

High-Precision, High-Speed Vertical Machining Center

NVX7000

# NVX7000



# Vertical Machining Center with Large Axis Travels, Suitable for Medium and Large Parts Machining

The NVX7000 has improved its rigidity by employing guideways 2.4 times wider than the conventional machine, and offers superior damping performance with the use of slideways in all axes.

The NVX7000 also achieves an 18% larger work envelope than the conventional model while reducing the floor space by 15%. Additionally, it has three spindle variations to meet a wide range of machining needs from high-speed machining to heavy-duty cutting.

The NVX7000, an ideal solution for various industries such as automobiles, industrial machines, aircraft and dies and molds, contributes to greater profits for our customers.





## CONTENTS

04 Main features	09 Improved workability/Maintenance	14 MAPPS IV
07 High precision	10 Peripheral equipment	18 Diagram
08 Machining ability	12 Environmental performance	20 Specifications

MAPPS: Mori Advanced Programming Production System  
● Figures in inches were converted from metric measurements.

# Main features

## Basic structure

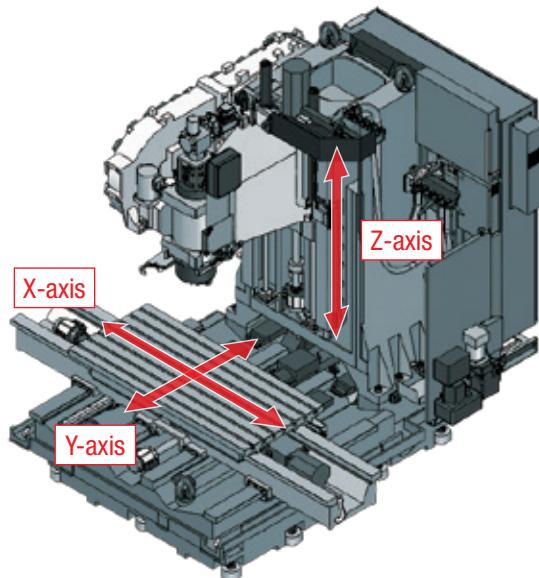
The NVX7000 offers improved vibration damping performance and dynamic rigidity by using slideways on all axes. The machine features a wide work envelope and high-speed machining, while maintaining high rigidity.

### Travel

X-axis **1,540** mm (60.6 in.)

Y-axis **760** mm (29.9 in.)

Z-axis **660** mm (26.0 in.)



### Rapid traverse rate

X/Y/Z-axis **20** m/min (65.6 fpm)

### Max. acceleration

Z-axis **0.71** G (6.96 m/s<sup>2</sup>)

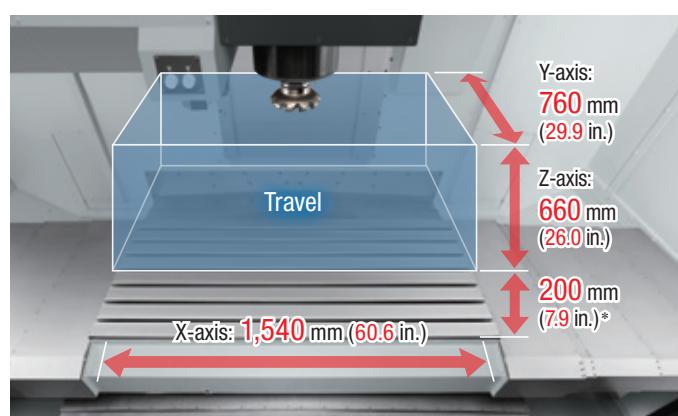
### Slideway width

X-axis **100** mm (3.9 in.)

Y-axis **120** mm (4.7 in.)

**Slideways are used for all axes**

## Working area



\* The area from the table surface to 200 mm (7.9 in.) above the surface is outside the stroke range.

### Table working surface

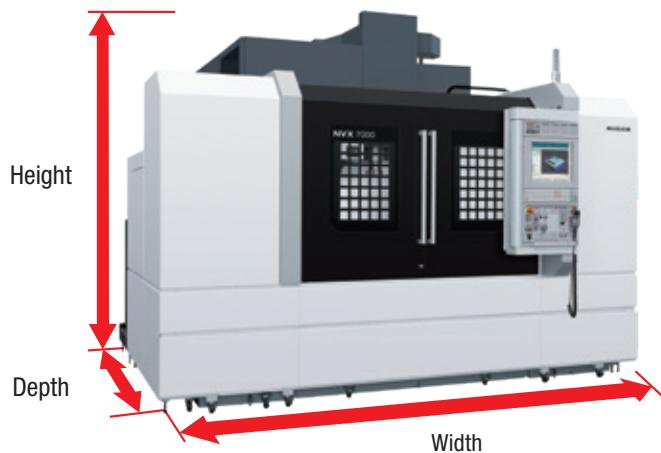
**1,700** mm × **760** mm (66.9 in. × 29.9 in.)

### Table loading capacity

**2,000** kg (4,400 lb.)

**Machine size**

&lt;Chip bucket front discharge specifications&gt;

**Machine height****3,167 mm (124.7 in.)****Machine width****4,280 mm (168.5 in.)****Machine depth****3,644 mm (143.5 in.)****Floor space****15.6 m<sup>2</sup> (167.9 ft<sup>2</sup>)****ATC•Tool magazine****Tool-to-tool****NVX7000/40 2.1 SEC.** <2.9 sec. (Tools weighing 8 kg (17.6 lb.) or more)>**NVX7000/50 2.5 SEC.** <3.1 sec. (Tools weighing 10 (22 lb.) kg or more)>**Tool storage capacity****NVX7000/40 30 tools 60 tools [OP]****NVX7000/50 30 tools 40 tools [OP] 60 tools [OP]****Max. tool diameter**

	<b>NVX7000 40</b>	<b>NVX7000 50</b>
With adjacent tools	<b>φ 95 mm (φ 3.7 in.)</b>	<b>φ 120 mm (φ 4.7 in.)</b>
Without adjacent tools	<b>φ 160 mm (φ 6.2 in.)   φ 125 mm (φ 4.9 in.) [OP]</b>	<b>φ 240 mm (φ 9.4 in.)</b>

● The maximum tool diameter is limited to 170 mm (6.7 in.) when using a No. 50 taper spindle at 10,000 min<sup>-1</sup> or higher.

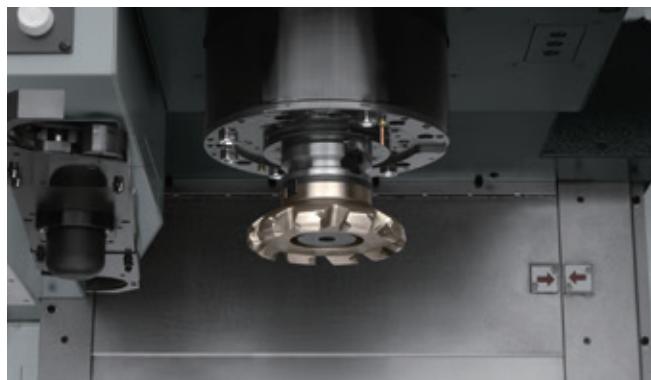
**Max. tool length****450 mm (17.7 in.)****Max. tool mass****NVX7000/40 12 kg (26.4 lb.)****NVX7000/50 20 kg (44.0 lb.)**

<b>40</b>	: No. 40 taper
<b>50</b>	: No. 50 taper

# Main features

## Spindle

We have prepared various spindle specifications to meet a wide range of machining needs, from high-speed machining to heavy-duty cutting. Adoption of DDS (Direct Drive Spindle) solves the noise problem of gear spindles and reduces spindle stop time during high/low speed switching.

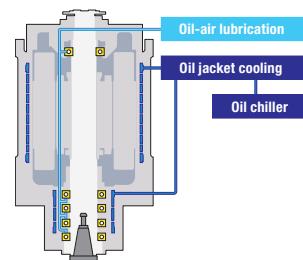


	NVX7000 40	NVX7000 50	
Max. spindle speed	14,000 min <sup>-1</sup> 20,000 min <sup>-1</sup> [OP]	10,000 min <sup>-1</sup> 15,000 min <sup>-1</sup> [OP]	6,000 min <sup>-1</sup> [OP]
Spindle bearing inner diameter	Φ 65 mm (Φ 2.6 in.)	Φ 100 mm (Φ 3.9 in.)	Φ 120 mm (Φ 4.7 in.)
Spindle acceleration/ deceleration time	1.50 sec. (0→14,000 min <sup>-1</sup> ) 2.57 sec. (0→20,000 min <sup>-1</sup> ) [OP] 1.19 sec. (14,000→0 min <sup>-1</sup> ) 2.27 sec. (20,000→0 min <sup>-1</sup> ) [OP]	3.33 sec. (0→10,000 min <sup>-1</sup> ) 3.09 sec. (10,000→0 min <sup>-1</sup> )	

## Spindle lubrication

### [Oil-air lubrication]

For bearing lubrication, we have adopted a oil-air lubrication system, which supplies minimum amount of lubricating oil and reduces heat generation caused by resistance to stirring. Air enables effective cooling, and the air purge which increases air pressure for bearings prevents foreign matter from getting inside.



### [Oil jacket cooling]

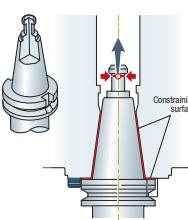
An oil jacket is placed around a spindle to suppress thermal displacement.

## Two-face contact specifications

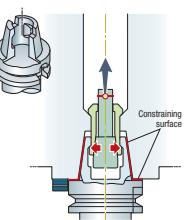
[OP]

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.

### BT specifications



### HSK specifications



- When the two-face contact specification is selected, two-face contact tools and non-two-face contact tools cannot be used together.
- When using spindle No. 40 taper at 15,000 min<sup>-1</sup> or higher, or spindle No. 50 taper at 10,000 min<sup>-1</sup> or higher, please use dual Contact tools.
- All spindles are made in-house to better meet our customer needs. For details, please consult with our sales representative.

