DNM 400 II / 500 II / 650 II

High Productivity Vertical Machining Center
High Productivity, High Efficiency Vertical Machining Center

DNM II series are available with a diversity of spindle specifications to meet various requirements. Roller LM guide enhances rigidity and extends service life. Utmost accuracy is achieved with direct coupled spindle structure and standard thermal displacement error compensation. The operator panel is redesigned to improve operator convenience.

DNM 400 II / 500 II / 650 II
Features

High Reliability Spindle & High Precision

- 12000 r/min direct coupled spindle provides high cutting capacity and minimizes noise and vibration.
- Utmost precision cutting is realized with thermal displacement compensation as standard.

Durability

- Ball-type is replaced with roller-type LM Guide as standard to improve rigidity and long-term durability.

Improved Usability

- The operator panel is redesigned to make operating more convenient.
High Reliability Spindle & High Precision

High rigidity spindle provides stable accuracy in long, heavy duty and high speed cutting.

Spindle Head

Spindle Max. Speed

<table>
<thead>
<tr>
<th>Speed</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8000 r/min</td>
<td>(Belt)</td>
</tr>
<tr>
<td>12000 r/min</td>
<td>(Direct-coupled)</td>
</tr>
</tbody>
</table>

12000 r/min direct-coupled spindle (option) minimises noise and vibration and reduces spindle start/stop time.

2-Face Locking Tool System (BIG PLUS) std.

The 2-face locking tool system offers longer tool life, higher power and more precise machining by the dual contact to both of the spindle surface and tool holder flange surface, as well as both the spindle taper and tool holder taper shank.
Thermal Displacement Compensation System

Thermal error is minimized with thermal displacement compensation system. Algorithms are used to calculate Y/Z axis heat displacement caused by specific spindle running conditions of r/min and time.

Drain Catcher

Removes moisture in the compressed air in solenoid valves and cylinders to extend service life of the pneumatic system.

Spindle Head Cooling System

Option for 8000 r/min, standard for 12000 r/min

Spindle Head Cooling System is offered for long, continuous operation. The system circulates cooled oil around spindle bearing to prevent thermal displacement and guarantee high accuracy cutting.
Durability

Main structures including bed and column are designed at optimum conditions for high speed and heavy duty cutting.

High Rigidity Roller Type LM Guide

Ball type LM Guide is replaced with roller type LM Guide to improve cutting performance and surface roughness. Service life is also extended to more than double compared to ball type LM Guide.

Wide Cutting Area

Various shapes can be processed

<table>
<thead>
<tr>
<th></th>
<th>DNM 400 II</th>
<th>DNM 500 II</th>
<th>DNM 650 II</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-axis (mm)</td>
<td>762 (30.0)</td>
<td>1020 (40.2)</td>
<td>1270 (50.0)</td>
</tr>
<tr>
<td>Y-axis (mm)</td>
<td>435 (17.1)</td>
<td>540 (21.3)</td>
<td>670 (26.4)</td>
</tr>
<tr>
<td>Z-axis (mm)</td>
<td>510 (20.1)</td>
<td>510 (20.1)</td>
<td>625 (24.6)</td>
</tr>
</tbody>
</table>
Static Rigidity

The highly rigid body raises the static stiffness by 30% compared to the previous model.

Dynamic Rigidity

Frequency response and vibration attenuation performances have been improved – high frequency increased by 35 % than the previous models.

* Designed with FEM (Finite Element Method) to implement stable machine structure.
Improved Usability

Easy Operation Package
Doosan’s easy operation software package is customized to provide fast and easy operation for tooling, workpiece and program setup. These features maximize productivity by minimizing time lost during process setup.

- **Data Registry Table**: Provides tool information for POT in 2D graphics.
- **ATC Recovery Help**: Guides the operator for troubleshooting in case of emergency stop of abnormal operation of ATC.
- **G Code List**: Explanation/help topics for G-Code can be viewed on the screen.
- **Sensor Status Monitor**: Provides view of the operation of the standard sensors and solenoid valves of the machine.
- **Table Moving for Setup**: Table can be moved to workpiece set-up position with simple key strokes.
- **Easy work coordinate setting**: A separate screen for viewing customizable parameters.
- **M Code List**: Explanation/help topics for M-Code can be viewed on the screen.
- **Tool Load Monitor**: Damage to tools is minimized by monitoring the axis and spindle load during cutting operations.

