

THE NEW VALUE FRONTIER



Highly Efficient Cutter with a 66°
Cutting Edge Angle

MFPN66

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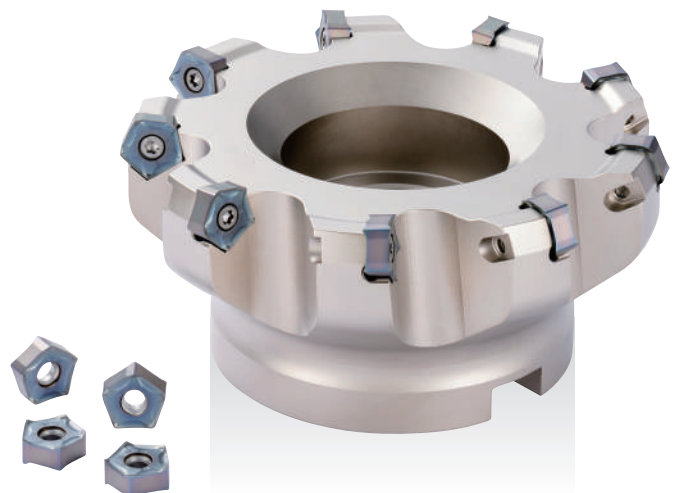


Economical Inserts with 10 Cutting Edges. Reduces Chattering with Low Cutting Force Design

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

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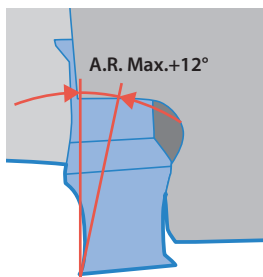
Economical Inserts with 10 Cutting Edges. Reduces Chattering with Low Cutting Force Design
Reduces Cutting Costs when Machining Auto Parts and Other General Purpose Machining Applications

1 Economical Inserts with 10 Cutting Edges Applicable to various machining applications with wide size range from $\phi 32$

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

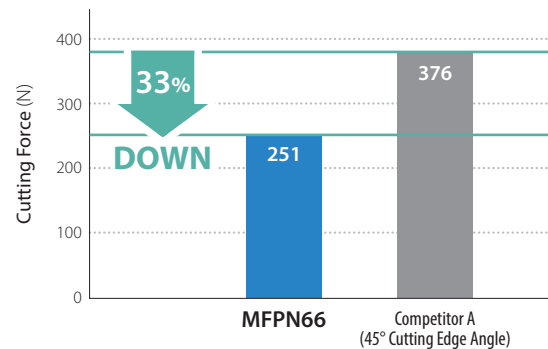
2 Reduces Chattering with Low Cutting Force Design For Stainless Steel Machining

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



Helical Edge with A.R. Max.+12°

Cutting Force Comparison (Internal Evaluation)



Thrust force is cutting resistance.

Cutting Conditions: $V_c = 200$ m/min, $f_z = 0.15$ mm/t, $a_p = 3$ mm
Cutting Dia. $\phi 63$ Workpiece: S50C

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

Cermet for Milling TN620M



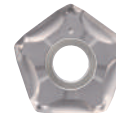
1st Recommendation
(General Purpose)
GM Chipbreaker