# High-precision equipment

## Direct scale feedback

OP



The absolute magnetic linear scale (full closed-loop control) made by Magnescale is effective for high-precision positioning, and is available as an option.

### Magnescale

#### Resolution

**0.01 μm**

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

## 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.

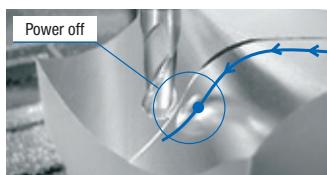


### When using oil-based coolant, please be sure to consult with our sales representative.

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

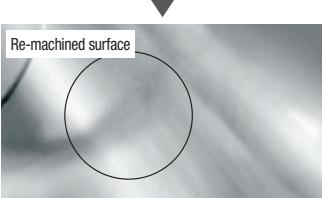
## Power failure Z-axis drop prevention function

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

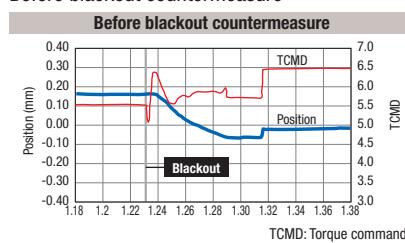


※ The Z-axis drop prevention function is not available in the following situations.

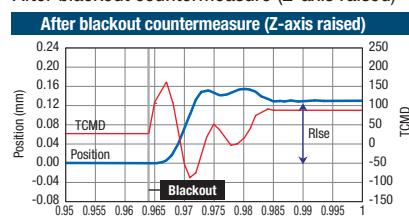
1. When a servo alarm for the feed shaft is set off.
2. When a power supply module alarm is set off.
3. When the communication alarm between the CNC and the amp has gone off.



#### Before blackout countermeasure



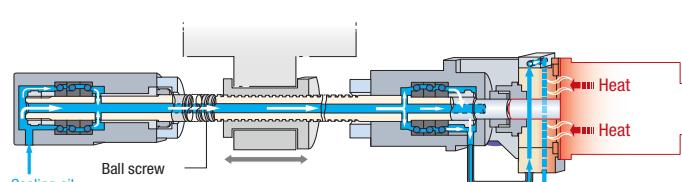
#### After blackout countermeasure (Z-axis raised)



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

## Ball screw core cooling

As well as ball screw core cooling and feed box cooling (Z-axis) to control thermal displacement, we have adopted a double-anchor support to offer highly rigid feed, making it possible to maintain high-precision machining.



# High-accuracy data

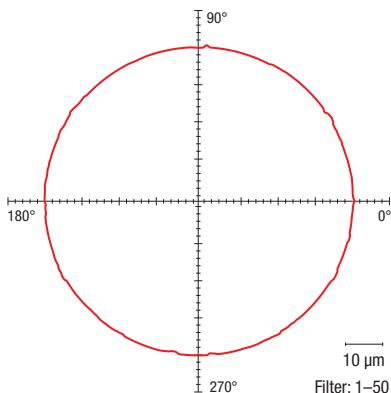
## Circularity

### NVX7000

Circularity (actual result)

**1.9 µm**

Material	A5056*
Tool	Carbide end mill(4 flutes)
Tool diameter	φ 30 mm (φ 1.2 in.)
Spindle speed	3,200 min <sup>-1</sup>
Feedrate	640 mm/min (25.2 ipm)



\*5056 (ANSI), NS6 (BS), AIMg5 (DIN), 5A05 (GB)

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

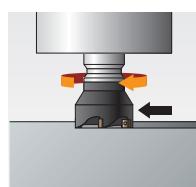
The results indicated in this catalog may not be obtained due to differences in cutting conditions and environmental conditions during measurement.

## Cutting test

### NVX7000 50

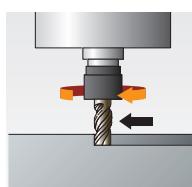
■ Material <JIS>: S50C\* (Carbon steel)

#### ■ Face mill



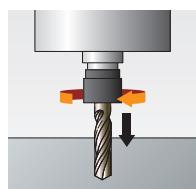
Material removal rate	<b>432 mL/min (26.4 in<sup>3</sup>./min)</b>
Tool diameter	φ 100 mm (φ 3.9 in.) <9 flutes>
Cutting speed	250 m/min (820.3 fpm)
Spindle speed	800 min <sup>-1</sup>
Feedrate	2,160 mm/min (85.0 ipm)
Width of cut	80 mm (3.1 in.)
Depth of cut	2.5 mm (0.10 in.)

#### ■ Roughing end mill



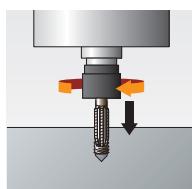
Material removal rate	<b>207 mL/min (12.6 in<sup>3</sup>./min)</b>
Tool diameter	φ 50 mm (φ 2.0 in.) <6 flutes>
Cutting speed	30 m/min (98.4 fpm)
Spindle speed	190 min <sup>-1</sup>
Feedrate	69 mm/min (2.7 ipm)
Width of cut	50 mm (2.0 in.)
Depth of cut	60 mm (2.4 in.)

#### ■ Drill



Material removal rate	<b>143 mL/min (8.7 in<sup>3</sup>./min)</b>
Tool diameter	φ 65 mm (φ 2.6 in.)
Cutting speed	25 m/min (82.0 fpm)
Spindle speed	122 min <sup>-1</sup>
Feedrate	43 mm/min (1.7 ipm)

#### ■ Tap



Tool	<b>M56×P5.5</b>
Cutting speed	10 m/min (32.8 fpm)
Spindle speed	56 min <sup>-1</sup>
Feedrate	319 mm/min (12.6 ipm)

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

● 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.

JIS: Japanese Industrial Standard

8 NVX7000

## Improved workability

### Easier setups

#### Distance from table

**325 mm (12.8 in.)**

#### Door opening width

**1,725 mm (67.9 in.)**

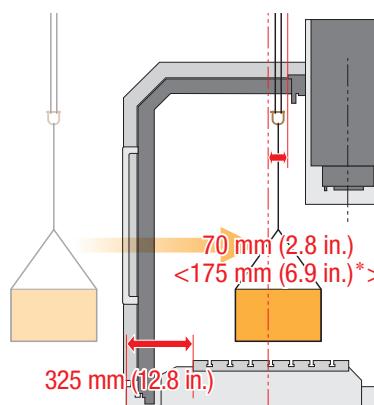


#### Height of table top surface

**1,000 mm (39.4 in.)**

When the table is moved closer to the operator side, the distance from the table center (Y-axis direction) to the front door rail is 70 mm (2.8 in.). This allows smooth setup changes with a crane. In the middle part, the distance from the table center to the front of the spindle head is 175 mm (6.9 in.), which was achieved by dividing the rail between the left and right sides. In addition, the distance from the front of the machine to the table is 325 mm (12.8 in.), offering excellent accessibility.

#### Smooth workpiece loading/unloading

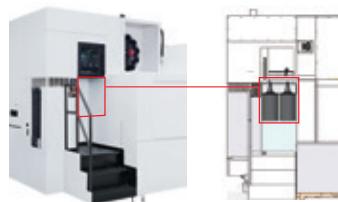


\* In the middle part, division of the rail allows 175 mm (6.9 in.) of the distance from the table center to the front of the spindle head.

#### Improved access to the table

### Table for temporary placement of tools

A table for temporary placement of tools is installed at the magazine steps to improve safety during heavy tool change.



### Tool Pusher

<NVX7000 50>

Tool Pusher that allows the operator to push out tools with a foot switch is mounted on the tool magazine as a standard equipment, improving ease of setup for tool change. Since tool change can be done with both hands, safety is also improved.

### Front steps

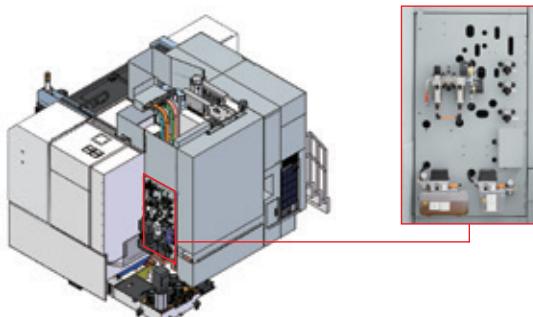
**OP**

It is possible to install the front steps with a height of 500 mm (19.7 in.) as option. The height of the operation panel can be chosen from 1,820 mm (71.7 in.) and 1,570 mm (61.8 in.).

## Maintenance

### Devices requiring maintenance

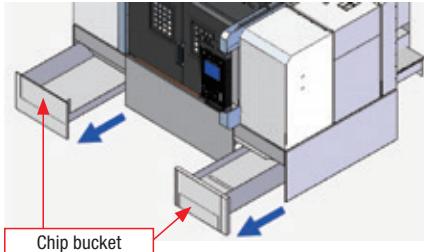
Devices which require frequent maintenance are located at the right rear of the machine for easier maintenance.



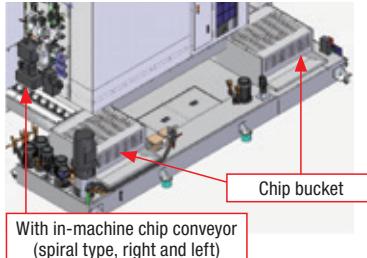
# Peripheral equipment

## Chip disposal

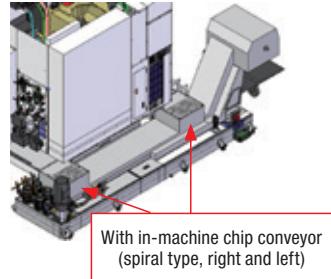
### ■ Chip bucket front discharge specifications



### ■ Chip bucket rear discharge specifications OP



### ■ External chip conveyor specifications OP



## External chip conveyor

OP

Specifications	Workpiece material and chip size			◎: Optimum    ○: Suitable    ×: Not suitable
	Steel		Cast iron	
	Long	Short	Short	
Hinge type+Scraper type+Drum filter type	○	○	○	○
Magnet scraper type	×	○	○	×

- Chip size guidelines  
Short: chips 50 mm (2.0 in.) or less in length,  
bundles of chips  $\phi 40$  mm (1.6 in.) or less  
Long: bigger than the above

- The options table below 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.
- We have prepared several options for different chip shapes and material. For details, please consult with our sales representative.

