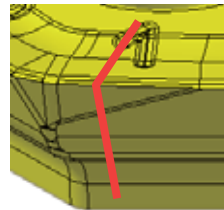


Chips in stainless steel

M	Cutter	: TAOW05M100B32.0R08 ($\phi 100$ mm, $z = 8$)
	Insert	: OWMTO5T3AFER-MM AH3135
	Workpiece material	: SUS304 / X5CrNi18-9 (160HB)
	Cutting speed	: $V_c = 200$ m/min
	Feed per tooth	: $f_z = 0.25$ mm/t
	Depth of cut	: $a_p = 3$ mm
	Width of cut	: $a_e = 75$ mm
	Coolant	: Dry
	Number of inserts	: $z = 8$

Better insert reliability with double flank relief

The insert flank is constructed with two angles which provides greater cutting edge support.



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insert cross section

After machining 7.6 m



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After machining 1.2 m



Competitor

M	Cutter	: TAOW05M100B32.0R08 ($\phi 100$ mm, $z = 8$)
	Insert	: OWHT05T3C07AFER-MM AH3135
	Workpiece material	: SUS304 / X5CrNi18-9 (160HB)
	Cutting speed	: $V_c = 200$ m/min
	Feed per tooth	: $f_z = 0.3$ mm/t
	Depth of cut	: $a_p = 2$ mm
	Width of cut	: $a_e = 60$ mm
	Coolant	: Dry
	Number of inserts	: $z = 1$

Minimum interference design

Allows milling close to the walls and fixtures.



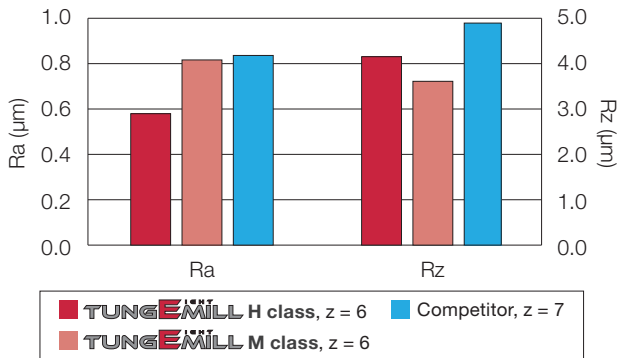
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Conventional tool

Excellent surface finish

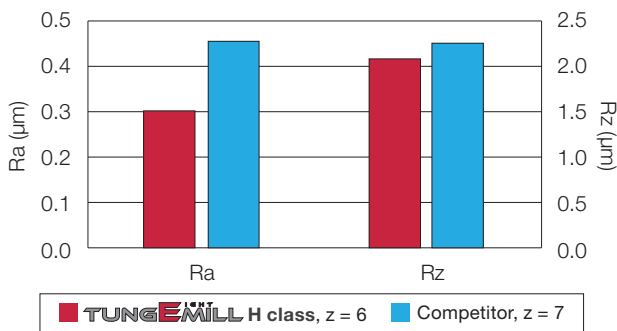
Surface quality in carbon steel



P

Cutter : TAOW05J100B31.7R06
(ø100 mm, z = 6)
Insert : OWMT05T3AFER-MM AH3135 /
OWHT05T3C07AFER-MM AH3135
Workpiece material : S55C / C55 (200HB)
Cutting speed : Vc = 200 m/min
Feed per tooth : fz = 0.15 mm/t
Depth of cut : ap = 0.5 mm
Width of cut : ae = 60 mm
Coolant : Dry

Surface quality in stainless steel



M

Cutter : TAOW05J100B31.7R06
(ø100 mm, z = 6)
Insert : OWHT05T3C07AFER-MM AH3135
Workpiece material : SUS304 / X5CrNi18-9 (160HB)
Cutting speed : Vc = 150 m/min
Feed per tooth : fz = 0.1 mm/t
Depth of cut : ap = 0.5 mm
Width of cut : ae = 60 mm
Coolant : Dry



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Competitor

OWHT05T3C07AFER-MM geometry is effective in minimizing burr formation.

Burr

Improved usability

Easy corner change without screw removal

Prevents dropping insert and screw when changing corner.



