KYOCERA

New 45° general purpose milling series | MB45

MB45

Extremely versatile, high performance, high quality, and long tool life milling

Delivers the "low cutting force" benefits of positive inserts and the "fracture resistance" benefits of negative inserts, and provides excellent surface finish

Wide variety of machining applications, including steel, stainless steel, cast iron, aluminum alloys, and heat-resistant alloys

Double sided 2-edge wiper insert (E-class) available

MEGACOAT NANO EX | Milling |

New 45° general purpose milling series

MB45

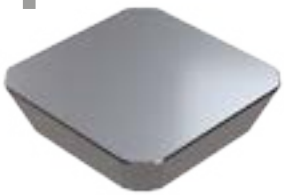
Provides high quality and high performance machining solutions with long tool life
Delivers the "low cutting force" benefits of positive inserts and the "fracture resistance" benefits of negative inserts, and provides excellent surface finish

Extreme versatility

General-purpose milling cutters require a balance between high-quality, high-performance, long tool life, economy, and versatility to be able to tackle a wide variety of machining applications.

Pursue all of these qualities without compromising with the MB45. These next-generation cutters will last, whether you are running general machining applications, or finding valuable new machining solutions.

01



ISO Standard
SEKN Type
(No breaker)

02

Positive (Single-sided) Type

Advantage

Low cutting force

Excellent finished surface and machining accuracy

03

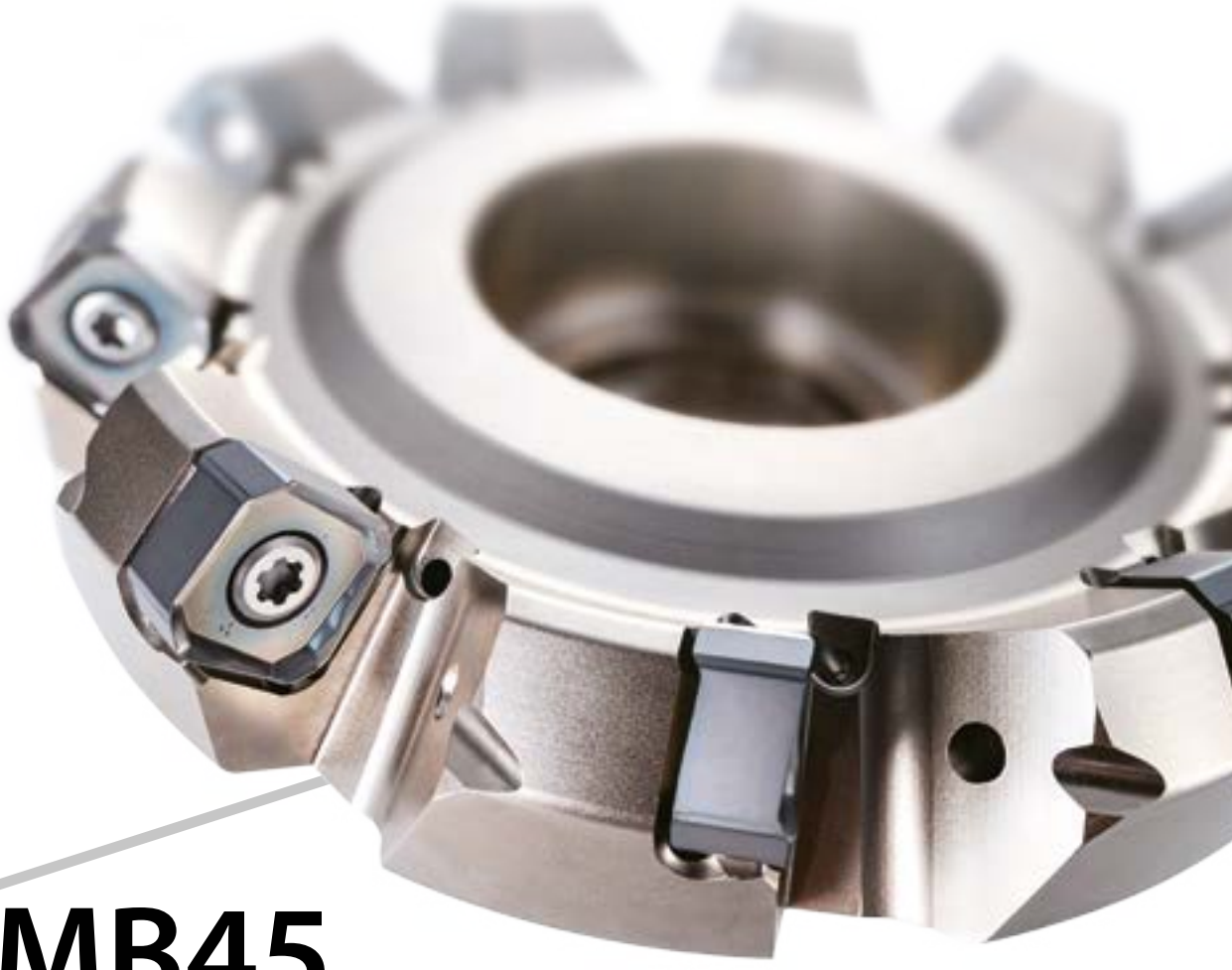
Negative (Double-sided) Type

Advantage

Excellent fracture resistance

Economical with multiple cutting edges

Evolving to standardize new technology



04

MB45

Delivers the “low cutting force” benefits of positive inserts and the “fracture resistance” benefits of negative inserts

High Quality

High quality results and excellent surface finish

- Lineup of E class inserts
- Long arc wiper edge
- Back coolant hole

High Performance

Unique design with high performance, low cutting force and fracture resistance

- Double edge structure and helical cutting edge (A.R. max + 13°)

Long Tool Life

Next-generation PVD coating for milling PR18 Series NEW

- Double lamination technology maintains longer tool life
- Double-sided 8-corner design reduces tool costs

Solution

Find new value with excellent versatility

- Roughing and finishing with E class inserts
- For a wide variety of machining applications: Small machines (BT30, etc.) with ø 40 mm cutter
- For a variety of workpieces: Cost-cutting with multiple cutting edges for aluminum machining
- Gain excellent surface finish with Cermet inserts (TN620M)

1 "Versatility" + "Quality" : Large insert lineup supports a wide variety of machining applications

Five types of inserts for various machining applications

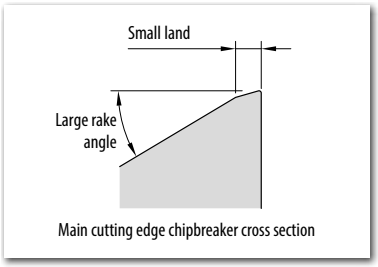
Economical inserts with 8 cutting edges

General purpose GM insert with E-Class and M-Class options based on required machining accuracy