## Chip flushing coolant

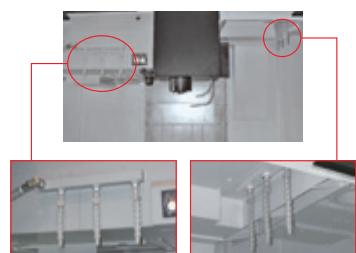
Chip flushing coolant equipped as standard prevents chip accumulation, improving ease of maintenance.



## Shower coolant

OP

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

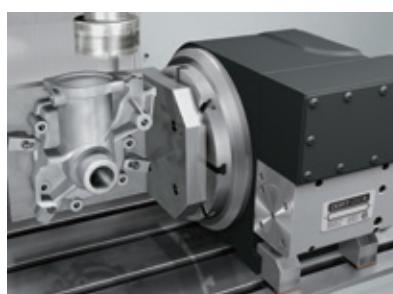


## Through-spindle coolant system (Unit on coolant tank) OP

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



## Rotary table DDRT Series

OP


It is possible to equip the machine with the high-speed, high-accuracy DDRT SERIES rotary table which incorporates the DDM (Direct Drive Motor). The high-efficiency machining using 4 axes and high-speed and high-precision indexing realize process integration. (For details on the machining ranges, please consult with our sales representative.)

- Equipped with DDM
- Zero backlash
- Achieves high-precision indexing
- Offers stable machining through powerful clamping
- Allows high-efficiency machining using 4 axes

### ■ Rotational speed of the table

Conventional machine **DDRT-260X**  
**17 min<sup>-1</sup>** ▶ **150 min<sup>-1</sup>**

Compared with conventional machine  
**9 times greater**

### ■ Positioning accuracy

Conventional machine **DDRT SERIES**  
**20 sec.** ▶ **5 sec.**

Compared with conventional machine  
**1/4**

■ For these models

Photo: DDRT-260X

4-axis: DDRT-200X, 260X, 300, 400

5-axis: 5AX-DDRT200X Consultation is required

- The cover protecting the DDRT cable / pipe joints is placed in the interference area on the table.  
So, when machining is performed without DDRT, extra care should be taken to prevent interference between fixtures and the cover.



### ■ Features of DDMs

- High-speed rotation
- Less maintenance
- Achieves high-precision indexing
- Longer product life

# Measurement

For the measuring devices, an automatic measuring function can be selected alone or in combination with manual measuring functions. Select the right devices for your use.

## Automatic measurement

OP

### In-machine measuring system (spindle)

- Automatic centering and automatic measurement are possible.
- Automatic measurement applications are included.



### In-machine measuring system (table)

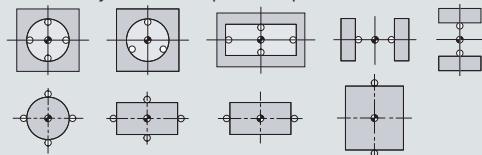
- Automatic tool length measurement and automatic breakage detection are possible.
- Automatic measurement applications are included.



## Automatic measurement applications

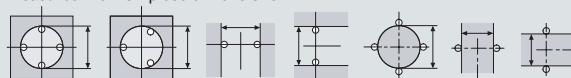
### Centering

Automatically sets the workpiece zero point.



### Measurement

Measures the workpiece dimensions.



## Automatic measurement applications

### Tool length measurement

Measures tool length automatically.



### Tool breakage detection

Prevent further damage with the automatic tool breakage detection.



## Automatic measurement



## Manual measurement functions

OP

Manual measurement applications can be added to the automatic measurement function.

## Workpiece measurement function

OP

### In-machine measuring system (spindle)

### Touch sensor (optical signal transmission type)



### Work setter function (manual measurement application)

\* The work setter and tool setter functions are not available with F0iMF.

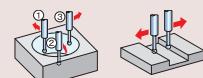
#### Reference plane measurement

The machining reference point can be calculated simply by applying the sensor from the Z, X and Y-axis directions.



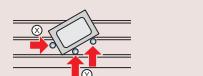
#### Reference hole measurement

Centering a boss, hole, groove or width can be done at any two or three points, simply by applying the sensor.



#### Coordinate rotation measurement

Machining can be done without changing the program even if the workpiece is attached crookedly, simply by performing this operation within the X-axis and Y-axis plane.



## Tool measurement function

OP

### In-machine measuring system (table)

### Touch sensor (tool length)



### Tool setter function (manual measurement application)

\* The work setter and tool setter functions are not available with F0iMF.

#### Tool length measurement

The tool length value can be registered automatically to the designated tool offset number.



### In-machine measuring system (table)

### Touch sensor (tool length/tool diameter)



### Tool setter function (manual measurement application)

\* The work setter and tool setter functions are not available with F0iMF.

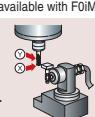
#### Tool length measurement

The tool length value can be registered automatically to the designated tool offset number.



#### Tool diameter measurement

The tool diameter value can be registered automatically to the designated tool offset number.



## Transfer systems

### 2-station shuttle-type APC

OP

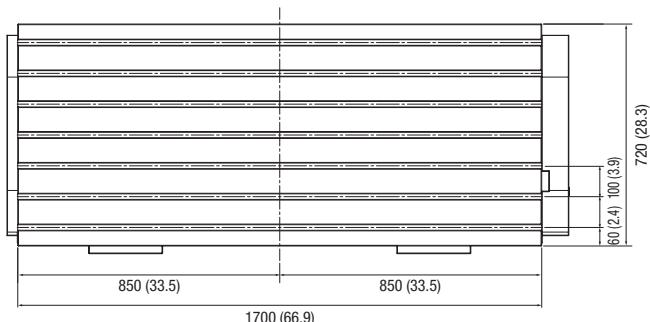
#### pallet size

**1,700 × 720 mm (66.9 × 28.3 in.)**

#### Pallet change time

**45 sec.**

- Round trip time between the center position of the X- and Y-axis travels inside the machine and the A pallet (or B pallet) position

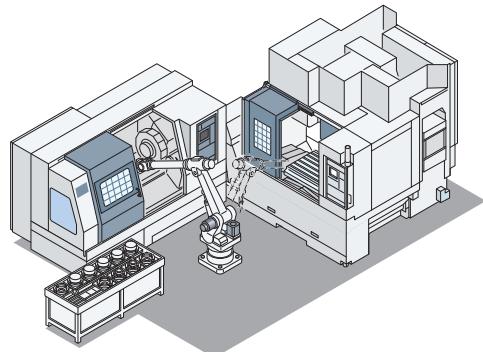


### Workpiece transfer robot

OP

Consultation is required

Introduction of the robot enables high-efficiency transfer of workpieces for better productivity.



• The actual colors and shapes may differ from those in the photo and illustration.

## Reduction in environmental burden

### Eco-friendly design

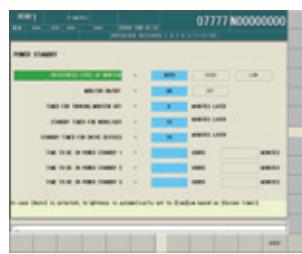
#### Reduction of oil consumption

##### Oil-bath ATC

The ATC unit adopts the oil bath method. This reduces the oil consumption to zero.



#### Power-saving function



Power-saving settings screen

##### Automatic sleep function

If the keyboard is not touched after a certain amount of time and NC operation is not being performed, power is cut off to the servo motor, the spindle, the coolant pump and the chip conveyor, thereby saving energy.

##### Automatic machine light function

If the operation panel is not touched for a certain amount of time, the interior light automatically turns off. This saves energy and lengthens the life of the machine lights.

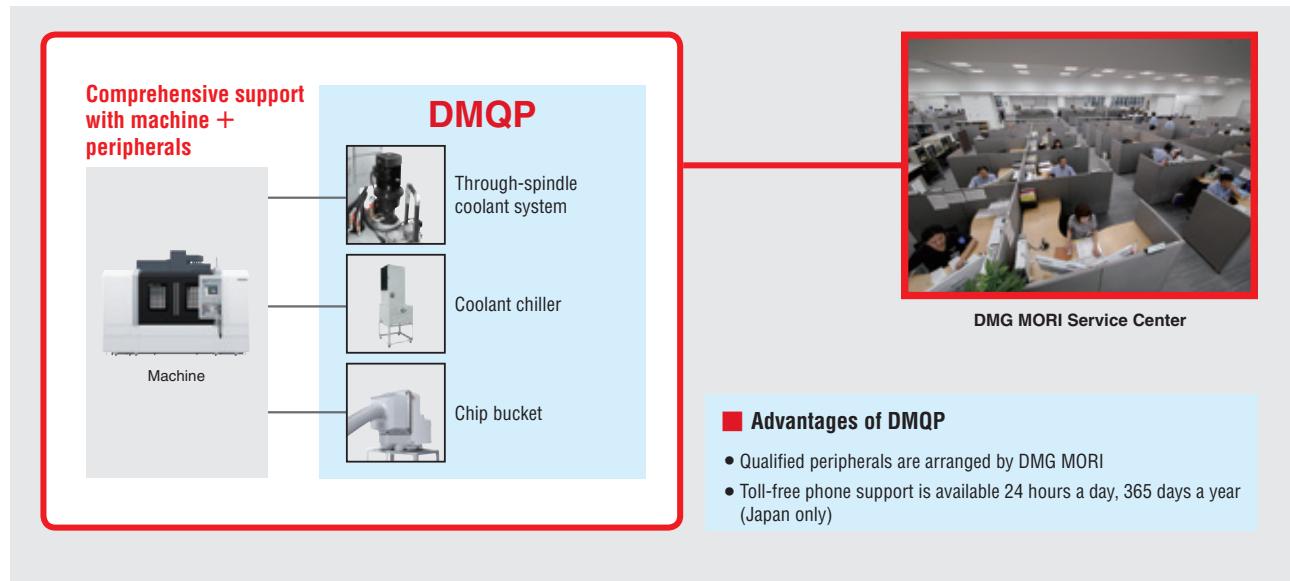
# DMQP (DMG MORI Qualified Products) OP

## Selected peripherals with superior quality, performance and maintainability.

The DMQP program is designed to certify peripherals that meet DMG MORI standards in quality, performance and maintainability. DMQP provides customers with even greater peace of mind.

