

High-Precision, High-Speed Horizontal Machining Center

NHX8000

NHX8000



Horizontal machining center offering outstanding performance in high-speed heavy-duty cutting of large workpieces

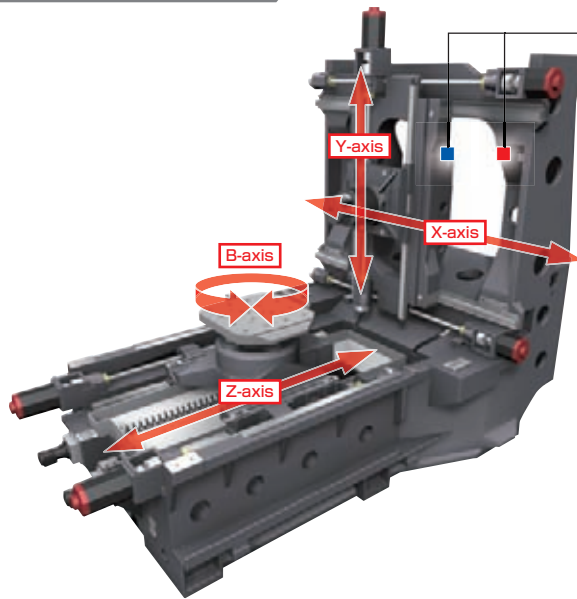
The heavy-duty cutting ability is improved by 40% and a maximum workpiece size is $\phi 1,450 \text{ mm} \times 1,450 \text{ mm}$ ($\phi 57.0 \text{ in.} \times 57.0 \text{ in.}$).

The NHX8000 with the enhanced heavy-duty cutting ability and a large work envelop is the most suitable for machining large workpieces and difficult-to-cut material in the construction machinery, aircraft, ship, and energy industries. We prepare a variety of spindles such as the high-speed, high-output, and high-torque specifications to meet various customers' needs.



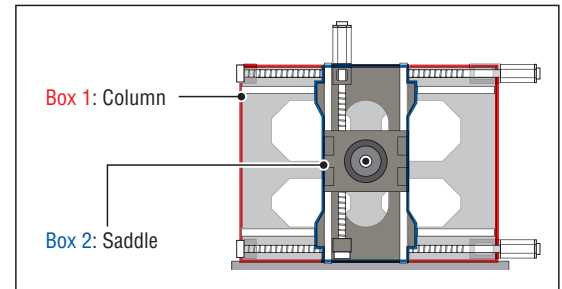
Principal mechanisms

Basic structure



Box-in-Box Construction

The Box-in-Box design, which supports the saddle from both sides, guides and drives the moving parts by its center of gravity in a more balanced manner.



Max. acceleration

X-axis **0.82 G** {8.0 m/s² (26.2 ft/s²)}

Y-axis **0.88 G** {8.6 m/s² (28.2 ft/s²)}

Z-axis **0.56 G** {5.5 m/s² (18.0 ft/s²)}

Rapid traverse rate <X, Y and Z axes>

50 m/min (1,968.5 ipm)

• The rapid traverse rate on the Y-axis is 40 m/min (1,574.8 ipm) when using the spindle with the 6,000 min⁻¹/8,000 min⁻¹ specifications <option>.

Feedrate <X, Y and Z axes>

50 m/min (1,968.5 ipm)

• Look-ahead control

Driven at the Center of Gravity



Original technology

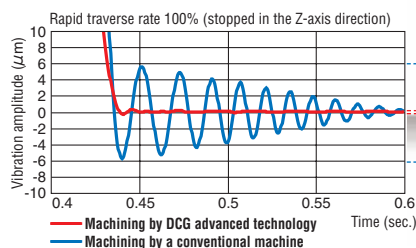
The 24th Technology Development Award from the Japan Society for Precision Engineering

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



Machining by DCG advanced technology

Machining by a conventional machine

(machine type: NV4000 DCG)

Machining by DCG advanced technology



Machining by a conventional machine



Features of DCG

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

Space-saving design

Customers can choose a magazine with the ideal number of tools to suit their needs, while keeping the machine width as it is.

■ **Machine height**
(chain-type: 60 tools)
3,678 mm
(144.8 in.)

■ **Machine width×machine depth**
(chain-type: 60 tools)

4,072×6,918 mm (160.3×272.4 in.)

Machine width

60, 80, 100, 120 tools (chain-type)	180, 240, 330 tools (rack-type)
4,072 mm (160.3 in.)	4,635 mm (182.5 in.)

- The machine depth is for hinge type chip conveyor specifications.
- Chain-type magazines (60-, 80-, 100- or 120-tool capacity) incorporate a pot tilting mechanism and the tool capacity includes one tool at the spindle side.
- Rack-type magazines (180-, 240- or 330-tool capacity) incorporate a pot transfer mechanism and the tool capacity includes one tool at the spindle side.

Machine depth

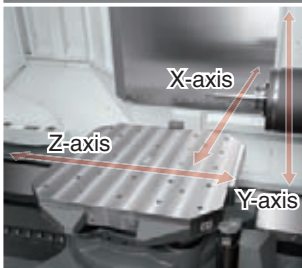
Chain-type

60 tools (standard)	80 tools	100, 120 tools
5,855 mm (230.5 in.)	7,005 mm (275.8 in.)	7,405 mm (291.5 in.)

Rack-type

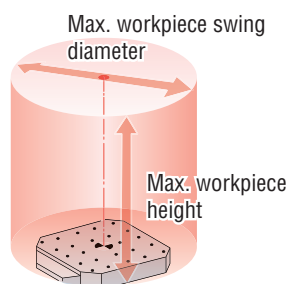
180 tools	240 tools	330 tools
6,440 mm (253.5 in.)	7,160 mm (281.9 in.)	8,240 mm (324.4 in.)

Travel <X, Y and Z axes>



X-axis	Y-axis	Z-axis
1,400 mm (55.1 in.)	1,200 mm (47.2 in.)	1,350 mm (53.1 in.)

