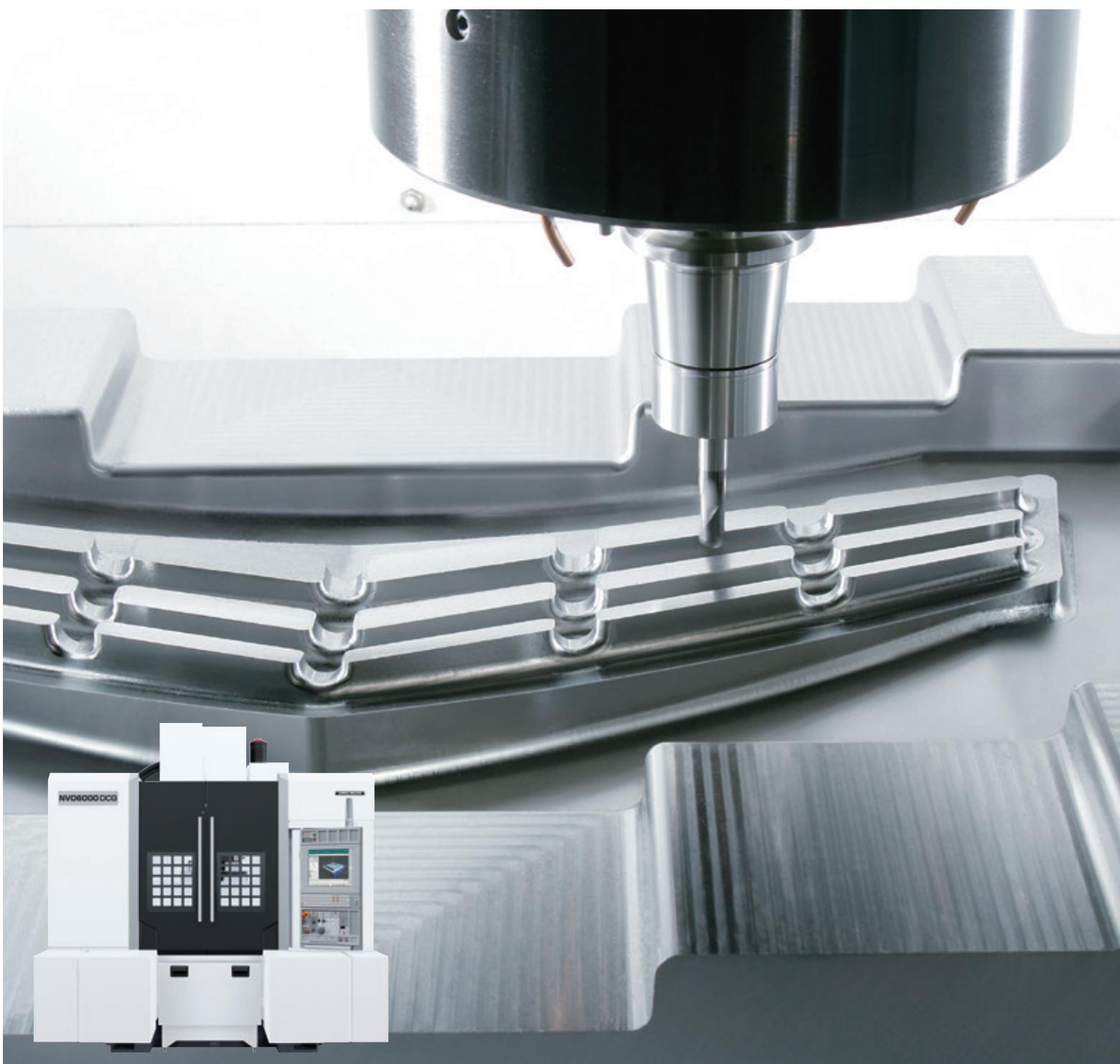
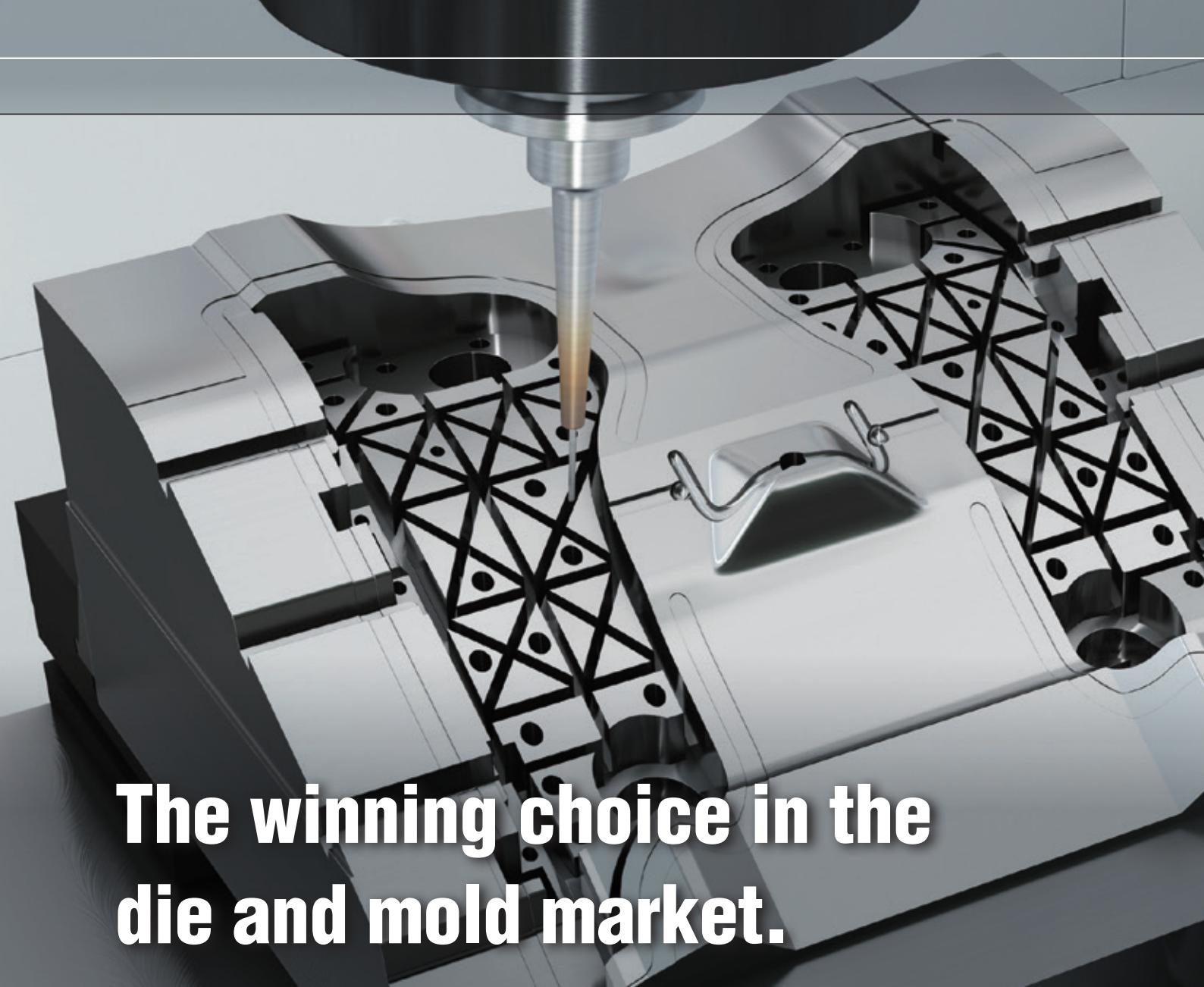


High-Precision Vertical Machining Center for Die & Mold Manufacturers

NVD6000 DCG

# NVD6000 DCG





# The winning choice in the die and mold market.

High-Precision Vertical Machining Center for Die & Mold Manufacturers

Equipped with a No. 40 taper spindle

## NVD6000 DCG



**DCG**

Driven at the Center of Gravity

Global competition in the die and mold market is getting fiercer than ever. In order to create dies and molds with greater value for our customers, DMG MORI has developed the next-generation die and mold machine tool. The machine uses DMG MORI's unique technology – DCG (Driven at the Center of Gravity). This original technology, which minimizes tool tip vibration, creates high-quality machined surfaces. The NVD6000 DCG high-precision vertical machining center for die and mold machining. The winning choice for this growing market is right here.



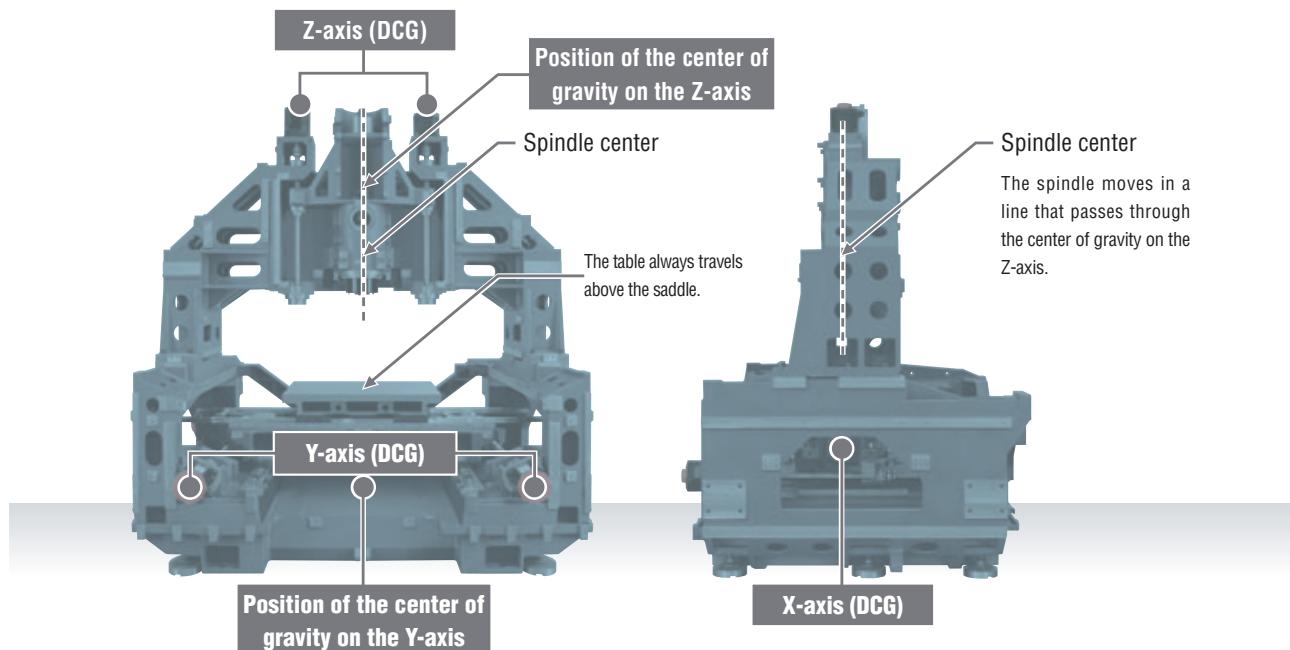
• Figures in inches were converted from metric measurements.

