Highly Efficient Cutter with a 66° Cutting Edge Angle

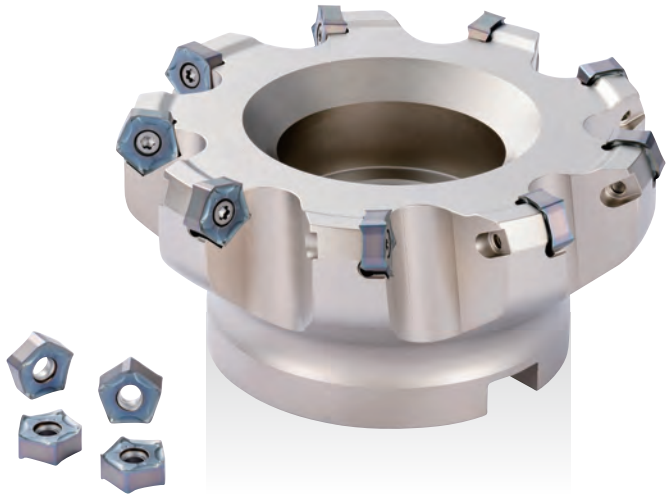
MFPN66

Economical Inserts with 10 Cutting Edges. Reduces Chattering with Low Cutting Force Design

Reduces Cutting Costs when Machining Auto Parts and Other General Purpose Machining Applications

Reduces Chattering with Low Cutting Force Design

TN620M cermet insert is available



Highly Efficient Cutter with a 66° Cutting Edge Angle

MFPN66

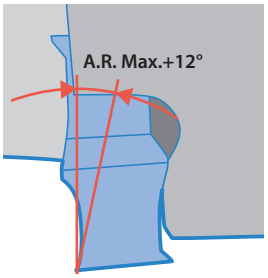
Economical Inserts with 10 Cutting Edges. Reduces Chattering with Low Cutting Force Design
Reduces Cutting Costs when Machining Auto Parts and Other General Purpose Machining Applications

1 Economical Inserts with 10 Cutting Edges
Applicable to various machining applications with wide size range from ø32

Cost reduction in various applications from general parts to automotive parts machining

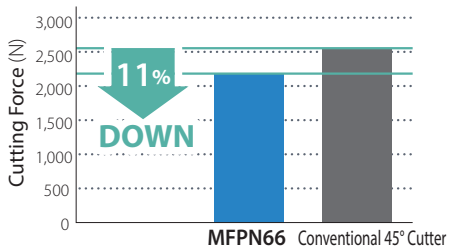
2 Reduces Chattering with Low Cutting Force Design
Available for Small to Medium ap Applications

Suppresses Vibration for Excellent Surface Finish with 66° Cutting Edge Angle

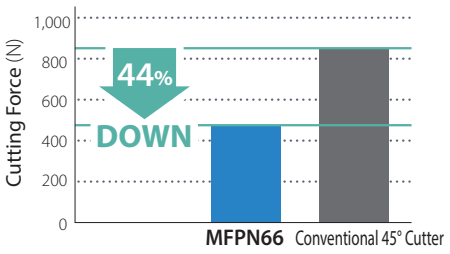


Helical Edge with A.R. Max.+12°

Cutting Force Comparison in Radial Direction (Internal Evaluation)

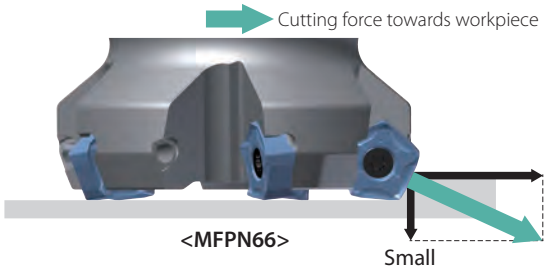


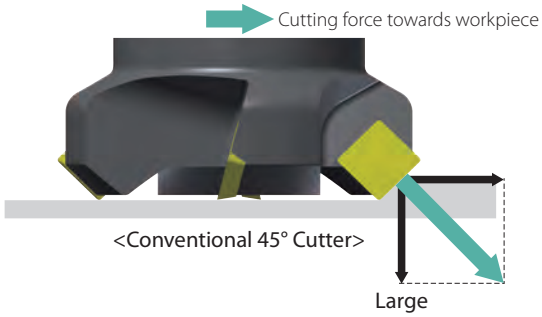
Cutting Force Comparison in Axial Direction (Internal Evaluation)



