MITSUBISHI
MITSUBISHI MATERIALS

TOOLS NEWS

B198G

Finishing Cutter for Aluminium Alloy and Cast Iron

NF10000

New lineup of CBN inserts for cast iron finishing.

Newly developed edge honing technology.
High-efficiency machining of cast iron.

Finishing Cutter for Aluminium Alloy and Cast Iron

NF10000

Appropriate system to high speed cutting

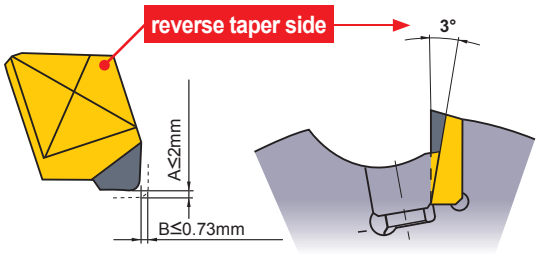
New system to prevent the insert scattering by centrifugal force. Newly developed system by using CAE strength analysis and high-speed rotation test.
New system realized the stability of high speed finishing.

When regrinding (only PCD inserts available)

B = A×tan20°(refer the daiagram)
Please cut under the condition above or the cutter dimension will change.

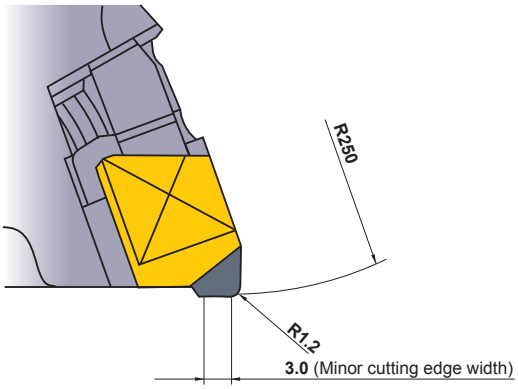
Do not use the inserts if regrinding width of A is over 2mm

New system to prevent the insert scattering



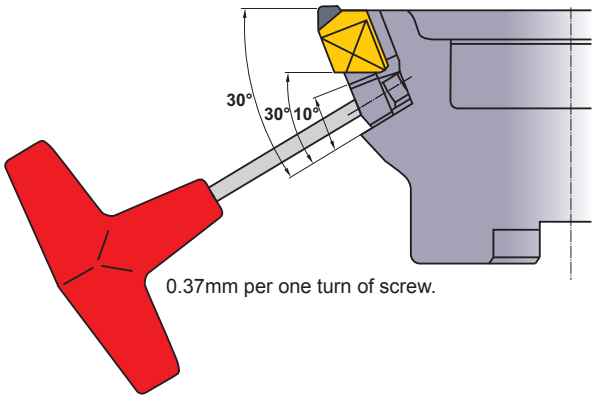
Excellent surface finish

By setting the minor cutting edge width to 3mm maintains a surface finish accuracy of under 5μm. At the same time maintains lower thrust resistance.



Adjust wedge system

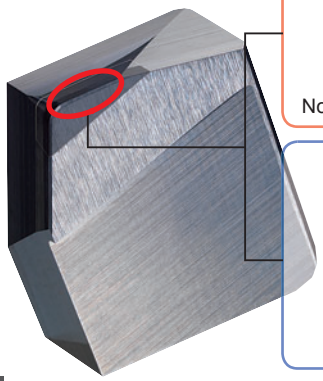
Adopts a wedge system to ensure easier adjusting the axial run-out of the minor cutting edge. This ensures that the axial run-out can be set to within 5μm.



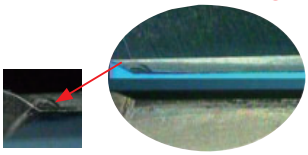
Specialty of new insert

NEW CBN inserts for finishing of cast iron (CBN grade MB730)

- Prevent the abnormal fracture by adopting the new technology of spiral honing.
- Optimal size of the CBN blank for machining of cast iron eliminating the need for regrinding.



