

THE NEW VALUE FRONTIER



High efficient cutter with
88° cutting edge angle

MFSN88

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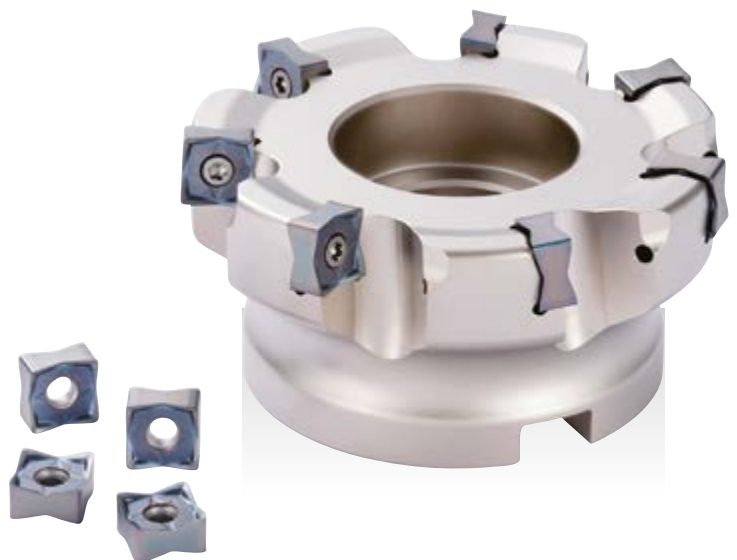


Economical inserts with 8 cutting edges

Cost reduction in shouldering

Reduces chattering with low cutting force design

TN620M cermet insert is available



Highly efficient cutter with 88° cutting edge angle

MFSN88

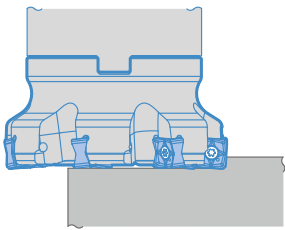
Economical inserts with 8 cutting edges. Reduces chattering with low cutting force design. Applicable to various types of machining.

1 Economical inserts with 8 cutting edges

Cost reduction in shoulder operation.

Shouldering

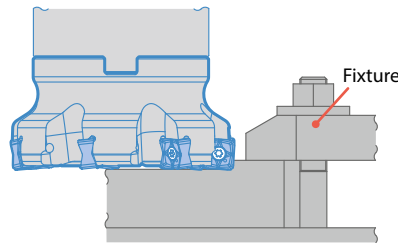
Cost reduction by switching from 90° cutter with positive inserts



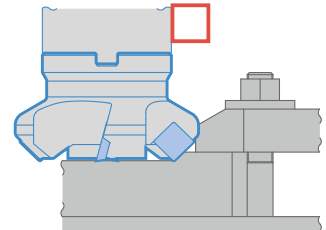
See page 4 for unmachined corner portion

Facing without interfering with fixtures

MFSN88

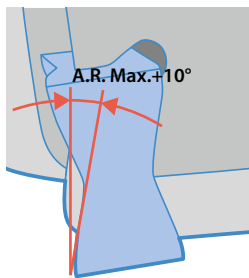


Conventional 45° cutter



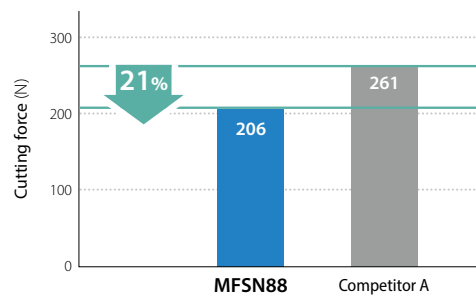
2 Reduces chattering with low cutting force design

Chatter resistant – medium to roughing operations



Helical cutting edge with A.R. max. +10°

Cutting force comparison (Internal evaluation)



Cutting force is thrust force.
Cutting conditions: $V_c = 200$ m/min, $f_z = 0.15$ mm/t, $a_p = 3$ mm, cutting dia. $\phi 63$, workpiece: C50