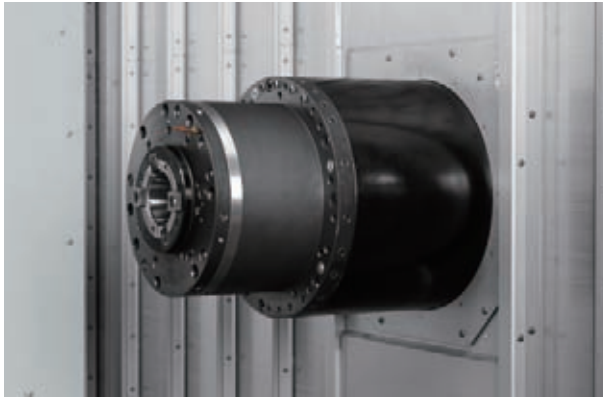
Working area



Max. workpiece swing diameter	Max. workpiece height	Pallet loading capacity
1,450 mm (57.0 in.)	1,450 mm (57.0 in.)	2,200 kg (4,840 lb.) 3,000 kg (6,600 lb.)

Principal mechanisms

Spindle



Max. spindle speed

10,000 min⁻¹ **15,000** min⁻¹ **OP**
 8,000 min⁻¹ **OP**
 6,000 min⁻¹ **OP**

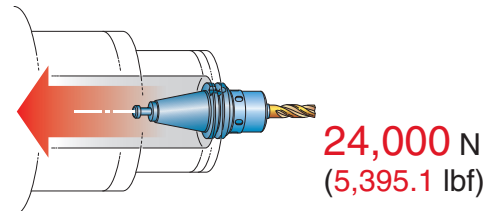
Spindle acceleration time/Spindle deceleration time (0→10,000 min⁻¹/10,000 min⁻¹→0)

3.00 sec./**2.98** sec.

For the spindle drive, we use the high-efficiency DDS (Direct Drive Spindle) motor which extracts full power over a wide range, from high-speed machining to heavy-duty cutting. This machine handles all types of materials from steel to aluminum and other non-ferrous metals.

Tool clamp power

Using the newly developed collet, clamping power on the tool has been increased. The ability to control vibration during spindle rotation ensures high-accuracy machining.

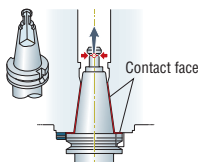


- Please use a two-face contact tool when cutting at higher than 10,000 min⁻¹.

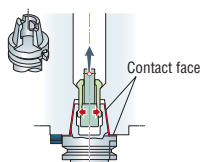
Two-face contact specification **OP**

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



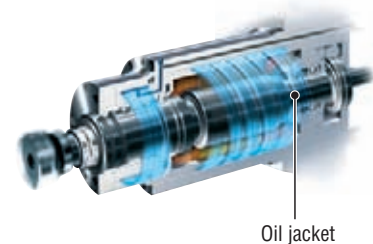
HSK specifications



- All DMG MORI SEIKI spindles are made in-house to better meet our customer needs. For details, please consult with our sales representative.
- When the two-face contact specification is selected, a two-face contact tool and other tools cannot be used together.

Spindle cooling

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



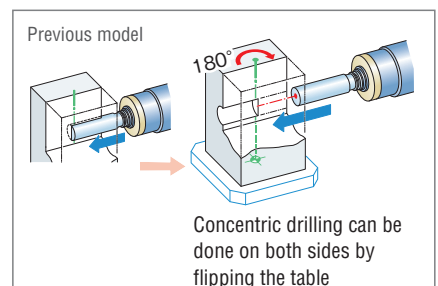
Tool, Boring



The maximum tool length is the same as the pallet size. Deep hole boring up to the maximum tool length can be done without turning the table around, reducing cutting time and achieving high-precision machining.

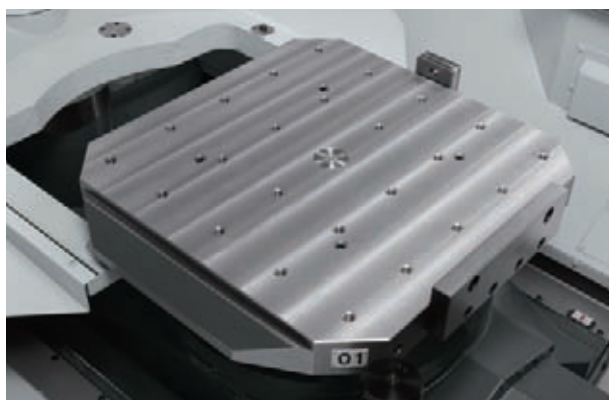
- Depending on condition, machining may not always be possible.

Max. tool length
800 mm (31.4 in.)



Pallet working surface
800×800 mm (31.4×31.4 in.)

Table



A one-degree indexing table is standard, and a full indexing table equipped with DDM is available as an option. These have significant advantages for machining of workpieces that require high speed and high positioning accuracy.

Selection of tables

Table type	1° indexing table	Full 4th axis rotary table DDM® OP
Minimum pallet indexing angle	1°	0.001°
Pallet indexing time (90°) <including clamping and unclamping time>	3.2 sec.	1.8 sec.

Direct Drive Motor

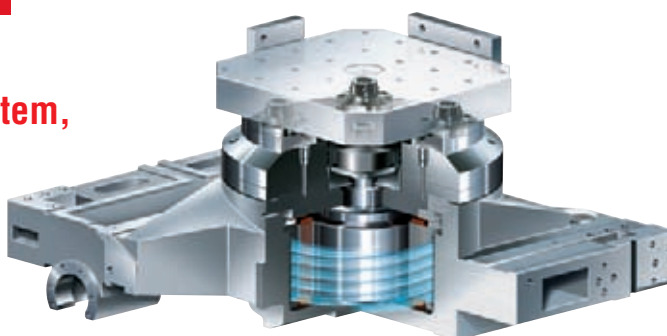


DDM®
Direct Drive Motor

Original technology

The world's fastest rotary axis drive system, which achieves zero backlash.

Until now, gears have been used to transmit the drive power to the rotary axes, but this drive system had a negative effect on drive speed and precision. By transmitting the drive power to the rotary axes directly without using gears, DDM offers outstanding transmission efficiency and high-speed feed. DDM also achieves zero backlash.



