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)

\[ B = A \times \tan 20° \] (refer the diagram)

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.

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.

INSERT LINEUP

- CBN grade for cast iron MB730
  - CBN particle
  - Metallic bond
  - 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**

**NF10000**

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

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**Inserts**

**Order Number**

- GDCN2004PDFR3
- NP-GDCN2004PDSR3

**Geometry**

- MD200
- MB730

**Spare Parts**

- Tool Holder Number: CWA10R1, LS10T, TKY25T
- Clamp Torque (N m): LS10T = 8.5

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**Recommended Cutting Conditions**

<table>
<thead>
<tr>
<th>Work Material</th>
<th>Grade</th>
<th>Cutting Speed (m/min)</th>
<th>Feed per Tooth (mm/tooth)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N Aluminium Alloy</td>
<td>MD220</td>
<td>3500 (1000—4500)</td>
<td>0.12 (0.05—0.20)</td>
</tr>
<tr>
<td>K Gray Cast Iron</td>
<td>MB730</td>
<td>1000 (800—1500)</td>
<td>0.15 (0.05—0.5)</td>
</tr>
</tbody>
</table>

- Revolution (min⁻¹) = (1000 x Cutting Speed) / (3.14 x D1)
- Table Feed (mm/min) = Feed per Tooth x Number of Teeth x Cutter Revolution

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

<table>
<thead>
<tr>
<th>Tool</th>
<th>NF10000R0408D (MB730)</th>
<th>NF10000R0508E (MB730)</th>
<th>NF10000R0508E (MD220)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workpiece</td>
<td>FC250</td>
<td>FC250</td>
<td>AC4B-T6</td>
</tr>
<tr>
<td>Component</td>
<td>Hydraulic component</td>
<td>Cast iron block</td>
<td>Cylinder head mating face</td>
</tr>
<tr>
<td>Cutting Conditions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cutting Speed (m/min)</td>
<td>1800</td>
<td>1200</td>
<td>Rough : 4710  Finish : 3930</td>
</tr>
<tr>
<td>Feed (mm/tooth)</td>
<td>0.1</td>
<td>0.3</td>
<td>Rough : 0.104  Finish : 0.08</td>
</tr>
<tr>
<td>Table Feed (mm/min)</td>
<td>4584</td>
<td>7334</td>
<td>Rough : 10000  Finish : 6400</td>
</tr>
<tr>
<td>Depth of Cut (mm)</td>
<td>0.05</td>
<td>0.3</td>
<td>Rough : 1.5  Finish : 0.27</td>
</tr>
<tr>
<td>Cutting Width (mm)</td>
<td>90</td>
<td>100</td>
<td>200</td>
</tr>
<tr>
<td>Coolant</td>
<td>Dry cutting (Wet cut at previous process)</td>
<td>Dry cutting</td>
<td>Wet cutting</td>
</tr>
<tr>
<td>Axial Runout (mm)</td>
<td>Below 0.005mm</td>
<td>Below 0.005mm</td>
<td>Below 0.005mm</td>
</tr>
<tr>
<td>Result</td>
<td>Compared to the competitor item, wear was reduced offering longer tool life while maintaining higher surface finishes.</td>
<td>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.</td>
<td>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.</td>
</tr>
</tbody>
</table>

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.)