Spiral chamfer horning



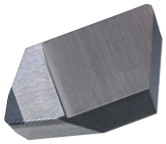
No fracture at the end of the cutting edge

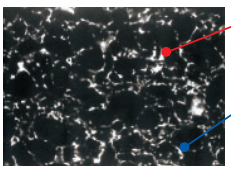
Usual chamfer horning

Fracture at the end of cutting edge

INSERT LINEUP

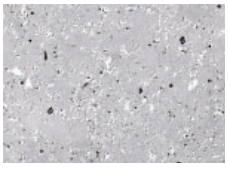
CBN grade for cast iron MB730





High adhesion between the CBN and binder improves the overall fracture resistance.
Good performance in high efficient cutting of cast iron.

PCD grade for Aluminium MD220



Good performance for Aluminium, Non-ferrous, FRP.

FACE MILLING

<HIGH FEED FINISHING FOR ALUMINIUM ALLOY AND CAST IRON> Finishing

NF10000

Light Alloy	Cast Iron	Carbon Steel · Alloy Steel	Stainless Steel	Hardened Steel

C H :0°
A.R :+10°
R.R :+5°

- Good performance at high speed finishing of light alloys and cast irons.
- Adjustable cutting edge run-out function

Fig.1
ø80
ø100

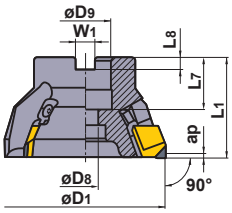
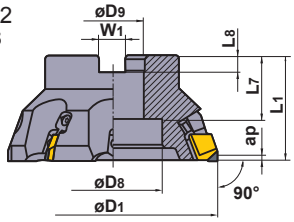


Fig.2
ø125

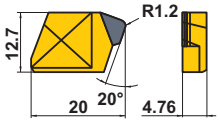
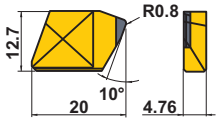


Right hand tool holder only.

Type	Order Number	Stock R	Number of Teeth	Dimensions (mm) D1	L1	D9	L7	D8	W1	L8	Tool Weight (kg)	Max. Depth of Cut ap (mm) PCD	CBN	Max. Allowable Revolution (min-1) *	Type (Fig.)
Coarse Pitch	**NF10000R0305C**	●	5	80	50	25.4	26	13	9.5	6	1.0	4.0	1.0	16000	1
	0406D	●	6	100	63	31.75	32	17	12.7	8	1.8	4.0	1.0	14000	1
	0508E	●	8	125	63	38.1	38	60	15.9	10	2.7	4.0	1.0	12000	2
Fine Pitch	**0306C**	●	6	80	50	25.4	26	13	9.5	6	1.0	4.0	1.0	16000	1
	0408D	●	8	100	63	31.75	32	17	12.7	8	1.8	4.0	1.0	14000	1
	0510E	●	10	125	63	38.1	38	60	15.9	10	2.7	4.0	1.0	12000	2

* Ensure max. spindle speed is achieved under the conditions that the cutter is clamped by a machine clamping force of 18kN with a standard type arbor. (HSK 63A-FMA□□□-60) The figure varies in actual machining depending on cutting conditions, such as the length of overhang or if there is insufficient drawing force from the arbor.

INSERTS

Order Number	Class	PCD MD220	CBN MB730	Geometry
GDCN2004PDFR3	C	●		
NEW **NP-GDCN2004PDSR3**	C		●	

SPARE PARTS

Tool Holder Number	Wedge	Clamp Screw *	Wrench
NF10000R0305C – NF10000R0510E	CWAF10R1	LS10T	TKY25T

