



# MFK-SF

Cutter for Cast Iron with Adjustable Cutting Edge Height



High Speed and High Precision Machining of Cast Iron

High Speed Multi-edge Cutter for Cast Iron

Adjustable Cutting Edge Height for Improved Surface Finish



NEW

CBN Wiper Insert

# MFK-SF

Cutter for Cast Iron with Adjustable Cutting Edge Height

Adjustable Cutting Edge Height for Improved Surface Finish  
High Speed and High Precision Machining of Cast Iron

## 1

### Adjustable Cutting Edge Height for High Precision Machining

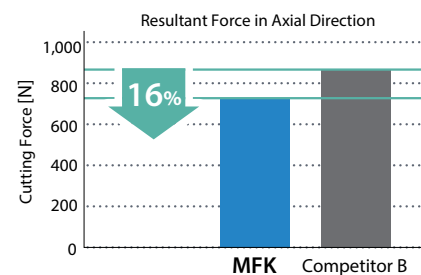
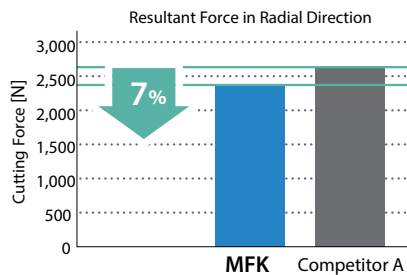
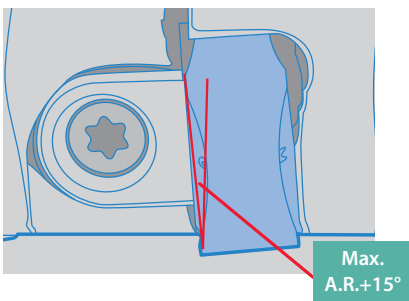
Multi-edge cutter with adjustable cutting edge height

High speed and high precision machining of cast iron is possible by combining ceramic insert and CBN wiper insert

## 2

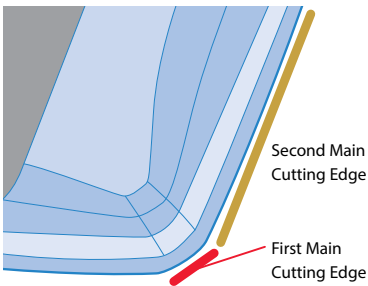
### Unique Insert Structure Designed for High Efficiency Machining

#### Low Cutting Forces with Helical Cutting Edge Design

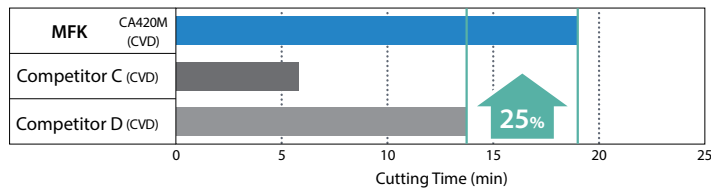


Cutting Conditions:  $V_c = 590$  sfm,  $f_z = 0.012$  ipt, D.O.C.  $\times ae = 0.118'' \times 2.441''$ , Dry Workpiece: Nodular Cast Iron (80-60-03),  $\emptyset 125$ mm Cutter

#### Tough and Reliable Dual Angle Edge Design

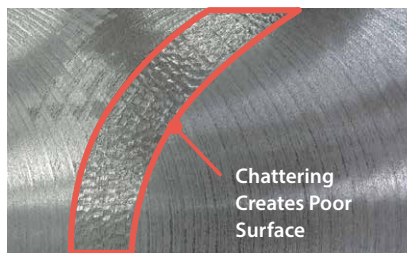


#### Fracture Resistance Comparison (Internal Evaluation)



Cutting Conditions:  $V_c = 980$  sfm,  $f_z = 0.020$  ipt, D.O.C. = 0.079", Wet Workpiece: Nodular Cast Iron (65-45-12) with 4 Bores