# Features of machine

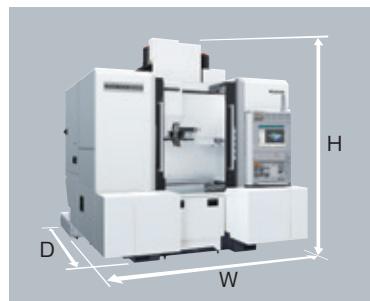
## Structure

The NVD6000 DCG incorporates the DCG on all axes.

Also, DMG MORI's original structure made it possible to eliminate spindle and table overhang.



## Machine size



## NVD6000 DCG

Width : 3,230 mm (127.2 in.)

Depth : 4,189 mm (164.9 in.)

Height: 3,015 mm (118.7 in.)

• Including oil chiller (separate type)

## Working area

Despite its compact body, the NVD6000 DCG ensures a large work envelope suitable for various workpieces.



## Table working surface

**1,000×600 mm**  
(**39.4×23.6 in.**)

## Table loading capacity

**800 kg (1,760 lb.)**

- Rapid traverse rate X, Y and Z axes: **20 m/min (787.4 ipm)** ..... P4
- Max. spindle speed: **20,000 min<sup>-1</sup> [12,000] [30,000] min<sup>-1</sup>** ..... P4

# Original technology, Mechanism

## Driven at the Center of Gravity



**DCG**

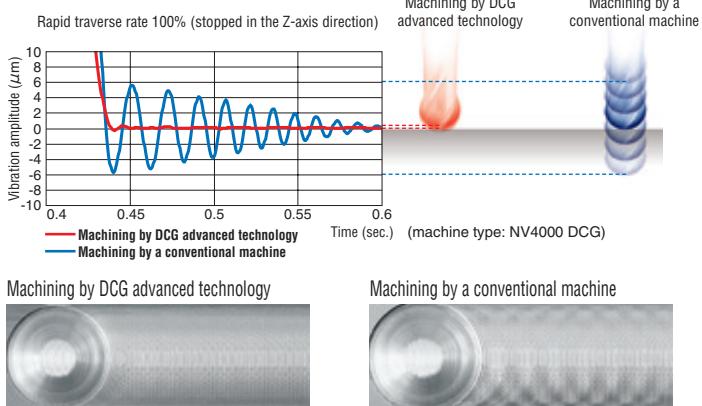
Driven at the Center of Gravity

Our DCG (Driven at the Center of Gravity) technology controls vibration, which is one of the main enemies of high speed and high precision, by driving structural parts at their center of gravity.

### Vibration controlled

For positioning, machines with DCG virtually eliminate vibration, while machines without DCG continue to vibrate for a long time. DCG controls the rotational vibration which appears at every acceleration start point, and which is proportional to the distance between the drive point and the center of gravity. This prevents deterioration of the quality of the machined surface.

### Residual vibration comparison



### DCG effect

- Improved surface quality      ● Outstanding acceleration      ● Improved roundness      ● Longer tool life

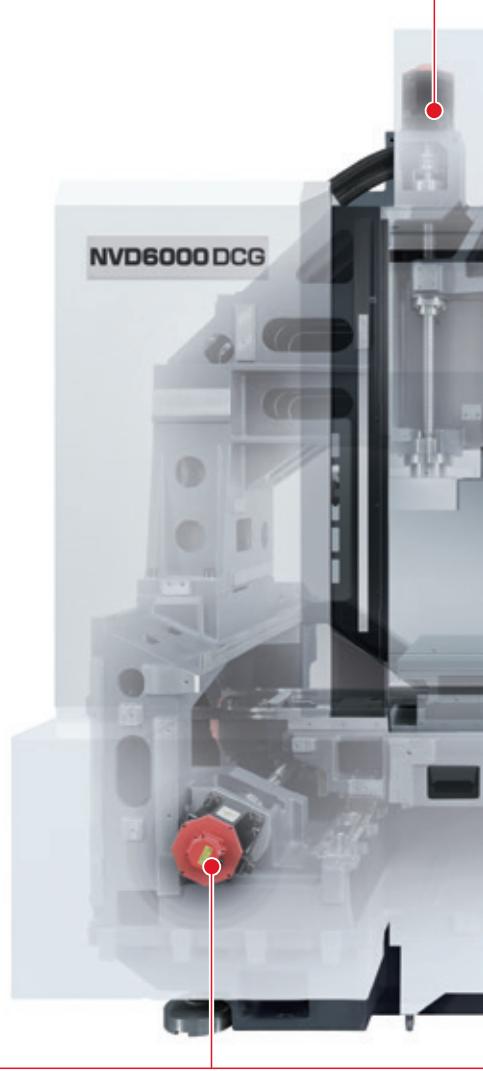
### ■ Rapid traverse rate <X, Y and Z axes>

20 m/min (787.4 ipm)

### ■ Cutting feedrate <X, Y and Z axes>

20 m/min (787.4 ipm)

(with AI contour control <theoretical value>)



## Spindle



### ■ Max. spindle speed

**NVD6000 DCG**

20,000 min<sup>-1</sup>      12,000 min<sup>-1</sup> **OP**      30,000 min<sup>-1</sup> **OP**

### ■ Tool clamp power

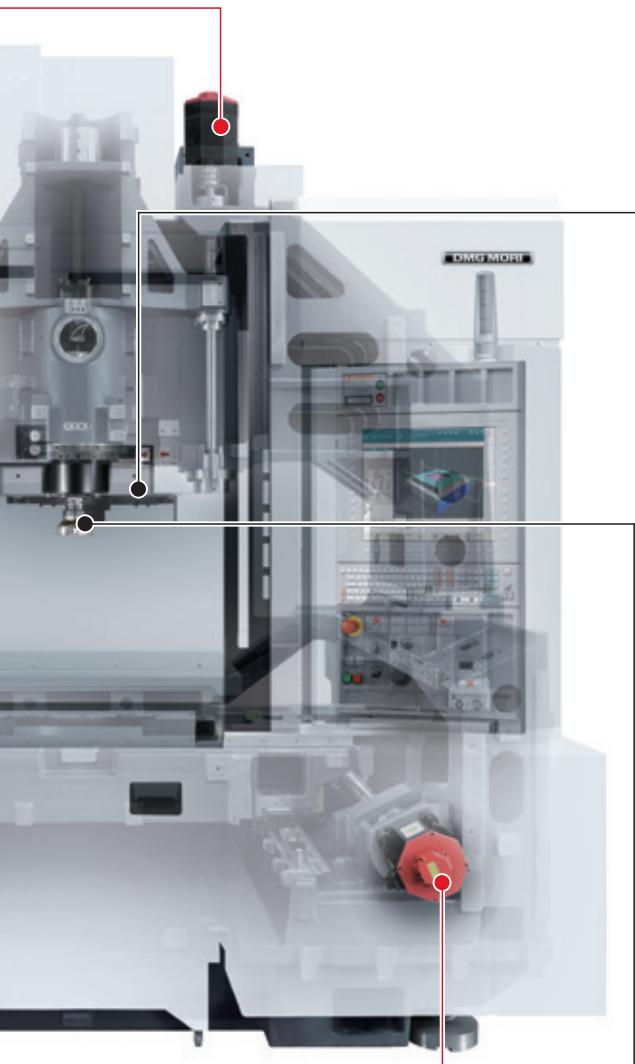
Previous model

9,800 N      ▶ **13,500 N**  
(2,203.0 lbf)      (3,034.8 lbf)

Compared against previous model

**Approx. 1.4 stronger**

Equipped with the two-face contact specification that improves both the machining capability and machining accuracy as standard.

**ATC**

By using the ATC, which allows high-speed tool change, non-cutting time is dramatically reduced.

**■ Tool changing time**

**20 tools**

Cut-to-cut  
(chip-to-chip)

<ISO> <MAS>

**5.9 sec. (max.)** **4.3 sec.**

**4.2 sec. (min.)**

- Without ATC shutter
- ISO 10791-9, JIS B6336-9

Tool-to-tool

**1.6 sec.**

- The time differences are caused by the different conditions (travel distances, etc) for each standard.
  - Depending on the arrangement of tools in the magazine, the cut-to-cut (chip-to-chip) time may be longer.
- ISO: International Organization for Standardization JIS: Japanese Industrial Standard

**Magazine**

Adopting tool magazines with an original space-saving design.

**■ Tool storage capacity**

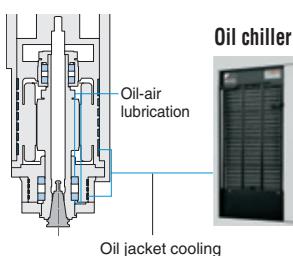
**20 tools**

**40 tools** OP

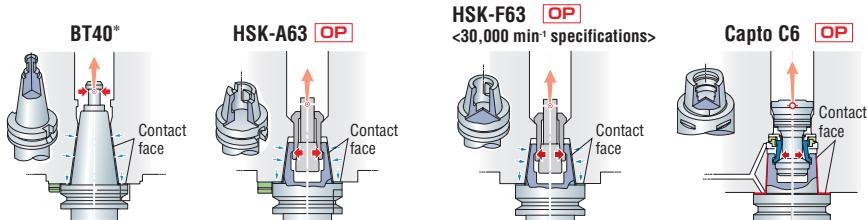
**60 tools** OP

**Spindle cooling**

Stator coil in DDS motor: the coolant supplied by the oil chiller minimizes heat diffusion by circulating through an oil jacket, which is placed around the stator coil.

**Two-face contact specifications**

Tool rigidity has been improved by contact of both the spindle taper and the tool flange. This extends the useful life of a tool, raises cutting power and improves the machining precision.



\* When the two-face contact specification is selected, a two-face contact tool and other tools cannot be used together.

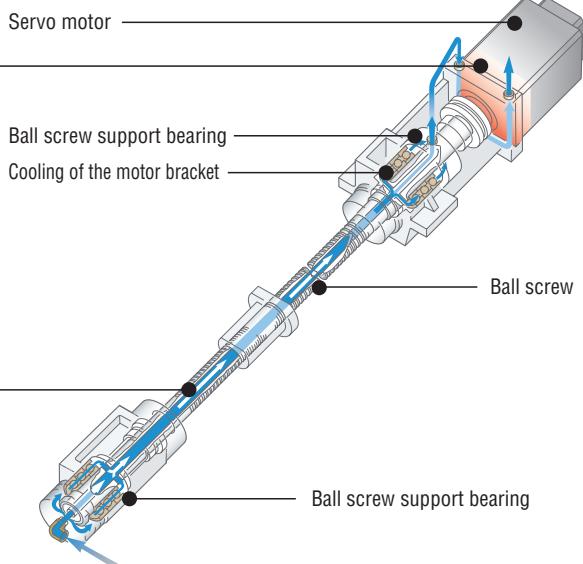
● See the page 15 for details.

● All DMG MORI spindles are made in-house to better meet our customer needs. For details, please consult with our sales representative.

Loaded with functions and features to achieve high-accuracy machining as standard

#### Cooling of the motor bracket

We have reduced the thermal displacement from the motor to the casting body by passing coolant through the motor base. This is standard on all axes - X-axis (saddle), Y-axis (bed), and Z-axis (columns).



#### Ball screw shaft cooling

The ball screw core cooling system in which cooling oil circulates through support bearings is adopted to maintain high positioning accuracy by suppressing the displacement due to generated heat.

#### High-rigidity double-anchor support

As well as ball screw core cooling, it uses a double-anchor support for highly rigid feed.

#### Direct scale feedback

An absolute magnetic linear scale (full closed-loop control) made by Magnescale is equipped as standard to offer high-precision positioning.