Video

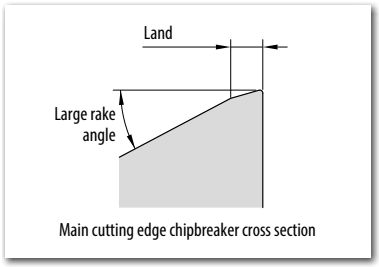
Low cutting force SM (E-Class)

Sharpness oriented with a low cutting force design
-10% cutting resistance compared to general purpose GM insert
Recommended for small machines (BT30)



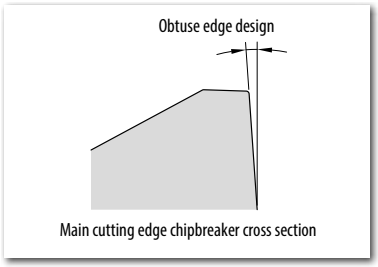
General GM (E-Class / M-Class)

1st recommendation for steel machining
Low cutting force and fracture resistance
E-Class or M-Class selectable



Tough Edge GH (M-Class)

Tough cutting edge and excellent fracture resistance
Obtuse edge design is resistant to chipping
Recommended for intermittent machining



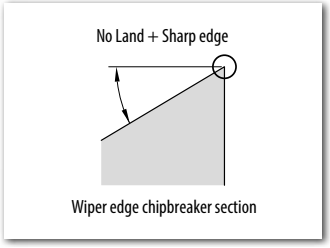
Wiper insert W (E-Class)

Ultra-long wiper edge (Wiper edge length approx. 8 mm)

* Double-sided 2-edge insert

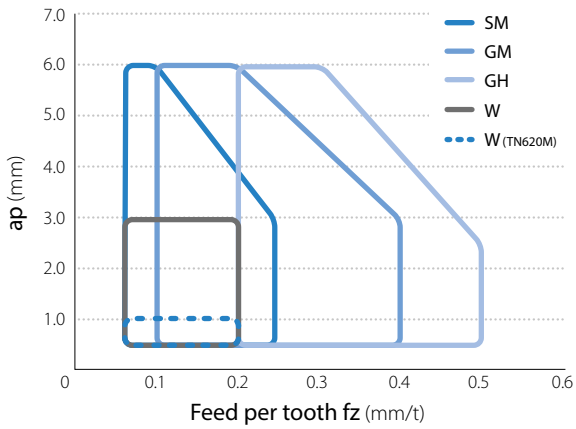
AM for Aluminum alloys

No Land + Sharp edge specifications
Excellent sharpness

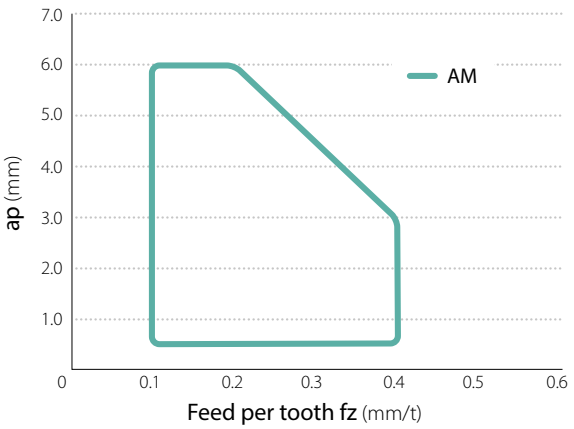


Applicable insert range

Steel



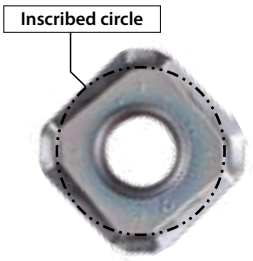
Aluminum alloy



When to use GM (Class E/M)

Selection by machining application

Surface finish oriented: GM (E-Class)
Cost-effective and surface finish oriented: GM (M-Class)
Efficiency and surface roughness oriented: W (E-Class)



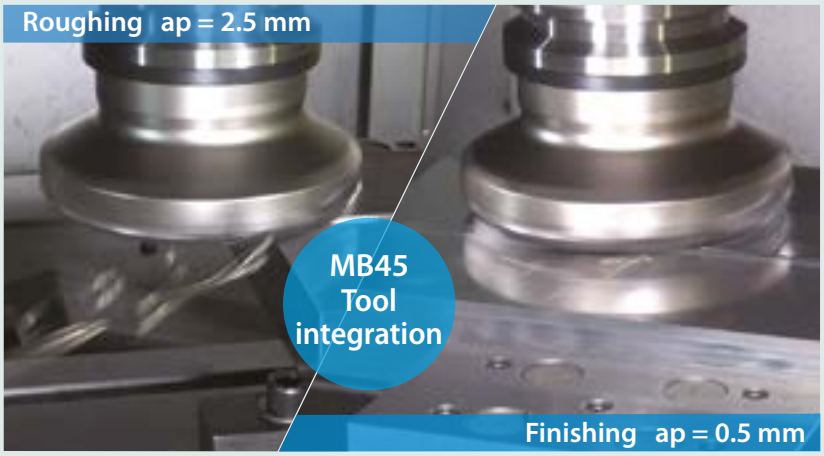
Criteria	GM (E-Class)	GM (M-Class)	W (E-Class) ＊Wiper
Tolerance	Inscribed circle tolerance ±0.013 mm	Inscribed circle tolerance ±0.05 mm	Inscribed circle tolerance ±0.013 mm
Surface finish	○ Approx. 1.6μmRa	△ Approx. 3.2μmRa	◎ Approx. 0.8μmRa or less
(Gloss)	(○)	(◎)	(◎)
Machining efficiency	○	○	◎
Economy	○	◎	△

＊Surface finish is based on internal assessment and varies depending on the machining environment

Solution Tool integration for roughing and finishing with E-Class insert

Video

MB45 Tool integration for roughing and finishing resulting in reduced tool management and inventory costs



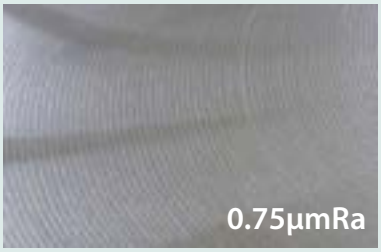
Cutting conditions: ø125 (10 inserts) GM (E-Class) dry, workpiece: S50C
Roughing: Vc = 200 m/min, ap × ae = 2.5 × 85 mm, fz = 0.20 mm/t
Finishing: Vc = 250 m/min, ap × ae = 0.5 × 85 mm, fz = 0.15 mm/t