### Comprehensive support with machine + peripherals

DMG MORI provides comprehensive support, from proposal to delivery and maintenance, for high-quality peripherals that offer superior performance and maintainability.



### Examples of qualified products (NVX7000)

#### Through-spindle coolant system (unit on coolant tank)

Coolant is supplied to the tool tip through the center of the tool and spindle.

#### Mist collector

It removes mist, smoke, etc. generated inside the machine.

#### Chip bucket

Chips discharged from the chip conveyor are collected into this bucket.

#### Refrigerating type air dryer

This unit removes moisture contained in the compressed air supplied by the compressor, preventing moisture-related problems in the pneumatic equipment.

#### Tool wagon

#### Tool cabinet

#### Basic tooling kit

# MAPPS IV

High-Performance Operating System  
for Machining Centers



• 19-inch operation panel

High-performance operating 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
- ▶ New 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](#)

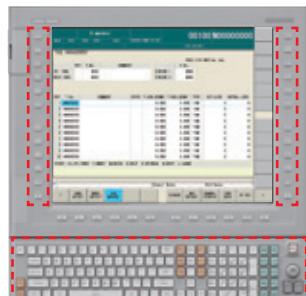
## Outstanding operability

### 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.



## Advanced hardware

### Reduction of drawing time\*

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>

\* The reduction rate differs depending on the program.

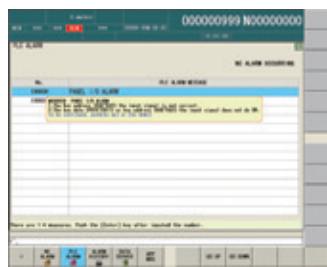
## Main specifications

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

## Improved ease of maintenance

### Alarm help function

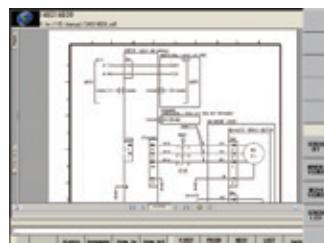
When an alarm occurs, MAPPS identifies the cause of the trouble and provides solutions.



## 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

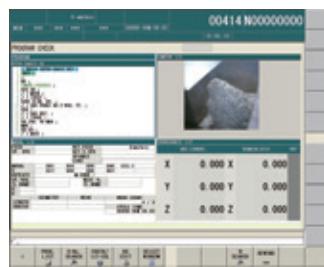
- PDF
- TXT (Editable)
- Any file that can be displayed with Internet Explorer is available

## 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.



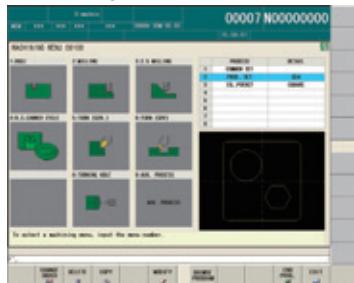
### Examples of camera locations

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

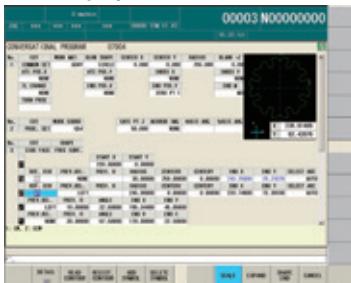
## Conversational automatic programming

This function allows users to create programs simply by following the guidance on the screen.  
Much of the programming process has been simplified due to the minimal key entry required for even the most complex shapes.

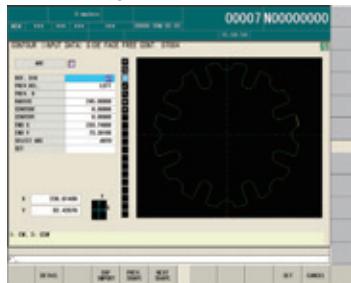
### Machining menu



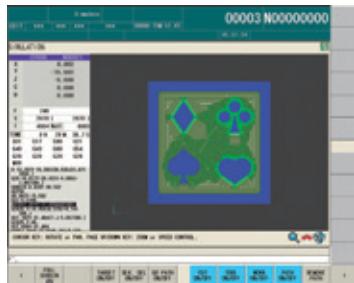
### List display function



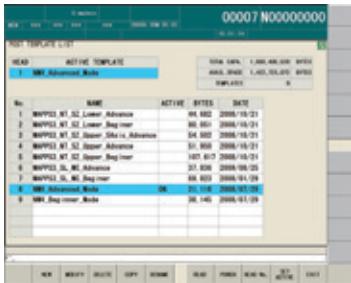
### Contour input



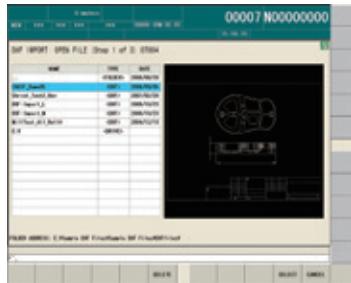
### Islands, open pockets **OP**



### MORI-POST advanced mode **OP**



### DXF import function **OP**



## Application System

### MORI Automatic Programming System for Machining Center

## MORI-APM **OP**

MORI-APM are application systems which let you create machining programs easily on your PC.

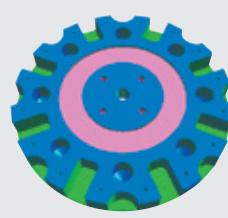


### 1. Simple programming



**[Conversational automatic programming]**  
Easy operation by simply inputting product shapes according to the screen guidance.

### 2. Reduce programming time



**[Supporting complicated programming]**  
Simply enter the machining shape using conversational automatic programming and the machine automatically selects the necessary tools and cutting conditions.

### 3. Save costs



**[Compatibility with the MAPPS conversational function]**

Prepared conversational programs can be converted into NC programs with MAPPS. Cutting conditions can also be changed on MAPPS.

- The photo shown may differ from actual machine.
- Information about the screen is current as of October 2017.

# MORI-NETWORK

Network Application Systems  
MORI-NET, MORI-SERVER, MORI-MONITOR

## For shorter total production time for all our customers

### DMG MORI's software Line-up

This network system application achieves fast information sharing and increased production efficiency.

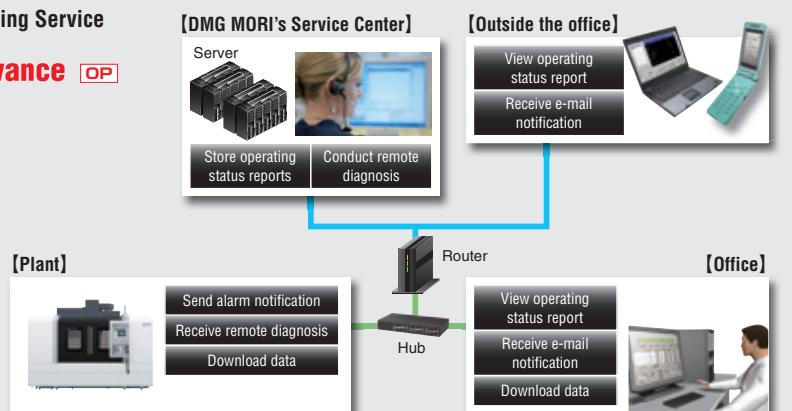
[Internet]  
 [LAN]

#### Remote Maintenance/Machine Operation Monitoring Service

### MORI-NET Global Edition Advance

#### ■ Features

- Remote maintenance service by DMG MORI Service Center
- Internet-based, high speed (max. 1 Gbps), large capacity network
- No server installation is required — reduction in initial cost
- Download various data from the server located at DMG MORI

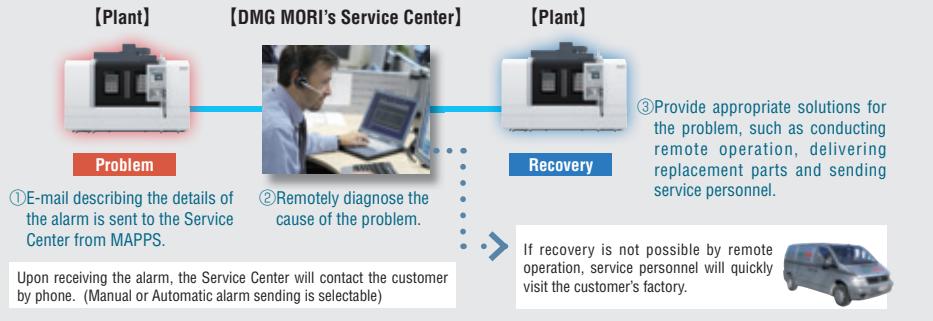


#### ■ Remote alarm support

When an alarm goes off, an alarm notification will be sent to the DMG MORI Service Center simply by pressing the "Send e-mail" button on MAPPS.

DMG MORI service personnel will remotely diagnose the cause of the problem, and quickly provide solutions for machine recovery.

- This service may not be available in some areas. Please contact our sales representative for details.