3 Long tool life with MEGACOAT NANO coating technology

Insert grade and chipbreaker lineup for various machining application



1st recommendation
(General purpose)
GM chipbreaker



Tough edge
GH chipbreaker

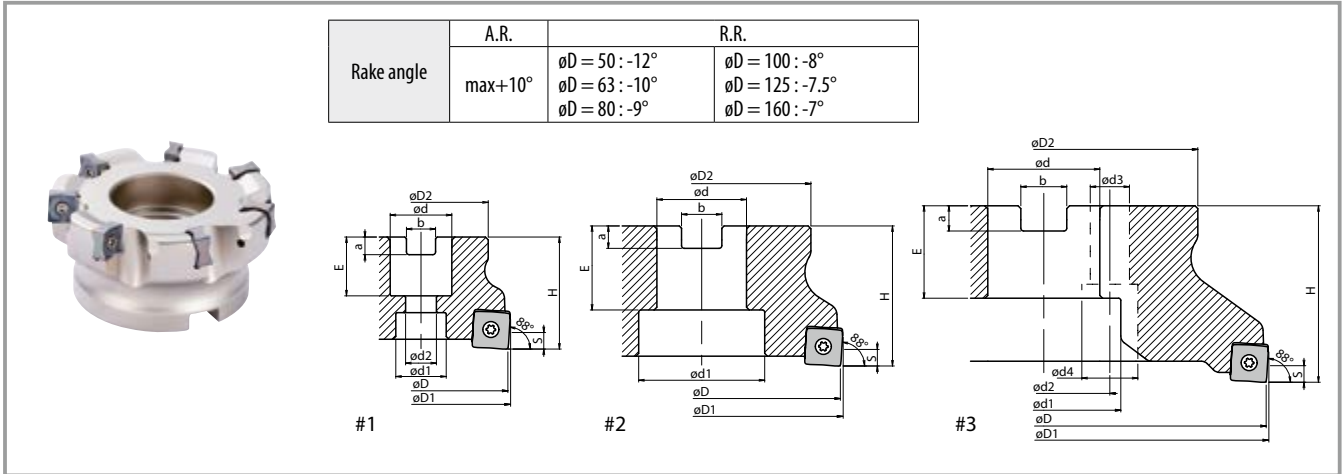


For stainless steel
machining
SM chipbreaker

Cermet for milling TN620M



Excellent wear resistance and adhesion resistance
High quality surface finish



Toolholder dimensions

Description	Availability	No. of inserts	Dimensions (mm)													Shape	Weight (kg)	Shim
			øD	øD1	øD2	ød	ød1	ød2	H	E	a	b	ød3	ød4				
Fine pitch	MFSN 88050R-4T-M-G	●	4	50	52	48	22	17.5	11	40	21	6.3	10.4			#1	0.3	No
	MFSN 88063R-5T-M-G	●	5	63	65			18									0.4	
	MFSN 88080R-6T-M-G	●	6	80	82	70	27	20	13	50	24	7	12.4				1.1	
	MFSN 88100R-7T-M-G	●	7	100	102	78	32	45			30	8	14.4			#2	1.4	
	MFSN 88125R-9T-M-G	●	9	125	127	89				63	33	9	16.4				2.4	
	MFSN 88160R-11T-M-G	●	11	160	162	110	40	55						14	20	#3	4.2	
Extra fine pitch	MFSN 88050R-5T-M-G	●	5	50	52	48	22	17.5	11	40	21	6.3	10.4			#1	0.3	No
	MFSN 88063R-7T-M-G	●	7	63	65			18									0.4	
	MFSN 88080R-9T-M-G	●	9	80	82	70	27	20	13	50	24	7	12.4				1.1	
	MFSN 88100R-11T-M-G	●	11	100	102	78	32	45			30	8	14.4			#2	1.4	
	MFSN 88125R-13T-M-G	●	13	125	127	89				63	33	9	16.4				2.5	
	MFSN 88160R-15T-M-G	●	15	160	162	110	40	55						14	20	#3	4.3	