Chip condition

Good chips in both roughing and finishing

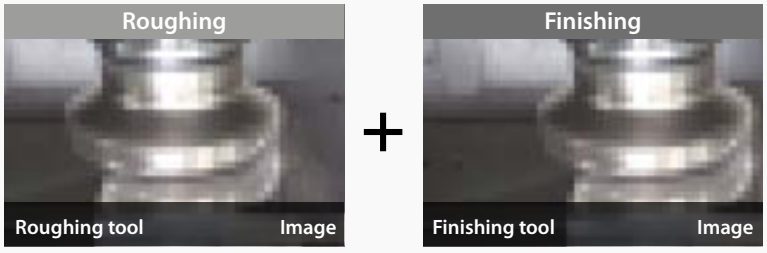
Finished surface condition

Excellent surface finish



(Internal evaluation)

Conventional machining Tool replacement is needed when roughing and finishing



2 "Versatility" + "Long tool life" Large lineup of insert grades
Steel, stainless steel, cast iron, heat-resistant alloys to aluminum alloy machining

For steel, stainless steel and cast iron

PR1825/PR1835/PR1810 New development MEGACOAT NANO EX

PR1825 P — For Steel (Wear resistance oriented)

PR1835 M — For Steel (Stability oriented)
1st Recommendation for stainless steel

PR1810 K — For Cast iron

Workpiece	P Steel					M Stainless steel					K Cast iron				
ISO	01	10	20	30	40	01	10	20	30	40	01	10	20	30	40
Grade		Wear resistance oriented PR1825					1st Recommendation PR1835					1st Recommendation PR1810			
		Stability oriented PR1835													

For hardened material

PR015S MEGACOAT HARD PVD coating

For stainless steel and heat-resistant alloys

CA6535 CVD coating

For steel Surface finish oriented

TN620M Cermet

For aluminum machining

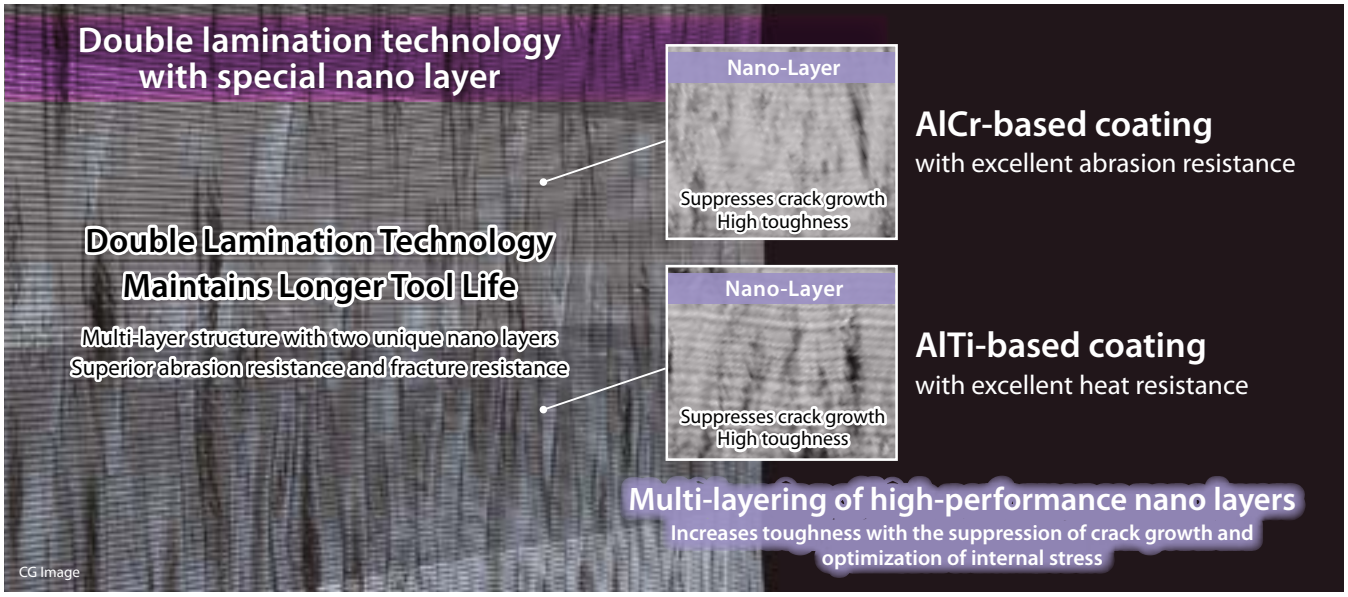
PDL025 DLC coating
GW25 Non-coated Carbide

Next-generation PVD coating for milling NEW

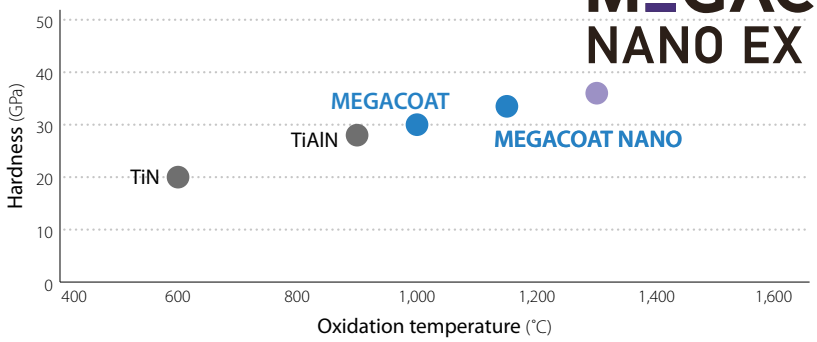
PR18 Series

Kyocera's nano layer coating technology.
Longer tool Life with next-generation coating for milling.

MEGACOAT NANO EX Milling



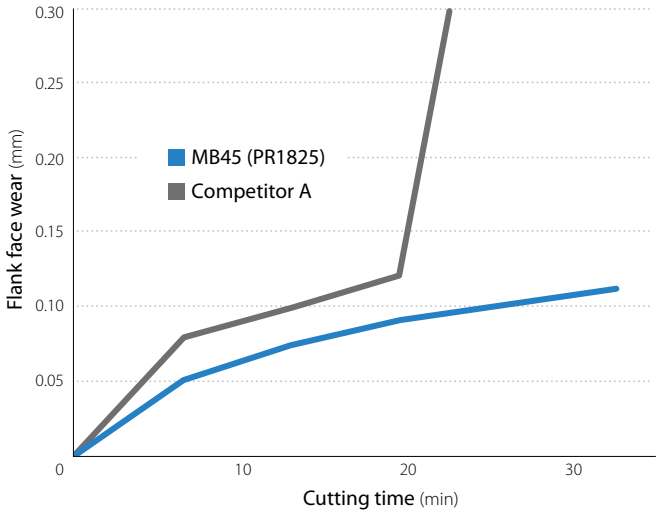
Coating characteristics (Internal evaluation)