**Magnescale**  
High accuracy absolute scale



Resolution (X, Y and Z axes) **0.01 μm**

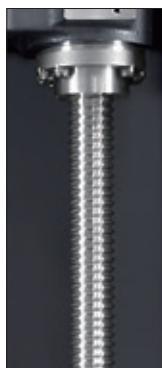
- High accuracy, high resolution
- Greater accuracy than optical scale
- Highly resistant to condensation and oil
- Vibration and impact resistant characteristics

#### Fine-lead ball screws

The lead of the ball screws is set to 10 mm (0.4 in.) in order to raise feed rigidity.

Ball screw lead

**10 mm  
(0.4 in.)**



#### Oil chiller

An energy-saving oil chiller is used that delivers very little temperature fluctuation.



#### Coolant chiller (separate type) **OP**

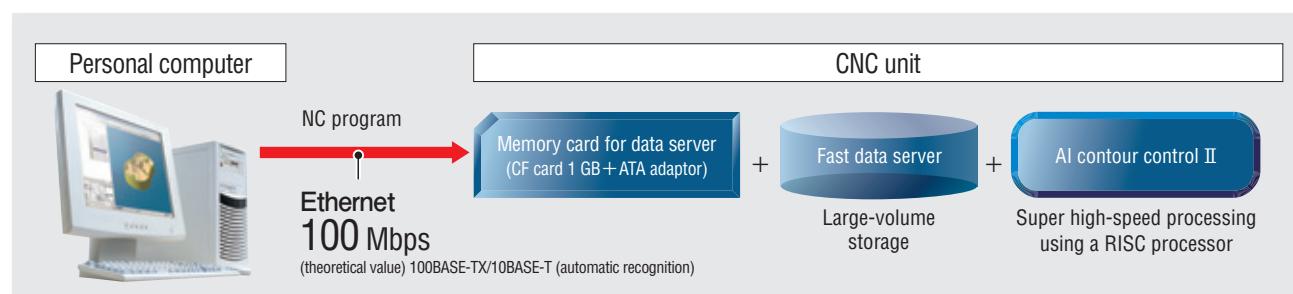
Raised coolant temperature causes thermal displacement in the fixtures and workpiece, affecting the machining accuracy of the workpiece. Use this unit to prevent the coolant from heating up. When using oil-based coolant, the coolant temperature can become extremely high even with the standard coolant pump, so please be sure to select this unit.

**When using oil-based coolant, please be sure to consult with our sales representative.**

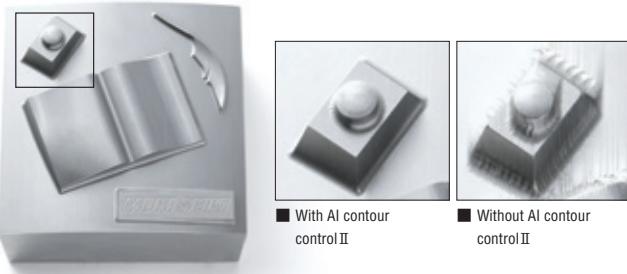
- We cannot guarantee that this unit will completely control the coolant temperature.  
It is designed to help prevent oil temperature increases.



# Die & Mold Specifications (Standard)



## AI contour control II



## Cutting mode selection function

### ■ Time priority mode

Top priority at cutting time. Use when required accuracy is in low level like roughness cutting etc.  
 The cutting time is the shortest.

### ■ Middle mode

Middle mode in time priority mode and accuracy priority mode.

### ■ Accuracy priority mode (the standard setting)

The mode which prioritizes the cutting accuracy. Recommended mode.

### ■ Custom mode

The mode which further prioritizes cutting accuracy.

This mode produces the longest machining time of all four modes.

## Surface roughness

X : Y is 2 : 1 taper machining



### Previous model

Calculates the least command increment in  $1 \mu\text{m}$  units.

### Feed command $1.0 \mu\text{m}$

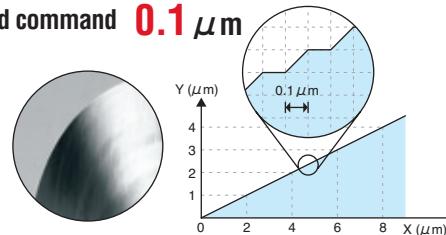
► 10 times better



### NVD6000 DCG

Improves surface roughness using smooth interpolation in nanometer increments.

### Feed command $0.1 \mu\text{m}$



## Safety device

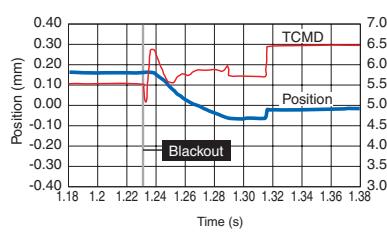
### Z-axis drop prevention function ideal for blackouts

Raising the spindle slightly during blackouts prevents any contact between the tool and the workpiece caused by the spindle dropping.

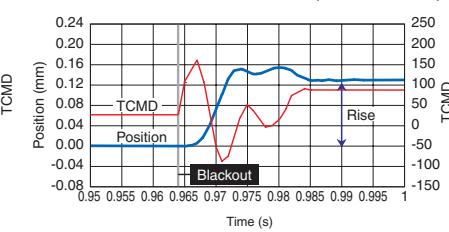
#### ※ The Z-axis drop prevention function is not available in the following situations.

1. When the feed axis servo alarm has gone off.
2. When the power supply module alarm has gone off.
3. When the communication alarm between the CNC and the amp has gone off.

#### Before blackout countermeasure



#### After blackout countermeasure (Z-axis raised)

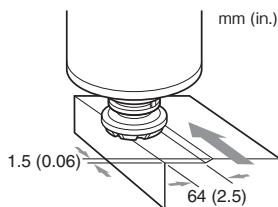


TCMD: Torque command

● Depending on how voltage drops (slowly or suddenly), it may not always be possible to detect a blackout.

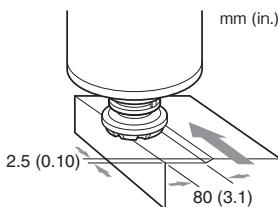
# Cutting test

## $\phi 80 \text{ mm} (\phi 3.1 \text{ in.})$ face mill <7 flutes>

Material <JIS>: S50C<sup>\*1</sup>

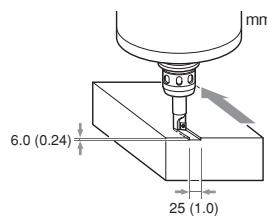
|                       |   |
|-----------------------|---|
| Material removal rate | 201.6 mL/min<br>(12.3 in <sup>3</sup> /min) |
| Spindle speed         | 1,000 min <sup>-1</sup>                     |
| Feedrate              | 2,100 mm/min (82.7 ipm)                     |

## $\phi 100 \text{ mm} (\phi 3.9 \text{ in.})$ face mill <5 flutes>

Material <JIS>: S50C<sup>\*1</sup>

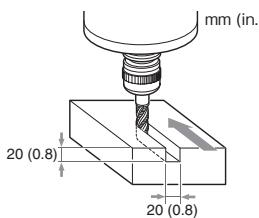
|                       |   |
|-----------------------|---|
| Material removal rate | 96.0 mL/min<br>(5.9 in <sup>3</sup> /min) |
| Spindle speed         | 480 min <sup>-1</sup>                     |
| Feedrate              | 480 mm/min (18.9 ipm)                     |

## $\phi 25 \text{ mm} (\phi 1.0 \text{ in.})$ throw-away end mill <2 flutes>

Material <JIS>: S50C<sup>\*1</sup>

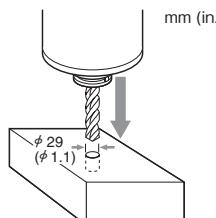
|                       |   |
|-----------------------|---|
| Material removal rate | 86.0 mL/min<br>(5.2 in <sup>3</sup> /min) |
| Spindle speed         | 1,909 min <sup>-1</sup>                   |
| Feedrate              | 573 mm/min (22.6 ipm)                     |

## $\phi 20 \text{ mm} (\phi 0.8 \text{ in.})$ roughing end mill <4 flutes>

Material <JIS>: S50C<sup>\*1</sup>

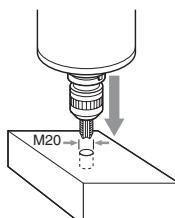
|                       |   |
|-----------------------|---|
| Material removal rate | 38.4 mL/min<br>(2.3 in <sup>3</sup> /min) |
| Spindle speed         | 400 min <sup>-1</sup>                     |
| Feedrate              | 96 mm/min (3.8 ipm)                       |

## $\phi 29 \text{ mm} (\phi 1.1 \text{ in.})$ HSS drill <2 flutes>

Material <JIS>: S50C<sup>\*1</sup>

|                       |   |
|-----------------------|---|
| Material removal rate | 36.2 mL/min<br>(2.2 in <sup>3</sup> /min) |
| Spindle speed         | 274 min <sup>-1</sup>                     |
| Feedrate              | 54.8 mm/min (2.2 ipm)                     |

## Tap

Material <JIS>: S50C<sup>\*1</sup>

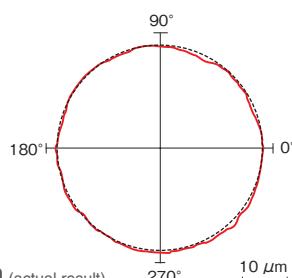
|               |                       |
|---------------|-----------------------|
| Tool          | M20×P2.5              |
| Spindle speed | 160 min <sup>-1</sup> |
| Feedrate      | 400 mm/min (15.7 ipm) |

●S50C: (Carbon steel) HSS: High-speed steel JIS: Japanese Industrial Standard

\*1 1049 (ANSI), C50, C50E, C50R (BS, DIN), 50 (GB)

## Circularity

### Previous model

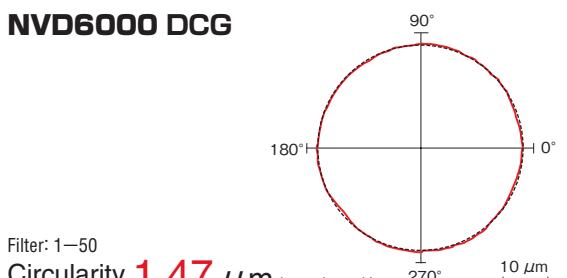


Filter: 1–50

Circularity **2.80 μm** (actual result)

|                  |   |
|------------------|---|
| Material <JIS>   | A5052 <sup>*2</sup> : Aluminum <outer diameter: 110 mm (4.3 in.)> |
| Tool             | φ 20 mm (φ 0.8 in.) carbide end mill <4 flutes>                   |
| Spindle speed    | 5,000 min <sup>-1</sup>   |
| Cutting feedrate | 2,000 mm/min (78.7 ipm)   |
| Depth of cut     | 0.05 mm (0.0020 in.)  |

### NVD6000 DCG



Filter: 1–50

Circularity **1.47 μm** (actual result)

|                  |   |
|------------------|---|
| Material <JIS>   | A5052 <sup>*2</sup> : Aluminum <outer diameter: 130 mm (5.1 in.)> |
| Tool             | φ 16 mm (φ 0.6 in.) carbide end mill <4 flutes>                   |
| Spindle speed    | 3,000 min <sup>-1</sup>   |
| Cutting feedrate | 800 mm/min (31.5 ipm)   |
| Depth of cut     | 0.05 mm (0.0020 in.)  |

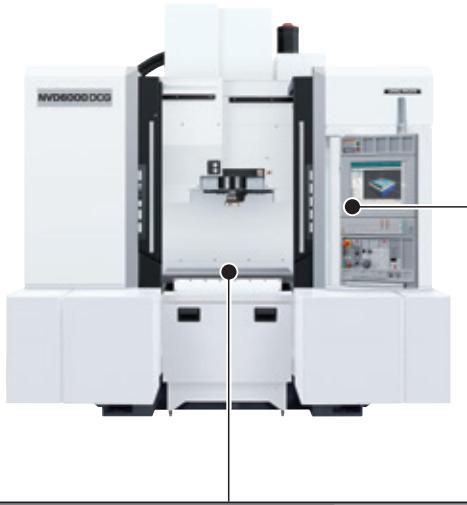
\*The cutting test results indicated in this catalog are provided as examples.