Dimension S: 5 mm

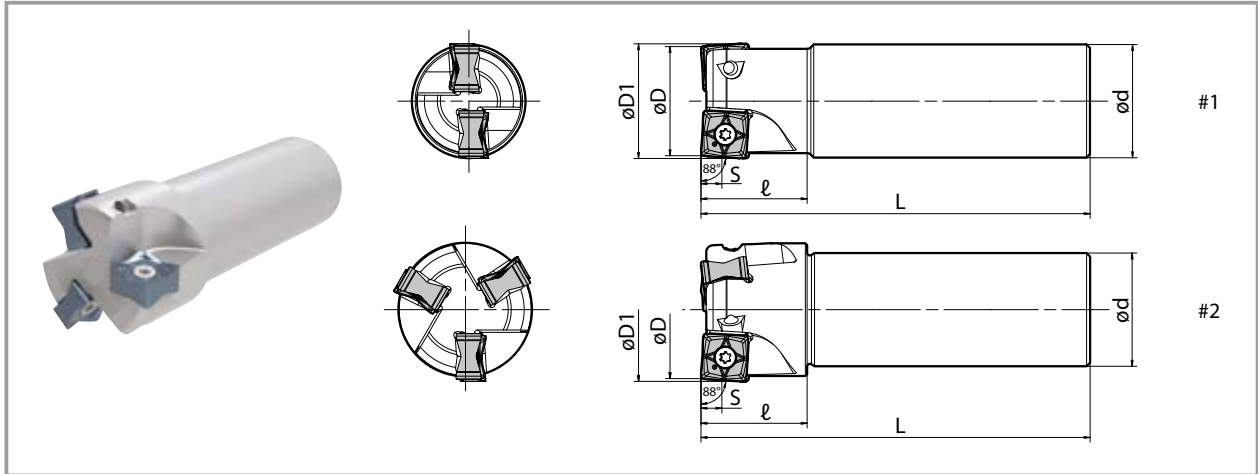
● : Available

Spare parts




Description		Clamp screw	Wrench	Anti-Seize compound	Arbor bolt	
Fine pitch	MFSN 88050R-4T-M-G	SB-4090TRP	DTPM-15	P-37	HH10×30	
	MFSN 88063R-5T-M-G				HH10×30	
	MFSN 88080R-6T(-M)-G				HH12×35	
	MFSN 88100R-7T(-M)-G				Recommended torque for insert clamp 3.5N-m	—
	MFSN 88125R-9T(-M)-G					
	MFSN 88160R-11T(-M)-G					
Extra fine pitch	MFSN 88050R-5T-M-G	SB-4090TRP	DTPM-15	P-37	HH10×30	
	MFSN 88063R-7T-M-G				HH10×30	
	MFSN 88080R-9T(-M)-G				HH12×35	
	MFSN 88100R-11T(-M)-G				Recommended torque for insert clamp 3.5 N-m	—
	MFSN 88125R-13T(-M)-G					
	MFSN 88160R-15T(-M)-G					

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

MFSN88 End mill


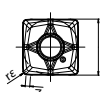



Toolholder dimensions

Description	Availability	No. of inserts	Dimensions (mm)						Rake angle		Shape	Spare parts		
			øD	øD1	ød	L	ℓ	S	A.R. (MAX)	R.R		Clamp screw	Wrench	Anti-Seize Compound
														
MFSN 88032R-S32-2T-G	●	2	32	34	32	110	30	5	10°	-15.5°	#1	SB-4090TRP	DTPM-15	P-37
88040R-S32-3T-G	●	3	40	42						-13°	#2	Recommended torque for insert clamp 3.5 N·m		

●: Available

Applicable inserts

Classification of usage		Description	Dimensions (mm)					MEGACOAT NANO			Cermet
Shape	Description		A	T	ød	Z	re	PR1535	PR1525	PR1510	TN620M
											