MEGACOAT NANO EX | Milling

PR1825 with PVD coating MEGACOAT NANO EX provides long tool life

Wear resistance comparison (Internal evaluation)



Cutting edge condition (after 20 min machining)

MB45(PR1825)

Competitor A

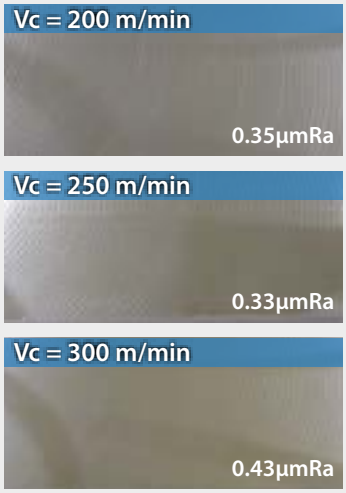
Cutting conditions: Vc = 120 m/min, ap = 2.0 mm, ae/DC = 80 %, fz = 0.20 mm/t, Dry
Workpiece: SKD11, ø125 BT50

Solution Utilizing Cermet TN620M

Cermet (TN620M) for efficient finishing

Surface finish condition (Internal evaluation)

Superior surface finish



Cutting conditions: ap × ae = 0.5 × 100 mm
fz = 0.15 mm/t, Dry
Workpiece: S50C, ø125 (10 inserts), GM (TN620M)

3 "Versatility" + "High Performance": New design utilizes unique technology. Low cutting force and excellent fracture resistance with excellent surface finish

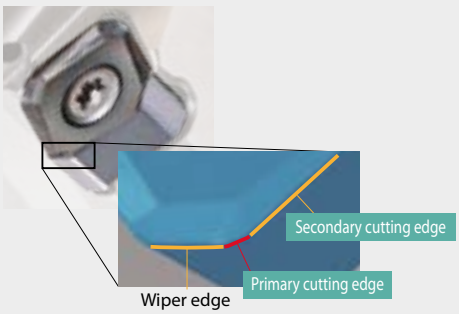
Low cutting force and excellent fracture resistance

Unique helical cutting edge and double-edge structure

A unique helical cutting edge

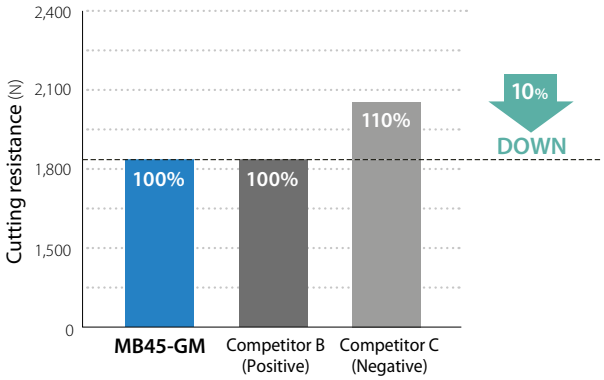
A.R. Ensures a maximum of 13° and suppresses chatter with low cutting force.

Double edge structure



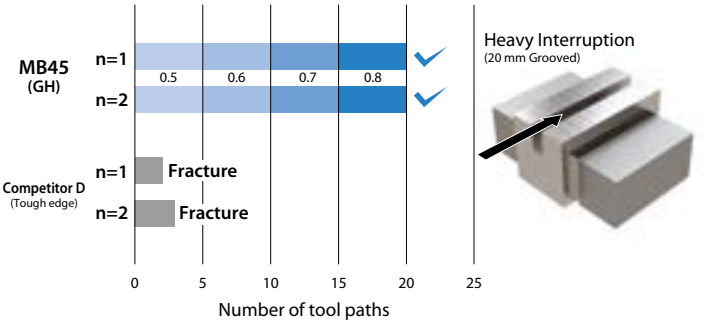
Primary cutting edge generates thin chips, reduces impact load and greatly reduces vibration when exiting the part.

Cutting resistance comparison (Internal evaluation)



Cutting conditions: Vc = 180 m/min, ap = 3.0 mm, ae/DC = 80 % Center Cut, fz = 0.30 mm/t, Workpiece: S50C

Fracture resistance comparison (Internal evaluation) fz = 0.5~0.8 mm/t

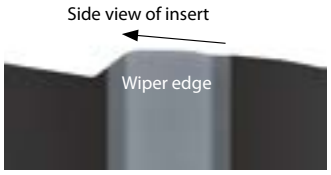


Cutting conditions: Vc = 100 m/min, ap × ae = 2 × 100 mm Center Cut, BT50
Workpiece: SCM440HT ø125 (10 inserts)

High quality — Long arc wiper edge utilizing unique technology

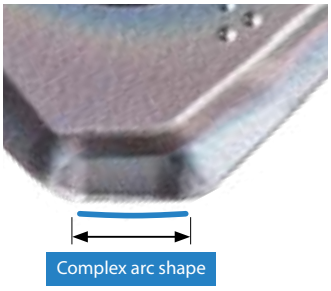
Unique long arc wiper edge

Reduces variation in mounting accuracy and provides superior finished surface quality

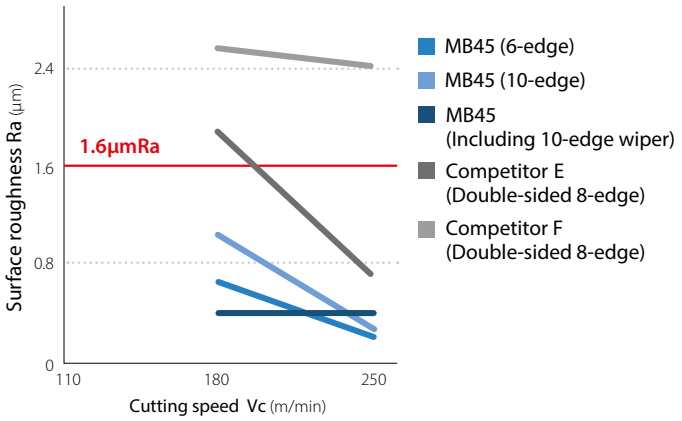


Convex curved shape with wiper edge protruding upward

*GM/SM/AM (E-Class)