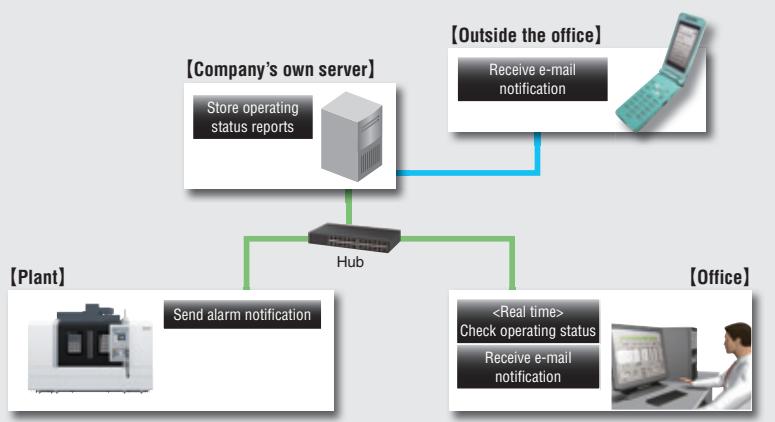


#### Machine Operation Monitoring System

### MORI-NET LAN Edition

#### ■ Features

- Intra-corporate network system
- Up to 30 machines can be connected with one server
- The operating status of your machines can be centrally managed in real time



#### Application for Data Transmission

### MORI-SERVER [Standard features]

This enables high-speed transfer of programming data between your office computer and machine, reducing the lead time of pre-machining processes.

#### MAPPs Screen Remote Control and Browsing Application

### MORI-MONITOR

This is an application which allows you to remotely operate and view the MAPPs screens from your office computer.

# ACT Advanced Communication Technology

Advanced  
Communication  
Technology

## Advanced Communication Technology (ACT) connects machine tool and peripheral devices

DMG MORI's new proposal, ACT, is designed to strengthen connections between machine tools and peripheral equipment by standardizing communication and software of the entire system. With ACT, standardization of interfaces of peripherals, simplified wiring, and labor saving can be achieved.

— [Internet]  
— [LAN]

### Industrial Network for Peripheral Equipment Control

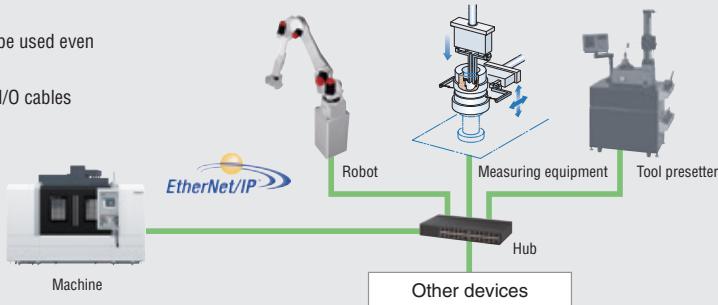
## MAPPs EtherNet/IP I/F OP

This industrial network using the standard Ethernet (TCP/IP) offers high speed and reliable connection. Simple Plug and Play connections, which are made available just by connecting to the hub through MAPPs, enable you to build a system easily. The use of standard cables also helps to reduce costs.

### ■ Features

- Connections between a machine and peripheral equipment become easy because standard LAN cables are used
- Thanks to increased versatility, your peripheral equipment can be used even when the machine tools are replaced by new ones
- Reliability is significantly increased by reducing the number of I/O cables

- Easy system construction
- Connection with existing devices
- Inexpensive devices



### Communication Interface for Monitoring Machine Operation

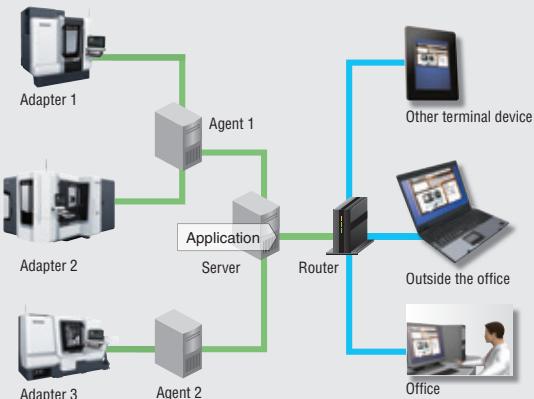
## MAPPs MTConnect I/F

MTConnect, which was introduced by the Association for Manufacturing Technology (AMT) in 2008, is a new XML (Extensible Markup Language) based communication protocol that offers an open interface. This interface allows you to build a system to monitor the operating status of your machines.

### ■ Features

- Open communication interface allows you to access to your company's system
- This makes it possible for you to build a system to monitor the operating status of your machines via the Internet

### ■ System examples



### ■ Application examples



Your machines are displayed all at once, allowing you to quickly call up the machine you wish to check.



Operating status can be checked in real time.



You can check the operating history on the Gantt chart screen.

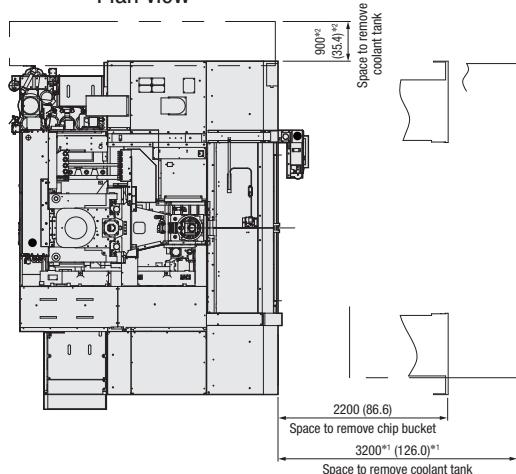
- A server and application must be prepared by the customer.
- For introduction of MTConnect, separate consultation is required.

# General view

mm (in.)

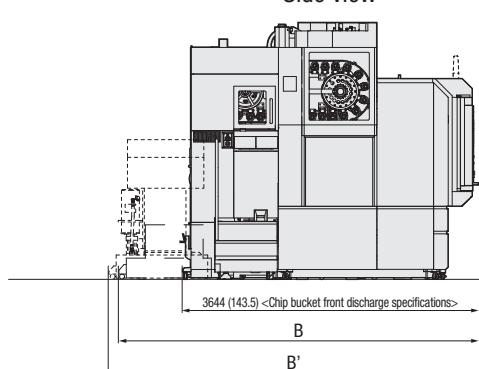
## NVX7000

### Plan view

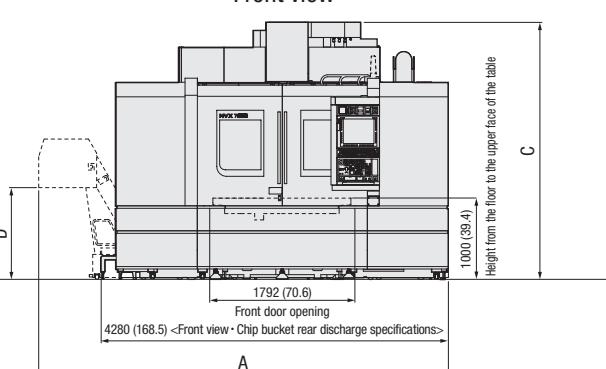


- \*1 Space to remove coolant tank as a single unit  
(It is necessary to remove all coolant pump in advance)
- \*2 Space to remove coolant tank by dividing it into three parts  
(It is not necessary to remove coolant pump)

### Side view



### Front view



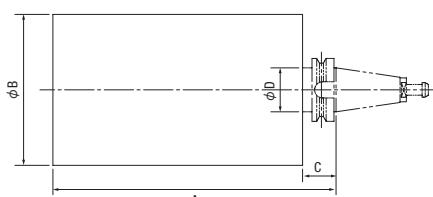
Q55225A08

Machine width				Machine depth		Machine height				Discharge height of chip conveyor	
A		B	B'			C				D	
[External chip conveyor specifications]				[Chip bucket rear discharge specifications]	[External chip conveyor specifications]	14,000 min <sup>-1</sup> (No. 40 taper) [20,000 min <sup>-1</sup> (No. 40 taper)] 10,000 min <sup>-1</sup> (No. 50 taper) [15,000 min <sup>-1</sup> (No. 50 taper)]		[6,000 min <sup>-1</sup> specification]		[External chip conveyor specifications]	
Hinge type	Magnet scraper type	Standard	EN Standards	Standard	EN Standards	Standard	Raised column specification	Standard	Raised column specification	Standard	EN Standards
5,057 (199.1)	5,308 (209.0)	4,727 (186.1)	5,012 (197.3)	4,432 (174.5)	4,512 (177.6)	3,167 (124.7) <at shipment: 3,157 (124.3)>	3,367 (132.6) <at shipment: 3,357 (132.2)>	3,256 (128.2) <at shipment: 3,246 (127.8)>	3,456 (136.1) <at shipment: 3,446 (135.7)>	1,124 (44.3)	1,075 (42.3)

[ ] Option

# Tool capacity diagram

## NVX7000



Shank size	No.40			No.50		
Standards	MAS	CAT	DIN	MAS	CAT	DIN
A Max. tool length mm (in.)				450 (17.7)		
B Max. tool diameter (With adjacent tools) mm (in.)		φ 95 (φ 3.7)			φ 120 (φ 4.7)	
B Max. tool diameter (Without adjacent tools) mm (in.)		14,000 min <sup>-1</sup> : φ 160 (φ 6.2) [20,000 min <sup>-1</sup> : φ 125 (φ 4.9)]			φ 240 (φ 9.4)	
C Standard size mm (in.)	32 (1.2)	34.925 (1.375)	35 (1.3)	38 (1.4)	34.925 (1.375)	35 (1.3)
D Standard size mm (in.)	63 (2.4)	44.45 (1.75)	50 (1.9)	100 (3.9)	69.85 (2.75)	80 (3.1)
Max. tool mass kg (lb.)	12 (26.4)			20 (44.0)		