Grade lineup for every kind of material

AH3135



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

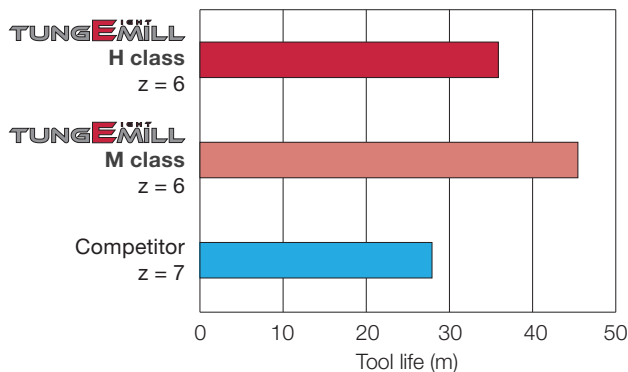
AH120



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

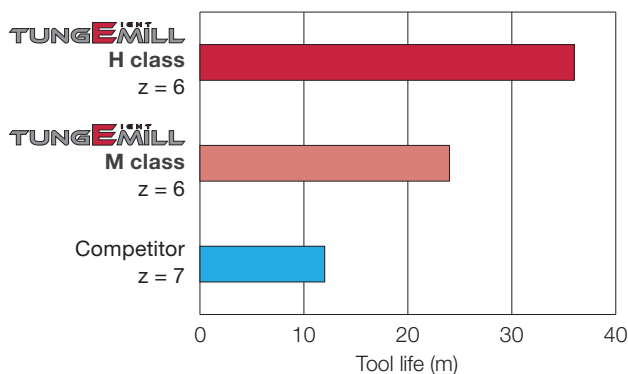
TOOL LIFE

Carbon steel



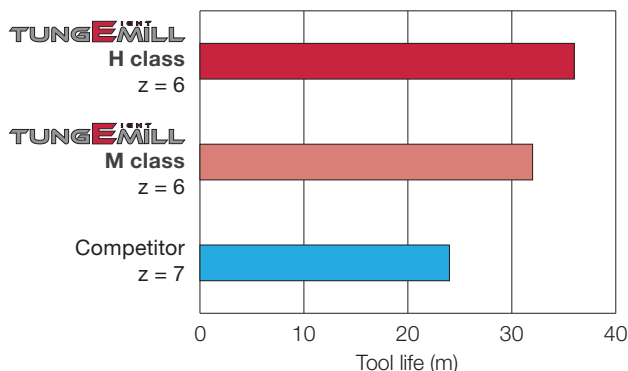
P Cutter	: TAOW05J100B31.7R06 (ø100 mm, z = 6)
Insert	: OWMT05T3AFER-MM AH3135 / OWHT05T3C07AFER-MM AH3135
Workpiece material	: S55C / C55 (200HB)
Cutting speed	: Vc = 200 m/min
Feed per tooth	: fz = 0.3 mm/t
Depth of cut	: ap = 2 mm
Width of cut	: ae = 60 mm
Coolant	: Dry

Stainless steel



M Cutter	: TAOW05J100B31.7R06 (ø100 mm, z = 6)
Insert	: OWMT05T3AFER-MM AH3135 / OWHT05T3C07AFER-MM AH3135
Workpiece material	: SUS304 / X5CrNi18-9 (160HB)
Cutting speed	: Vc = 150 m/min
Feed per tooth	: fz = 0.2 mm/t
Depth of cut	: ap = 2 mm
Width of cut	: ae = 60 mm
Coolant	: Dry