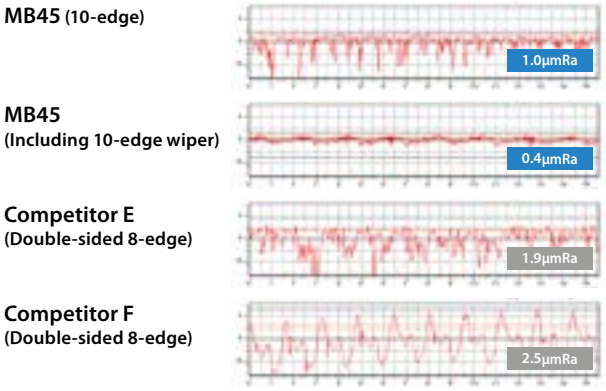


Surface roughness comparison (Internal evaluation)



Cutting conditions: ap = 1.0 mm, ap × ae = 1 × 100 mm (Center Cut), fz = 0.20 mm/t, Dry
Workpiece: S50C ø125 (6 inserts/10 inserts) GM (PR1825) BT50

Finishing surface condition (Vc = 250 m/min)



Proprietary long arc wiper edge provides excellent finishing surface quality

Finishing surface quality comparison (Image)

MB45

Long arc wiper edge

Smooth finished surface with small feed joints

Workpiece

General insert

Straight wiper edge

The feed joint is large and the finished surface is stepped.

Workpiece

Solution — Unique back coolant structure delivers excellent finished surface.

Smooth chip evacuation reduces scratches and chip clogging on finished surfaces.
Reliably supplies coolant to the cutting edge. Internal coolant allows for even higher quality surface finish.

Unique back coolant structure

Coolant hole

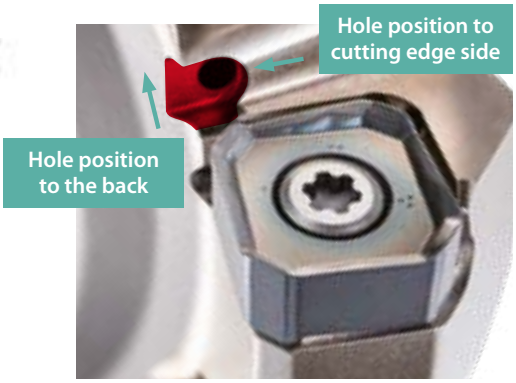
Mounted closer to the cutting edge than before
Control chip outward for excellent chip evacuation to ensure to cool the cutting edge (up to ø125).

Special grooves in the discharge port

The hole position is on the far side to prevent chip contact. Improves deterioration of chip control and evacuation.

* Due to shape restrictions, some toolholders do not have grooves in the discharge port.

Fluid analysis (image)



Toolholder Lineup

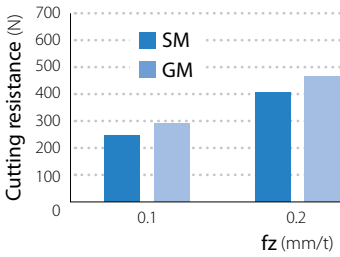
Coarse pitch	Fine pitch	Extra fine pitch	Shank type
			
Recommended for workpieces or machines with low rigidity (such as sheet machining or BT30) Economical	1st recommendation Good balance of stability, machining accuracy and efficiency Supports a wide range of machining areas	Recommended for high rigid workpiece and machine	Compatible with milling chucks (face mill recommended basically) *Shank size: ø32
Cutting diameter ø40 to ø315 *ø315: Made to order	Cutting diameter ø40 to ø315 *ø315: Made to order	Cutting diameter ø40 to ø250	Cutting diameter ø40 to ø80

Compatible with smaller machines

Lineup of coarse pitch ø40
Works well on small machines such as BT30

Recommendation for small machines:
Low cutting force SM
Cutting resistance is about 10% less than general-purpose GM

Cutting resistance comparison (Internal evaluation)

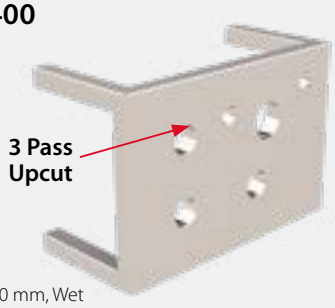



SM

Cutting conditions: Vc = 150 m/min, ap = 1.0 mm, ae/Dc = 80 %, Dry, BT50
Workpiece: S50C

Case studies — Excellent performance even under unstable machining conditions

Cradle SS400



Vc = 160 m/min
ap × ae = 0.07x130 mm, Wet

Machining efficiency

Machining efficiency 1.2x

MB45 ø160 12 inserts GM(PR1825) — **Vf = 760 mm/min**
fz = 0.20 mm/t

Competitor G ø160 8 inserts — **Vf = 620 mm/min**
fz = 0.25 mm/t

MB45 shows stable machining in an environment prone to deflection and chatter.
Increasing the number of inserts improves efficiency. Highly rated for quiet machining
Improved joints between machining passes

(User evaluation)

Case studies — Achieves 1.6x longer tool life under the same machining conditions

Housing SUS316

Vc = 90 m/min
ap = 2.0 mm, fz = 0.18 mm/t, Dry

Number of parts

Tool life 1.6x

MB45 ø63 5 inserts GM(PR1825) — **30 pcs per corner**

Competitor H ø63 5 inserts — **18 pcs per corner**

MB45 shows stable machining without chattering
Wear on the cutting edge proceeds normally and shows 1.6x tool life than competitor.

(User evaluation)