Easy-to-use Operator Panel
The operator panel is integrated for convenient usage. Additional, customized function switches can be attached to maximize operator convenience.

- **USB Port**: Upload/download of NC software programs, NC parameters, tool information and ladder program using USB drive is allowed but, DNC operation is not supported.
- **Swivelling operating console**: The operation panel can be rotated by up to 90 degrees for convenient operator position. The control provides a wide selection of detailed alarm messages which makes fault-finding easier for better usability.
- **Portable MPG**: The portable MPG allows you to set a workpiece more easily.
Operator-Friendly Design

Built-in Chip Brush

A brush is provided between the top cover and spindle head to remove chips and coolant from the spindle head.

Top Cover Opening

The top cover on the machine can be opened to allow crane to access the table when working with a heavy workpiece.

Excellent Accessibility

Enhanced operator's accessibility to machine facilitates mounting of workpieces.
High Productivity

Spindle acceleration/deceleration and cutting rate are further increased.

Reduced Cycle Time

Cycle time is reduced by more than 10% compared to the previous model.

<table>
<thead>
<tr>
<th>Unit: second</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous model</td>
</tr>
<tr>
<td>DNM 400 II</td>
</tr>
</tbody>
</table>

* Based on the productivity specimen of DOOSAN using 18 tools including tap and milling.

Reduced Tapping Cycle Time

<table>
<thead>
<tr>
<th>Unit: second</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous model</td>
</tr>
<tr>
<td>DNM 400 II</td>
</tr>
</tbody>
</table>

* 10-M3x0.5

Tapping Cycle time is reduced by 40% compared to the previous models.

Reduced Spindle Acceleration/Deceleration Time

<table>
<thead>
<tr>
<th>Unit: second</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous model</td>
</tr>
<tr>
<td>DNM 400 II / 500 II</td>
</tr>
</tbody>
</table>

* 12K, 12000 r/min motor

* The data above is based on DOOSAN’s test standards, and may vary by testing conditions.
Higher Cutting Power

Face Milling (max. chip removal capacity)

SM45C

Higher cutting power is implemented with higher motor power and torque of the spindle motor

<table>
<thead>
<tr>
<th></th>
<th>Previous Model</th>
<th>DNM II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. spindle motor power</td>
<td>15 kW (20.1 Hp)</td>
<td>18.5 kW (24.8 Hp)</td>
</tr>
<tr>
<td>Max. spindle torque</td>
<td>106 N·m (78.2 ft-lb)</td>
<td>117 N·m (86.3 ft-lb)</td>
</tr>
</tbody>
</table>

Tool Magazine

Productivity increase with the CAM-type tool changer (standard) that supports faster tool changing.

Tool-to-Tool: 1.3 s

Tool storage capacity: 30 tools (40 tools opt.)

Rapid Traverse

Linear motion guide ways and high speed servomotors apply high rapid axis movement. This reduces non-cutting time and machining time for greater productivity.

<table>
<thead>
<tr>
<th></th>
<th>Rapid traverse</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-axis m/min (ipm)</td>
<td>36 (1417.3)</td>
</tr>
<tr>
<td>Y-axis m/min (ipm)</td>
<td>36 (1417.3)</td>
</tr>
<tr>
<td>Z-axis m/min (ipm)</td>
<td>30 (1181.1)</td>
</tr>
</tbody>
</table>
Machining Accuracy
For increased repeatability and reliability
Designed for exceptional high accuracy and minimized thermal displacement and vibration.