Ductile cast iron

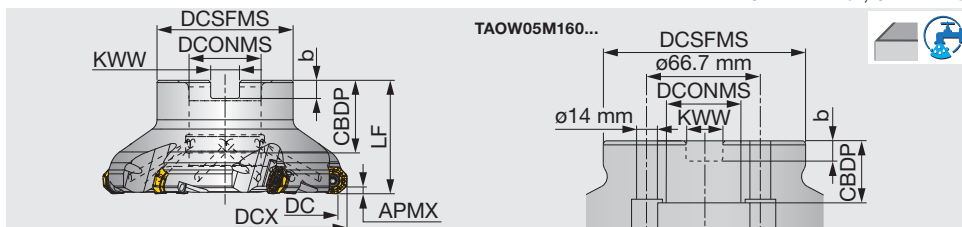


K Cutter	: TAOW05J100B31.7R06 (ø100 mm, z = 6)
Insert	: OWMT05T3AFER-MM AH120 / OWHT05T3C07AFER-MM AH120
Workpiece material	: FCD600 / 600-3 / GGG60 (240HB)
Cutting speed	: Vc = 200 m/min
Feed per tooth	: fz = 0.2 mm/t
Depth of cut	: ap = 2 mm
Width of cut	: ae = 80 mm
Coolant	: Dry

TAOW05

41° face mill, with screw clamp system, for single sided octagonal inserts

GAMP = +23°, GAMF = -5°



Designation	APMX	DC	DCX	CICT	DCSFMS	LF	DCONMS	CBDP	KWW	b	WT(kg)	Air hole	Insert
TAOW05M050B22.0R04	3	50	57.8	4	41	40	22	20	10.4	6.3	0.35	With	OW*T05...
TAOW05M063B22.0R05	3	63	70.7	5	47	40	22	20	10.4	6.3	0.54	With	OW*T05...
TAOW05M080B27.0R07	3	80	87.7	7	58	50	27	22	12.4	7	1.07	With	OW*T05...
TAOW05J080B25.4R05	3	80	87.7	5	58	50	25.4	26	9.5	6	1.12	With	OW*T05...
TAOW05M100B32.0R08	3	100	107.6	8	60	50	32	28.5	14.4	8	1.20	With	OW*T05...
TAOW05J100B31.7R06	3	100	107.6	6	60	50	31.75	32	12.7	8	1.27	With	OW*T05...
TAOW05M125B40.0R10	3	125	132.6	10	71	63	40	32	16.4	9	2.41	With	OW*T05...
TAOW05J125B38.1R07	3	125	132.6	7	80	63	38.1	38	15.9	10	2.72	With	OW*T05...
TAOW05M160B40.0R12	3	160	167.6	12	100	63	40	29	16.4	9	4.39	Without	OW*T05...
TAOW05J160B50.8R08	3	160	167.6	8	100	63	50.8	46	19	11	4.22	Without	OW*T05...

SPARE PARTS

Designation	Clamping screw	Grip	Torx bit	Shell locking bolt
TAOW05**050...	CSPB-4S	SW6-SD	BLDIP15/S7	CM10X30H
TAOW05**063...	CSPB-4S	SW6-SD	BLDIP15/S7	CM10X30H
TAOW05**080...	CSPB-4S	SW6-SD	BLDIP15/S7	CM12X30H
TAOW05**100...	CSPB-4S	SW6-SD	BLDIP15/S7	TMBA-M16H
TAOW05**125...	CSPB-4S	SW6-SD	BLDIP15/S7	TMBA-M20H
TAOW05**160...	CSPB-4S	SW6-SD	BLDIP15/S7	-

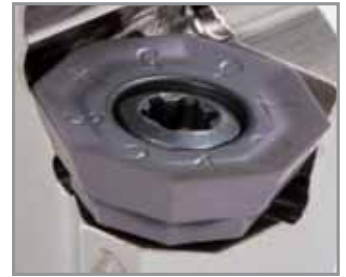
*Recommended clamping torque (N·m): CSPB-4S=3.5

IMPORTANT NOTES

■ Installing MM inserts

Before tightening the insert screw, make sure that the insert is correctly positioned in the pocket. If the screw is tightened with the insert not in place, the pocket may be damaged.

Do not use an excessive tightening torque as it may damage the pocket preventing proper positioning of the insert.