Recommended Cutting conditions ★ 1st Recommendation ☆ 2nd Recommendation

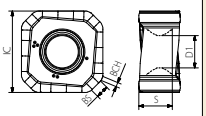
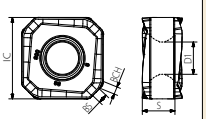
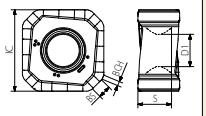
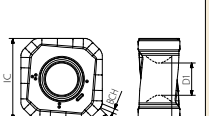
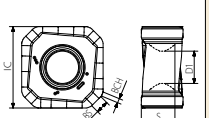
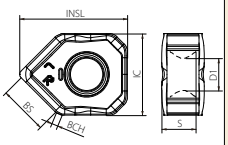
Chipbreaker	Workpiece	Feed fz (mm/t)	Recommended insert grade (Vc: m/min)							
			PVD coating				CVD coating	Cermet	DLC coating	Carbide
			MEGACOAT NANO EX			MEGACOAT HARD				
			PR1835	PR1825	PR1810	PR015S	CA6535	TN620M	PDL025	GW25
General GM	Carbon steel	0.1 – **0.2** – 0.4 (0.06 – **0.12** – 0.20)	☆ 120 – **180** – 250	★ 120 – **180** – 250	–	–	–	★ 200 – **250** – 300	–	–
	Alloy steel	0.1 – **0.2** – 0.4 (0.06 – **0.12** – 0.20)	☆ 100 – **160** – 220	★ 100 – **160** – 220	–	–	–	★ 180 – **220** – 250	–	–
	Mold steel	0.1 – **0.2** – 0.35 (0.06 – **0.08** – 0.15)	☆ 80 – **140** – 180	★ 80 – **140** – 180	–	–	–	★ 150 – **180** – 220	–	–
	Austenitic stainless steel	0.1 – **0.2** – 0.4	☆ 100 – **160** – 200	☆ 100 – **160** – 200	–	–	–	–	–	–
	Martensitic stainless steel	0.1 – **0.2** – 0.4	☆ 150 – **200** – 250	–	–	–	☆ 180 – **240** – 300	–	–	–
	Precipitation hardening stainless steel	0.1 – **0.2** – 0.3	★ 90 – **120** – 150	–	–	–	–	–	–	–
	Gray cast iron	0.1 – **0.2** – 0.4	–	–	★ 120 – **180** – 250	–	–	–	–	–
	Ductile cast iron	0.1 – **0.2** – 0.35	–	–	★ 100 – **150** – 200	–	–	–	–	–
	Ni-based heat resistant alloys	0.1 – **0.12** – 0.2	☆ 20 – **30** – 50	–	–	–	★ 20 – **30** – 50	–	–	–
Low cutting force SM	Carbon Steel	0.06 – **0.12** – 0.25	☆ 120 – **180** – 250	☆ 120 – **180** – 250	–	–	–	–	–	–
	Alloy Steel	0.06 – **0.12** – 0.25	☆ 100 – **160** – 220	☆ 100 – **160** – 220	–	–	–	–	–	–
	Mold steel	0.06 – **0.1** – 0.2	☆ 80 – **140** – 180	☆ 80 – **140** – 180	–	–	–	–	–	–
	Austenitic stainless steel	0.06 – **0.12** – 0.25	★ 100 – **160** – 200	☆ 100 – **160** – 200	–	–	–	–	–	–
	Martensitic stainless steel	0.06 – **0.12** – 0.25	☆ 150 – **200** – 250	–	–	–	★ 180 – **240** – 300	–	–	–
	Precipitation hardening stainless steel	0.06 – **0.12** – 0.25	☆ 90 – **120** – 150	–	–	–	–	–	–	–
	Gray cast iron	0.06 – **0.12** – 0.25	–	–	☆ 120 – **180** – 250	–	–	–	–	–
	Ductile cast iron	0.06 – **0.1** – 0.2	–	–	☆ 100 – **150** – 200	–	–	–	–	–
	Ni-based heat resistant alloys	0.06 – **0.1** – 0.15	☆ 20 – **30** – 50	–	–	–	☆ 20 – **30** – 50	–	–	–
	Titanium alloy	0.06 – **0.08** – 0.15	★ 40 – **60** – 80	–	–	–	–	–	–	–
Tough edge GH	Carbon Steel	0.2 – **0.3** – 0.5	☆ 120 – **180** – 250	☆ 120 – **180** – 250	–	–	–	–	–	–
	Alloy Steel	0.2 – **0.3** – 0.5	☆ 100 – **160** – 220	☆ 120 – **160** – 220	–	–	–	–	–	–
	Mold steel	0.2 – **0.3** – 0.45	☆ 80 – **140** – 180	☆ 80 – **140** – 180	–	–	–	–	–	–
	Austenitic stainless steel	0.2 – **0.3** – 0.4	☆ 100 – **160** – 200	☆ 100 – **160** – 200	–	–	–	–	–	–
	Martensitic stainless steel	0.2 – **0.3** – 0.4	☆ 150 – **200** – 250	–	–	–	☆ 180 – **240** – 300	–	–	–
	Precipitation hardening stainless steel	0.2 – **0.3** – 0.4	☆ 90 – **120** – 150	–	–	–	–	–	–	–
	Gray cast iron	0.2 – **0.3** – 0.5	–	–	☆ 120 – **180** – 250	–	–	–	–	–
	Ductile cast iron	0.2 – **0.3** – 0.45	–	–	☆ 100 – **150** – 200	–	–	–	–	–
	Ni-based heat resistant alloys	0.1 – **0.2** – 0.3	☆ 20 – **30** – 50	–	–	–	☆ 20 – **30** – 50	–	–	–
	Hardened material (40 HRC or less)	0.05 – **0.1** – 0.2	–	–	–	★ 50 – **80** – 100	–	–	–	–
AM	Aluminum alloy	0.1 – **0.2** – 0.4	–	–	–	–	–	–	★ 200 – **600** – 900	☆ 200 – **500** – 800

The number **in bold font** is **recommended starting conditions**. Adjust the cutting speed and the feed rate within the above conditions according to the actual machining situation.
Machining with coolant is recommended for Ni-based heat resistant alloy and titanium alloy. When choosing wet machining for other workpieces, reduce the cutting speed to 70% or less.
When machining aluminum, be sure to use within recommended conditions. Do not rotate more than the maximum speed listed on the main unit.
Dry machining is recommended for cermet.

Applicable inserts

Usage classification											
	P	Steel	★	☆				■		
		Mold steel	★	☆				■		
	M	Austenitic stainless steel	☆	★						
		Martensitic stainless steel		☆			★			
		Precipitation hardening stainless steel		★						
	K	Gray cast iron			★					
		Ductile cast iron			★					
	N	Nonferrous metal							★	☆
	S	Heat resistant alloys (Ni-based heat resistant alloys)					★			
		Titanium alloy		★						
	H	Hardened material				★				

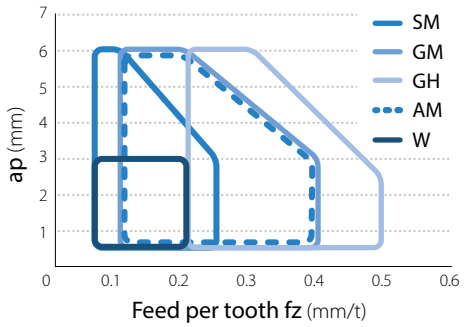
★: Roughing/ 1st recommendation
☆: Roughing/ 2nd recommendation
■: Finishing/ 1st recommendation
□: Finishing/ 2nd recommendation
(Hardened material is 40 HRC or less)

