

MEF



High efficiency and stable machining performance

For countersinking and boring of bolts with hexagon holes (M6 to M30)

Economical inserts with 4 cutting edges

New GM chipbreaker provides low cutting force and superior chip control

New grade PR18 series MEGACOAT NANO EX extends tool life

Custom-made varieties available for various applications.



**KEEPS YOU
AHEAD**



MEF

High Efficiency Bolt Countersink End Mill

For countersinking and boring of bolts with hexagon holes (M6 to M30)
Economical inserts with 4 cutting edges

1

New GM chipbreaker provides high-efficiency and stable machining

Excellent chip control for a wide range of machining. Provides stable machining with a low cutting force design

NEW



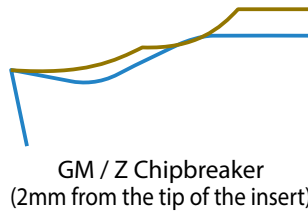
General Purpose
1st Recommendation

GM Chipbreaker



Tough edge

Z Chipbreaker

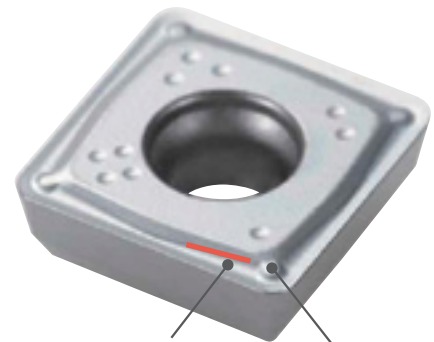


GM / Z Chipbreaker
(2mm from the tip of the insert)

Conventional Challenges

- Poor chip evacuation can lead to entanglement.
- Feed rate cannot increase due to high cutting force.
- Chatter occurs when deep hole making.

GM Chipbreaker



Variable chipbreaker width
considering speed difference
of inner and outer periphery
⇒ Stable chip control at high D.O.C.

Bump at corners
⇒ Stable chip control
at low D.O.C.

Chip samples by GM chipbreaker

<u>Case1</u>	Vc = 390 sfm fz = 0.004 ipt	D.O.C. = 0.177" ø26mm 1045	<u>Case2</u>	Vc = 260 sfm fz = 0.006 ipt	D.O.C. = 0.138" ø30mm 1045
					
<u>Case3</u>	Vc = 390 sfm fz = 0.004 ipt	D.O.C. = 0.039" ø26mm 1049	<u>Case4</u>	Vc = 390 sfm fz = 0.006 ipt	D.O.C. = 0.039" ø26mm 1049
					

Achieves excellent chip control under various machining conditions
(User/internal evaluation)

2

New Grade PR18 series Provides extended tool life

NEW

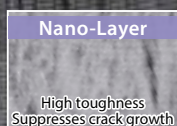


MEGACOAT
NANO EX | Milling

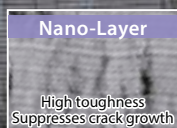
Double lamination technology maintains longer tool life

Multi-layer structure with two unique nano layers
Superior abrasion resistance and fracture resistance

Special Nano Layer x Multilayer Lamination



AlCr-based coating
with excellent abrasion resistance



AlTi-based coating
with excellent heat resistance

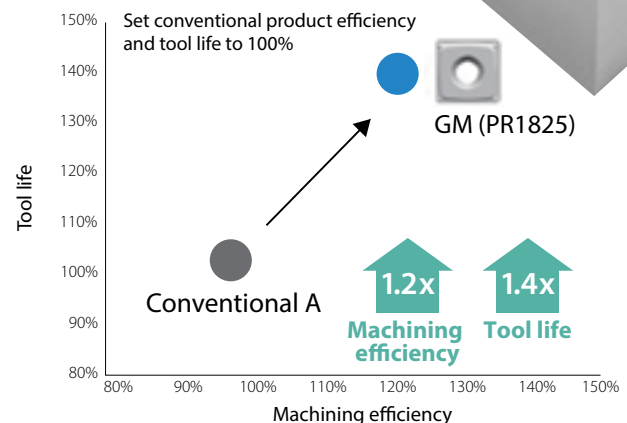
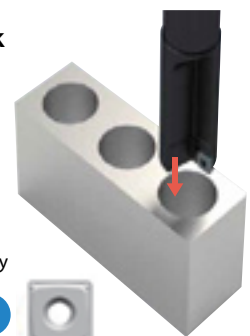
Multi-layering of high-performance nano layers
Increases toughness with the suppression of crack growth
and optimization of internal stress