Features of DDM

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

B-axis max. rotational speed

Previous model
(worm gear system)

8.4 min⁻¹

NHX8000 (DDM)

▶ 100 min⁻¹

Approx.

12.0 times faster

APC



It uses a front 2-station turn-type APC.

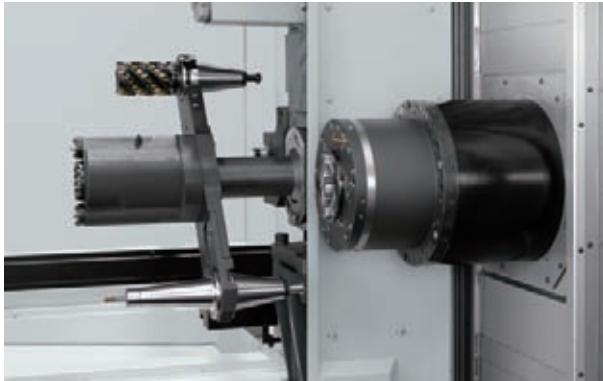
This APC offers high-speed pallet change that reduces non-cutting time.

Pallet changing time (2-station turn-type APC)

16.0 sec.

Principal mechanisms

ATC



By using a double arm, which offers high-speed tool change, non-cutting time is dramatically reduced.

Tool changing time

Cut-to-cut (chip-to-chip) <60 tools>

Max. <ISO>	Min. <ISO>
16.6 sec.	5.0 sec.

ISO 10791-9 JIS B6336-9 ISO: International Organization for Standardization
JIS: Japanese Industrial Standard

● The time differences are caused by the different conditions (travel distances, etc) for each standard.

Tool-to-tool

1.9 sec.

Magazine



We prepared two types of magazine: a chain type and a rack type. Customers can choose either a chain type or rack type to suit their production needs.

Chain-type magazine

Tool storage capacity

60 tools **80 tools** **100 tools** **120 tools**

Rack-type magazine

Tool storage capacity

180 tools **240 tools** **330 tools**

Separation of magazine unit

The static precision of the main body is unaffected

Since the magazine is separated from the body of the machine, the weight of the magazine has no effect, ensuring stable static precision for the machine body.

Unaffected by magazine vibration

As a result of the magazine being separated from the body, vibration from the magazine does not create cutter marks in workpieces being machined.

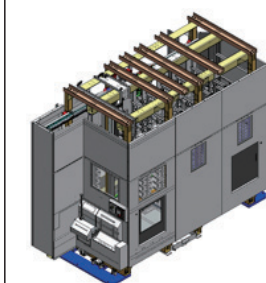
Reduction of tool preparation time

2-axis servo drive

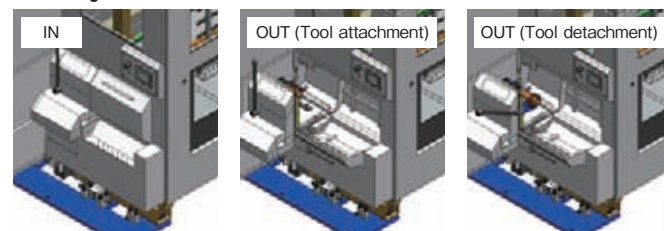
Improved tool transport speed thanks to the 2-axis servo drive.

180 tools

OP



Setting tools



Max. tool length	Max. tool mass	Max. tool diameter		Max. tool mass moment <from spindle gauge line>
800 mm (31.4 in.)	30 kg (66 lb.)	110 mm (4.3 in.) <with adjacent tools>	320 mm (12.5 in.) <without adjacent tools>	29.4 N · m (21.6 in.)*

* 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.

● The maximum tool diameter is limited to 255 mm (10.0 in.) or less when using the spindle at 10,000 min⁻¹ or higher.

High-precision equipment

Coolant cooling system (separate type)

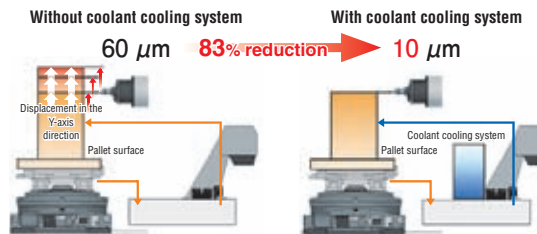


Increase in the oil temperature, which is caused by heat generation during machining or by coolant circulation, causes thermal displacement in the fixtures and workpiece, affecting the dimensional accuracy of the workpiece. Please use this unit to prevent the coolant from heating. For the machining described below, this unit must be selected.

- Machining with required accuracy of less than 20 μm
- High-precision machining that requires a large amount of high-pressure coolant
- Machining that requires oil-based coolant

<Thermal displacement of the Y-axis tombstone>

As an example, when a coolant cooling system is used, thermal displacement in the Y-axis plus direction decreases by 83% to 10 μm .



- While this unit is not the only way to completely control the temperature of the coolant, it makes a major contribution to preventing increases in the oil temperature.

Direct scale feedback



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



Resolution
0.01 μm

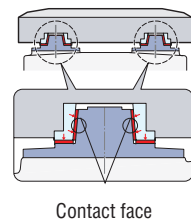
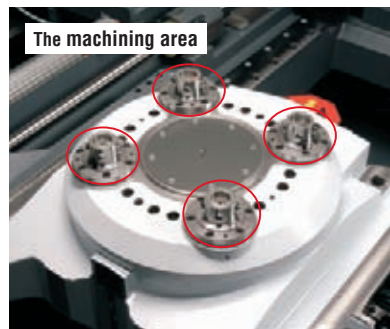
Magnescale

High accuracy absolute scale
SR87

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

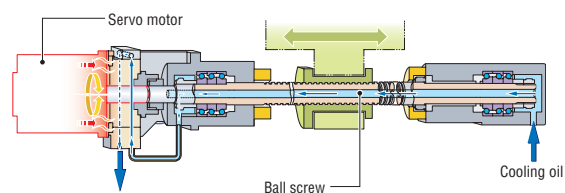
Pallet clamp system

The two-face contact taper cone pallet stabilizes the pallet with its powerful clamping force, and improves the repeatability.