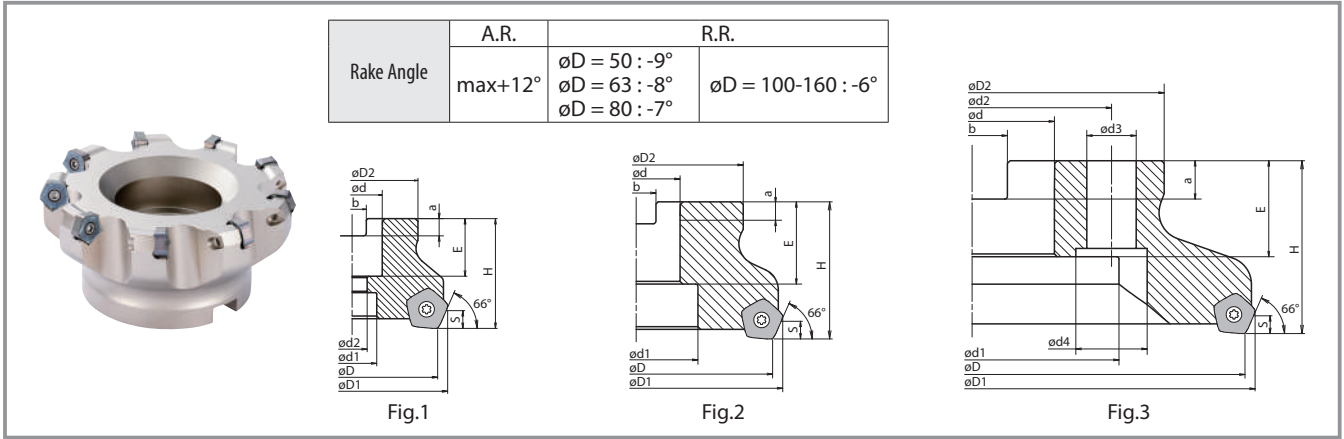
Tough Edge
GH Chipbreaker



For Stainless Steel Machining
SM Chipbreaker



Excellent Wear Resistance and Adhesion Resistance
High Quality Surface Finish



Toolholder Dimensions

Description		Stock	No. of Inserts	Dimensions (mm)											Shape	Weight (kg)	Shim			
				øD	øD1	øD2	ød	ød1	ød2	H	E	a	b	ød3				ød4		
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	
		MFPN 66100R-7T-G	●	7	100	107	78	31.75	45	34		8	12.7	Fig.2			1.7			
		MFPN 66125R-9T-G	●	9	125	132	89	38.1	55	63	38	10	15.9	Fig.2			2.9			
		MFPN 66160R-11T-G	●	11	160	167	110	50.8	72		11	19.1	Fig.3	4.5						
Bore Dia. Inch Spec	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	
		MFPN 66100R-11T-G	●	11	100	107	78	31.75	45	34		8	12.7	Fig.2			1.7			
		MFPN 66125R-13T-G	●	13	125	132	89	38.1	55	63	38	10	15.9	Fig.2			3			
		MFPN 66160R-15T-G	●	15	160	167	110	50.8	72		11	19.1	Fig.3	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	
		MFPN 66063R-5T-M-G	●	5	63	71		30	8	14.4		Fig.1	0.5							
		MFPN 66080R-6T-M-G	●	6	80	88	70	27	20	13	50	24	7	12.4			Fig.2	1.2		
		MFPN 66100R-7T-M-G	●	7	100	107	78	32	45	30		8	14.4	Fig.2			1.6			
		MFPN 66125R-9T-M-G	●	9	125	132	89	40	55	63	33	9	16.4	14			20	Fig.3		2.8
	MFPN 66160R-11T-M-G	●	11	160	167	33		9	16.4		Fig.3	3.8								
	Metric	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
			MFPN 66063R-7T-M-G	●	7	63	71		30	8	14.4		Fig.1	0.5						
			MFPN 66080R-9T-M-G	●	9	80	88	70	27	20	13	50	24	7	12.4			Fig.2	1.2	
			MFPN 66100R-11T-M-G	●	11	100	107	78	32	45	30		8	14.4	Fig.2			1.6		
MFPN 66125R-13T-M-G			●	13	125	132	89	40	55	63	33	9	16.4	14	20			Fig.3	3	
MFPN 66160R-15T-M-G	●	15	160	167	33	9		16.4	Fig.3		4									

Dimension S: 5mm

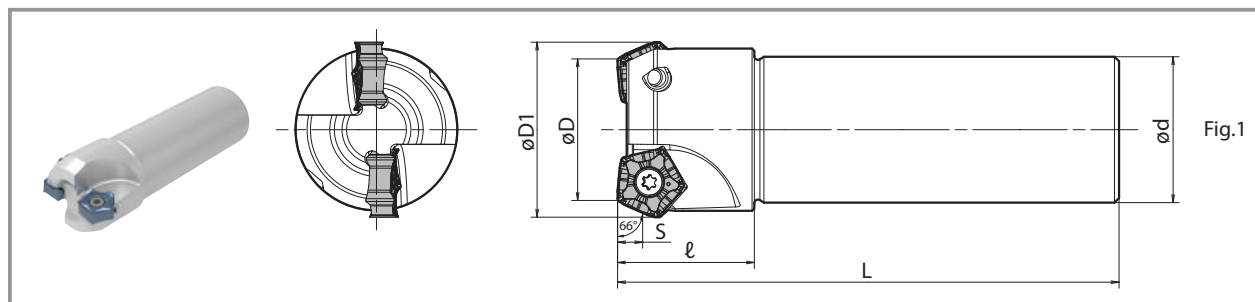
● : Standard Stock

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	HH10×30
	MFPN 66063R-5T-M-G				HH10×30
	MFPN 66080R-6T(M)-G				HH12×35
	MFPN 66100R-7T(M)-G				—
	MFPN 66125R-9T(M)-G				—
Recommended Torque for Insert Clamp 3.5N·m					
Extra Fine Pitch	MFPN 66050R-5T-M-G	SB-4090TRP	DTPM-15	P-37	HH10×30
	MFPN 66063R-7T-M-G				HH10×30
	MFPN 66080R-9T(M)-G				HH12×35
	MFPN 66100R-11T(M)-G				—
	MFPN 66125R-13T(M)-G				—
Recommended Torque for Insert Clamp 3.5N·m					
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		
			øD	øD1	ød	L	ℓ	S	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
MFPN 66040R-S32-3T-G	●	3	40	47.5						-12°			