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

\*2 5052 (ANSI), NS4 (BS), AlMg2.5 (DIN), 5A02 (GB)

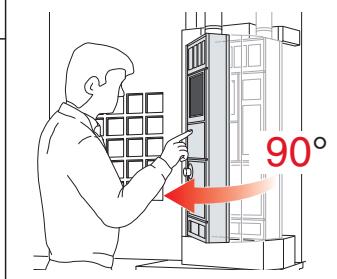
## Improved convenience

Excellent access to the table and a smoothly opening roof for easier setup when using a crane. The NVD6000 DCG was designed as a vertical machining center with maximum ease of use and setup.



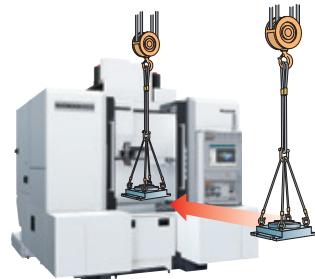
### Swivel-type operation panel

The operation panel which can swivel from 0 degree to 90 degrees improves operability and visibility.



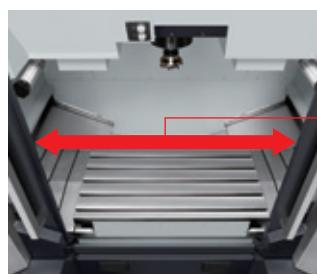
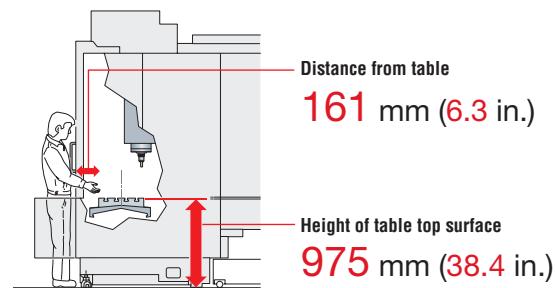
### The open/close ceiling

The top panel can be opened and closed, making crane accessibility quick and easy.



### Setup station

With excellent access to the table and a wide door opening, setup operations such as fixture adjustment can be done smoothly.



## Maintenance

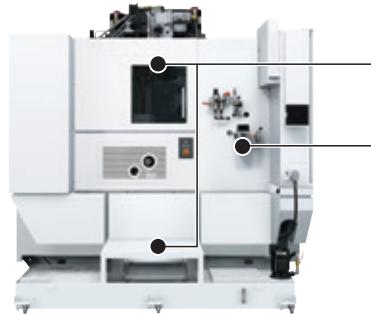
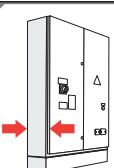
The NVD6000 DCG is designed with features for ease of maintenance to increase the machine operating rate.



### Slimmer electrical cabinet

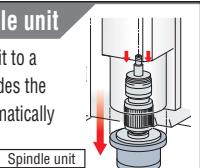
A slim electrical cabinet closes the proximity between you and the insides of the machine during maintenance.

**300 mm (11.8 in.)** <including doors>



### Replacement of spindle unit

By changing the spindle unit to a cartridge, which even includes the rear bearings, we have dramatically reduced replacement time.



### Access to equipment

Visibility of the magazine has been improved with the addition of a door with a window. In addition, the coolant tank can be used as steps to facilitate access to gauges and other instruments.

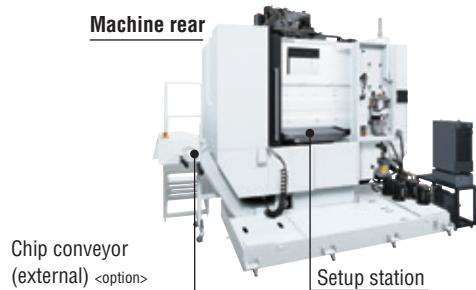


### Centralized layout of devices

Devices which need to be inspected every day are gathered together at the rear of the machine.



## 2-station turn-type APC OP

**Machine front****Machine rear**

- The APC uses a 2-station turn-type design. Cycle time is shorter than that of a shuttle-type machine.

- A new design allows access from the back of the machine when setting up the APC. This contributes to space savings.

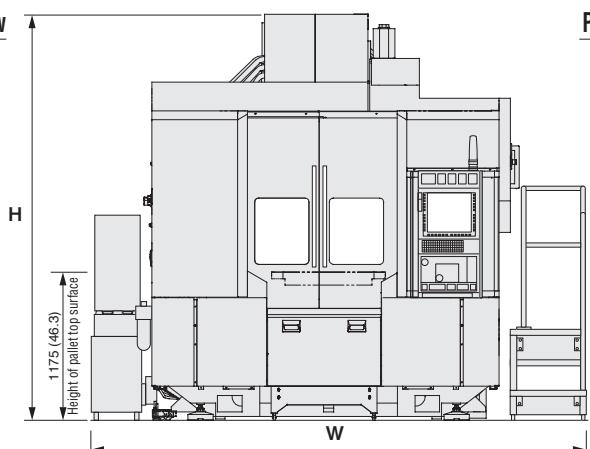
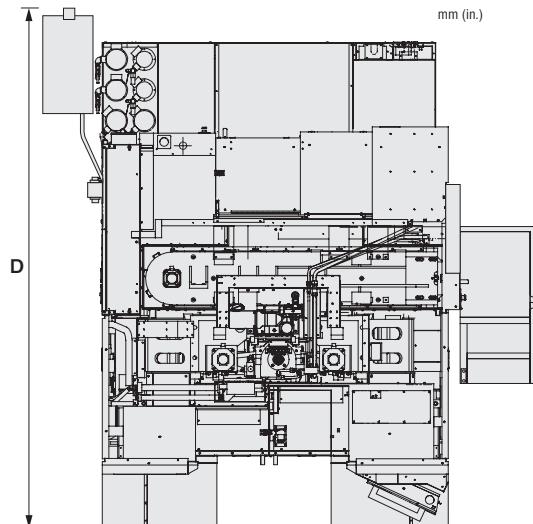
**Pallet changing time****25 sec.**

- To prevent APC interference, this specification includes time required for the spindle protection tool to be moved until after the APC turning is complete.
- When there are adjacent tools. Depending on the arrangement of tools in the magazine, the APC time may be longer.
- Without ATC shutter

**Pallet size****900×600 mm (35.4×23.6 in.)****Tool storage capacity****40/60 tools**

- For APC specifications, a dummy tool which is mounted on the spindle during APC operation is included.

● The photo shows the NV4000 DCG.

**Machine size****Front view****Plan view****APC specifications**

|         | Width (W)*1   | Depth (D)**2  | Height (H)                                 |
|---------|---------------|---------------|--|
| 40-tool | 3,863 (152.1) | 4,188 (164.9) | 3,215 (126.6) <at shipment: 3,089 (121.6)> |
| 60-tool | 3,928 (154.6) | 4,188 (164.9) | 3,215 (126.6) <at shipment: 3,089 (121.6)> |

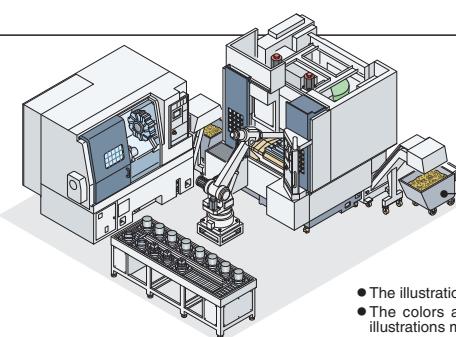
\*1 Including oil chiller (separate type) and magazine step.

\*2 Including oil chiller (separate type).

● When APC is selected, 200 mm (7.9 in.) raised column specifications are required.

Q55230A02

## Workpiece transfer robot



Robots make workpiece loading and unloading more efficient, improving productivity.

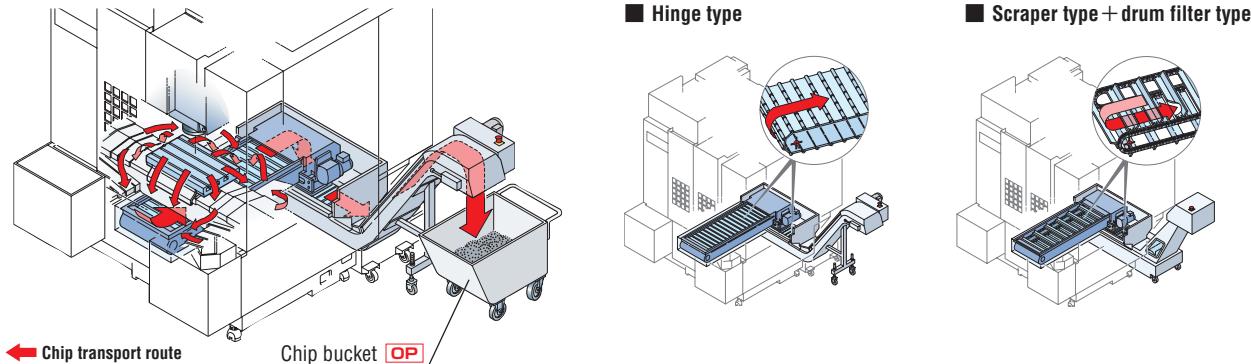
- The illustration shows the NV4000 DCG.
- The colors and configurations shown in the photographs or illustrations may differ from those of the actual product.

# Peripheral equipment

## Chip conveyor

OP

Chips that fall from the Y-axis tilted panel down into the center trough are automatically discharged out of the machine by the chip conveyor. This design prevents chips from accumulating.



| Specifications  | Workpiece material and chip size |       |           |                            |       | ○: Suitable    ×: Not suitable |  |
|---|----------------------------------|-------|-----------|----------------------------|-------|--------------------------------|--|
|   | Steel                            |       | Cast iron | Aluminum/non-ferrous metal |       |                                |  |
|   | Long                             | Short | Short     | Long                       | Short |                                |  |
| Hinge type+drum filter type <small>Consultation is required</small> | ○                                | ○     | ○         | ○                          | ○     |                                |  |
| Hinge type  | ○                                | ○     | ×         | ○                          | ×     |                                |  |
| Scraper type+drum filter type                                       | ×                                | ○     | ○         | ×                          | ○     |                                |  |
| Magnet scraper type <small>Consultation is required</small>         | ×                                | ○     | ○         | ×                          | ×     |                                |  |

- Chip size guidelines  
Short: chips 50 mm (2.0 in.) or less in length, bundles of chips  $\phi$  40 mm ( $\phi$  1.6 in.) or less  
Long: bigger than the above
- The options table shows the general options when using coolant. Changes may be necessary if you are not using coolant, or depending on the amount of coolant, compatibility with machines, or the specifications required.
- Please select a chip conveyor to suit the shape of your chips. When using special or difficult-to-cut material (chip hardness HRC45 or higher), please consult with our sales representative.
- Chip conveyors are available in various types for handling chips of different shape and material. For details, please consult with our sales representative.