Cutting Conditions: Vc = 200 m/min, fz = 0.2 mm/t, ap × ae = 2 × 50 mm
Cutting Dia.: ø100 Number of Inserts: 7 Workpiece: S50C

MFPN66 is great for facing unstable workpieces such as thin plates due to its 66° cutting edge angle which exerts less cutting force in the axial direction than a conventional 45° cutter





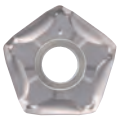
3 Long Tool Life with MEGACOAT NANO Coating Technology
Insert Lineup Also Contains Cermet Grade for Better Surface Finish

Cermet for Milling TN620M

1st Recommendation
(General Purpose)
GM Chipbreaker

Tough Edge
GH Chipbreaker

For Stainless Steel Machining
SM Chipbreaker



Excellent Wear Resistance and Adhesion Resistance
High Quality Surface Finish

MFPN66 Face Mill

Rake Angle	A.R.	R.R.	
	max.+12°	DC = 50 : -9° DC = 63 : -8° DC = 80 : -7°	DC = 100-160 : -6°

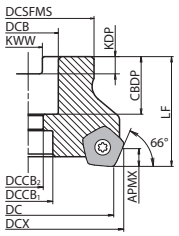


Fig.1

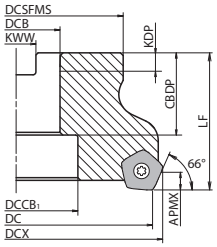


Fig.2

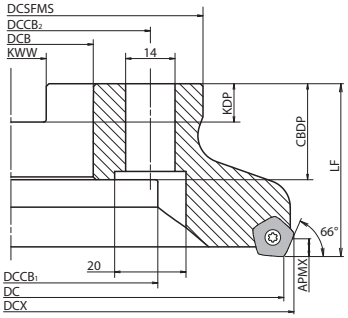


Fig.3

Toolholder Dimensions

Description			Stock	No.of Inserts	Dimensions (mm)										Shape	Weight (kg)	Shim
					DC	DCX	DCSFMS	DCB	$DCCB_1$	$DCCB_2$	LF	CBDP	KDP	KWW			
Bore Dia. Inch Spec	Fine Pitch	MFPN 66080R-6T-G	●	6	80	88	70	25.4	20	13	50	27	6	9.5	Fig.1	1.2	No
		66100R-7T-G	●	7	100	107	78	31.75	45	—		34	8	12.7	Fig.2	1.7	
		66125R-9T-G	●	9	125	132	89	38.1	55		63	38	10	15.9		2.9	
		66160R-11T-G	●	11	160	167	110	50.8	72				11	19.1		4.5	
	Extra Fine Pitch	MFPN 66080R-9T-G	●	9	80	88	70	25.4	20	13	50	27	6	9.5	Fig.1	1.2	No
		66100R-11T-G	●	11	100	107	78	31.75	45	—		34	8	12.7	Fig.2	1.7	
		66125R-13T-G	●	13	125	132	89	38.1	55		63	38	10	15.9		3	
		66160R-15T-G	●	15	160	167	110	50.8	72				11	19.1		4.8	
Metric	Fine Pitch	MFPN 66050R-4T-M-G	●	4	50	58	48	22	18	11	40	21	6.3	10.4	Fig.1	0.3	No
		66063R-5T-M-G	●	5	63	71										0.5	
		66080R-6T-M-G	●	6	80	88	70	27	20	13	50	24	7	12.4		1.2	
		66100R-7T-M-G	●	7	100	107	78	32	45	—		30	8	14.4	Fig.2	1.6	
		66125R-9T-M-G	●	9	125	132	89	40	55		63	33	9	16.4		2.8	
		66160R-11T-M-G	●	11	160	167									Fig.3	3.8	
	Extra Fine Pitch	MFPN 66050R-5T-M-G	●	5	50	58	48	22	18	11	40	21	6.3	10.4	Fig.1	0.4	No
		66063R-7T-M-G	●	7	63	71										0.5	
		66080R-9T-M-G	●	9	80	88	70	27	20	13	50	24	7	12.4		1.2	
		66100R-11T-M-G	●	11	100	107	78	32	45	—		30	8	14.4	Fig.2	1.6	
		66125R-13T-M-G	●	13	125	132	89	40	55		63	33	9	16.4		3	
		66160R-15T-M-G	●	15	160	167									Fig.3	4	