CG Image

Case study

Alloy Steel / Copper Alloy Block

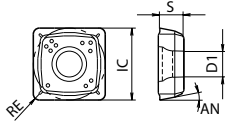
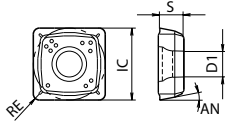
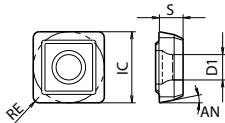
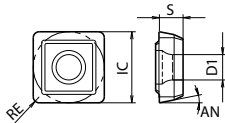
Vc = 330 sfm
D.O.C. × H = 0.032" × 2.953"
Vf = 8.858 ipm
Wet (Internal and external)
SPMT090308EN-GM PR1825
Custom-made toolholder



GM chipbreaker (PR1825) provided stable machining with increased cutting speed and feed rate.
Reduced chip clogging and extended tool life.

(User evaluation)

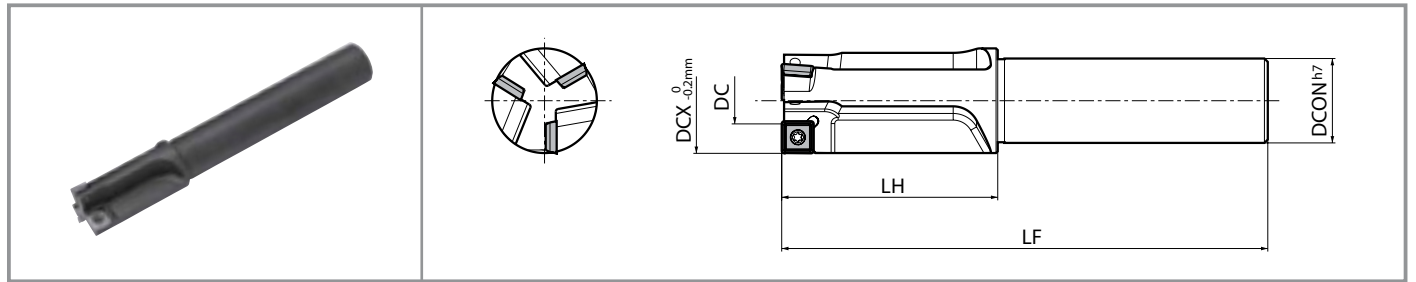
Applicable Inserts

Shape		Description	Dimensions (in)				Angle (°)	Carbide				Applicable Toolholder
			IC	S	D1	RE	AN	MEGACOAT NANO EX (PVD)			Carbide	
								PR1825	PR1835	PR1810	KW10	
NEW  General Purpose		SPMT 060204EN-GM	6.35	2.38	2.5	0.4	11	●	●	●	-	MEF(11~25)-S..
		060208EN-GM				0.8		●	●	●	-	
		SPMT 090304EN-GM	9.525	3.18	3.4	0.4	11	●	●	●	-	MEF(26~48)-S..
		090308EN-GM				0.8		●	●	●	-	
 Tough Edge		SPMT 060204E-Z	6.35	2.38	2.5	0.4	11	●	-	●	●	MEF(11~25)-S..
		060208E-Z				0.8		●	-	●	●	
		SPMT 090304E-Z	9.525	3.18	3.4	0.4	11	●	-	●	●	MEF(26~48)-S..
		090308E-Z				0.8		●	-	●	●	