<table>
<thead>
<tr>
<th>Face mill</th>
<th>Carbon steel (SM45C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ø80mm (3.15 in.) Face mill (6Z)</td>
<td>Machining rate 432 cm/min (26.4 in³/min)</td>
</tr>
<tr>
<td>Spindle speed 1500 r/min</td>
<td></td>
</tr>
<tr>
<td>Feedrate 2700 mm/min (106.3 ipm)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>End mill</th>
<th>Carbon steel (SM45C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ø30mm (1.2 in.) Endmill (6Z)</td>
<td>Machining rate 81 cm/min (5.0 in³/min)</td>
</tr>
<tr>
<td>Spindle speed 222 r/min</td>
<td></td>
</tr>
<tr>
<td>Feedrate 84 mm/min (3.3 ipm)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Face mill</th>
<th>Gray casting (GC25)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ø80mm (3.15 in.) Face mill (6Z)</td>
<td>Machining rate 691 cm/min (42.2 in³/min)</td>
</tr>
<tr>
<td>Spindle speed 1500 r/min</td>
<td></td>
</tr>
<tr>
<td>Feedrate 3600 mm/min (141.7 ipm)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>U-drill</th>
<th>Carbon steel (SM45C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ø51 mm (2 in.)</td>
<td>Machining rate 172 cm/min (10.5 in³/min)</td>
</tr>
<tr>
<td>Spindle speed 750 r/min</td>
<td></td>
</tr>
<tr>
<td>Feedrate 84 mm/min (3.3 ipm)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Face mill</th>
<th>Aluminum (AL6061)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ø80mm (3.15 in.) Face mill (6Z)</td>
<td>Machining rate 1785 cm/min (109 in³/min)</td>
</tr>
<tr>
<td>Spindle speed 1500 r/min</td>
<td></td>
</tr>
<tr>
<td>Feedrate 5580 mm/min (219.7 ipm)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tap</th>
<th>Carbon steel (SM45C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M30 X P3.5</td>
<td>Machining rate</td>
</tr>
<tr>
<td>Spindle speed 212 r/min</td>
<td></td>
</tr>
<tr>
<td>Feedrate 742 mm/min (29.2 ipm)</td>
<td></td>
</tr>
</tbody>
</table>

Machining Capacity
Provides high-productivity and high-accuracy in a variety of machining operations

Roundness
5.40 µm
- Model : DNM 500
- Material : A7075F
- Tool : Endmill ø16mm (ø0.6 in.) (4 blades)

Roughness
Ra 0.12 µm
- Spindle speed : 8000 r/min
- Feedrate : 1000 mm/min (39.4 ipm)

The results indicated in this catalog may not be obtained due to differences in environmental conditions during measurement and cutting conditions.
Easy-to-Use Chip Conveyor

Removing chips is very important in terms of productivity and environmental protection. To achieve these goals, the DNM II series provide various chip handling systems for better work environment.

Chip Removal

Easy chip removal design
Chip and coolant are collected from both sides of the table in the chip pan in front of the machine, and discharged by chip conveyor. Left or right hand chip conveyor discharge is available.

Increased flood coolant capacity
Chip handling capacity is improved with a high flood wash pump.

Through-Spindle Coolant System
Middle pressure: 1.96 Mpa (284.2 psi)
High pressure: 6.86 Mpa (994.7 psi)

Screw Conveyor*
Internal screw conveyor at left and right sides (standard).

Large capacity coolant tank with chip pan and box filter
Easy to discard chips piled up

* Please select the chip conveyor considering the material of the workpiece. Consult with sales man for details.
Optional Equipment

A wide range of options are offered for higher efficiency and convenience of the customers.

4-axis Auxiliary Devices Interface

- Pneumatic
- Hydraulic
- Electronic

Senso dimension and device

※ Recommended Rotary Table: ø250(DNM 400 II), ø320(DNM 650 II)
※ Please check the driving system (hydraulic or pneumatic) of the rotary table before ordering the machine

Hydraulic/Pneumatic Fixture Line

Fixure check list (for hydraulic / pneumatic fixtures)

- Pressure source
  - Hydraulic
    - P/T
    - A/B
  - Pneumatic
    - P/T
    - A/B

- Hydraulic power unit
  Supply scope:
  - User
  - DOOSAN
  (Please check the below detail specification, if you want Doosan to supply.)
  - Use Doosan standard unit
    - 24 L/min (6.3 gal/min) / 4.9 MPa (711 psi)
  - Special requirement
    - _____ L / min (gal/min) at _____ MPa (psi)