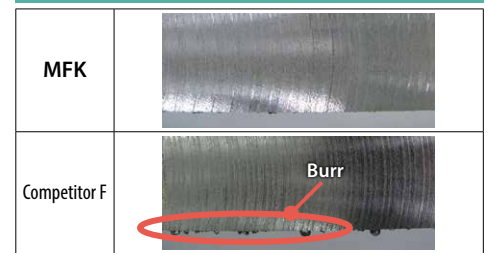
#### Surface Finish Comparison (Internal Evaluation)



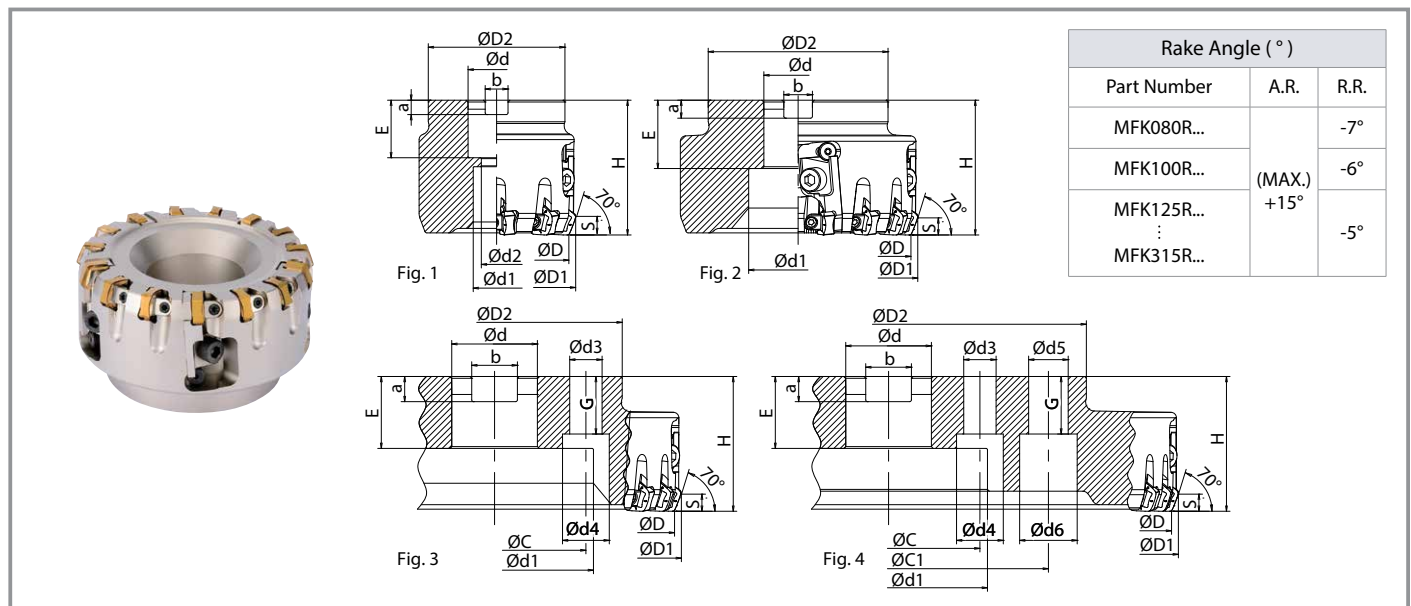
Cutting Conditions:  $V_c = 590$  sfm,  $f_z = 0.012$  ipt, D.O.C.  $\times ae = 0.118'' \times 3.071''$ , Dry Workpiece: Nodular Cast Iron (80-60-03)