GM General purpose	SM Low cutting force	GH tough edge (Heavy milling)	13	5.51	4.7	1	0.8	●	●	●	●
								●	●	●	
								●	●	●	

●: Available

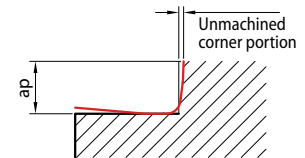
Applicable chipbreaker

Cutter	Insert		
	GM	SM	GH
Fine pitch	○	○	○
Extra fine pitch	○	○	fz = 0.2 mm/t is recommended

Not applicable to vertical milling (plunging)

Reference data of unmachined corner portion

ap	1 mm	2 mm	3 mm	4 mm	5 mm
Unmachined corner portion	0.12 mm	0.24 mm	0.27 mm	0.31 mm	0.34 mm



Recommended cutting conditions ★ 1st recommendation ☆ 2nd recommendation

Coated carbide (MEGACOAT NANO)

Insert	Workpiece	fz (mm/t)	Recommended insert grade Vc (m/min)		
			PR1535	PR1525	PR1510
GM	Carbon steel	0.1 – 0.2 – 0.3	☆ 120 – 180 – 250	★ 120 – 180 – 250	—
	Alloy steel	0.1 – 0.2 – 0.3	☆ 100 – 160 – 220	★ 100 – 160 – 220	—
	Die steel	0.1 – 0.15 – 0.25	★ 80 – 140 – 180	★ 80 – 140 – 180	—
	Austenitic stainless steel	0.1 – 0.15 – 0.25	☆ 100 – 150 – 200	☆ 100 – 150 – 200	—
	Martensitic stainless steel	0.1 – 0.15 – 0.25	☆ 100 – 150 – 200	—	—
	Precipitation hardened stainless steel	0.1 – 0.15 – 0.25	★ 90 – 120 – 150	—	—
	Gray cast iron	0.1 – 0.2 – 0.3	—	—	★ 120 – 180 – 250
	Nodular cast iron	0.1 – 0.15 – 0.25	—	—	★ 100 – 150 – 200
	Ni-base heat-resistant alloy	0.1 – 0.12 – 0.2	☆ 20 – 30 – 50	—	—
SM	Carbon steel	0.06 – 0.12 – 0.2	—	☆ 120 – 180 – 250	—
	Alloy steel	0.06 – 0.12 – 0.2	—	☆ 100 – 160 – 220	—
	Die steel	0.06 – 0.08 – 0.15	—	☆ 80 – 140 – 180	—
	Austenitic stainless steel	0.06 – 0.12 – 0.2	★ 100 – 150 – 200	☆ 100 – 150 – 200	—
	Martensitic stainless steel	0.06 – 0.12 – 0.2	★ 100 – 150 – 200	—	—
	Precipitation hardened stainless steel	0.06 – 0.12 – 0.2	☆ 90 – 120 – 150	—	—
	Gray cast iron	0.06 – 0.12 – 0.2	—	—	☆ 120 – 180 – 250
	Nodular cast iron	0.06 – 0.1 – 0.15	—	—	☆ 100 – 150 – 200
	Ni-base heat-resistant alloy	0.06 – 0.08 – 0.15	★ 20 – 30 – 50	—	—
Titanium alloy	0.06 – 0.08 – 0.15	★ 40 – 60 – 80	—	—	
GH	Carbon steel	0.15 – 0.25 – 0.35	—	☆ 120 – 180 – 250	—
	Alloy steel	0.15 – 0.25 – 0.35	—	☆ 100 – 160 – 220	—
	Die steel	0.1 – 0.2 – 0.3	—	☆ 80 – 140 – 180	—
	Gray cast iron	0.15 – 0.25 – 0.35	—	—	☆ 120 – 180 – 250
	Nodular cast iron	0.1 – 0.2 – 0.3	—	—	☆ 100 – 150 – 200