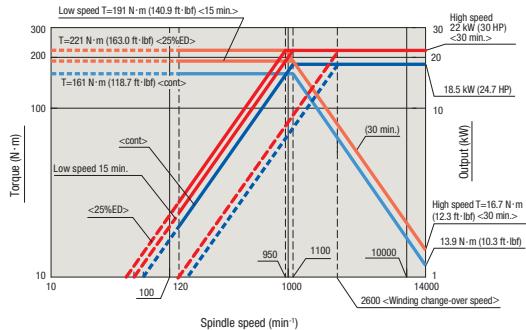
Q55369A02

## Spindle torque/output-rotation speed diagram

**NVX7000 40**

## [Standard]

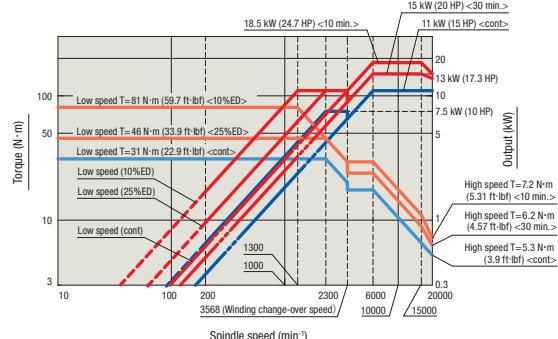
- Max. spindle speed: 14,000 min<sup>-1</sup>
  - Spindle drive motor: 22/22/18.5 kW (30/30/24.7 HP) <15 min./30 min./cont>
  - Max. spindle torque: 221 N·m (163.0 ft·lb) <25%ED>



Q43323A01



- 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>
  - Max. spindle torque: 81 N·m (59.7 ft-lbf) <10%ED>

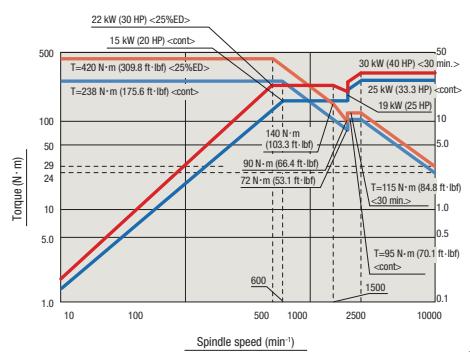


Q43322A03

NVX7000 50

[Standard]

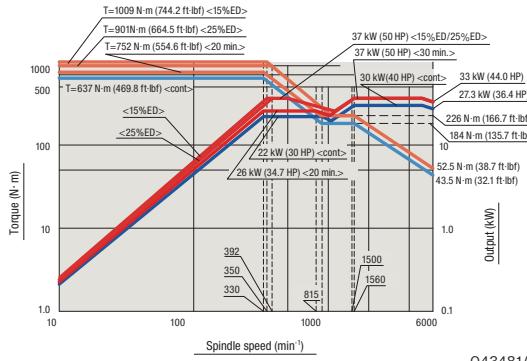
- Max. spindle speed: 10,000 min<sup>-1</sup>
  - Spindle drive motor: 30/25 kW (40/33.3 HP) <30 min./cont>
  - Max. spindle torque: 420 N·m (309.8 ft·lbf) <25%ED>



Q43480A01



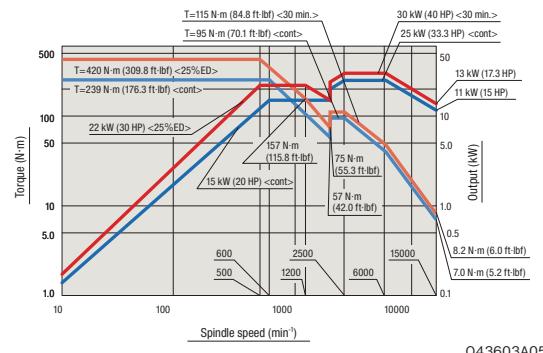
- Max. spindle speed: 6,000 min<sup>-1</sup>
  - Spindle drive motor: 37/30 kW (50/40 HP) <30 min./cont>
  - Max. spindle torque: 1,009 N·m (744.2 ft-lbf) <15%ED>



Q43481A01

[High-speed **OP** ]

- Max. spindle speed: 15,000 min<sup>1</sup>
  - Spindle drive motor: 30/25 kW (40/33.3 HP) <30 min./cont>
  - Max. spindle torque: 420 N·m (309.8 ft-lbf) <25%ED>



Q43603A05

# Standard & optional features

● : Standard features ○ : Option ☆ : Consultation is required — : Not applicable

	NVX7000 50	NVX7000 40
<b>Spindle</b>		
Type of tool shank	BT40/DIN40/CAT40/ HSK-A63	Dual Contact
Type of retention knob	BT50/DIN50/CAT50/ HSK-A100	Dual Contact
14,000 min <sup>1</sup> : 22/18.5 kW (30/24.7 HP) <30 min./cont>	●	—
20,000 min <sup>1</sup> : 15/11 kW (20/15 HP) <30 min./cont> <sup>*1</sup>	○	—
10,000 min <sup>1</sup> : 30/25 kW (40/33.3 HP) <30 min./cont> <sup>*1</sup>	—	●
6,000 min <sup>1</sup> : 37/30 kW (50/40 HP) <30 min./cont> {High-torque}	—	○
15,000 min <sup>1</sup> : 30/25 kW (40/33.3 HP) <30 min./cont> {High-speed} <sup>*1</sup>	—	○
Positioning block (Angle head)	○	○

\*1 When using spindle No. 40 taper at 15,000 min<sup>1</sup> or higher, or spindle No. 50 taper at 10,000 min<sup>1</sup> or higher, please use dual Contact tools.

## Table

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

## Pallet/APC

2-station shuttle-type APC	T-slot pallet	○	○
	Tapped pallet	○	○

## Fixture/Steady Rest

Additional axis interface (1 axis)	○	○
Additional axis (DDRT) specifications	DDRT-200X/DDRT-260X/DDRT-300/DDRT-400	○
	5AX-DDRT200X	☆
Indexable table interface	○	○

## Magazine

Tool storage capacity	30 tools (chain-type)	●	●
	40 tools (chain-type)	—	○
	60 tools (chain-type)	○	○

## Coolant

Coolant system (Spindle)	635/1,040 W (50/60 Hz)	●	●
Additional coolant system for tool tip	○	○	
Chip flushing coolant	730/1,210 W (50/60 Hz)	●	●
Oil mist	○	○	
Semi dry unit	Tanaka Import	○	○
	☆	☆	
Coolant gun	○	○	
Shower coolant	○	○	
Through-spindle air specifications (only for air)	○	○	
Oil shot system	○	○	
Oil-hole drill coolant system	○	○	
Through-spindle coolant system (unit on coolant tank)	Center through: 1.5/7.0 MPa (217.5/1,015.0 psi) Side through: 1.5/7.0 MPa (217.5/1,015.0 psi)	○*	○*
Through-spindle coolant system (unit on coolant tank) Interface	Center through: 1.5/7.0 MPa (217.5/1,015.0 psi) Side through: 1.5/7.0 MPa (217.5/1,015.0 psi)	○	○
Through-spindle coolant system (Separate type) Interface	Center through: 1.5/7.0 MPa (217.5/1,015.0 psi) Side through: 1.5/7.0 MPa (217.5/1,015.0 psi) Center through: 7.0 MPa (1,015.0 psi) <KNOLL> Side through: 7.0 MPa (1,015.0 psi) <KNOLL>	○	○
Coolant chiller (Separate type)	Optional when using water-soluble coolant Compulsory when using oil-based coolant (For details, please consult with our sales representative)	○	○
Mist collector	HVS-300 <sup>*2</sup>	○*	○*
Mist collector interface (duct only)	φ 150 mm (φ 5.9 in.) φ 200 mm (φ 7.9 in.)	○	○
Mist collector interface (Electric parts only)	○	○	
Oil skimmer <sup>*3</sup>	○	○	

\*2 Not available in Europe

\*3 It is recommended to use the oil skimmer when water-soluble coolant is used.

Due to the structure of the slideways, lubricating oil may mix with coolant, causing deterioration of coolant.

## NVX7000 50

## NVX7000 40

## NVX7000 50

## NVX7000 40

### Chip disposal

Air blow (tool tip) <sup>*4</sup>	●	●
Air blow button	●	●
Chip bucket (without chip conveyor)	Front discharge Rear discharge <sup>*5</sup>	● ●
Additional air blow for tool tip	○ ○	
Air gun	○ ○	
Chip conveyor <sup>*5</sup>	Rear discharge, Hinge type + Scraper type + Drum filter type	○ ○
Chip conveyor interface <sup>*5</sup>	Rear discharge, Hinge type + Scraper type + Drum filter type	○ ○
Chip bucket (for chip conveyor)	Rear discharge, Magnet scraper type	○ ○

\*4 When the tool tip air blow is regularly used, air supply of more than 300 L/min (79.2 gpm) is separately required.

\*5 In-machine chip conveyor (spiral type) included.

### Measurement

In-machine measuring system (Table)	Touch sensor (Magnescale)/(Renishaw)	○	○
In-machine measuring system (Table) +With tool setter function (tool length only) <sup>*6</sup>	Touch sensor (Magnescale)	○	○
In-machine measuring system (Table) +With tool setter function (tool length + tool diameter) <sup>*6</sup>	Touch sensor (Renishaw)	○	○
In-machine measuring system (Spindle)	Touch sensor <optical signal transmission type> (Renishaw)	○	○
In-machine measuring system (Spindle) +Workpiece setter function <sup>*6</sup>	Touch sensor <optical signal transmission type> (Renishaw)	○	○

\*6 The work setter and tool setter functions are not available with F0iMF.