Ball screw center cooling

In order to control thermal displacement and to keep high-accuracy positioning, the ball screw core cooling system in which cooling oil circulates through the support bearings is used.



Improved workability

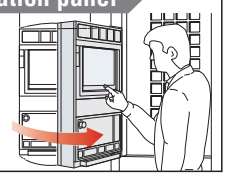
For the NHX8000, we have installed features throughout the machines to improve the operability based on the complete operator-centered concept.



Swivel-type operation panel

Swivel range

90°



Foot pedal

The chain type magazine has a foot pedal so that an operator can hold a tool with both hands.



Setup station button

Redesigning the machine, we have placed the setup button at the ideal height so that an operator can use the machine comfortably.



1,620 mm (63.8 in.)

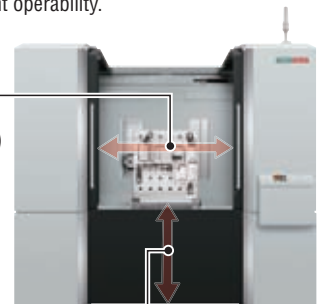
● A step is needed.

Setup station

The open/close ceiling for easier loading/unloading of large workpieces and the wide door opening offer excellent operability.

Door opening

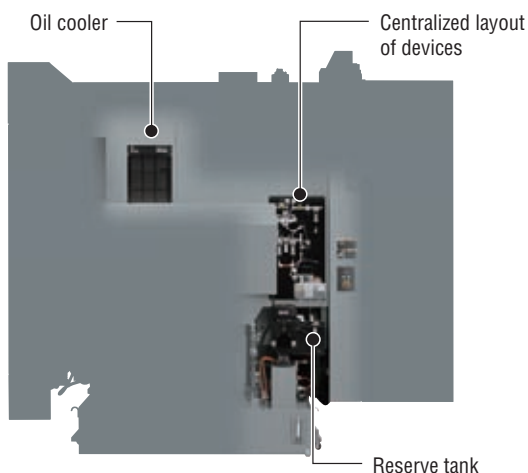
1,480 mm (58.3 in.)



Distance from floor surface to pallet surface

1,350 mm (53.1 in.)

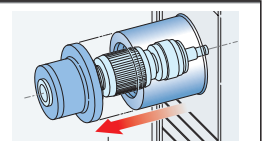
Maintenance



For the NHX8000, the maintenance is improved by placing the oil cooler, hydraulic unit, and pneumatic instruments all in one place and offering better accessibility for operators.

Replacement of spindle unit

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

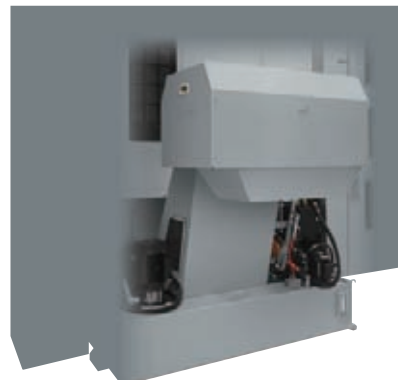


Peripheral equipment

Chip conveyor outside machine (Hinge type+drum filter type)

A high-performance external chip conveyor, which is used as standard, can discharge both long and short chips on one unit with its filter backwashing structure and excellent chip disposal capacity.

- Regardless of shapes or materials, any types of chips including long/short chips can be transferred on one conveyor.
- Suitable for discharging various types of chips on multi-axis machines.
- Regardless of water-soluble or water-insoluble, any types of coolant can be used.
- The built-in tank drum filter greatly reduces efforts and times for cleaning the inside of the tank.



Specifications	Workpiece material and chip size						
	Steel			Cast iron	Aluminum/non-ferrous metal		
	Long	Short	Powdery	Short	Long	Short	Powdery
Hinge type+drum filter type	○	○	○	○	○	○	○
Drum filter type+cyclone filter OP	○	◎	○*	○	○	◎	○*
Scraper type+drum filter type OP	×	○	○	○	×	○	○

* Please contact our sales representative for details.

● Chip size guidelines

Short: chips 50 mm (2.0 in.) or less in length, bundles of chips ϕ 40 mm (ϕ 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.

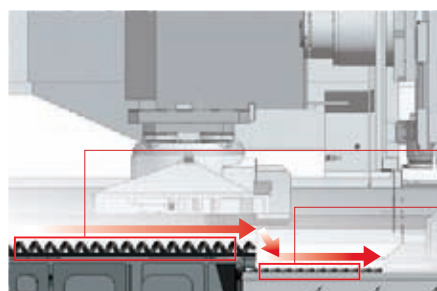
● Please select a chip conveyor to suit the shape of your chips.

When using special or difficult-to-cut material (chip hardness HRC45 or higher), please consult with our sales representative.

● Chip conveyors are available in various types for handling chips of different shape and material. For details, please consult with our sales representative.

Chip conveyor inside machine (spiral type)

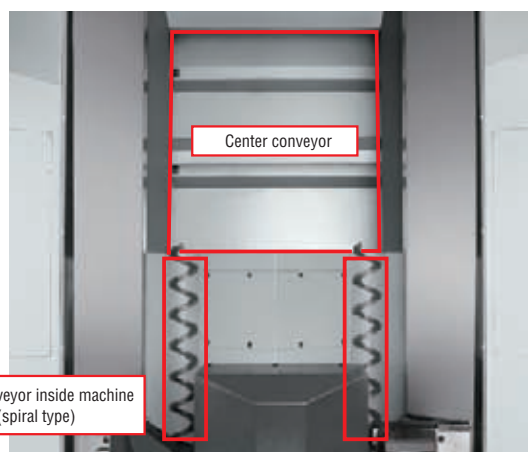
Chips under the table, which cannot be completely eliminated by coolant, are forcibly discharged using a spiral conveyor. This contributes to long-term, unmanned operation. It is also suitable for dry machining, when coolant is not used.