- Number of ports
  - 1 pair (2-PT 3/8" port)
  - 2 pair (4-PT 3/8" port)
  - 3 pair (6-PT 3/8" port)

Automatic tool measurement
Automatic workpiece measurement
Minimum Quantity Lubrication
Oil skimmer
Misting device
Spindle Power-Torque Diagram

**DNM 400 II / 500 II**

Max. Spindle Speed

- **8000 r/min**
- **15/11 kW**
  (20.1/14.8 Hp)

**DNM 400 II / 500 II**

Max. Spindle Speed

- **12000 r/min**
- **18.5/11 kW**
  (24.8/14.8 Hp)

**DNM 650 II**

Max. Spindle Speed

- **8000 r/min**
- **18.5/15 kW**
  (24.8/20.1 Hp)

**DNM 650 II**

Max. Spindle Speed

- **12000 r/min**
- **18.5/11 kW**
  (24.8/14.8 Hp)
### External Dimensions

#### Top View

#### Front View

#### Side View

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
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<tbody>
<tr>
<td><strong>DNM 400 II</strong></td>
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<tr>
<td></td>
<td>2152 (84.7)</td>
<td>742 (29.2)</td>
<td>2615 (103.0)</td>
<td>594 (23.4)</td>
<td>1317 (51.9)</td>
<td>2711 (106.7)</td>
<td>1900 (74.8)</td>
<td>2465 (97.0)</td>
<td>3655 (143.9)</td>
<td>772 (30.4)</td>
<td>2676 (104.6)</td>
<td>40 Tools</td>
<td></td>
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<tr>
<td><strong>DNM 500 II</strong></td>
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<td></td>
<td>2444 (96.2)</td>
<td>641 (25.2)</td>
<td>2960 (116.5)</td>
<td>594 (23.4)</td>
<td>1317 (51.9)</td>
<td>2700 (106.3)</td>
<td>1900 (74.8)</td>
<td>1960 (77.2)</td>
<td>3200 (126.0)</td>
<td>4345 (171.1)</td>
<td>785 (30.9)</td>
<td>2789 (109.8)</td>
<td>40 Tools</td>
<td></td>
<td></td>
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<tr>
<td><strong>DNM 650 II</strong></td>
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<tr>
<td></td>
<td>2642 (104.0)</td>
<td>602 (23.7)</td>
<td>3350 (131.9)</td>
<td>594 (23.4)</td>
<td>1312 (51.7)</td>
<td>2815 (110.8)</td>
<td>1960 (77.2)</td>
<td>3200 (126.0)</td>
<td>4345 (171.1)</td>
<td>785 (30.9)</td>
<td>2789 (109.8)</td>
<td>40 Tools</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Unit: mm (inch)
Table & Tool Shank

Table

<table>
<thead>
<tr>
<th></th>
<th>P</th>
<th>Q</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNM 400 II</td>
<td>920 (36.2)</td>
<td>435 (17.1)</td>
</tr>
<tr>
<td>DNM 500 II</td>
<td>1200 (47.2)</td>
<td>540 (21.3)</td>
</tr>
<tr>
<td>DNM 650 II</td>
<td>1300 (51.2)</td>
<td>670 (26.4)</td>
</tr>
</tbody>
</table>

Unit: mm (inch)