## Coolant tank

A high capacity coolant tank comes as a standard feature.



Tank capacity

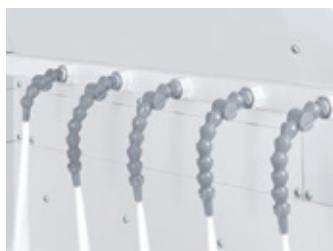
**345 L (91.1 gal.)**

<without chip conveyor>

## Shower coolant

OP

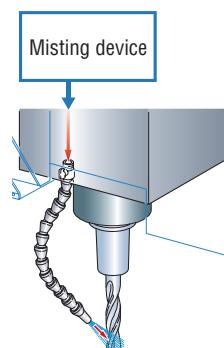
As well as preventing chips from scattering during machining, this allows them to fall smoothly into the center conveyor.



## Semi dry unit

OP

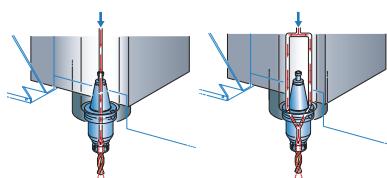
Supplies air and oil mist to the cutting tip. An environmentally friendly device which reduces oil consumption. We recommend using this unit together with a mist collector.



## Through-spindle coolant system

OP

The through-spindle coolant system effectively eliminates chips, cooling the machine point, and lengthening the lives of your tools.



- The colors and configurations shown in the photographs or illustrations may differ from those of the actual product.

|                                     | Unit on coolant tank | Separate type  |
|-------------------------------------|----------------------|--|
| Discharge pressure                  | MPa (psi)            | 1.5 (217.5)    1.5/3.5/7.0(217.5/507.5/1,015)  |
| Installation space<br><width×depth> | mm (in.)             | 360×360<br>(14.2×14.2)    820×1,120<br>(32.3×44.1)<br><line filter unit><br><high-pressure coolant system> |
| Water-soluble coolant               | ○                    | ○  |
| Oil-based coolant                   | ×                    | ○*   |
| Coolant filtration accuracy         | 40 $\mu\text{m}$     | 20 $\mu\text{m}$   |

\*Oil-based coolant may not be filtered appropriately depending on its viscosity. In such cases it is advisable to select the high-pressure coolant unit (special option), which uses a ceramic backwashing filter in the filtration system instead of a regular cyclone filter. For details, please consult with our sales representative.

**⚠ Flammable coolant such as oil-based coolant has a high risk of ignition, and will cause fire or machine breakage if ignited. If you have to use a flammable coolant for any reason, please consult with our sales representative.**

# MAPPS IV

High-Performance Operation System  
for Machining Centers



• 19-inch operation panel

## Advanced hardware

### Reduction of drawing time\*1

Shorter drawing time was achieved thanks to increased CPU performance.

|                  |         |                        |
|------------------|---------|------------------------|
| <b>MAPPS III</b> | 68 sec. | <b>Approx.</b>         |
| <b>MAPPS IV</b>  | 45 sec. | <b>Reduced by 33 %</b> |

\*1 The reduction rate differs depending on the program.

### Main specifications

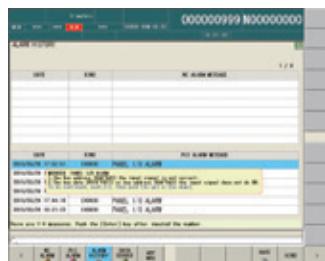
|             |   |
|-------------|---|
| Main memory | 2 GB  |
| User area   | 6 GB  |
| Interface   | <ul style="list-style-type: none"> <li>• USB 2.0 3 ports<br/>(Screen side: 2, Bottom of operation panel: 1<sup>*2</sup>)</li> <li>• LAN 1 port (1000BASE-T)</li> <li>• RS-232-C port</li> </ul> |
| Soft-keys   | Left/right 12 keys Bottom 12 keys   |

\*2 Option

## Improved ease of maintenance

### Alarm help function

When an alarm occurs, MAPPS identifies the cause of the trouble and provides solutions.



MAPPS: Mori Advanced Programming Production System

High-performance operation system that pursues ease of use, and combines the best hardware in the industry with the advanced application/network systems.

- ▶ Outstanding operability thanks to upgraded hardware
- ▶ Cutting-edge functions for easier setup and maintenance
- ▶ Various types of monitoring, including internal monitoring, are possible on the screen (option)
- ▶ In the event of trouble, DMG MORI's remote maintenance service solves it smoothly **MORI-NET Global Edition Advance** [OP](#)

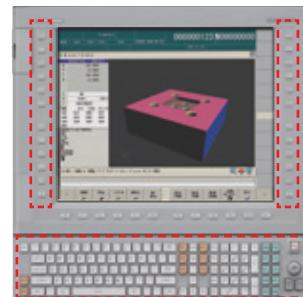
## Outstanding operability

### Vertical soft-keys

Vertical soft-keys are arranged on the left and right sides of the screen. The vertical soft-keys can be used as option buttons or shortcut keys to which you can assign your desired screens and functions, allowing you to quickly display the screen you want.

### Keyboard

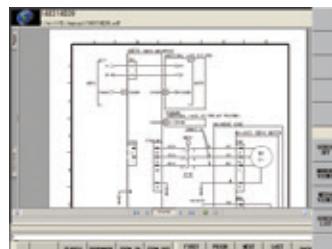
A PC-type keyboard is used as standard, making key input easy. A keyboard with a conventional key layout is also available as an option.



## Improved ease of setup

### File display and Memo function

Data necessary for setups such as operating instructions, drawing data and text data can be viewed on MAPPS. Text data is editable.



### Viewable file types

- PDF
- TXT (Editable)
- Any file that can be displayed with Internet Explorer is available

## Improved work efficiency

### Fixed-point in-machine camera

[OP](#) Consultation is required

Images taken by cameras installed inside/outside the machine can be viewed on the programming screen. This function is useful for maintenance.



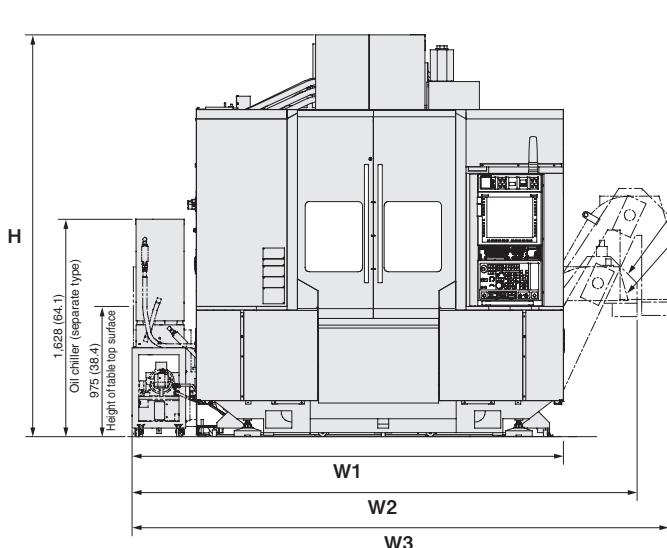
### Examples of camera locations

- Inside machine  
(to check machining)
- Tool magazine  
(to check cutting tools)
- Chip bucket  
(to check chip accumulation)

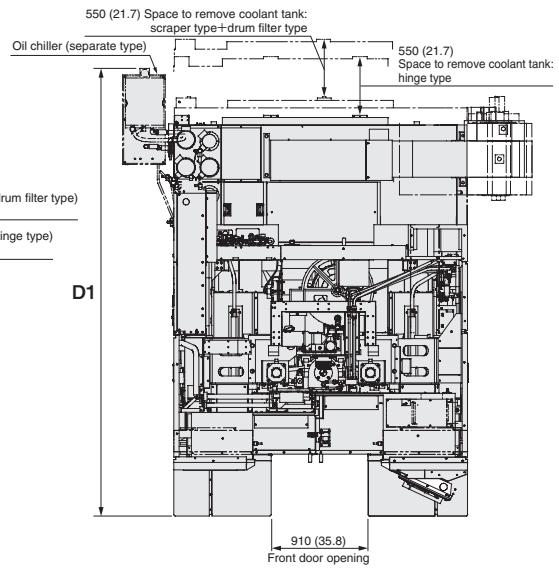
- The photo shown may differ from actual machine.
- Information about the screen is current as of November 2020.

# General view

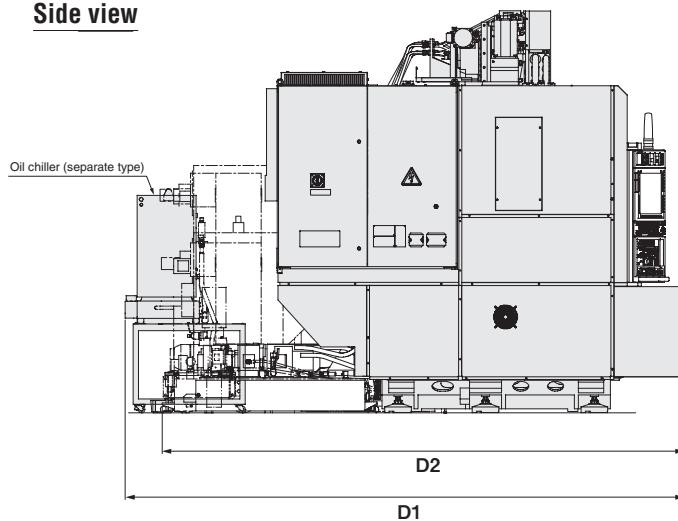
**Front view**



**Plan view**



**Side view**



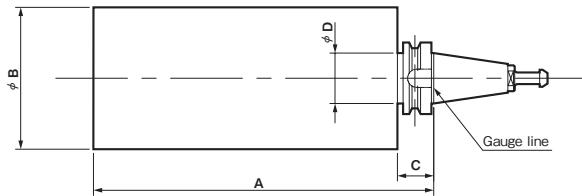
Q50767A14

**Standard <20-tool>**

| Including oil chiller<br>(separate type) | Width   |                  |                                    |                  | Depth                                    |                         |                                    | Height<br><b>H</b>                            | mm (in.) |  |  |
|--|---|------------------|------------------------------------|------------------|--|-------------------------|------------------------------------|---|----------|--|--|
|  | Including oil chiller (separate type) and chip conveyor |                  |                                    |                  | Including oil chiller<br>(separate type) | Including chip conveyor |                                    |   |          |  |  |
|  | Hinge type  |                  | Scraper type +<br>drum filter type |                  |  | Hinge type              | Scraper type +<br>drum filter type |   |          |  |  |
|  | Standard  | EN Standards     | Standard                           | EN Standards     |  |                         |                                    |   |          |  |  |
| W1                                       | W2  | W3               | W2                                 | W3               | D1                                       | D2                      |                                    |   |          |  |  |
| 3,230<br>(127.2)                         | 3,715<br>(146.3)  | 4,015<br>(158.1) | 3,780<br>(148.8)                   | 4,013<br>(158.0) | 4,189<br>(164.9)                         | 3,750<br>(147.6)        | 3,912<br>(154.0)                   | 3,015 (118.7)<br><at shipment: 2,889 (113.7)> |          |  |  |

● The oil chiller <separate type> is equipped as standard.