Chip conveyor inside machine (spiral type)

Center conveyor

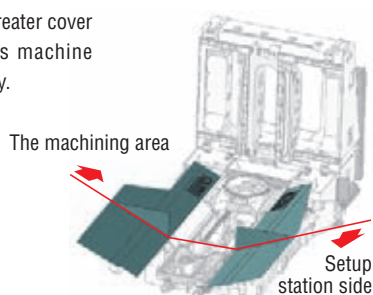
→ Chip transport route



Chip conveyor inside machine (spiral type)

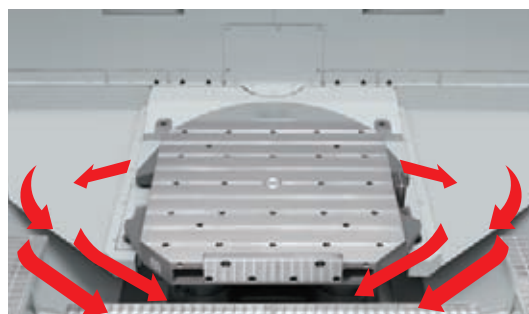
Slanted cover

The center trough structure with greater cover inclined angle than the previous machine improves the chip disposal capacity.



The machining area

Setup station side



Peripheral equipment

Shower coolant

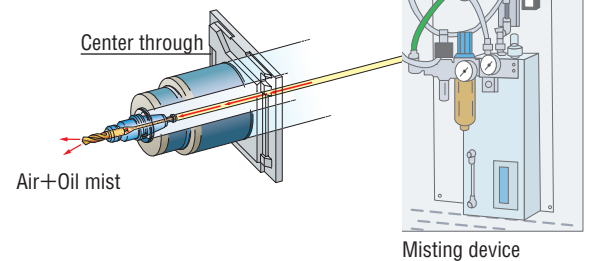
As well as preventing chips from scattering during machining, this allows them to fall smoothly into the center conveyor.



Semi dry unit

OP Consultation is required

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.

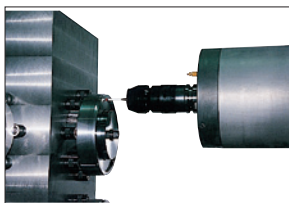


Automatic measurement

OP

In-machine measuring system (spindle)

Optical type touch sensor



Sensor



Receiver

Automatic

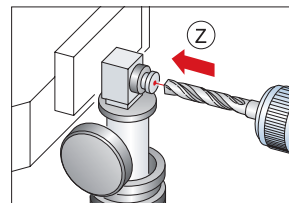
- Centering
- Measurement

Manual The workpiece setter function can be added

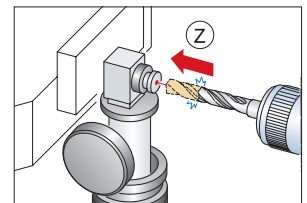
Workpiece zero point setting and centering are possible

In-machine measuring system (table)

Touch sensor



Tool length measurement



Tool breakage detection

Automatic

- Tool length measurement
- Tool breakage detection

Manual The tool setter function can be added

Tool length offset is possible

Automatic measurement+Manual measurement functions

OP

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

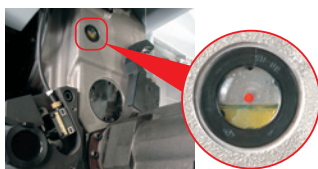
Reduction in environmental burden

Eco-friendly design

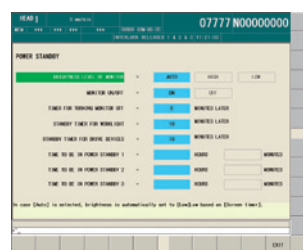
Reduced consumption of lubricating oil

Oil-bath ATC

An oil-bath design has been integrated into the ATC unit design. Compared with conventional oil drip designs, the amount of lubricating oil used has been radically reduced.



Power-saving function



Energy-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.

Transfer systems OP

The versatile systems resolve production issues.

CPP system (Carrier Pallet Pool System)

With its simple construction provided in predefined packages, this system is easy to introduce. For the system configuration, the customer can select from 8 packages to provide the optimum specifications for their needs.

Controller

Handy controller
(standard features)



- MCC-LPS III is available as an option.
- When the number of machines or workpiece setup stations is two or more, the MCC-LPS III is required.
- For models and systems, please consult with our sales representative.



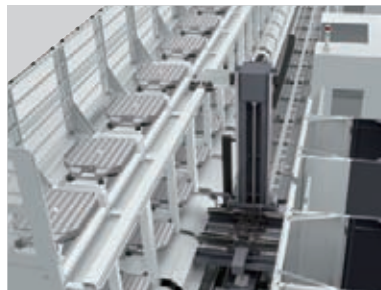
● System example

LPP system (Linear Pallet Pool System)

It is a system with a high level of automation, equipped with multi-level pallet racks. The system construction can also be customized however you wish, achieving the optimum productivity and operation rate.

Controller

MCC-LPS III (standard features)

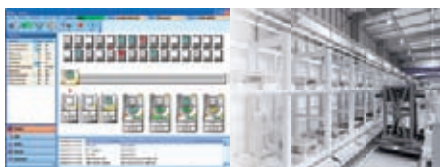


● System example

Applications

Linear Pallet Pool Control System

MCC-LPS III



- DMG MORI SEIKI's original, highly reliable system allows easy operation/management of the pallet transfer system.
- Machining programs can be managed and automatically downloaded.
- Urgent production requests will be flexibly prioritized.

The Tool Management System

MCC-TMS



- Improves the system operating rate through highly efficient, centralized tool management.
- Compatible with ID chips.
- Compatible with tool presetter interface.



- MCC-LPS III is installed in the specialized cell controller and MCC-TMS can be installed in the controller and your PC.

DMSQP (DMG Mori Seiki Qualified Products)

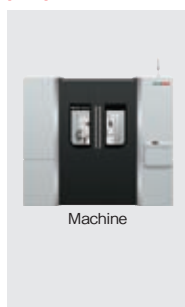
Selected peripherals with superior quality, performance and maintainability.