Tool Shank

BT40

CAT40

DIN40
# Machine Specifications

<table>
<thead>
<tr>
<th>Features</th>
<th>Unit</th>
<th>DNM 400 II</th>
<th>DNM 500 II</th>
<th>DNM 650 II</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Travels</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X-axis mm/inch</td>
<td>762 (30.0)</td>
<td>1020 (40.2)</td>
<td>1270 (50.0)</td>
<td></td>
</tr>
<tr>
<td>Y-axis mm/inch</td>
<td>435 (17.1)</td>
<td>540 (21.3)</td>
<td>670 (26.4)</td>
<td></td>
</tr>
<tr>
<td>Z-axis mm/inch</td>
<td>510 (20.1)</td>
<td>625 (24.6)</td>
<td>747 (29.4)</td>
<td></td>
</tr>
<tr>
<td>Distance from spindle nose to table mm/inch</td>
<td>150-660 (5.9-30.5)</td>
<td>150-775 (5.9-30.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distance from spindle nose to column mm/inch</td>
<td>512 (20.2)</td>
<td>587 (23.1)</td>
<td>747 (29.4)</td>
<td></td>
</tr>
<tr>
<td><strong>Feedrates</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapid Traverse Rate X-axis m/min (ipm)</td>
<td>36 (1417.3)</td>
<td>36 (1417.3)</td>
<td>30 (1181.1)</td>
<td></td>
</tr>
<tr>
<td>Rapid Traverse Rate Y-axis m/min (ipm)</td>
<td>36 (1417.3)</td>
<td>36 (1417.3)</td>
<td>30 (1181.1)</td>
<td></td>
</tr>
<tr>
<td>Rapid Traverse Rate Z-axis m/min (ipm)</td>
<td>30 (1181.1)</td>
<td>30 (1181.1)</td>
<td>30 (1181.1)</td>
<td></td>
</tr>
<tr>
<td>Max. Cutting feedrate m/min (ipm)</td>
<td>15000 (590.6)</td>
<td>15000 (590.6)</td>
<td>15000 (590.6)</td>
<td></td>
</tr>
<tr>
<td><strong>Table</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Table size mm/inch</td>
<td>920<em>435 (36.2</em>17.1)</td>
<td>1200<em>540 (47.2</em>21.3)</td>
<td>1300<em>670 (51.2</em>26.4)</td>
<td></td>
</tr>
<tr>
<td>Table loading capacity kg/lb</td>
<td>600 (1322.8)</td>
<td>800 (1763.7)</td>
<td>1000 (2204.6)</td>
<td></td>
</tr>
<tr>
<td>Table surface type</td>
<td>4-125*18H8</td>
<td>5-125*18H8</td>
<td>118<em>125</em>18H8</td>
<td></td>
</tr>
<tr>
<td><strong>Spindle</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spindle taper ISO #40, 7/24 TAPER</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spindle motor power kW (Hp)</td>
<td>15/11 (18.5/11, 15/9) (20.1/14.8/14.8, 20.1/12.1)</td>
<td>18.5/15 (18.5/11, 15/9) (24.8/20.1/24.8, 20.1/12.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coolant pump motor power kW (Hp)</td>
<td>0.4 (0.5)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power source Electric power supply (rated capacity) kVA</td>
<td>30</td>
<td>42.55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compressed air supply MPa (psi)</td>
<td>0.54 (78.3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Machine Dimensions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Height mm/inch</td>
<td>2703 (106.4)</td>
<td>2815 (110.8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length mm/inch</td>
<td>2282 (89.8)</td>
<td>2444 (96.2)</td>
<td>2762 (108.7)</td>
<td></td>
</tr>
<tr>
<td>Width mm/inch</td>
<td>2615 (103.0)</td>
<td>2960 (116.5)</td>
<td>3350 (131.9)</td>
<td></td>
</tr>
<tr>
<td>Weight kg/lb</td>
<td>5000 (11023.0)</td>
<td>6500 (14329.8)</td>
<td>8500 (18739.0)</td>
<td></td>
</tr>
</tbody>
</table>

### Standard Feature
- 10.4" color TFT LCD
- Air tight splash guard
- Built-in screw chip conveyor
- Coolant system
- Coolant tank and chip pan
- Door interlock
- Machine condition indicator lamp (signal tower)
- Non-water miscible coolant filter
- Parts and tools for installation work
- Portable MPG
- Spindle head cooling system
- (Standard for 12000 r/min)
- Work light
- X, Y, Z Absolute pulse coder
- EZ Guide i
- Minimum Quantity Lubrication
- Oil skimmer
- Spindle head cooling system
- (Optional for 8000 r/min)
- Test bar
- Through-spindle coolant jet

### Optional Feature
- 4-axes rotary table
- Auto measuring instrument
- Auto power cutoff system
- Auto workpiece length measuring device
- Cam type tool magazine
- (40 tools)
- Chip conveyor and chip bucket