## Tool restrictions



| Item   | Tool restrictions |                                   |                |                                  |
|--|-------------------|-----------------------------------|----------------|----------------------------------|
|  | NVD6000 DCG       |                                   |                |                                  |
| Type of tool shank                                   | BT40              | CAT40                             | DIN40          | HSK-A63<br>HSK-F63 <sup>*1</sup> |
| Max. tool length <b>A</b>                            | mm (in.)          | 300 (11.8)                        |                |                                  |
| Max. tool diameter <with adjacent tools> <b>B</b>    | mm (in.)          | 70 (2.7) <sup>*2</sup> , 80 (3.1) |                |                                  |
| Max. tool diameter <without adjacent tools> <b>B</b> | mm (in.)          | 125 (4.9)                         |                |                                  |
| Tool limitation <b>C</b>                             | mm (in.)          | 32 (1.3)                          | 34.925 (1.375) | 35 (1.4)                         |
| Tool limitation <b>D</b>                             | mm (in.)          | 63 (2.5)                          | 44.45 (1.75)   | 50 (2.0)                         |
| Max. tool mass                                       | kg (lb.)          | 3 (6.6) <sup>*1</sup> , 8 (17.6)  |                |                                  |
| Max. tool mass moment <from spindle gauge line>      | N·m (ft·lbf)      | 11 (8.1)                          |                |                                  |

<sup>\*1</sup> 30,000 min<sup>-1</sup><sup>\*2</sup> 40-tool, 60-tool

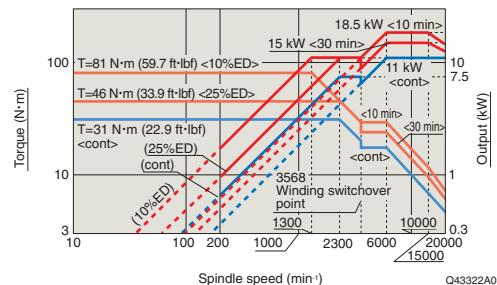
● A tool with a mass moment greater than the maximum tool mass moment may cause problems during ATC operations even if it satisfies other conditions.

Q81085A02

## Spindle speed torque/output diagrams

### NVD6000 DCG

Max. spindle speed: 20,000 min<sup>-1</sup>  
 Spindle drive motor: 18.5/15/11 kW (24.7/20/15 HP)  
     <10 min/30 min/cont> (high-speed winding side)  
 Max. spindle torque: 81 N·m (59.7 ft·lbf) <10%ED>

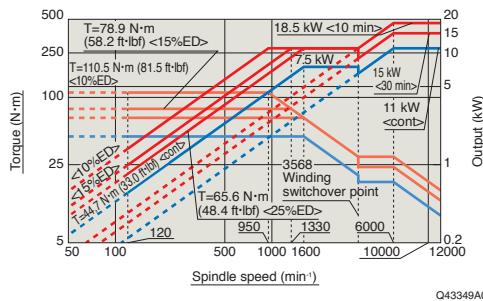


Q43322A03

### NVD6000 DCG

12,000 min<sup>-1</sup> specifications

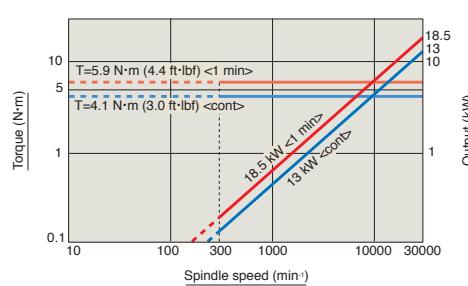
Max. spindle speed: 12,000 min<sup>-1</sup>  
 Spindle drive motor: 18.5/15/11 kW (24.7/20/15 HP)  
     <10 min/30 min/cont> (high-speed winding side)  
 Max. spindle torque: 110.5 N·m (81.5 ft·lbf) <10%ED>



Q43349A01

### High speed

Max. spindle speed: 30,000 min<sup>-1</sup>  
 Spindle drive motor: 18.5/13 kW (24.7/17.3 HP) <1 min/cont>  
 Max. spindle torque: 5.9 N·m (4.4 ft·lbf) <1 min>



Q43382A01

# Standard & optional features

●: Standard features ○: Options ☆: Consultation is required

## Spindle

|  |   |   |
|--|---|---|
|  | BT40 <sup>*1</sup>                                | ● |
| Type of tool shank   | CAT40   | ○ |
|  | DIN40   | ○ |
|  | HSK-A63   | ○ |
|  | HSK-F63 <30,000 min <sup>-1</sup> specifications> | ○ |
|  | Capt o C6   | ○ |
|  | DMG MORI 90° type                                 | ● |
| Type of retention knob   | 45° (MAS-I)                                       | ○ |
|  | 60° (MAS-II)                                      | ○ |
|  | HSK-A63   | ○ |
|  | HSK-F63 <30,000 min <sup>-1</sup> specifications> | ○ |
| BT40 <sup>*1</sup>   | 20,000 min <sup>-1</sup> : two-face contact       | ● |
|  | 12,000 min <sup>-1</sup> : two-face contact       | ○ |
| HSK-A63  | 12,000 min <sup>-1</sup> : two-face contact       | ○ |
| HSK-F63  | 20,000 min <sup>-1</sup> : two-face contact       | ○ |
| Capt o C6  | 20,000 min <sup>-1</sup> : two-face contact       | ○ |
| 20,000 min <sup>-1</sup> : 18.5/15/11 kW (24.7/20/15 HP) <10 min/30 min/cont>                                    | ●   |   |
| 12,000 min <sup>-1</sup> : 18.5/15/11 kW (24.7/20/15 HP) <10 min/30 min/cont>                                    | ○   |   |
| 30,000 min <sup>-1</sup> : 18.5/13 kW (24.7/17.3 HP) <1 min/cont> (high speed)                                   | ○   |   |
| Carbon specifications (oil/air lubrication) <this is only available for BT40 (12,000/20,000 min <sup>-1</sup> )> | ○   |   |
| Positioning block for angle head tool  |   | ○ |

\*1 When the two-face contact specification is selected, a two-face contact tool and other tools cannot be used together.

## Table

|           |        |   |
|-----------|--------|---|
| Table     | T-slot | ● |
| Sub-table | T-slot | ○ |
|           | Solid  | ○ |

## Pallet/APC

|   |        |   |
|---|--------|---|
| 2-station turn-type APC                                 | T-slot | ○ |
| <available only for 40/60-tool magazine specifications> | Tap    | ○ |
| One additional pallet                                   | T-slot | ○ |
|   | Tap    | ○ |

● When APC is selected, 200 mm (7.9 in.) raised column specifications are required.

## Fixture/Steady rest

|                             |                                     |   |
|-----------------------------|-------------------------------------|---|
| Additional 1-axis interface | With motor                          | ○ |
|                             | Without motor                       | ○ |
| Index table interface       | M signal output from terminal block | ○ |
| Fixture interface           |                                     | ☆ |

## Magazine

|                       |          |   |
|-----------------------|----------|---|
|                       | 20 tools | ● |
| Tool storage capacity | 40 tools | ○ |
|                       | 60 tools | ○ |

## ATC shutter

|  |  |   |
|--|--|---|
|  |  | ○ |
|--|--|---|

## Coolant

|  |   |    |
|--|---|----|
| Coolant system   |   | ●  |
| Additional coolant system for tool tip   |   | ○  |
| Oil mist system  |   | ○  |
|  | BLUEBE  | ○  |
| Semi dry unit  | Kuroda Precision  | ○  |
|  | Tanaka Import   | ○  |
| Coolant float switch   |   | ○  |
|  | Machining side  | ○  |
| Coolant gun  | Setup station side  | ○  |
|  | Setup station side and machining side   | ○  |
| Shower coolant   | Essential for chips that easily accumulate (Aluminum, etc.)   | ○  |
| Through-spindle air specifications (only for air)  |   | ○  |
| Through-spindle coolant/air (switching specifications)   |   | ○  |
| <through-spindle coolant system is necessary required separating>  |   |    |
| Through-spindle coolant/ semi-dry (switching specifications)   |   |    |
| <semi-dry unit and through-spindle coolant specifications (only available for center-through). Side-through requires consultation> |   |    |
| Oil shot system  |   | ○  |
| Through-spindle coolant system <unit on coolant tank, 1.5 MPa (217.5 psi)> Center through  |   | ○  |
| Oil-hole drill coolant system  |   | ○  |
| Oil-hole drill coolant/air switching specifications  |   | ○  |
| <oil-hole drill coolant system is necessary required separating>   |   |    |
| Through-spindle coolant system (separate type)   | Interface   | ○  |
| Through-spindle coolant system <unit on coolant tank, 1.5 MPa (217.5 psi)> Side through  |   | ○  |
| Coolant chiller (separate type) for standard coolant system  |   | ○* |
|  | Optional when using water-soluble coolant   | ○  |
| Coolant chiller (separate type)  | Essential when using oil-based coolant<br>(for details, please consult with our sales representative) | ○  |
| Mist collector HVS-300 <sup>*1</sup>   | Including stand <sup>*2</sup>   | ○* |
| Mist collector AFS-1600 <sup>*3</sup>  | Including stand   | ○* |
| Mist collector interface   | Electric parts only   | ○  |

\*1 Applicable only when using oil-based coolant.

\*2 Cannot be used in Europe.

\*3 Not compatible with oil-based coolant. If using oil-based coolant, select the HVS-300.

\* DMQP (DMG MORI Qualified Products)

● The information in this catalog is valid as of November 2020.

● Specifications, accessories, safety device and function are available upon request.

● Some options are not available in particular regions. Please contact our sales representative for details.

## Coolant

|                                      |                  |   |
|--------------------------------------|------------------|---|
|                                      | 125 mm (4.9 in.) | ○ |
| Mist collector interface (duct only) | 150 mm (5.9 in.) | ○ |
|                                      | 200 mm (7.9 in.) | ○ |

## Chip disposal

|  |  |    |
|--|--|----|
| Air blow for tool tip <sup>*1</sup>            | ●  |    |
| Additional air blow for tool tip <sup>*1</sup> | ○  |    |
| Air gun  |  | ○  |
|  | Right discharge, hinge type                    | ○  |
| Chip conveyor (external+internal)              | Hinge type+drum filter type                    | ☆  |
|  | Right discharge, scraper type+drum filter type | ○  |
|  | Magnet scraper type                            | ☆  |
| Chip bucket                                    | Interface (right discharge, hinge type)        | ○  |
| Air blow button for tool tip                   | 254 L (64.7 gal.)                              | ○* |

\*1 When the tool tip air blow is regularly used, air supply of more than 300 L/min (79.2 gpm) is separately required.

## Measurement

|                                       |   |   |
|---------------------------------------|---|---|
|                                       | Touch sensor (M)  | ○ |
| In-machine measuring system (table)   | Touch sensor + tool setter function (tool length only) (M)                      | ○ |
|                                       | Touch sensor (R)  | ○ |
|                                       | Touch sensor + tool setter function (tool length+diameter) (R)                  | ○ |
| In-machine measuring system (spindle) | Touch sensor (optical signal transmission type) (R)                             | ○ |
|                                       | Touch sensor (optical signal transmission type) + workpiece setter function (R) | ○ |
|                                       | Inductive type touch sensor (D)   | ○ |
|                                       | Inductive type touch sensor + workpiece setter function (D)                     | ○ |

● The specifications vary depending on the manufacturers.