APMX: 5mm

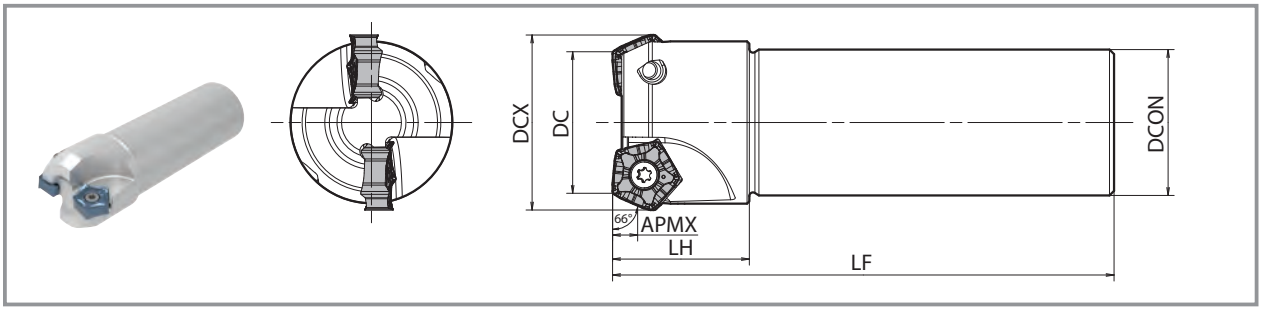
●: Standard Stock

Spare Parts for Face Mill (Common to Inch / Metric Specs)

Description		Clamp Screw	Wrench	Anti-Seize Compound	Arbor Bolt
					
Fine Pitch	MFPN 66050R-4T-M-G	SB-4090TRP	DTPM-15	P-37	HH10X30
	MFPN 66063R-5T-M-G				HH10X30
	MFPN 66080R-6T(-M)-G	Recommended Torque for Insert Clamp 3.5N·m			HH12X35
	MFPN 66100R-7T(-M)-G				—
	MFPN 66125R-9T(-M)-G				
	MFPN 66160R-11T(-M)-G				
Extra Fine Pitch	MFPN 66050R-5T-M-G	SB-4090TRP	DTPM-15	P-37	HH10X30
	MFPN 66063R-7T-M-G				HH10X30
	MFPN 66080R-9T(-M)-G	Recommended Torque for Insert Clamp 3.5N·m			HH12X35
	MFPN 66100R-11T(-M)-G				—
	MFPN 66125R-13T(-M)-G				
	MFPN 66160R-15T(-M)-G				

Coat Anti-Seize Compound thinly on portion of taper and thread prior to installation

MFPN66 End Mill



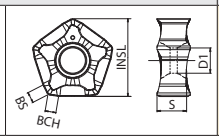
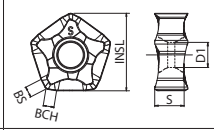
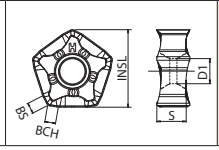
Toolholder Dimensions

Description		Stock	No.of Inserts	Dimensions (mm)						Rake Angle		Spare Parts		
				DC	DCX	DCON	LF	LH	APMX	A.R. (MAX.)	R.R.	Clamp Screw	Wrench	Anti-Seize Compound
MFPN	66032R-S32-2T-G	●	2	32	39.5	32	110	30	5	+12°	-14°	SB-4090TRP	DTPM-15	P-37
	66040R-S32-3T-G	●	3	40	47.5						-12°	Recommended Torque for Insert Clamp 3.5N·m		

●: Standard Stock

Applicable Inserts

Classification of Usage							
★: Roughing / 1st Choice ☆: Roughing / 2nd Choice ■: Finishing / 1st Choice □: Finishing / 2nd Choice (In Case Hardness is Under 45HRC)	P	Carbon Steel / Alloy Steel	☆	★		★
		Die Steel	☆	★		★
	M	Austenitic Stainless Steel	★	☆		
		Martensitic Stainless Steel	★			
		Precipitation Hardened Stainless Steel	★			
	K	Gray Cast Iron			★	
		Nodular Cast Iron (FCD)			★	
	N	Non Ferrous Metals				
	S	Ni-base Heat-Resistant Alloys (Inconel®)	★			
		Titanium Alloy	★			
	H	High Hardness Steel		□		

Shape		Description	Dimensions (mm)					MEGACOAT NANO			Cermet
			INSL	S	D1	BCH	BS	PR1535	PR1525	PR1510	TN620M
 General Purpose		PNMU 0905XNER-GM	14.6	5.56	4.7	2.0	2.0	●	●	●	●
 Low Cutting Force		PNMU 0905XNER-SM						●	●	●	
 Tough Edge (Heavy Milling)		PNMU 0905XNER-GH						●	●	●	