* Clamp Torque (N • m) : LS10T=8.5

RECOMMENDED CUTTING CONDITIONS

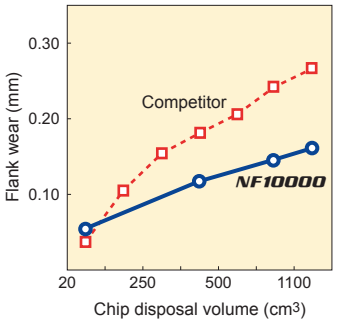
	Work Material	Grade	Cutting Speed (m/min)	Feed per Tooth (mm/tooth)
N	Aluminium Alloy	**MD220**	3500 (1000—4500)	0.12 (0.05—0.20)
K	Gray Cast Iron	**MB730**	1000 (800—1500)	0.15 (0.05—0.5)

● Revolution (min-1)=(1000 x Cutting Speed)÷(3.14 x ϕD1)
● Table Feed (mm/min)=Feed per Tooth x Number of Teeth x Cutter Revolution

● : **Inventory maintained in Japan. (1 insert in one case)**

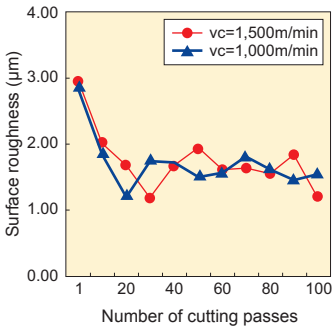
Cutting performance

Metal removal rate



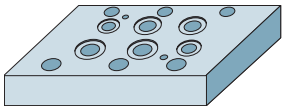
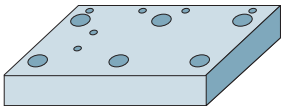
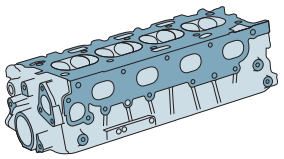
<Cutting Conditions>
Workpiece : FC250
Tool : NF10000R0406D
Cutting Speed : 1000m/min
Feed : 0.15mm/tooth
Depth of Cut : ap=0.5mm
Coolant : Dry Cut

Surface Roughness



<Cutting Conditions>
Workpiece : FC250
Tool : NF10000R0406D
Insert : NP-GDCN2004PDSR3
Grade : MB730
Cutting Speed : 1000,1500m/min
Feed : 0.15mm/tooth
Depth of Cut : ap=0.5mm
Coolant : Dry Cut

APPLICATION EXAMPLES

Tool		NF10000R0408D (MB730)	NF10000R0508E (MB730)	NF10000R0508E (MD220)
Workpiece		FC250 	FC250 	AC4B-T6 
Component		Hydraulic component	Cast iron block	Cylinder head mating face
Cutting Conditions	Cutting Speed (m/min)	1800	1200	Rough : 4710 Finish : 3930
	Feed (mm/tooth)	0.1	0.3	Rough : 0.104 Finish : 0.08
	Table Feed (mm/min)	4584	7334	Rough : 10000 Finish : 6400
	Depth of Cut (mm)	0.05	0.3	Rough : 1.5 Finish : 0.27
	Cutting Width (mm)	90	100	200
Coolant		Dry cutting (Wet cut at previous process)	Dry cutting	Wet cutting
Axial Runout (mm)		Below 0.005mm	Below 0.005mm	Below 0.005mm
Result		Compared to the competitor item, wear was reduced offering longer tool life while maintaining higher surface finishes.	Compared to a conventional carbide insert the overall machining efficiency was 8.5 times higher. Additionally the surface finish obtained was 1/5 of that when compared to the finish when using a carbide insert.	The same insert was used for both the roughing and finishing process, the overall tool life was double that of the competitor`s PCD insert.

For Your Safety
●Don't handle inserts and chips without gloves. ●Please machine within the recommended application range and exchange expired tools with new ones in advance of breakage. ●Please use safety covers and wear safety glasses. ●When using compounded cutting oils, please take fire precautions. ●When attaching inserts or spare parts, please use only the correct wrench or spanner. ●When using rotating tools, please make a trial run to check run-out, vibration and abnormal sounds etc.

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(Tools specifications subject to change without notice.)

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