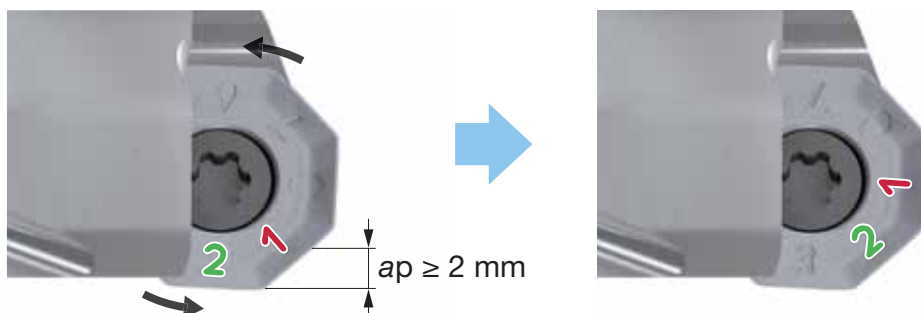
■ Installing MW (wiper) inserts

Wiper edge is identified with a ▼ inscribed on the insert flank. Make sure to match the ▼ mark to the ▲ mark on the cutter body when installing the wiper insert.

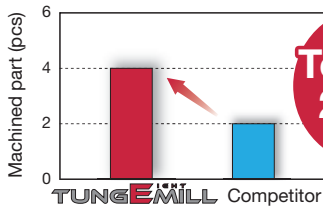
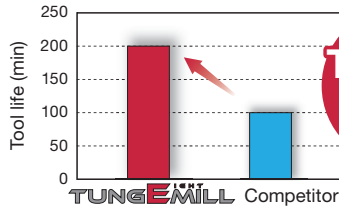
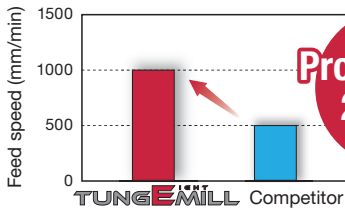
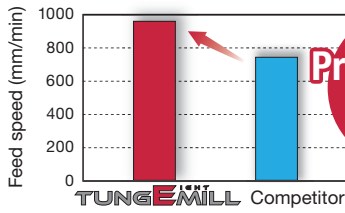


■ When indexing MM insert

When MM insert is used at a cutting depth of 2 mm or greater, the adjacent wiper is also engaged in the cut. Therefore, it is recommended that the insert is then rotated in the counter clockwise direction for indexing a new cutting edge.



PRACTICAL EXAMPLES

Workpiece type		Part for semiconductor equipment	Base
Cutter		TAOW05M063B22.0R05	TAOW05J100B31.7R06
Insert		OWHT05T3C07AFER-MM	OWHT05T3C07AFER-MM
Grade		AH3135	AH3135
		EN 1.4301	ISO E275A
Workpiece material		 M	 P
Cutting conditions	Cutting speed : V_c (m/min)	160	220
	Feed per tooth: f_z (mm/t)	0.2	0.2
	Feed speed : V_f (mm/min)	808	840
	Depth of cut : a_p (mm)	1.6	2
	Width of cut : a_e (mm)	19	100
	Machining	Face Milling	Face Milling
	Coolant	External coolant	External coolant
	Machine	Vertical M/C (BT40)	Vertical M/C
Results		 Tool life has doubled thanks to TungEight-Mill's robust insert.	 Tool life has doubled due to reduced burr generation. MRR has also increased by 130%.
Workpiece type		Machine part	Head of control block
Cutter		TAOW05M063B22.0R05	TAOW05M063B22.0R05
Insert		OWMT05T3AFER-MM	OWMT05T3AFER-MM
Grade		AH3135	AH120
		EN 1.7225	GGG40.3
Workpiece material		 P	 K
Cutting conditions	Cutting speed : V_c (m/min)	150	190
	Feed per tooth: f_z (mm/t)	0.26	0.2
	Feed speed : V_f (mm/min)	1000	960
	Depth of cut : a_p (mm)	2.6	0.5
	Width of cut : a_e (mm)	18	60
	Machining	Face Milling	Face Milling
	Coolant	Internal coolant	External coolant
	Machine	Vertical M/C (BT40)	Horizontal M/C (SK40)
Results		 Thanks to the light cutting geometry of TungEight-Mill, higher cutting parameters were possible, doubling the table feed.	 Thanks to TungEight-Mill's light-cutting, sharp-edged geometry, table feed was increased by 130% despite the deflecting structure of the workpiece.

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