●: Standard Stock

Applicable Chipbreaker

Cutter	Insert		
	GM	SM	GH
Fine Pitch	○	○	○
Extra Fine Pitch	○	○	fz = 0.2 mm/t is Recommended

Recommended Cutting Conditions ★ 1st Recommendation ☆ 2nd Recommendation

Coated Carbide

Insert	Workpiece	Feed (fz: mm/t)	Recommended Insert Grade (Cutting Conditions Vc: m/min)		
			MEGACOAT NANO		
			PR1535	PR1525	PR1510
GM	Carbon Steel (SxxC)	0.1 – **0.2** – 0.3	☆ 120 – **180** – 250	★ 120 – **180** – 250	—
	Alloy Steel (SCM etc)	0.1 – **0.2** – 0.3	☆ 100 – **160** – 220	★ 100 – **160** – 220	—
	Die Steel (SKD etc)	0.1 – **0.18** – 0.25	★ 80 – **140** – 180	★ 80 – **140** – 180	—
	Austenitic Stainless Steel (SUS304 etc)	0.1 – **0.18** – 0.25	☆ 100 – **150** – 200	☆ 100 – **150** – 200	—
	Martensitic Stainless Steel (SUS403 etc)	0.1 – **0.18** – 0.25	☆ 100 – **150** – 200	—	—
	Precipitation Hardened Stainless Steel (SUS630 etc)	0.1 – **0.18** – 0.25	★ 90 – **120** – 150	—	—
	Gray Cast Iron (FC)	0.1 – **0.2** – 0.3	—	—	★ 120 – **180** – 250
	Nodular Cast Iron (FCD)	0.1 – **0.18** – 0.25	—	—	★ 100 – **150** – 200
	Ni-base Heat-Resistant Alloy (Inconel® etc)	0.1 – **0.12** – 0.2	☆ 20 – **30** – 50	—	—
SM	Carbon Steel (SxxC)	0.06 – **0.12** – 0.2	—	☆ 120 – **180** – 250	—
	Alloy Steel (SCM etc)	0.06 – **0.12** – 0.2	—	☆ 100 – **160** – 220	—
	Die Steel (SKD etc)	0.06 – **0.1** – 0.15	—	☆ 80 – **140** – 180	—
	Austenitic Stainless Steel (SUS304 etc)	0.06 – **0.12** – 0.2	★ 100 – **150** – 200	☆ 100 – **150** – 200	—
	Martensitic Stainless Steel (SUS403 etc)	0.06 – **0.12** – 0.2	★ 100 – **150** – 200	—	—
	Precipitation Hardened Stainless Steel (SUS630 etc)	0.06 – **0.12** – 0.2	☆ 90 – **120** – 150	—	—
	Gray Cast Iron (FC)	0.06 – **0.12** – 0.2	—	—	☆ 120 – **180** – 250
	Nodular Cast Iron (FCD)	0.06 – **0.1** – 0.15	—	—	☆ 100 – **150** – 200
	Ni-base Heat-Resistant Alloy (Inconel® etc)	0.06 – **0.08** – 0.15	★ 20 – **30** – 50	—	—
	Titanium Alloy (Ti-6Al-4V)	0.06 – **0.08** – 0.15	★ 40 – **60** – 80	—	—
GH*	Carbon Steel (SxxC)	0.15 – **0.25** – 0.35	—	☆ 120 – **180** – 250	—
	Alloy Steel (SCM etc)	0.15 – **0.25** – 0.35	—	☆ 100 – **160** – 220	—
	Die Steel (SKD etc)	0.1 – **0.2** – 0.3	—	☆ 80 – **140** – 180	—
	Gray Cast Iron (FC)	0.15 – **0.25** – 0.35	—	—	☆ 120 – **180** – 250
	Nodular Cast Iron (FCD)	0.1 – **0.2** – 0.3	—	—	☆ 100 – **150** – 200

*When using GH chipbreaker for fine pitch cutters, recommended feed is fz 0.2(mm/t)