#### Burr Comparison (Internal Evaluation)

#### Sharp Cutting Prevents Burr Formation



# MFK Face Mill (Metric Sizes)



## Toolholder Dimensions

Bore Dia.	Part Number	Stock	No. of Inerts*	Dimensions (mm)																	Drawing	Weight (kg)				
				ØD	ØD1	ØD2	Ød	Ød1	Ød2	H	E	a	b	s	Ød3	Ød4	Ød5	Ød6	ØC	ØC1			G			
Inch Bore	MFK080R-11-9T-SF	○	9 (3)	80	89	76	1.250"	26	17														Fig. 1	2.08		
	MFK100R-11-12T-SF	○	12 (4)	100	109	96																		Fig. 1	3.49	
	MFK125R-11-15T-SF	○	15 (5)	125	134	100	1.500"	55																Fig. 2	4.54	
	MFK160R-11-18T-SF	○	18 (6)	160	169	100	2.000"	70																Fig. 2	6.82	
	MFK200R-11-24T-SF	○	24 (8)	200	209	142																			Fig. 3	10.39
	MFK250R-11-30T-SF	○	30 (10)	250	259	142	1.875"	110																	Fig. 3	16.85
	MFK315R-11-39T-SF	○	39 (13)	315	324	220																			Fig. 4	28.65
Metric Bore	MFK080R-11-9T-M-SF	○	9 (3)	80	89	76	27	20	13															Fig. 1	2.21	
	MFK100R-11-12T-M-SF	○	12 (4)	100	109	96	32	26	17																Fig. 1	3.49
	MFK125R-11-15T-M-SF	○	15 (5)	125	134	100	40	55																	Fig. 2	4.47
	MFK160R-11-18T-M-SF	○	18 (6)	160	169	100	40	55																	Fig. 2	6.99
	MFK200R-11-24T-M-SF	○	24 (8)	200	209	142																			Fig. 3	9.89
	MFK250R-11-30T-M-SF	○	30 (10)	250	259	142	60	110																	Fig. 3	16.35
	MFK315R-11-39T-M-SF	○	39 (13)	315	324	220																			Fig. 4	28.14


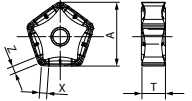

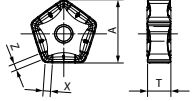

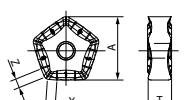

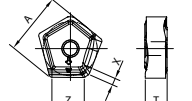

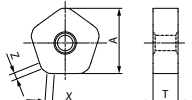

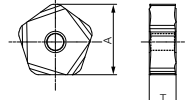

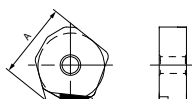
\* Numbers in parentheses ( ) are the number of adjustable cutting edge pockets  
Please install wiper inserts into the adjustable cutting edge pockets.

○ : World Express (Shipping: 7-10 Business Days)

## Spare Parts and Applicable Inserts

Part Number	Spare Parts							
	Wedge	Wedge Screw	Wrench	Cartridge	Cartridge Screw	Wrench	Adjustment Screw	Arbor Bolt
MFK080R-11-9T-SF								HH16X40
MFK100R-11-12T-SF								
MFK125R-11-15T-SF								
MFK160R-11-18T-SF	C09N	W6X18N	TT-15	CR-MFK70R	HH8X25	LW-6	AJ-519TR	
MFK200R-11-24T-SF								-
MFK250R-11-30T-SF								
MFK315R-11-39T-SF								
MFK080R-11-9T-M-SF								HH12X35
MFK100R-11-12T-M-SF								HH16X40
MFK125R-11-15T-M-SF								
MFK160R-11-18T-M-SF	C09N	W6X18N	TT-15	CR-MFK70R	HH8X25	LW-6	AJ-519TR	
MFK200R-11-24T-M-SF								-
MFK250R-11-30T-M-SF								
MFK315R-11-39T-M-SF								

# Applicable Inserts

Insert		Part Number	Dimensions (in)				CVD Coated Carbide	MEGACOAT NANO		Silicon Nitride Ceramic	CVD Silicon Nitride Ceramic	CBN
			A	T	X	Z	CA420M	PR1510	PR1525	KS6050	CS7050	KBN475
 General		PNMG 1106XNEN-GM	0.678	0.250	0.079	0.079	●	●	●	-	-	-
 Tough Edge		PNMG 1106XNEN-GH	0.678	0.250	0.079	0.079	●	●	●	-	-	-
 Surface Finish Oriented		PNEG 1106XNEN-GL	0.676	0.250	0.102	0.102	●	●	●	-	-	-
 Wiper Insert (Z-edge)		PNEG 1106XNER-W	0.709	0.250	0.079	0.394	●	●	●	-	-	-
 High Speed		PNEA 1106XNTN-T01020	0.667	0.256	0.059	0.059	-	-	-	●	●	-
 High Speed (with Chipbreaker)		PNEG 1106XNTR-T00515	0.672	0.250	-	-	-	-	-	●	●	-
 Wiper Insert (Z-edge)		PNEG 1106XNTR-T01015W	0.667	0.256	0.059	0.059	-	-	-	-	-	○