★ 1st recommendation ☆ 2nd recommendation

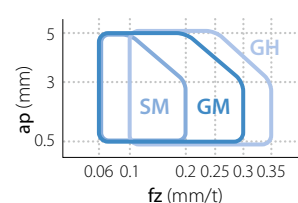
Cermet

Insert	Workpiece	fz (mm/t)	Vc (m/min)
			TN620M
GM	Carbon steel	0.06 – 0.12 – 0.15	★ 200 – 250 – 300
	Alloy steel	0.06 – 0.12 – 0.15	★ 180 – 220 – 250
	Die steel	0.06 – 0.1 – 0.13	★ 150 – 180 – 220

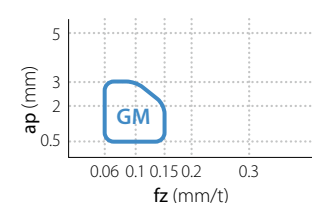
★ 1st recommendation

Chipbreaker application range

Coated carbide



Cermet



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.

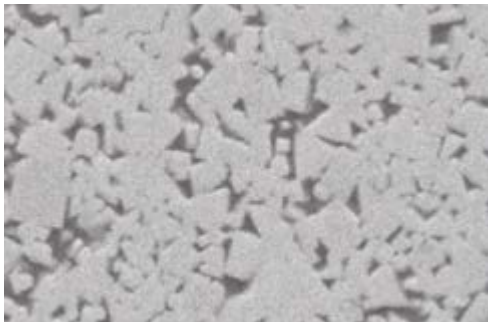
MEGACOAT NANO PR1535

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



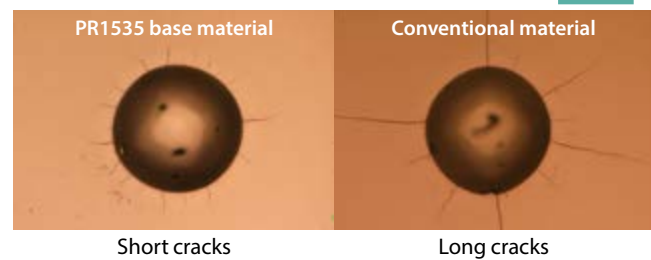
↑
23%
Fracture
toughness*

2 Stability improvement

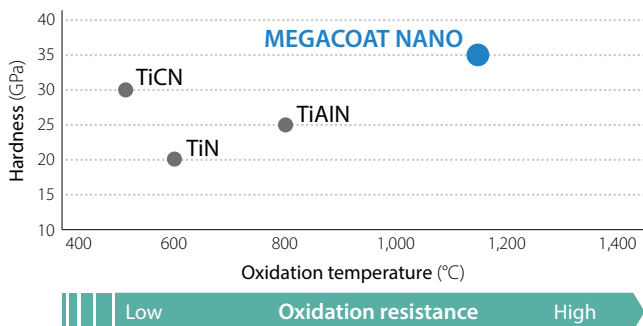
The coarse grain structure and uniform particle size correspond to improved heat resistance, with conductivity values decreased by 11%. The uniform structure also reduces crack propagation.

Cracking comparison by diamond indenter
(In-house evaluation)

↑
Shock
resistance

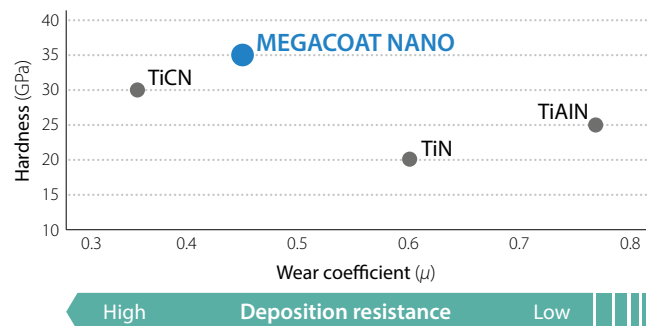


Coating properties (Abrasion resistance)



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