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

Comprehensive support with machine + peripherals

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

Comprehensive support with machine + peripherals



Through-spindle coolant system



Coolant cooling system



Mist collector

DMSQP



DMG MORI SEIKI Service Center

Advantages of DMSQP

- Qualified peripherals are arranged by DMG MORI SEIKI
- Two-year warranty, the same as machines
(Parts relating to machine breakdown will be guaranteed free for 2 years from the date of installation, and labor costs to repair will be free for 1 year)
- Toll-free phone support is available 24 hours a day, 365 days a year (Japan only)

Examples of qualified products (NHX8000)

☐ Through-spindle coolant system

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

☐ Coolant cooling system

It cools down coolant to offer better cutting performance and minimize thermal displacement in the workpiece.

☐ Mist collector

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

☐ Chip bucket

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

☐ Temperature conditioner in electrical cabinet

This prevents temperature rise and dew condensation inside the electrical cabinet.

☐ Rotary window

Coolant scattered on the machining chamber window is removed to check the inside of the machine during machining.

☐ 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.

☐ CPP

This is a workpiece transfer system with the packaged system configuration that can be easily introduced at your factory.

☐ LPP

This is a workpiece transfer system that can be freely customized for high-level automation.

☐ Tool wagon

☐ Tool cabinet

☐ Basic tooling kit

● For more details on DMSQP items, please contact our sales representative.

MAPPS IV

A New High-Performance Operating System
for Machining Centers



● 19-inch operation panel

A new 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
- ▶ Enhanced functionality by using CAM software
- ▶ 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 SEIKI'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.

MAPPS III 68 sec.

MAPPS IV 45 sec.

Approx.
Reduced by **33%**

Main specifications

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

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 ease of maintenance

Alarm help function

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

Improved productivity

APC schedule operation function OP

Operation schedule of the APC can be controlled through MAPPS. The ability to set various schedules supports unmanned continuous operation. This function can also handle changes to machining schedules flexibly.



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

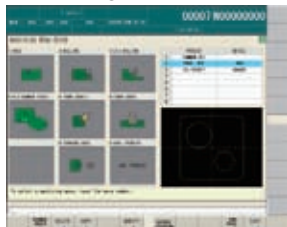
- Inside machine (to check machining)
- Tool magazine (to check cutting tools)
- Chip bucket (to check chip accumulation)

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



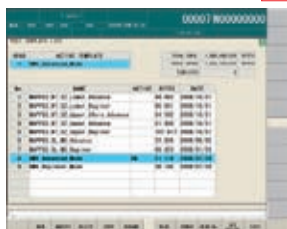
Contour input



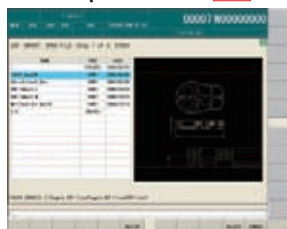
Islands, open pockets OP



MORI-POST advanced mode OP



DXF import function OP



MORI Automatic Programming System for Machining Center **MORI-APM** OP

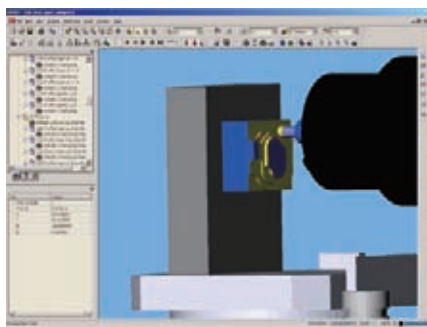
Application systems which let you create machining programs easily on your PC.

- Easy operation, simply by entering the product shapes while following the instructions on the screen.
- Its functions, data and operability are fully compatible with the conversational programming system of the MAPPS IV operating systems.



CAM software

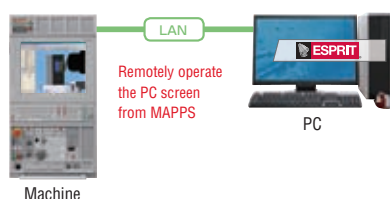
ESPRIT® allows you to create complex 3D programming with high-added value. By just installing the software on your PC with connection to LAN, you will be able to use it. (Once the software is started on the computer, it can be used for up to 7 days without LAN connection)



- **Postprocessor as standard**
- **CAM software will be ready to use once your machine is installed**
- **Cost for introducing CAM software can be saved**
- **ESPRIT® data can be modified on the machine** (through Remote Desktop connection*)
- **The software can be installed on multiple PCs on the network** (It cannot be simultaneously started up on more than one PC)
- **2-year warranty support** (including free update)

Remote Desktop <Patent pending>

ESPRIT® installed on your PC can be operated from your machine via LAN. (It cannot be simultaneously started up on more than one PC)



License borrowing system

By borrowing the ESPRIT® license from the machine over LAN, ESPRIT® can be run on the PC up to 7 days without LAN connection (or turning on the machine).



Support system

Distributors/Trading companies, DMG MORI SEIKI Technical Centers and ESPRIT® Support Team will answer inquiries about the CAM software.



* Applicable Operating Systems: Windows® Vista Business / Ultimate, Windows® 7 Professional / Ultimate
 • A PC is required to use ESPRIT®. Please prepare PCs by yourself.

- The photo shown may differ from actual machine.
- Information about the screen is current as of July 2013.