● : U.S. Stock ○ : World Express (Shipping: 7-10 Business Days)

PNEG1106XNER-W inserts are sold in 5 piece boxes

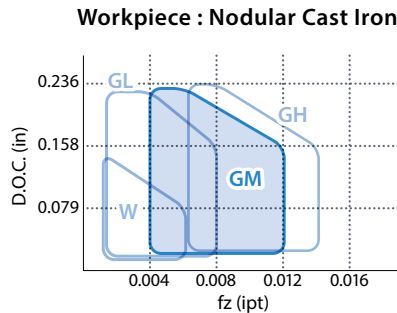
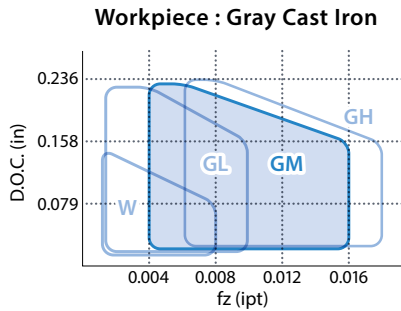
PNEG1106XNTR-T01015W inserts are sold in 1 piece boxes

All other inserts are sold in 10 piece boxes

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

Workpiece Material	Insert Grade	Cutting Speed (sfm)	Chipbreaker	Feed per Tooth fz (ipt)				
				0.0024	0.0039	0.0079	0.0018	0.0158
Gray Cast Iron (FC)	CA420M	560 – 750 – 980	GM ★			● 0.0098		
	PR1510	390 – 590 – 820	GH ☆				● 0.0118	
	PR1525		GL		● 0.0047			
Nodular Cast Iron (FCD)	CA420M	490 – 660 – 820	GM ★			● 0.0079		
	PR1510	330 – 490 – 660	GH ☆				● 0.0098	
	PR1525		GL		● 0.0039			

## Recommended Application Range



### NOTES

- When using W (wiper), please use together with GM or GH. (Not recommended for use with GL)
- When using wiper, do not exceed  $fz = 0.008$  ipt or insert corner may be damaged. The main cutting edge of W (wiper) insert is receding from that of GM and GH. Therefore, the feed rate for the insert next to W (wiper) is double that of other inserts.

## Recommended Cutting Conditions (Ceramic / CBN) ★ 1st Recommendation ☆ 2nd Recommendation

### Without Chipbreaker

Workpiece Material	Insert Grade	Cutting Speed (sfm)	Edge Preparation	Feed per Tooth fz (ipt)				
				0.0020	0.0039	0.0079	0.0018	0.0158
Gray Cast Iron	KS6050 ★ CS7050 ☆	1970 – 2950 – 3940	0.004 × 20°		● 0.0039			
Nodular Cast Iron	KS6050 ☆ CS7050 ★	1310 – 1970 – 2950						

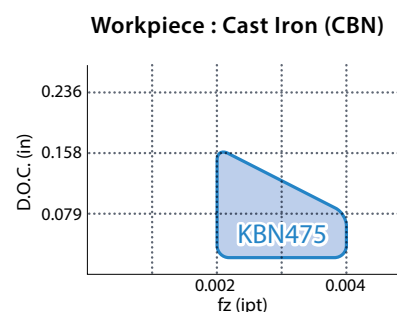
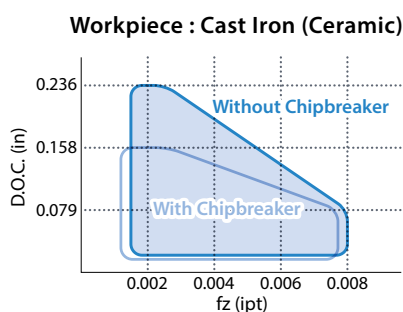
### With Chipbreaker