(M): Made by Magnehause (R): Made by RENISHAW (D): Made by BIG DAISHOWA

## Improved accuracy

|  |   |  |
|--|---|--|
| Direct scale feedback for X, Y, Z-axis | ● |  |
| Oil chiller                            | ● |  |

## Automation

|  |  |   |
|--|--|---|
| Auto power off   |  | ● |
| EtherNet/IP interface  |  | ○ |
| Robot interface (EtherNet/IP) <EtherNet/IP interface is necessary required separating> |  | ○ |
| Automatic door   |  | ○ |

## Other

|  |   |    |
|--|---|----|
| • Full cover   |   |    |
| • Door interlock system (incl. mechanical lock): front door/setup station door (for APC) |   |    |
| • Door interlock system: electrical cabinet door   | - Low air pressure detecting switch                                       |    |
|  |   | ●  |
| • Residual pressure relief valve   |   |    |
| • Built-in worklight   | • T-nuts for table slots  |    |
| • Signal light 3 layers (LED type: red, yellow, green)                                   | • Leveling block  |    |
| Dry anchor   | • Hand tools  |    |
| High column  | 100 mm (3.9 in.)  | ○  |
|  | 200 mm (7.9 in.)  | ○  |
| Earth leakage breaker  |   | ○  |
| Danger sensing device interface  | (recommended when oil-based coolant is used or during unmanned operation) | ○  |
| Refrigerating type air dryer   |   | ○* |
| Tool wagon   |   | ○* |
| Tool cabinet   |   | ○* |
| Basic tooling kit  |   | ○* |
| Weekly timer   |   | ○  |
| Total counter  |   | ○  |
| Workpiece counter  |   | ○  |
| Manual pulse generator (separate type)   |   | ○  |
| Electrical cabinet chiller   |   | ☆  |

## Through-spindle coolant system (separate type)

<high-pressure coolant system is attached>

| Discharge pressure<br>MPa (psi) | Side through | Center through<br>(special retention knobs are required) |
|---------------------------------|--------------|--|
| 1.5 (217.5)                     | ○*           | ○*   |
| 3.5 (507.5)                     | ○*           | ○*   |
| 7.0 (1,015)                     | ○*           | ○*   |

**⚠** Flammable coolant such as oil-based coolant has a high risk of ignition, and will cause fire or machine breakage if ignited. If you have to use a flammable coolant for any reason, please consult with our sales representative.

# Numerical control unit specifications F31iA, F31iA5

## Controlled axes

|                                    |   |   |
|------------------------------------|---|---|
| Controlled axes                    | X, Y (V), Z (W), MG   | ● |
| Simultaneously controlled axes     | Positioning/linear interpolation/circular interpolation (3/3/2) | ● |
| Least input increment              | 0.0001 mm (0.00001 in.)   | ● |
| Least command increment            | 0.0001 mm (0.00001 in.)   | ● |
| Max. command value                 | ±9,999,999 mm (±9,999,999 in.)                                  | ● |
| Inch/metric conversion             | G20/G21   | ● |
| Machine lock                       |   | ● |
| Overtravel                         |   | ● |
| Door interlock                     |   | ● |
| Stroke limit check before movement |   | ○ |
| Mirror image                       |   | ● |
| Software damper                    | Abnormal load detection   | ● |
| Load monitor function C            | Soft key type   | ● |

## Operation

|                                     |  |   |
|-------------------------------------|--|---|
| Dry run                             |  | ● |
| Single block                        |  | ● |
| Jog feed                            | 0–5,000 mm/min (0–197.0 ipm)<br><20 steps>                             | ● |
| Manual reference position return    |  | ● |
| Manual pulse handle feed            | Manual pulse generator: 1 unit<br>×1, ×10, ×100, ×1,000<br>(per pulse) | ● |
| Sequence number comparison and stop |  | ○ |
| Program restart                     |  | ○ |
| Tool retract and recover            |  | ○ |
| Manual handle interruption          |  | ○ |

## Interpolation functions

|   |                                  |   |
|---|----------------------------------|---|
| Nano interpolation  |                                  | ● |
| Positioning   | G00                              | ● |
| Single direction positioning  |                                  | ● |
| Exact stop mode   | G61                              | ● |
| Tapping mode  | G63                              | ● |
| Cutting mode  | G64                              | ● |
| Exact stop  | G09                              | ● |
| Helical interpolation   | Optional 2 axes and other 1 axis | ● |
| Reference position return   | G28                              | ● |
| Reference position return check   | G27                              | ● |
| Return from reference position  | G29                              | ● |
| 2nd reference position return   | G30 (used for ATC)               | ● |
| Cylindrical interpolation   | G7.1                             | ○ |
| Involute interpolation  | G2.2/G3.2                        | ○ |
| Spiral/conical interpolation  |                                  | ○ |
| Smooth interpolation  |                                  | ○ |
| Nano smoothing  |                                  | ○ |
| External high-speed skip (installation of high-speed skip terminal)                   |                                  | ○ |
| 3rd, 4th reference position return  | Standard with APC specifications | ○ |
| Tool spindle Cs control (Cs contour control+normal direction control)                 |                                  | ○ |
| <consultation is required if orbit machining or hole machining needs to be performed> |                                  | ○ |
| NURBS interpolation   |                                  | ○ |

## Feed functions

|  |  |   |
|--|--|---|
| Rapid traverse rate  | Max. 20,000 mm/min (787.4 ipm)                                   | ● |
| Cutting feedrate   | 1–20,000 mm/min<br>(0.04–787.4 ipm)<br><with AI contour control> | ● |
| Rapid traverse override  | F0/1/10/25/100%  | ● |
| Feed per minute  |  | ● |
| Tangential speed constant control  |  | ● |
| Cutting feedrate clamp   |  | ● |
| Automatic acceleration/deceleration  | Linear type (rapid traverse)/<br>Linear type (cutting feed)      | ● |
| Rapid traverse bell-shaped acceleration/deceleration                                       |  | ● |
| Feedrate override  | 0–200% (10% increments)  | ● |
| Override cancel  |  | ● |
| Linear acceleration/deceleration after cutting feed interpolation                          |  | ● |
| AI contour control II+Fast data server<br>(1,000 look-ahead blocks, high-speed processing) |  | ● |
| One-digit F code feed  | F1 to F9   | ○ |
| Small-hole peck drilling cycle   |  | ○ |
| (the arbor with the overload torque detection function must be attached)                   |  | ○ |

## Program input

|   |  |   |
|---|--|---|
| Optional block skip                     |  | ● |
| Max. command value                      | ±9 digits<br>(R, I, J, K is ±12 digits)  | ● |
| Program number/<br>program name         | 4 digits<br>8 digits   | ● |
| Absolute/incremental programming        | G90/G91  | ● |
| Decimal point programming               | Decimal point programming or<br>electronic calculator type<br>decimal point programming<br>can be set using parameters | ● |
| Diameter/radius programming             |  | ● |
| Plane selection                         | G17, G18, G19  | ● |
| Rotary axis designation                 |  | ● |
| Rotary axis roll-over                   |  | ● |
| Coordinate system setting               | G92  | ● |
| Automatic coordinate system setting     |  | ● |
| Workpiece coordinate system             | G52–G59  | ● |
| Programmable data input                 | G10  | ● |
| Sub-program call                        | Up to 10 nestings  | ● |
| Custom macro                            |  | ● |
| Hole machining canned cycle             | G80–G89  | ● |
| F15 format                              |  | ● |
| Additional workpiece coordinate systems | 48 sets<br>300 sets  | ○ |
| Addition of optional block skip         | Soft key type (2–9)  | ○ |
| Optional chamfering/corner R            |  | ○ |
| Custom macro common variables           | 600 variables<br><in total><br>(#100 to #199, #500 to #999)  | ○ |
| Interruption type custom macro          |  | ○ |
| Automatic corner override               |  | ○ |
| Scaling                                 |  | ○ |
| Coordinate system rotation              |  | ○ |
| Programmable mirror image               |  | ○ |
| Graphic copy                            | G72.1/G72.2  | ○ |
| High-speed canned cycle* <MAPPS>        |  | ○ |
| MORI-POST advanced mode <MAPPS>         |  | ○ |
| DXF import function <MAPPS>             |  | ○ |
| Islands, open pockets* <MAPPS>          |  | ○ |
| Text engraving function <MAPPS>         |  | ○ |

\* For Europe, this specification is provided as standard.

●: Standard ○: Option

## Miscellaneous function/Spindle speed function

|  |                          |   |
|--|--------------------------|---|
| Miscellaneous function (M function)                      | 4-digit M code           | ● |
| Auxiliary function lock                                  |                          | ● |
| Multiple miscellaneous function commands                 | 3 commands               | ● |
| Spindle speed function (S function)                      | 5-digit S code           | ● |
| Spindle speed override                                   | 50–150% (10% increments) | ● |
| Spindle orientation                                      |                          | ● |
| Synchronous tapping                                      |                          | ● |
| Multiple M cords in single block (Multi M code function) |                          | ○ |
| <incl. M code group check>                               |                          | ○ |

## Tool function/Tool offset function

|  |   |   |
|--|---|---|
| Tool function (T function)   | 4-digit T code                                | ● |
| Number of tool offsets   | 32 sets<br>(length, diameter, wear, geometry) | ● |
| Tool offset memory C   | D/H code, geometry/wear                       | ● |
| Tool length offset   | G43, G44, G49                                 | ● |
| Cutter radius offset   | G40–G42                                       | ● |
| Tool length measurement  |   | ● |
| Number of tool offsets   | 64 sets                                       | ○ |
| <in total>   | 99 sets                                       | ○ |
|  | 200 sets                                      | ○ |
| (the number of selectable tool offsets depends on the tool storage capacity) | 400 sets                                      | ○ |
|  | 499 sets                                      | ○ |
|  | 999 sets                                      | ○ |
| Tool position offset   | G45–G48                                       | ○ |
| Rotary table dynamic fixture offset  |   | ○ |
| Tool life management   |   | ○ |
| Tool pair in total for tool life management                                  | 1,024 sets                                    | ○ |
| MAPPS tool management system*+ Tool IC (MAPPS software only)*2               |   | ○ |
| MAPPS tool management system*+ Tool ID (MAPPS software only)*2               |   | ○ |

\*1 Includes common variable #600 for custom macro.

\*2 Separate consultation is required if hardware and software are customized.