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NC Unit Specification

DOOSAN FANUC-i series

AXES CONTROL
- Controlled axes: 3 (X, Y, Z)
- Simultaneously controllable axes: Positioning (G00) / Linear interpolation (G01): 3 axes, Circular interpolation (G02, G03): 2 axes
- Absolute pulse coder
- Backlash compensation
- Follow up
- Least command increment: 0.001mm (0.0001 inch)
- Least input increment: 0.001mm (0.0001 inch)
- Machine lock: all axes / 2 axes
- Mirror image
- Reverse axis movement (setting screen and M-function)
- Stored pitch error compensation
- Pitch error offset compensation for each axis
- Stored stroke check 1
- Overtravel controlled by software

INTERPOLATION & FEED FUNCTION
- 2nd reference point return: G30
- Circular interpolation: G02, G03
- Cylindrical interpolation: G07.1
- Dwelling: G04
- Exact stop check: G09, G66 (mode)
- Feed per minute
- Feedrate override (10% increments): 0 - 200%
- Helical interpolation
- Jog override (10% increments): 0 - 200%
- Linear interpolation: G01
- Manual handle feed: (1 unit)
- Manual handle feedrate: x1, x10, x100 (per pulse)
- Override cancel: M48 / M49
- Positioning: G00
- Rapid traverse override: F0 (fine feed), 25 / 50 / 100%
- Reference point return: G27, G28, G29
- Skip function: G31

SPINDLE & M-CODE FUNCTION
- M-code function: M3 digits
- Spindle orientation
- Spindle serial output
- Spindle speed command: S5 digits
- Spindle speed override (10% increments): 10 - 150%

TOOL FUNCTION
- Cutter compensation C: G40, G41, G42
- Number of tool offsets: 400 ea
- Tool length compensation: G43, G44, G49
- Tool life management: 128 sets
- Tool number command: T2 digits
- Tool offset memory C: Geometry / Wear and Length / Radius offset memory
- Tool position offset: G45 - G48

PROGRAMMING & EDITING FUNCTION
- Absolute/Incremental programming: G90 / G91
- Auto. Coordinate system setting
- Background editing
- Canned cycle: G73, G74, G76, G80 - G89, G99
- Circular interpolation by radius programming
- Custom macro B
- Decimal point input
- Extended part program editing
- I/O interface: RS - 232C

- inch/metric conversion: G20 / G21
- Label skip
- Local / Machine coordinate system: G52 / G53
- Maximum commandable value: ±9,999,999.999 mm (±9999.99999 inch)
- No. of Registered programs: 400ea
- Optional block skip
- Optional stop: M01
- Part program storage: 640 m (2,100 ft) [256 kb]
- Pentium Board
- Program number:
- Program protect
- Program stop / end: M00 / M02, M30
- Rigid tapping: G84, G74
- Sub program: Up to 4 nesting
- Tape code: ISO / EIA Automatic discrimination

OPTION SPECIFICATION
- Additional controlled axes: 4 axes in total
- ACC (AI Contour Control) with Hardware: 200 block preview
- Data server: 1024 pairs
- Fast Ethernet function: G45 - G48
Head Office
Doosan Tower 20th FL., 18-12, Euljiro-6Ga, Jung-Gu, Seoul, Korea 100-730
Tel: ++82-2-3398-8693 / 8671 / 8680   Fax: ++82-2-3398-8699

Doosan Infracore America Corp.
19A Chapin Rd, Pine Brook, NJ 07058, U.S.A.
Tel: ++1-973-618-2500   Fax: ++1-973-618-2501

Doosan Infracore Germany GmbH
Emdener Strasse 24 D-41540 Dormagen Germany
Tel: ++49-2133-5067-100   Fax: ++49-2133-5067-001

Doosan Infracore Yantai Co., LTD
13 Building, 140 Tianlin Road, Xuhui District, Shanghai, China (200233)
Tel: ++86-21-6440-3384 (808, 805)   Fax: ++86-21-6440-3389

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http://www.doosaninfracore.com/machinetools/