Workpiece Material	Insert Grade	Cutting Speed (sfm)	Edge Preparation	Feed per Tooth fz (ipt)				
				0.0020	0.0039	0.0079	0.0018	0.0158
Gray Cast Iron	KS6050 ★ CS7050 ☆	1970 – 2950 – 3940	0.002 × 15°		● 0.0039			
Nodular Cast Iron	KS6050 ☆ CS7050 ★	1310 – 1970 – 2950						

### CBN Wiper Insert

Workpiece Material	Insert Grade	Cutting Speed (sfm)	Edge Preparation	Feed per Tooth fz (ipt)				
				0.0020	0.0039	0.0079	0.0018	0.0158
Gray Cast Iron	KBN475	1970 – 2950 – 3940	0.004 × 15°		● 0.0039			
Nodular Cast Iron		1310 – 1970 – 2950						

## Recommended Application Range (Ceramic / CBN)

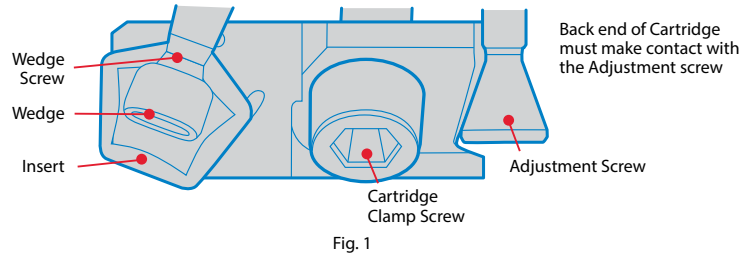


### When Using CBN Wiper Inserts

- Please use CBN wiper inserts together with ceramic inserts. Feed rate should be under  $fz = 0.004$  ipt.
- The main cutting edge of CBN wiper insert is slightly higher than that of ceramic inserts. Therefore, the feed rate for the inserts next to CBN wiper inserts is double that of other inserts.

# How to Adjust Cutting Edge Height

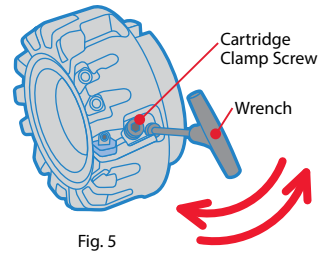
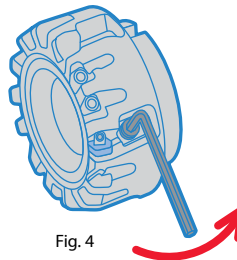
1. Assemble all related parts into the cutter.
2. Make sure the back end of cartridge makes contact with adjustment screw (Fig 1), and pull them lightly inwards (Fig 2).  
Tighten the cartridge clamp screw temporary.



3. Install the insert (Fig 3), and tighten the wedge screw temporarily.  
Temporarily tighten the screw with a 40 to 45 degree rotation after the wedge contacts the insert.



4. Loosen the cartridge clamp screw (Fig 4).
5. Adjust the extruding amount with adjustment screw (Fig 5).
6. Tighten the wedge screw and firmly mount the insert.  
(Recommended tightening torque : 6Nm)
7. Tighten the cartridge clamp screw firmly.  
(Recommended tightening torque : 10Nm)



## Notes

1. Follow steps 1-7 above for adjustment.
2. To adjust the edge height adjust the wedge screw and loosen the cartridge clamp screw.  
Tightening the adjustment screw with the clamp screw fixed firmly may damage the adjustment screw.
3. The adjusted edge height difference must be within 5 $\mu$ m.



## KYOCERA Precision Tools

102 Industrial Park Road  
Hendersonville, NC 28792  
Customer Service | 800.823.7284 - Option 1  
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