MORI-NETWORK

Network Application Systems

MORI-NET, MORI-SERVER, MORI-MONITOR

For shorter total production time for all our customers

DMG MORI SEIKI'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 OP

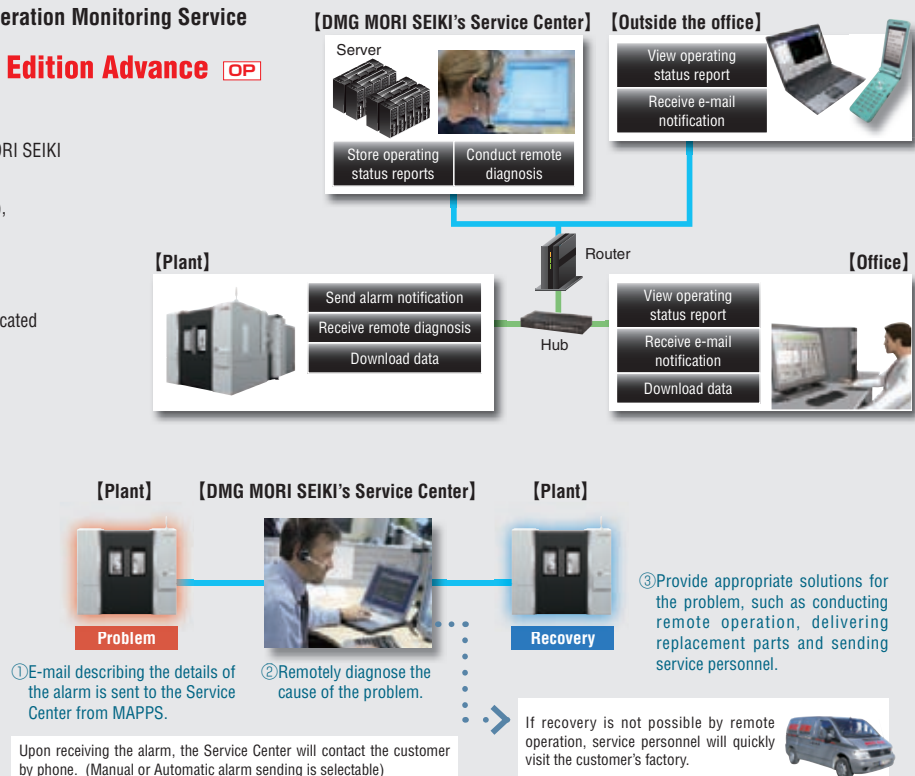
■ Features

- Remote maintenance service by DMG MORI SEIKI 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 SEIKI

■ Remote alarm support

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

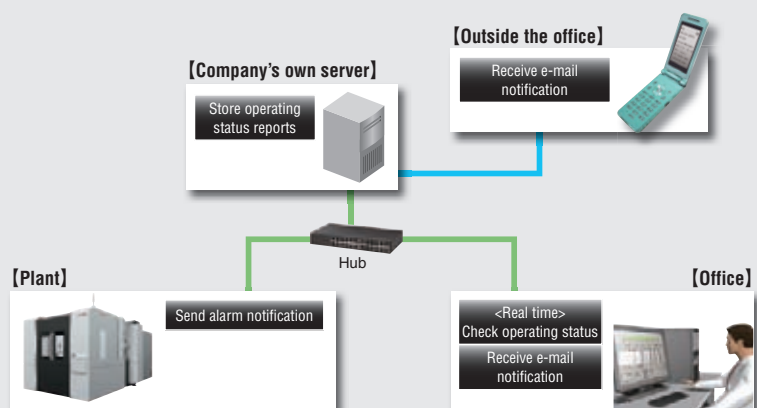


Machine Operation Monitoring System

MORI-NET LAN Edition OP

■ 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 OP

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 (ACT) connects machine tool and peripheral devices

DMG MORI SEIKI'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

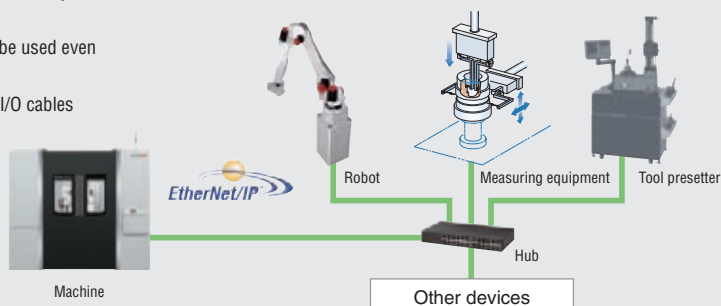
MAPPS EtherNet/IP I/F OP

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

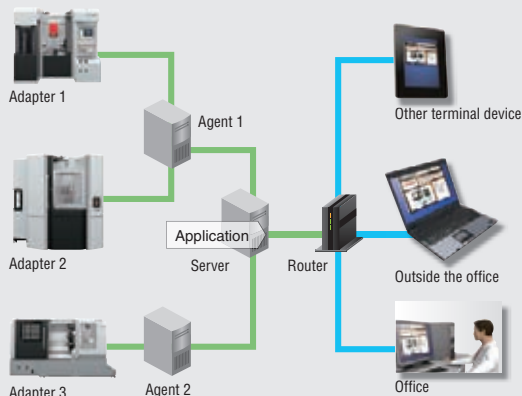
MAPPS MTConnect I/F

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.