### Improved accuracy

Direct scale feedback	X, Y, Z-axis	○	○
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### Automation

Automatic power off	●	●	
Manual pulse generator (Separate type)	●	●	
Automatic door	○	○	
Robot interface (EtherNet I/P)	An EtherNet IP interface is required separately.	○	○

### Other

Full cover	●	●	
Impact resistant viewing window	●	●	
Door interlock system	●	●	
Low air pressure detecting switch	●	●	
Built-in worklight	●	●	
ATC shutter	●	●	
Dry anchor	○	○	
Raised column	200 mm (7.9 in.)	○	○
Partial shipment of covers	○	○	
Earth leakage breaker	○	○	
Danger sensing device interface (Recommended when oil-based coolant is used or during unmanned operation.)	○	○	
Signal light	3 layers (Red, Yellow, Green)	○	○
Additional in-machine light	○	○	
Refrigerating type air dryer	○*	○*	
Tool wagon	○*	○*	
Tool cabinet	○*	○*	
Basic tool kit	○*	○*	
Front steps	○	○	
Weekly timer	○	○	
Total counter	○	○	
Workpiece counter	○	○	
External M-code	5 10	○	○
Electrical cabinet chiller	○	○	

\* DMQP (DMG MORI Qualified Products)

● DMQP:Please see Page 13 for details.

● The information in this catalog is valid as of March 2021.

● 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.

 A flammable coolant or oil-based coolant may ignite and cause fire or machine breakage. If you have to use a flammable coolant for any reason, please consult with our sales representative.

# Numerical control unit specifications F0iMF, F31iB, F31iB5

●: Standard ○: Option —: Not applicable

	F31iB5	F31iB	F0iMF
Controlled axes	X, Y, Z	● ● ●	
Least input increment	0.001 mm (0.0001 in.)	● ● ●	
Max. command value	±99,999.999 mm (±9,999.999 in.)	● ● ●	
Software damper	Abnormal load detection	● ● ●	
Simultaneously controllable axes	4 axes	● ● —	
	5 axes	— — ●	
Programming resolution multiplied by 1/10	0.0001 mm (0.00001 in.)	○ ○ ○	
Stroke limit check before movement	● ○ ○		
Load monitor function C	Soft key type	○ ● ●	

Operation			
Sequence number comparison and stop	● ○ ○		
Manual handle interruption	○ ○ ○		
Program restart	○ ○ ○		
Tool retract and recover	○ ○ ○		

Interpolation functions			
Single direction positioning	G60	● ● ●	
	G02, G03		
Helical interpolation	Circular interpolation + Up to 2 axes linear interpolation	● ● ●	
Thread cutting	G33	● — —	
Thread cutting, synchronous cutting /Feed per revolution	G33	— ○ ○	
Cylindrical interpolation	G07.1	● ○ ○	
Involute interpolation	G02.2, G03.2	— ○ ○	
Spiral/conical interpolation	G02, G03	— ○ ○	
Nano smoothing	G05.1	○ ● ●	
Nano smoothing 2	— — ●		
Smooth interpolation	— ○ ○		
NURBS interpolation	— ○ ○		
Polar coordinate interpolation	G12.1, G13.1	— ○ ○	
Polar coordinate command	G15, G16	● ○ ○	
External high-speed skip (installation of high-speed skip terminal)	— ○ ○		
Tool spindle Cs control (Cs contour control+normal direction control) <Consultation is required if orbit machining or hole machining needs to be performed>	— ○ ○		

Feed functions			
Feedrate override	0 – 200% (10% increments)	● ● ●	
Override cancel	● ● ●		
Tangential speed constant control	— ● ●		
AI contour control I <sup>*1</sup>	G05.1	○ ● ●	
AI contour control II <sup>*2</sup>	— ○ ○		
Small-hole peck drilling cycle (the arbor with the overload torque detection function must be attached)	— ○ ○		

\*1 Anzahl der Look-Ahead Blöcke: 30  
 \*2 F0iMF: Maximum number of look-ahead blocks: 400  
 F31iB, F31iB5 Maximum number of look-ahead blocks: 1,000

Program input			
Program number	4 digits	● ● ●	
	8 digits	○ ○ ○	
Sequence number	5 digits N code	● ● ●	
Absolute/incremental programming	G90/G91	● ● ●	
Decimal point input	Decimal point programming or electronic calculator type decimal point programming can be set using parameters.	● ● ●	
Plane selection	G17, G18, G19	● ● ●	
Local coordinate system setting	G52	● ● ●	
Machine coordinate system selection	G53	● ● ●	
Programmable data input	G10	● ● ●	

● The information in this catalog is valid as of March 2021

	F31iB5	F31iB	F0iMF
Program input			
Sub-program call	Up to 10 nestings	● ● ●	
Hole machining canned cycle	G73, G74, G76, G80 – G89	● ● ●	
Workpiece coordinate system selection	G54 – G59	● ● ●	
Additional workpiece coordinate systems	48 sets 300 sets	● ○ ○ ○ ○ ○	
F10/11 format	— — —	● — —	
F15 format	— — —	● ○ ●	
Addition of optional block skip	Soft key type (2 – 9)	● ○ ○	
Interruption type custom macro	— ○ ○		
Programmable mirror image	G50.1, G51.1	● ○ ○	
Custom macro common variables <in total>	600 variables (#100 – #199, #500 – #999)	● ○ ○	
Scaling	G50, G51	● ○ ○	
Coordinate system rotation	G68, G69	● ○ ○	
Automatic corner override	G62	● ○ ○	
Tilted working plane command	G69, G68.2	— ○ ●	
Graphic copy	G72.1, G72.2	○ ○ ○	
Efficient Production Package (High-speed canned cycle) <MAPPS>	— ○ ○		
MORI-POST advanced mode <MAPPS>	— ○ ○		
Islands, open pockets <MAPPS>	— ○ ○		
DXF import function <MAPPS>	— ○ ○		
Text engraving function <MAPPS>	— ○ ○		

Miscellaneous function/Spindle speed function			
Spindle speed override	50 –150% (10% increments)	● ● ●	
Spindle orientation	— ○ ○		
Synchronous tapping	— ○ ○		
Multiple M cords in single block (Multi M code function)	— ○ ○		

Tool functions/Tool offset functions			
Tool functions	4 digits T code	● ● ●	
Tool offset memory C	D/H code, geometry/wear	● ● ●	
Tool length offset	G43, G44, G49	● ● ●	
Cutter radius offset	G40 – G42	● ● ●	
	32 sets	— ● ●	
	64 sets	— ○ ○	
	99 sets	— ○ ○	
	200 sets	— ○ ○	
	400 sets	● ○ ○	
	499 sets	— ○ ○	
	999 sets	— ○ ○	
Tool position offset	G45 – G48	● ○ ○	
Tool center point control	G43.4, G43.5, G49	— ○ ●	
3-D cutter compensation	G40, G41.2, G41.6, G42.2, G42.6	— — ●	
Workpiece position error compensation	G54.4	— ○ ●	
Rotary table dynamic fixture offset	G54.2	— ○ ●	
Tool life management	— ○ ○		

Number of tool offsets (length, diameter, wear, geometry)	128 sets 1,024 sets	● — — — ○ ○	
Tool position offset	G45 – G48	● ○ ○	
Tool center point control	G43.4, G43.5, G49	— ○ ●	
3-D cutter compensation	G40, G41.2, G41.6, G42.2, G42.6	— — ●	
Workpiece position error compensation	G54.4	— ○ ●	
Rotary table dynamic fixture offset	G54.2	— ○ ●	
Tool life management	— ○ ○		

Number of tool life management sets	128 sets 1,024 sets	● — — — ○ ○	
MAPPS Tool management system <sup>*3</sup>	— ○ ○		
MAPPS Tool management system <sup>*3</sup> + Tool IC (MAPPS software only) <sup>*4</sup>	— ○ ○		
MAPPS Tool management system <sup>*3</sup> + Tool ID (MAPPS software only) <sup>*4</sup>	— ○ ○		

\*3 Includes common variable 600 for custom macro.

\*4 Separate consultation is required if hardware and software are customized.

Mechanical error compensation			
Backlash compensation	— ○ ○		
Rapid traverse/cutting feed backlash compensation	— ○ ○		
Stored pitch error compensation	— ○ ○		
Interpolation type pitch error compensation	— ○ ○		

	F31iB5	F31iB	F0iMF
Editing			
Expanded program editing	Copy buffer (10 KB)	● ● ●	
Background editing	— ○ ○		
Undo/Redo function <MAPPS>	— ○ ○		
Line number display <MAPPS>	— ○ ○		
Machining time stamp	— ○ ○		
Playback	— ○ ○		

Setting and display			
Status display	— ○ ○		
Clock function	— ○ ○		
Actual position display	— ○ ○		
	191 characters (4-digit O code)	● ● ●	
Program comment display	187 characters (8-digit O code)	● ● ●	
Parameter setting display	— ○ ○		
Alarm display	— ○ ○		
Alarm history display	— ○ ○		
Operator message history display	— ○ ○		
Operation history display	— ○ ○		
Running time display/Number of parts display	— ○ ○		
Actual feedrate display	— ○ ○		
Self-diagnosis	Includes alarm display, I/O signal diagnosis and ladder diagram	● ● ●	
Operating panel: Display section	19-inch TFT color LCD	● ● ●	
Multi-counter display <MAPPS>	— ○ ○		

Data input/output			
I/O interface	USB	● ● ●	
	10/100/1000BASE-T		
Ethernet	Access to user memory area by Ethernet function with MORI-SERVER Software	● ● ●	
Fast data server	— ○ ○		
Memory card for Data server <sup>*5</sup>	— ○ ○		
Fast data server+	— ○ ○		
Memory card for Data server <sup>*5</sup>	— ○ ○		
DNC operation using external memory (front USB port)	— ○ ○		
Memory card for MAPPS <sup>*6</sup>	— ○ ○		
6 GB user memory area (for MAPPS-DNC operation function, for data backup) <MAPPS>	Files up to 10 MB in size can be edited	● ● ●	

\*5 CF card 1 GB+ATA adapter

\*6 CF card (2 GB/512 MB)+ATA adapter

## Program storage length and registerable programs

Part program storage length <in total>	Registerable programs <in total>		
320 m (1,050 ft) <128 KB>	63	—	● ● ●
	250	—	○ ○ ○
640 m (2,100 ft) <256 KB>	63/500	—	○ ○ ○
	400	●	— —
1,280 m (4,200 ft) <512 KB>	63/1,000	○	○ ○ ○
	2,560 m (8,400 ft) <1 MB>	63/1,000/2,000	— ○ ○
	400	○	— —
5,120 m (16,800 ft) <2 MB>	63/1,000/4,000	—	○ ○ ○
	10,240 m (33,600 ft) <4 MB>	63/1,000/4,000	— ○ ○
	20,480 m (67,200 ft) <8 MB>	63/1,000/4,000	— ○ ○