## Mechanical error compensation

|   |               |   |
|---|---------------|---|
| Backlash compensation                             | ±9,999 pulses | ● |
| Rapid traverse/cutting feed backlash compensation |               | ● |
| Stored pitch error compensation                   |               | ● |
| Interpolation type pitch error compensation       |               | ● |
| Z-axis drop prevention function                   |               | ● |

## Editing

|                             |                    |   |
|-----------------------------|--------------------|---|
| Expanded program editing    | Copy buffer: 10 KB | ● |
| Background editing          |                    | ● |
| Playback                    |                    | ○ |
| Machining time stamp        |                    | ○ |
| Undo/Redo function <MAPPS>  |                    | ● |
| Line number display <MAPPS> |                    | ● |

## Operation and display

|  |   |   |
|--|---|---|
| Status display                               |   | ● |
| Clock function                               |   | ● |
| Current position display                     |   | ● |
| Program comment display                      | 191 characters (4-digit O code),<br>187 characters (8-digit O code) | ● |
| Parameter setting display                    |   | ● |
| Alarm display                                |   | ● |
| Alarm history display                        |   | ● |
| Operator's message history display           |   | ● |
| Operation history display                    |   | ● |
| Running time display/Number of parts display |   | ● |
| Actual cutting feedrate display              |   | ● |
| Operating monitor screen                     | Load meter display etc.   | ● |
| Help function                                |   | ● |
| Self-diagnosis                               | Includes alarm display, I/O signal diagnosis, and ladder diagram    | ● |
| Operation panel: display section             | 19-inch TFT color LCD   | ● |
| Multi-counter display <MAPPS>                |   | ○ |

## I/O functions and units

|   |   |   |
|---|---|---|
| USB   | ●   |   |
| RS-232-C  | ○   |   |
| 10/100/1000BASE-T (access to user memory area by Ethernet function with MORI-SERVER Software) | ●   |   |
| Ethernet  |   |   |
| Fast data server  | 100BASE-TX/10BASE-T (automatic recognition) | ● |
| Memory card for data server   | CF card 1 GB + ATA adaptor                  | ● |
| 6 GB Program storage area (for MAPPS-DNC operation function, for data backup) <MAPPS>         | Files up to 10 MB in size can be edited     | ● |
| Memory card for MAPPS   | CF card (4 GB/2 GB/512 MB) + ATA adaptor    | ○ |
| DNC operation using external memory (front USB port)  |   | ○ |

I9502SB04

## ■ Program storage length and registerable programs

| Part program storage length<br><in total> | Registerable programs <in total> |                           |                           |
|---|----------------------------------|---------------------------|---------------------------|
|   | Without expansion<br>(programs)  | Expansion 1<br>(programs) | Expansion 2<br>(programs) |
| 128 KB <320 m (1,050 ft)>                 | 63                               | 250                       | —                         |
| 256 KB <640 m (2,100 ft)>                 |                                  | 500                       | —                         |
| 512 KB <1,280 m (4,200 ft)>               |                                  | 1,000                     | —                         |
| 1 MB <2,560 m (8,400 ft)>                 |                                  | 1,000                     | 2,000                     |
| 2 MB <5,120 m (16,800 ft)>                |                                  | 1,000                     | 4,000                     |
| 4 MB <10,240 m (33,600 ft)>               |                                  | 1,000                     | 4,000                     |
| 8 MB <20,480 m (67,200 ft)>               |                                  | 1,000                     | 4,000                     |

● The information in this catalog is valid as of November 2020.

# Machine specifications

|                             | Item   | NVD6000 DCG                     |  |
|-----------------------------|--|---------------------------------|--|
| Travel                      | X-axis travel <longitudinal movement of table>   | mm (in.)                        | 900 (35.4)   |
|                             | Y-axis travel <cross movement of saddle>   | mm (in.)                        | 600 (23.6)   |
|                             | Z-axis travel <vertical movement of spindle head>  | mm (in.)                        | 450 (17.7)   |
|                             | Distance from table surface to spindle gauge plane   | mm (in.)                        | 200–650 (7.9–25.6)   |
| Table                       | Distance from table surface to floor surface   | mm (in.)                        | 975 (38.4)   |
|                             | Table working surface  | mm (in.)                        | 1,000×600 (39.4×23.6)  |
|                             | Table loading capacity   | kg (lb.)                        | 800 (1,760)  |
|                             | Table surface configuration <T slots width×pitch×No. of T slots>   |                                 | 18 mm×100 mm×6 (0.7 in.×3.9 in.×6)   |
| Spindle                     | Max. spindle speed   | min <sup>-1</sup>               | 20,000 [12,000] [30,000]   |
|                             | Number of spindle speed ranges   |                                 | 1  |
|                             | Type of spindle taper hole   |                                 | No. 40 [HSK-F63*1]   |
|                             | Spindle bearing inner diameter   | mm (in.)                        | 70 (2.8) [60 (2.4)*1]  |
| Feedrate                    | Rapid traverse rate  | mm/min (ipm)                    | X, Y, Z: 20,000 (787.4)  |
|                             | Cutting feedrate   | mm/min (ipm)                    | 1–20,000 (0.04–787.4) <with AI contour control>  |
|                             | Jog feedrate   | mm/min (ipm)                    | 0–5,000 (0–197.0) <20 steps>   |
| ATC                         | Type of tool shank   |                                 | BT40* [HSK-A63] [DIN40] [CAT40] [Capto C6] [HSK-F63*1]   |
|                             | Type of retention knob   |                                 | DMG MORI 90° type  |
|                             | Tool storage capacity  |                                 | [45° (MAS-I)] [60° (MAS-II)] [HSK-A63] [HSK-F63*1]   |
|                             | Max. tool diameter   | With adjacent tools mm (in.)    | 80 (3.1) [70 (2.8) <40-, 60-tool>]   |
|                             |  | Without adjacent tools mm (in.) | 125 (4.9)  |
|                             | Max. tool length   | mm (in.)                        | 300 (11.8)   |
|                             | Max. tool mass   | kg (lb.)                        | 8 (17.6) [3 (6.6)*1]   |
|                             | Max. tool mass moment <from spindle gauge line>  | N·m (ft·lbf)                    | 11 (8.1)<br><a tool with a mass moment greater than the maximum tool mass moment may cause problems during ATC operations even if it satisfies other conditions> |
|                             | Method of tool selection   |                                 | Fixed address, shorter route access  |
|                             | Tool changing time   | Tool-to-tool                    | \$ 1.6   |
| Motor                       | ● The time differences are caused by the different conditions (travel distances, etc) for each standard. | <MAS>                           | \$ 4.3   |
|                             | ● Depending on the arrangement of tools in the magazine, the chip-to-chip time may be longer.            | Cut-to-cut<br>(chip-to-chip)    |  |
|                             |  | ISO 10791-9<br>JIS B6336-9      | \$ 20-tool <without ATC shutter>: 5.9 (max.)/4.2 (min.)  |
| Power sources<br><standard> | Spindle drive motor  | kW (HP)                         | 18.5/15/11 (24.7/20/15) <10 min/30 min/cont> {high-speed winding side}<br>[18.5/13 (24.7/17.3) <1 min/cont>*1]   |
|                             | Feed motor   | kW (HP)                         | X: 3 (4), Y, Z: 3 (4)×2  |
|                             | Coolant pump motor <50/60 Hz>  | kW (HP)                         | 0.6/1.02 (0.8/1.36)  |
| Tank capacity               | Electrical power supply <cont>   | 194056DD03 kVA                  | 31.5   |
|                             | Compressed air supply  | MPa (psi), L/min (gpm)          | 0.5 (72.5), 200 (52.8)<br>{when the tool tip air blow is regularly used, air supply of more than 300 L/min (79.2 gpm) is separately required} <ANR>              |
| Machine size                | Hydraulic oil tank capacity  | L (gal.)                        | 20 (5.3)   |
|                             | Coolant tank capacity  | L (gal.)                        | 345 (91.1) <without chip conveyor>   |
|                             | Machine height   | mm (in.)                        | 3,015 (118.7) [3,215 (126.6) <APC specifications>]   |
| Noise data                  | Floor space <width×depth>  | mm (in.)                        | 3,230×4,189 (127.2×164.9)  |
|                             | Mass of machine  | kg (lb.)                        | 10,160 (22,352)  |
|                             | A-weighted, time-average radiated sound  | dB                              | 63–78 (Measurement uncertainty is 4 dB)  |

[ ] Option ISO: International Organization for Standardization JIS: Japanese Industrial Standard

\*1 30,000 min<sup>-1</sup> specifications

\*2 When the two-face contact specification is selected, a two-face contact tool and other tools cannot be used together.

● Max. spindle speed: depending on restrictions imposed by the workpiece clamping device, fixture and tool used, it may not be possible to rotate at the maximum spindle speed.

● Tool storage capacity (40 tools, 60 tools): with the APC specifications, a dummy tool to be mounted on the spindle during APC operation will be included.

● ANR: ANR refers to a standard atmospheric state; i.e., temperature at 20 °C (68 °F), absolute pressure at 101.3 kPa (14.7 psi) and relative humidity at 65%.

● Power sources, machine size: the actual values may differ from those specified in the catalogue, depending on the optional features and peripheral equipment.

● Compressed air supply: please be sure to supply clean compressed air <air pressure: 0.7 MPa (101.5 psi), pressure dew point: 10 °C (50 °F) or below>.

● A criterion capacity to select a compressor is 90 L/min (23.8 gpm) per 0.75 kW (1 HP). However, this figure may differ depending on the type of compressors and options attached.

For details, please check the compressor specifications.

● Noise data: the measurement was performed at the front of the machine with a maximum spindle speed of 20,000 min<sup>-1</sup>. Please contact our sales representative for details.

● The information in this catalog is valid as of November 2020.





#### <Precautions for Machine Relocation>

This product is deemed regulated cargo when exported under the Japanese government's Foreign Exchange and Foreign Control Trade Law. Government authorization is required when exporting this product. The product shipped to you (the machine and accessory equipment) has been manufactured in accordance with the laws and standards that prevail in the relevant country or region. If it is exported, sold, or relocated to a destination in a country with different laws or standards, it may be subject to export restrictions of that country.

This product detects machine relocation. Once the machine is relocated, it is not operable unless its legitimate relocation is confirmed by DMG MORI or its distributor representative. If the restart of the machine can result in unauthorized export of cargo or technology or will violate legitimate export controls, DMG MORI and its distributor representative can refuse to restart the machine. In that case, DMG MORI and its distributor representative do not assume any loss due to the inability to operate the machine or any liability during the warranty period.

+ DCG, DDM, ORC, speedMASTER, powerMASTER, 5X-torqueMASTER, DMQP, DDRT, MATRIS, Robo2Go, Zero sludge coolant tank, ZEROCHIP, CELOS, ERGOline, SLIMline, COMPACTline, DMG MORI SMARTkey and names of each Technology Cycle are trademarks or registered trademarks of DMG MORI CO., LTD. in Japan, the USA and other countries.

- + If you have any questions regarding the content, please consult our sales representative.
- + The information in this catalog is valid as of January 2021. Designs and specifications are subject to changes without notice.
- + The machines shown in the catalog may differ from the actual machines. The location and the size of the nameplates may also differ from the actual machines, or the nameplates may not be attached to some machines.
- + DMG MORI is not responsible for differences between the information in the catalog and the actual machine.

#### DMG MORI CO., LTD.

Nagoya Head Office □ 2-35-16 Meieki, Nakamura-ku, Nagoya City, Aichi 450-0002, Japan Phone: +81-52-587-1811  
Tokyo Global Headquarters □ 2-3-23, Shiomi, Koto-ku, Tokyo 135-0052, Japan Phone: +81-3-6758-5900

Iga Campus □ 201 Midai, Iga City, Mie 519-1414, Japan Phone: +81-595-45-4151  
Nara Campus □ 362 Idono-cho, Yamato-Koriyama City, Nara 639-1183, Japan Phone: +81-743-53-1121

**DMG MORI**



NVD6000-ED04D  
D.2101.CDT.0000  
Created in Japan