Machine specifications

Item				NHX8000
Travel	X-axis travel <longitudinal movement of saddle>		mm (in.)	1,400 (55.1)
	Y-axis travel <vertical movement of spindle head>		mm (in.)	1,200 (47.2)
	Z-axis travel <cross movement of pallet>		mm (in.)	1,350 (53.1)
	Distance from pallet surface to spindle center		mm (in.)	100 — 1,300 (3.9 — 51.2)
	Distance from pallet center to spindle gauge plane		mm (in.)	100 — 1,450 (3.9 — 57.1)
Pallet	Distance from floor surface to pallet surface		mm (in.)	1,350 (53.1)
	Pallet working surface		mm (in.)	800 × 800 (31.5 × 31.5)
	Pallet loading capacity		kg (lb.)	2,200 (4,840) [3,000 (6,600)]
	Max. workpiece swing diameter		mm (in.)	1,450 (57.0)
	Max. workpiece height		mm (in.)	1,450 (57.0)
	Pallet surface configuration			M16 (3/4-10 UNC) Tap: 24 Holes. Pitch 160 mm (6 1/4 in.)
	Minimum pallet indexing angle			1°[0.001° <full 4th axis rotary table>]
	Pallet indexing time <including clamping and unclamping time>		s	3.2 [1.8 <full 4th axis rotary table>] <90°> 3.7 [2.3 <full 4th axis rotary table>] <180°>
Spindle	Max. spindle speed		min ⁻¹	10,000 [15,000] [8,000] [6,000]
	Number of spindle speed ranges			1
	Type of spindle taper hole			No. 50 [HSK-A100]
	Spindle bearing inner diameter		mm (in.)	100 (3.9) [120 (4.7) <6,000 min ⁻¹ /8,000 min ⁻¹ >]
Feedrate	Rapid traverse rate		mm/min (ipm)	X, Z: 50,000 (1,968.5) Y: 50,000 (1,968.5) [40,000 (1,574.8) <6,000 min ⁻¹ /8,000 min ⁻¹ >]
	Feedrate		mm/min (ipm)	X, Y, Z: 1 — 50,000 (1,968.5) <look-ahead control>
	Max. rotational speed		min ⁻¹	B: 35.7 [100 <full 4th axis rotary table>]
	Jog feedrate		mm/min (ipm)	0—5,000 (0—197.0) <20 steps>
ATC	Type of tool shank			BT50 [DIN50] [CAT50] [HSK-A100] <when the two-face contact specification is selected, a two-face contact tool and other tools cannot be used together>
	Type of retention knob			DMG MORI SEIKI 90° type [45°(MAS- I)] [60°(MAS- II)] [HSK-A100] [DIN]
	Tool storage capacity <including one tool at the spindle side>			Chain-type: 60 [80] [100] [120] Rack-type: [180] [240] [330] <with rack type 180-, 240- or 330-tool magazines, the number of tools with a diameter of 110 mm (4.3 in.) or greater that can be stored in the magazine is restricted. Up to nine of the tools with the maximum permissible diameter of 320 mm (12.5 in.) can be stored>
	Max. tool diameter <with adjacent tools>		mm (in.)	110 (4.3)
	Max. tool diameter <without adjacent tools>		mm (in.)	320 (12.5)
	Max. tool length		mm (in.)	800 (31.4)
	Max. tool mass		kg (lb.)	30 (66)
	Max. tool mass moment <from spindle gauge line>		N·m (ft·lbf)	29.4 (21.6) <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 s Cut-to-cut MAS s ● The time differences are caused by the different conditions (travel distances, etc) for each standard. (Chip-to-chip) <60-tool specifications> ISO 10791-9 JIS B6336-9 s	1.9 5.0 16.6/5.0 (max./min.)
APC	Number of pallets			2
	Method of pallet change			Turn-type
	Pallet changing time		s	16
Motor	Spindle drive motor	10,000 min ⁻¹	kW (HP)	40/30/25 (53.3/40/33.3) <15%ED/30 min/cont>
		15,000 min ⁻¹	kW (HP)	[30/25 (40/33.3) <30 min/cont>]
		8,000 min ⁻¹	kW (HP)	[37/30 (50/40)<30 min/cont>]
		6,000 min ⁻¹	kW (HP)	[55/45/37 (75/60/50) <25%ED/30 min/cont>]
	Feed motor	X/Y/Z axes	kW (HP)	4.5 × 2 (6.0 × 2)/5.5 (7.5)/5.5 × 2 (7.5 × 2)
		B axis	kW (HP)	3.0 (4.0) [23.3/10.8 (31.1/14.4) <max./cont>] [full 4th axis rotary table]
	Coolant pump motor		kW (HP)	1.2 (1.6) <spindle>/ 1.2 (1.6) <chip removal>/ 1.8 (2.4) <shower coolant>
Power source <standard>	Electrical power supply <cont>		I94132B05 kVA	64.7
	Compressed air supply		MPa (psi), L/min (gpm)	0.5 (72.5), 820 (216.5) [when the tool tip air blow is regularly used, air supply of more than 300 L/min (79.2 gpm) is separately required.] <ANR>
Tank capacity	Coolant tank capacity		L (gal.)	930 (245.5)
Machine size	Machine height (from floor) <60-tool specifications>		mm (in.)	3,678 (144.8)
	Floor space (width×depth) <60-tool specifications>		mm (in.)	4,072 × 6,918 (160.3 × 272.4)
	Mass of machine <60-tool specifications>		kg (lb.)	28,000 (61,600)
Noise data	A-weighted, time-average radiated sound pressure level		dB	67 — 77 (Measurement uncertainty is 4 dB)

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

NHX8000 (201207)

- 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.
- Please use a two-face contact tool when cutting at higher than 10,000 min⁻¹.
- Max. tool diameter: the maximum tool diameter is limited to 255 mm (10.0 in.) or less when using the spindle at 10,000 min⁻¹ or higher.
- 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.
- Machine size: Please see the machine diagram on page 22 for a machine with an optional tool storage capacity.
- Noise data: the measurement was performed at the front of the machine with a maximum spindle speed of 8,000 min⁻¹. Please contact our sales representative for details.
- The information in this catalog is valid as of July 2013.

DMG MORI

2-year warranty, twice the peace of mind.

For machines delivered outside of Japan, parts relating to machine breakdown will be guaranteed free for 2 years from the date of installation, and labor costs to repair will be free for 1 year. Please contact our sales representative for details.



<Precautions for Machine Relocation>

EXPORTATION: All contracts are subject to export permit by the Government of Japan. Customer shall comply with the laws and regulations of the exporting country governing the exportation or re-exportation of the Equipment, including but not limited to the Export Administration Regulations. The Equipment is subject to export restrictions imposed by Japan and other exporting countries and the Customer will not export or permit the export of the Equipment anywhere outside the exporting country without proper government authorization. To prevent the illegal diversion of the Equipment to individuals or nations that threaten international security, it may include a "Relocation Machine Security Function" that automatically disables the Equipment if it is moved following installation. If the Equipment is so-disabled, it can only be re-enabled by contacting DMG MORI SEIKI or its distributor representative. DMG MORI SEIKI and its distributor representative may refuse to re-enable the Equipment if it determines that doing so would be an unauthorized export of technology or otherwise violates applicable export restrictions. DMG MORI SEIKI and its distributor representative shall have no obligation to re-enable such Equipment. DMG MORI SEIKI and its distributor representative shall have no liability (including for lost profits or business interruption or under the limited service warranty included herein) as a result of the Equipment being disabled.

- DCG, DDM, BMT and ORC are trademarks or registered trademarks of DMG MORI SEIKI CO., LTD. in Japan, the USA and other countries.
- If you have any questions regarding the content, contact our sales representative.
- The information in this catalog is valid as of October 2013. 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 SEIKI is not responsible for differences between the information in the catalog and the actual machine.

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