Shape		Description	Dimensions (mm)						MEGACOAT NANO EX NEW			MEGACOAT HARD	CVD	Cermet	DLC	Carbide
			IC	S	BCH	BS	D1	INSL	PR1825	PR1835	PR1810	PR015S	CA6535	TN620M	PDL025	GW25
 General purpose (M-Class)		SNMU1406ANER-GM	14.7	6.07	0.8	2.3	5.8		●	●	●		●	●		
 Tough edge (M-Class)		SNMU1406ANER-GH	14.7	5.89	1.4	1.7	5.8		●	●	●	●	●			
 General purpose (E-Class)		SNEU1406ANER-GM	14.7	6.07	0.8	2.3	5.8		●	●	●		●	●		
 Low cutting force (E-Class)		SNEU1406ANER-SM	14.7	6.07	0.8	2.3	5.8		●	●			●			
 Aluminum and non-ferrous metals (E-Class)		SNEU1406ANFR-AM	14.7	6.07	0.8	2.3	5.8								●	●
 Wiper insert (E-Class 2-edge)		SNEU1406ANEN-W	14.7	6.15	1.1	8.8	5.8	19.4	●	●	●		●	●		

●: Available

Applicable chipbreaker range

Carbide coating



Cermet

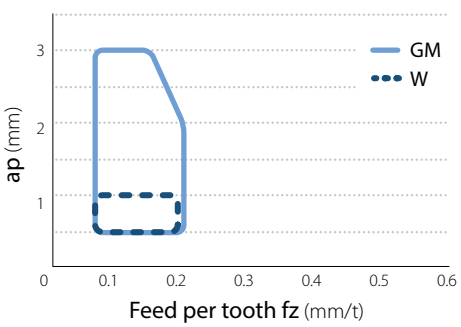


Fig.1

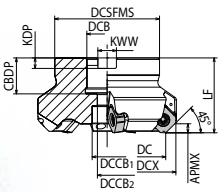


Fig.2

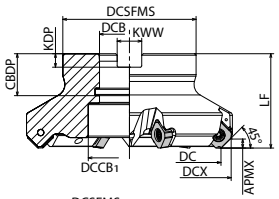


Fig.3

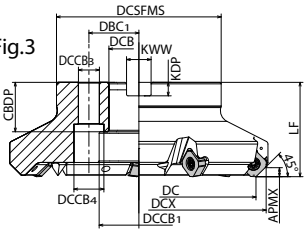
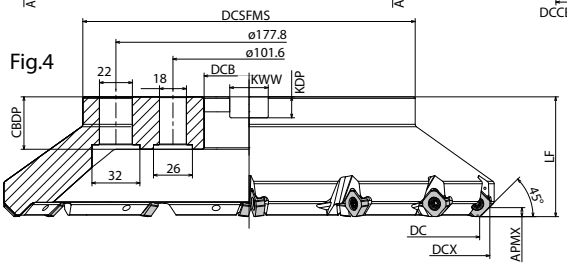


Fig.4



Toolholder dimensions

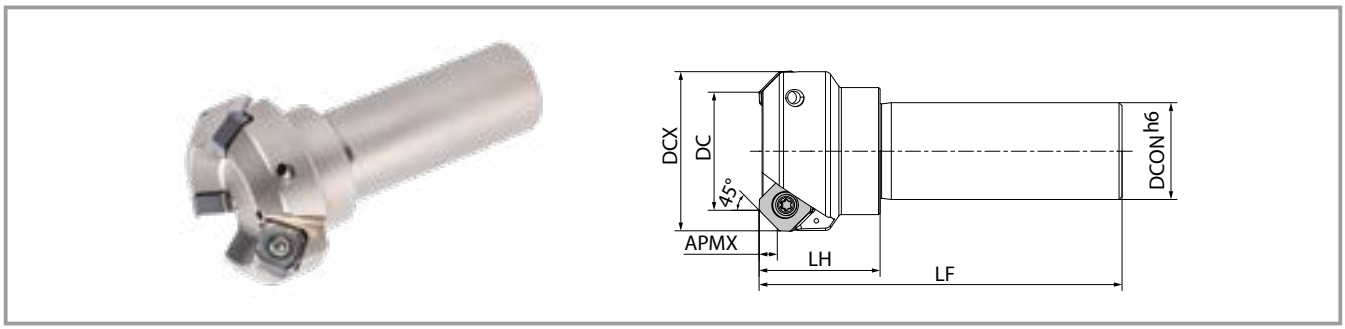
Description			Availability	Number of inserts	Dimensions (mm)															A.R. max.(°)	R.R.(°)	Coolant hole	Weight (kg)	Maximum number of revolutions (min⁻¹)	Shape
					DC	DCX	DCSFMS	DCB	DCCB1	DCCB2	DCCB3	DCCB4	DBC1	LF	CBDP	KDP	KWW	APMX							
Coarse pitch	MB45 -	040R-14T2C-M	●	2	40	53	38	16	13.5	9				40	19	5.6	8.4					Yes	0.4	12,700	
		050R-14T3C-M	●	3	50	63	48	22	18	11					21	6.3	10.4						0.5	11,400	Fig.1
		063R-14T4C-M	●	4	63	76	50				-	-	-										0.7	10,100	
		080R-14T5C-M	●	5	80	93	70	27	20	13				50	24	7	12.4						1.4	9,000	
		100R-14T5C-M	●	5	100	113	78	32	45						30	8	14.4						1.9	8,000	Fig.2
		125R-14T6C-M	●	6	125	138	89	40	55					63	33	9	16.4	6	13	-12			3.2	7,200	
		160R-14T7-M	●	7	160	173	110			-	14	20	66.7									No	5.1	6,300	
		200R-14T8-M	●	8	200	213	142	60	110		18	26	101.6		35	14	25.7						7.3	5,700	Fig.3
		250R-14T10-M	●	10	250	263																	10.5	5,100	
		315R-14T14-M	MTO	14	315	328	222		-		-	-	-	80									19.4	4,500	Fig.4
Fine pitch	MB45 -	040R-14T3C-M	●	3	40	53	38	16	13.5	9				40	19	5.6	8.4					Yes	0.3	12,700	
		050R-14T4C-M	●	4	50	63	48	22	18	11					21	6.3	10.4						0.4	11,400	Fig.1
		063R-14T5C-M	●	5	63	76	50				-	-	-										0.6	10,100	
		080R-14T6C-M	●	6	80	93	70	27	20	13				50	24	7	12.4						1.4	9,000	
		100R-14T8C-M	●	8	100	113	78	32	45						30	8	14.4						1.8	8,000	Fig.2
		125R-14T10C-M	●	10	125	138	89	40	55					63	33	9	16.4	6	13	-12			3.0	7,200	
		160R-14T12-M	●	12	160	173	110			-	14	20	66.7									No	4.9	6,300	
		200R-14T14-M	●	14	200	213	142	60	110		18	26	101.6		35	14	25.7						7.0	5,700	Fig.3
		250R-14T16-M	●	16	250	263																	10.2	5,100	
		315R-14T18-M	MTO	18	315	328	222		-		-	-	-	80									19.2	4,500	Fig.4
Extra fine pitch	MB45 -	040R-14T4C-M	●	4	40	53	38	16	13.5	9				40	19	5.6	8.4					Yes	0.3	12,700	
		050R-14T5C-M	●	5	50	63	48	22	18	11					21	6.3	10.4						0.4	11,400	Fig.1
		063R-14T6C-M	●	6	63	76	50				-	-	-										0.6	10,100	
		080R-14T8C-M	●	8	80	93	70	27	20	13				50	24	7	12.4			-12			1.3	9,000	
		100R-14T10C-M	●	10	100	113	78	32	45						30	8	14.4	6	13				1.7	8,000	Fig.2
		125R-14T13C-M	●	13	125	138	89	40	55					63	33	9	16.4						2.9	7,200	
		160R-14T16-M	●	16	160	173	110			-	14	20	66.7							-13		No	4.8	6,300	
		200R-14T18-M	●	18	200	213	142	60	110		18	26	101.6		35	14	25.7						6.9	5,700	Fig.3
		250R-14T20-M	●	20	250	263														-12			10.1	5,100	