I95037C02 I95038A07

# Machine specifications

Item			NVX7000 40
Travel	X/Y/Z-axis travel	mm (in.)	1,540/760/660 (60.6/29.9/26.0)
	Distance from table surface to spindle gauge plane	mm (in.)	200 – 860 (7.9 – 33.9) [Raised column: 400 – 1,060 (15.7 – 41.7)]
Table	Height from the floor to the upper face of the table	mm (in.)	1,000 (39.4)
	Table working surface	mm (in.)	1,700 × 760 (66.9 × 29.9)
	Table loading capacity	kg (lb.)	2,000 (4,400)
	Table surface configuration		18 mm (0.7 in.) × Pitch 100 mm (3.9 in.) × 7
Spindle	Max. spindle speed	min <sup>-1</sup>	14,000 [20,000]
	Number of spindle speed ranges		1
	Type of spindle taper hole		No. 40
	Spindle bearing inner diameter	14,000 min <sup>-1</sup> [20,000 min <sup>-1</sup> ] mm (in.)	φ65 (φ2.6) [φ65 (φ2.6)]
Feedrate	Rapid traverse rate	mm/min (ipm)	20,000 (787.4)
	Cutting feedrate	mm/min (ipm)	1 – 20,000 (39.4–787.4) <when using high-precision control (look-ahead control)>
	Jog feedrate	mm/min (ipm)	0 – 5,000 (0 – 196.9) <20 steps>
ATC	Type of tool shank		BT40 [CAT40] [DIN40] [HSK-A63]
	Type of retention knob		DMG MORI 90° [45°(MAS-I)] [60°(MAS-II)] [DIN] [HSK]
	Tool storage capacity		30 [60]
	Max. tool diameter	With adjacent tools mm (in.)	φ95 (φ3.7)
		Without adjacent tools mm (in.)	φ160 (φ6.2) [φ125 (φ4.9)]
	Max. tool length	mm (in.)	450 (17.7)
	Max. tool mass	kg (lb.)	12 (26.4)
	Method of tool selection		Technical memory random
	Tool changing time	Tool-to-tool sec.	2.1 <2.9 (Tools weighing 8 kg (17.6 lb.) or more)>
		Cut-to-cut (chip-to-chip) <30 tools> ISO10791-9 sec.	Max. tool changing time: 15.4 <16.2 (Tools weighing 8 kg (17.6 lb.) or more)> Min. tool changing time: 7.0 <7.8 (Tools weighing 8 kg (17.6 lb.) or more)>
Motors	Spindle drive motor (30 min./cont)	14,000 min <sup>-1</sup> [20,000 min <sup>-1</sup> ] kW (HP)	22/18.5 (30/24.7) [15/11 (20/15)]
	Feed motor	kW (HP)	X: 4.0 (5.3) Y: 4.0 (5.3) Z: 6.0 (8.0)
	Coolant pump motor (50/60 Hz)	kW (HP)	0.635 (0.846)/1.04 (1.38) <Spindle>, 0.73 (0.97)/1.21 (1.61) <Chip removal>
Power sources	Electrical power supply (cont) 194276001	14,000 min <sup>-1</sup> [20,000 min <sup>-1</sup> ] kVA	33.9 [24.9]
	Compressed air supply (Standard)	MPa(psi), L/min(gpm)	0.5 (72.5), 240 (63.4) <ANR>
Tank capacity	Coolant tank capacity	L (gal.)	Chip bucket front discharge specifications: 750 (198.0) [Chip bucket rear discharge specifications: 900 (237.6)] [External chip conveyor specifications: 1,150 (303.6)]
Machine size	Machine height (From floor)	14,000 min <sup>-1</sup> [20,000 min <sup>-1</sup> ] mm (in.)	3,167 (124.7) [Raised column: 3,367 (132.6)]
	Floor space (Width×Depth)	mm (in.)	Chip bucket front discharge specifications: 4,280 × 3,644 (168.5 × 143.5) [Chip bucket rear discharge specifications: 4,280×4,432 (168.5×174.5)] [External chip conveyor specifications: 5,057×4,512 (199.1×177.6)]
	Mass of machine	kg (lb.)	11,800 (25,960)

[ ] Option

- 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.
- When using spindle No. 40 taper at 15,000 min<sup>-1</sup> or higher, or spindle No. 50 taper at 10,000 min<sup>-1</sup> or higher, please use dual contact tools.
- 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.
- When the tool tip air blow is regularly used, air supply of more than 300 L/min (79.2 gpm) is separately required.
- 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.
- The information in this catalog is valid as of March 2021

Item		NVX7000 50		
Travel	X/Y/Z-axis travel	mm (in.)	1,540/760/660 (60.6/29.9/26.0)	
	Distance from table surface to spindle gauge plane	mm (in.)	200 – 860 (7.9 – 33.9) [Raised column: 400 – 1,060 (15.7 – 41.7)]	
Table	Height from the floor to the upper face of the table	mm (in.)	1,000 (39.4)	
	Table working surface	mm (in.)	1,700 × 760 (66.9 × 29.9)	
	Table loading capacity	kg (lb.)	2,000 (4,400)	
	Table surface configuration		18 mm (0.7 in.) × Pitch 100 mm (3.9 in.) × 7	
Spindle	Max. spindle speed	min <sup>-1</sup>	10,000 [6,000] [15,000]	
	Number of spindle speed ranges		1	
	Type of spindle taper hole		No. 50	
Feedrate	Spindle bearing inner diameter	10,000 min <sup>-1</sup> [6,000 min <sup>-1</sup> ] [15,000 min <sup>-1</sup> ]	mm (in.)	φ100 (φ3.9) [φ120 (φ4.7)] [φ100 (φ3.9)]
	Rapid traverse rate	mm/min (ipm)	20,000 (787.4)	
	Cutting feedrate	mm/min (ipm)	1 – 20,000 (39.4–787.4) <when using high-precision control (look-ahead control)>	
ATC	Jog feedrate	mm/min (ipm)	0 – 5,000 (0–196.9) <20 steps>	
	Type of tool shank		BT50 [CAT50] [DIN50] [HSK-A100]	
	Type of retention knob		DMG MORI 90° [45°(MAS-I)] [60°(MAS-II)] [DIN] [HSK]	
	Tool storage capacity		30 [40] [60]	
	Max. tool diameter	With adjacent tools	mm (in.)	φ120 (φ4.7)
		Without adjacent tools	mm (in.)	φ240 (φ9.4)
	Max. tool length	mm (in.)	450 (17.7)	
	Max. tool mass	kg (lb.)	20 (44.0)	
	Method of tool selection		Technical memory random	
	Tool changing time	Tool-to-tool	sec.	2.5 <3.1 (Tools weighing 10 kg (22.0 lb.) or more)>
		Cut-to-cut (chip-to-chip) <30 tools> ISO10791-9	sec.	Max. tool changing time: 16.2 <16.8 (Tools weighing 10 kg (22.0 lb.) or more)> Min. tool changing time: 7.6 <8.3 (Tools weighing 10 kg (22.0 lb.) or more)>
	Spindle drive motor (30 min./cont)	10,000 min <sup>-1</sup> [6,000 min <sup>-1</sup> ] [15,000 min <sup>-1</sup> ]	kW (HP)	30/25 (40/33.3) [37/30 (50/40)] [30/25 (40/33.3)]
	Feed motor		kW (HP)	X: 4.0 (5.3) Y: 4.0 (5.3) Z: 6.0 (8.0)
	Coolant pump motor (50/60 Hz)		kW (HP)	0.635 (0.846)/1.04 (1.38) <Spindle>, 0.73 (0.97)/1.21 (1.61) <Chip removal>
	Electrical power supply (cont) I94276C01	10,000 min <sup>-1</sup> [6,000 min <sup>-1</sup> ] [15,000 min <sup>-1</sup> ]	kVA	41.5 [47.2] [41.5]
Tank capacity	Compressed air supply (Standard)	MPa(psi), L/min(gpm)		0.5 (72.5), 240 (63.4) <ANR>
	Coolant tank capacity	L (gal.)		Chip bucket front discharge specifications: 750 (198.0) [Chip bucket rear discharge specifications: 900 (237.6)] [External chip conveyor specifications: 1,150 (303.6)]
	Machine height (From floor)	10,000 min <sup>-1</sup> [15,000 min <sup>-1</sup> ]	mm (in.)	3,167 (124.7) [Raised column: 3,367 (132.6)]
		[6,000 min <sup>-1</sup> ]	mm (in.)	3,256 (128.2) [Raised column: 3,456 (136.1)]
	Floor space (Width×Depth)	mm (in.)		Chip bucket front discharge specifications: 4,280 × 3,644 (168.5 × 143.5) [Chip bucket rear discharge specifications: 4,280×4,432 (168.5×174.5)] [External chip conveyor specifications: 5,057×4,512 (199.1×177.6)]
Noise data	Mass of machine	kg (lb.)		12,000 (26,400)
	A-weighted, time-average radiated sound pressure level	dB		53–72 (measurement uncertainty is 4 dB)

[ ] Option

- 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.
- The maximum tool diameter is limited to 170 mm (6.7 in.) when using a No. 50 taper spindle at 10,000 min<sup>-1</sup> or higher.
- 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.
- When the tool tip air blow is regularly used, air supply of more than 300 L/min (79.2 gpm) is separately required.
- 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.
- Noise data: the measurement was performed at the front of the machine with a No. 50 spindle taper and a maximum spindle speed of 10,000 min<sup>-1</sup>. For details, please consult with our sales representative.
- The information in this catalog is valid as of March 2021

#### <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.

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- + The information in this catalog is valid as of March 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, Shiomis, 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

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