★ 1st Recommendation ☆ 2nd Recommendation

Cermet

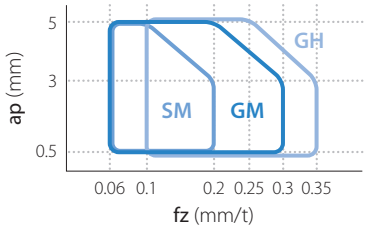
Insert	Workpiece	Feed (fz: mm/t)	Recommended Insert Grade (Cutting Conditions Vc: m/min)
			Cermet
			TN620M
GM	Carbon Steel (SxxC)	0.06 – **0.12** – 0.15	★ 200 – **250** – 300
	Alloy Steel (SCM etc)	0.06 – **0.12** – 0.15	★ 180 – **220** – 250
	Die Steel (SKD etc)	0.06 – **0.1** – 0.13	★ 150 – **180** – 220

★ 1st Recommendation

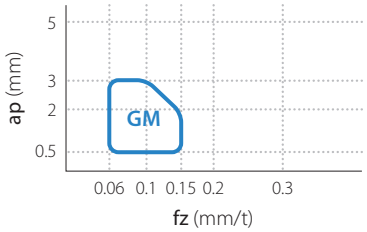
The number in bold font is recommended starting conditions. Adjust the cutting speed and the feed rate within the above conditions according to the actual machining situation
Cutting with coolant is recommended for Ni-base Heat Resistant Alloy and Titanium Alloy

Chipbreaker Recommended Applications

Coated Carbide



Cermet



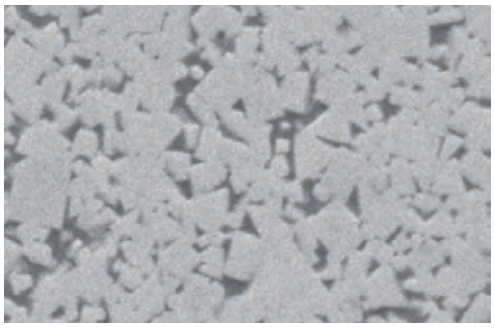
MEGACOAT NANO PR1535

Fracture resistant with a tough substrate and high heat-resistant coating
Stable machining of general steel, mold steel, and difficult-to-cut materials

1 Toughening by a New Cobalt Mixing Ratio

*In-house Evaluation

High Toughness Carbide Base Material



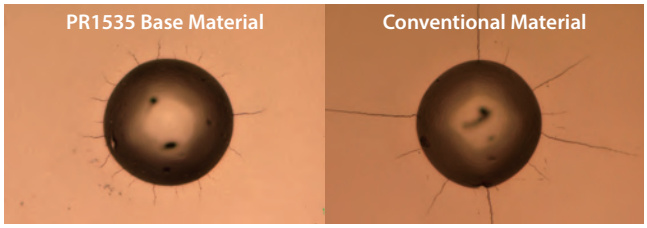
UP 23% Fracture Toughness*

2 Stability Improvement

The coarse grain structure and uniform particle size correspond to improved heat resistance, with conductivity values decreased by 11%. The uniform structure also reduces crack propagation

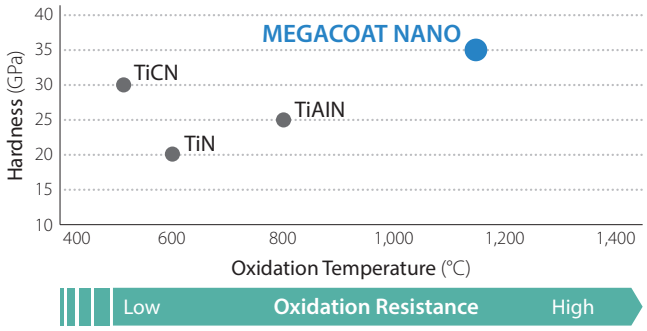
UP Shock Resistance

Cracking Comparison by Diamond Indenter
(Internal Evaluation)



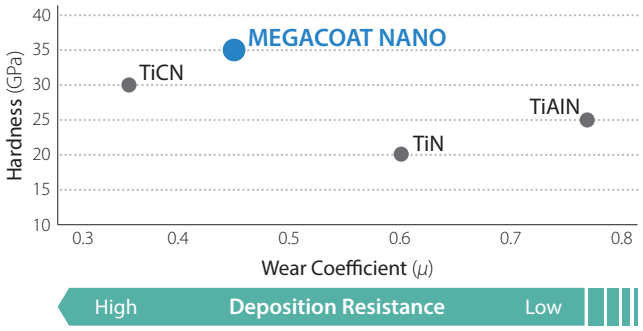
Short Cracks　　Long Cracks

Coating Properties (Abrasion Resistance)



Achieve long tool life with the combination of a tough substrate and a special Nano coating layer

Coating Properties (Deposition Resistance)



Stable Machining with Excellent Wear Resistance

CP407-1