●: Available MTO: Made to order

Maximum number of revolutions

Set the number of revolutions per minute within the recommended cutting speed specified by the workpiece on page 10.
Do not use the face mill or shank type at the maximum revolution or higher since the centrifugal force may cause chips and parts to scatter even under no load.

MB45 Shank type



Toolholder dimensions

Description		Availability	Number of inserts	Dimensions (mm)						A.R. max.(°)	R.R.(°)	Coolant hole	Weight (kg)	Maximum number of revolutions (min^{-1})
				DC	DCX	DCON	LH	LF	APMX					
MB45-	40S32-14T2C	●	2	40	53	32	40	120	6	13	-12	Yes	0.9	12,700
	50S32-14T3C	●	3	50	63								1.0	11,400
	63S32-14T4C	●	4	63	76								1.1	10,100
	80S32-14T5C	●	5	80	93								1.5	9,000

●: Available

Maximum number of revolutions

Set the number of revolutions per minute within the recommended cutting speed specified by the workpiece on page 10.
Do not use the face mill or shank type at the maximum revolution or higher since the centrifugal force may cause chips and parts to scatter even under no load.

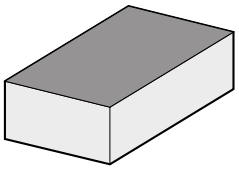
Parts

Description			Parts			
			Clamp screw	Wrench	Anti-seize compound	Arbor clamp bolt
						
Face mill	MB45-	040R-14T...	SB-50110TRP	TTP-20	P-37	HH8X25
		050R-14T...				HH10X30
		063R-14T...				HH10X30
		080R-14T...				HH12X35
		100R-14T... ≀ 315R-14T...	Insert clamp tightening torque 4.5 N·m			-
Shank Type	MB45-	40S32-14T2C	SB-50110TRP	TTP-20	P-37	-
		50S32-14T3C				
		63S32-14T4C				
		80S32-14T5C	Insert clamp tightening torque 4.5 N·m			

Coat anti-seize compound thinly on portion of taper and thread prior to installation.

Precautions

Applications



Facing

How to mount inserts

1. Completely eliminate chips and dust from the insert mounting side.
2. Coat anti-seize compound thinly on portion of taper and thread of clamp screw prior to installation.
3. After mounting a clamp screw on the top edge of wrench, tighten the screw while keeping the insert pushed against the shim seat surface and holder surface (Fig.1).
4. Tighten the wrench in a direction parallel to the clamp screw.
   Recommended tightening torque · · · 4.5 N·m
5. After tightening, check that there is no gap between the contact surface of the insert and the surface of the shim, or between the side surface of insert and the holder surface.

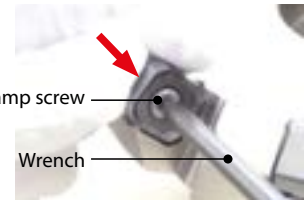


Fig.1

Defining the Machining Diameter (DC)

With respect to the machining diameter (DC) specified in ISO*, the numerical value of the machining diameter (Fig. 2) where the plane surface is finished depends on the insert. Please be careful.

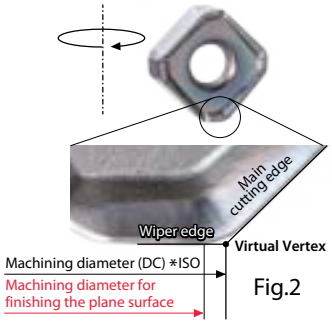


Fig.2

Machining diameter at which the plane surface is finished (for ø125mm)

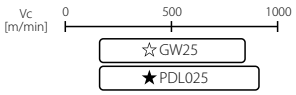
	GM	GH	SM	AM
Difference to machining diameter (DC)	-1.1	-2.0	-1.1	-1.1
Machining diameter (mm) at which the plane surface is finished *Dimensional tolerance $^{0}_{-0.2}$	123.9	123.0	123.9	123.9

*GH has a larger double-edge size, so the machining diameter at which the plane surface is finished is smaller than other inserts.

Precautions when machining

Precautions when machining aluminum

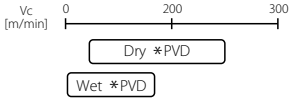
- Be sure to use within recommended conditions.
- Do not rotate more than the maximum speed listed on the main unit.
  *The number of revolutions listed on the holder is the maximum number of revolutions without load.



	Recommended cutting speed [m/min]
PDL025	200~600~900
GW25	200~500~800

Precautions for wet machining of steel

For wet machining, select PR1835 and use a cutting speed of 70% or less of the recommended condition as a guide.



MB45-125R-14T10C
SCREW:SB-50110TRP WRENCH:
MAX 7,200 RPM
Rotating at maximum speed is prohibited.

Precautions

How to use a wiper insert

1. Use when the feed amount per revolution [mm/rev] becomes large. The table below shows the standard feed amount per revolution and the number of wipers installed.

Feed per rotation	Number of wiper inserts	Pocket for wiper insert
2.0 < f [mm/rev] ≤ 4.0	1 pc	Pocket with "Single dot" (Fig. 3)
4.0 < f [mm/rev]	2 pcs	"Single dot" and "Double dots" pockets (Figs. 3, 4) * Only holders with 12 or more inserts have "Double dots"

Fig. 3

Fig. 4

"Double dots" are placed in the diagonal pocket of "Single dot"
* For only holders with 12 or more inserts

2. Chipbreaker recommended for use with wiper insert

	GM chipbreaker	GH chipbreaker	SM chipbreaker	AM chipbreaker
Wiper insert	✓	Not recommended	✓	Not recommended

3. Install the wiper insert correctly as shown in Fig. 5.
   * Fig. 6 shows the insert incorrectly attached to the holder.

Fig. 5

Fig. 6