● : Standard Stock

Applicable Inserts

Classification of Usage		P	M	K	N	S	H						
★ : Roughing / 1st Choice ☆ : Roughing / 2nd Choice ■ : Finishing / 1st Choice □ : Finishing / 2nd Choice (In Case Hardness is Under 45HRC)	Carbon Steel / Alloy Steel	☆	★									★	
	Die Steel	☆	★									★	
	Austenitic Stainless Steel	★	☆										
	Martensitic Stainless Steel	★											
	Precipitation Hardened Stainless Steel	★											
	Gray Cast Iron												★
	Nodular Cast Iron (FCD)												★
	Non Ferrous Metals												
Ni-base Heat-Resistant Alloys (Inconel®)	★												
Titanium Alloy	★												
High Hardness Steel											□		
Shape	Description	Dimensions (mm)						MEGACOAT NANO			Cermet		
		A	T	ød	X	Z	rε	PR1535	PR1525	PR1510	TN620M		
	PNMU 0905XNER-GM	14.6	5.56	4.7	2	2	0.8	●	●	●	●		
	PNMU 0905XNER-SM							●	●	●			
	PNMU 0905XNER-GH							●	●	●			

● : Standard Stock

Applicable Chipbreaker

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

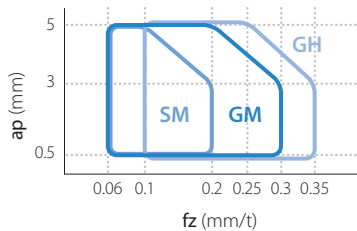
Insert	Workpiece	Feed (fz: mm/t)	Recommended Insert Grade (Cutting Conditions Vc: m/min)
			Cermet
			TN620M
GM	Carbon Steel (SxxC)	0.06 – 0.12 – 0.15	★ 200 – 250 – 300
	Alloy Steel (SCM etc)	0.06 – 0.12 – 0.15	★ 180 – 220 – 250
	Die Steel (SKD etc)	0.06 – 0.1 – 0.13	★ 150 – 180 – 220

★ 1st Recommendation

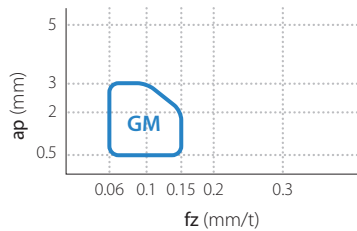
The number in bold font is recommended starting conditions. Adjust the cutting speed and the feed rate within the above conditions according to the actual machining situation. Cutting with coolant is recommended for Ni-base Heat Resistant Alloy and Titanium Alloy.

Chipbreaker Recommended Applications

Coated Carbide



Cermet

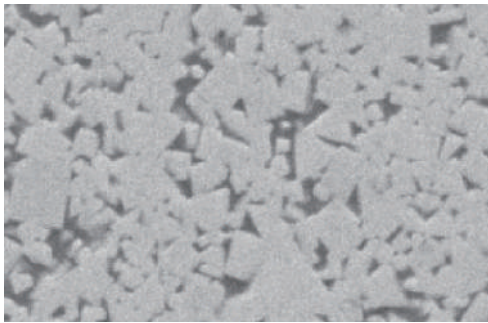


MEGACOAT NANO PR1535

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



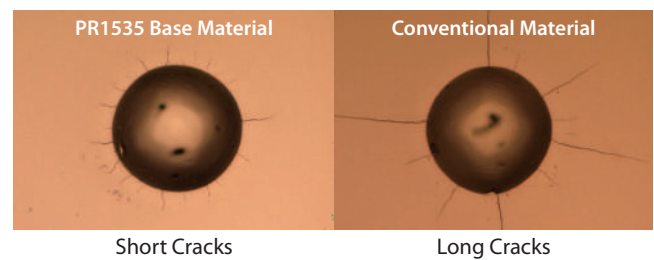
UP
23%
Fracture Toughness*

2 Stability Improvement

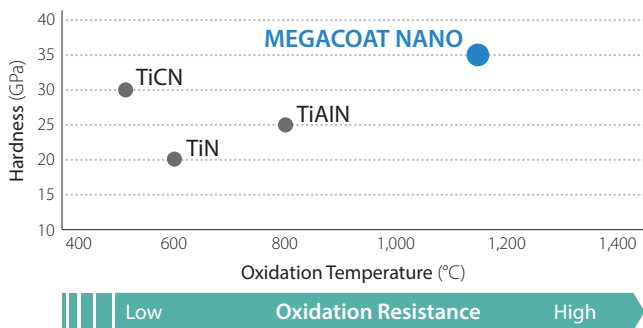
The coarse grain structure and uniform particle size correspond to improved heat resistance, with conductivity values decreased by 11%. The uniform structure also reduces crack propagation.

Cracking Comparison by Diamond Indenter
(In-house evaluation)

UP
Shock Resistance

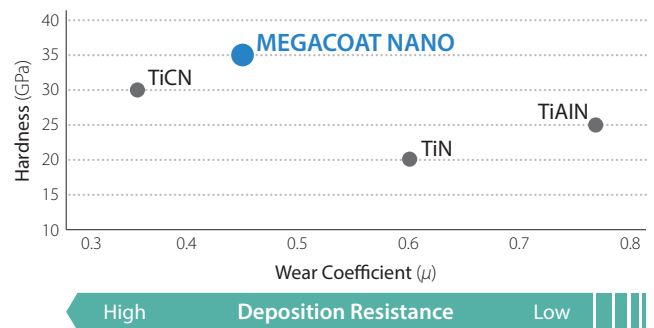


Coating Properties (Abrasion Resistance)



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