● : Standard Stock

▼ : Standard Stock

MEF Toolholder



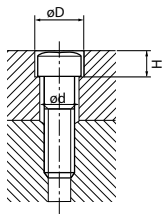
Toolholder Dimensions

Description	Stock	Number of Inserts	Dimensions (in)					Standard Corner-R (RE)	A.R. (°)	R.R. (°)	Objective Bolt Size	Coolant Hole	Parts		Applicable insert			
			DC	DCX	DCON	LF	LH						Clamp Screw	Wrench				
																		
MEF	11-S10	●	1	3	11	10	103	23	0.4	+5	-13	M6	No	SB-2250TR	DT-7	SPMT060204EN-GM SPMT060208EN-GM SPMT060204E-Z SPMT060208E-Z		
	14-S12	●		4.5	14	12	108	28				M8						
	17-S16	●	2	7.3	17.5	16	115	35				M10						
	18-S16	●		7.7	18		117	38				—						
	20-S16	●	3	9.5	20	20	120	40			M12	SB-2260TR		DT-7				
	22-S20	●		11.4	22		124	44			—							
	23-S20	●		12.4	23		126	46			M14							
	24-S20	●		13.4	24		128	48			—							
	25-S20	●		14.4	25		130	50			—							
MEF	26-S25	●	3	9.8	26	25	132	52	0.8	+5	-13	M16	No	SB-3080TR	DT-10	SPMT090304EN-GM SPMT090308EN-GM SPMT090304E-Z SPMT090308E-Z		
	27-S25	●		10.6	27		134	54				—						
	28-S25	●		11.5	28		136	56				—						
	29-S25	●		12.6	29		138	58				M18						
	30-S25	●		13.5	30		140	60				—						
	32-S25	●		15.5	32		144	64				M20						
	35-S32	●	4	18.4	35	32	150	70				M22					-12	M24
	39-S32	●		22.5	39		158	78				M27						
	43-S32	●		26.2	43		166	86			M30							
	48-S32	●		31.3	48		176	96										

MEF11 only has DC = 3.0mm regardless of corner-R (RE).

● : Standard Stock

Bolt Countersink (Hexagon socket head cap screw)



Nominal Screw Size	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24	M27	M30
øD (mm)	11	14	17.5	20	23	26	29	32	35	39	43	48
H (mm)	6.5	8.6	10.8	13	15.2	17.5	19.5	21.5	23.5	25.5	29	32
ød (mm)	6.6	9	11	14	16	18	20	22	24	26	30	33
Applicable End Mill	MEF11	MEF14	MEF17	MEF20	MEF23	MEF26	MEF29	MEF32	MEF35	MEF39	MEF43	MEF48

Recommended Cutting Conditions ★:1st Recommendation ☆:2nd Recommendation

Workpiece Material	fz (ipt)	Recommended insert grade (Vc : sfm)			
		MEGACOAT NANO EX			Carbide
		PR1825	PR1835	PR1810	KW10
Carbon Steel	0.004	★ 390 – 590 – 720	☆ 390 – 590 – 720	–	–
Alloy Steel	0.004	★ 390 – 590 – 720	☆ 390 – 590 – 720	–	–
Mold Steel	0.002 – 0.003 – 0.004	★ 330 – 490 – 590	☆ 330 – 490 – 590	–	–
Stainless Steel	0.002 – 0.003 – 0.004	–	★ 260 – 390 – 590	–	–
Cast Iron	0.004 – 0.006	–	–	★ 330 – 590 – 720	☆ 260 – 330 – 390
Non-ferrous Metal	0.004 – 0.006	–	–	–	★ 330 – 660 – 980

For more details on points at bolt countersinking and other cautions, see the KYOCERA general product catalog.

Custom-Made Toolholders

Custom-made according to the application

We offer custom-made tools to meet your various needs.
Please contact your local sales representative for details.

Custom-made example

- Customizable: Machining diameter / Number of inserts / Internal coolant
- Customized for machining applications such as simultaneous chamfering and multi-stage machining.

