

High-Precision, High-Speed Horizontal Machining Center

NHX 4000 3rd Generation

NHX 5000 3rd Generation

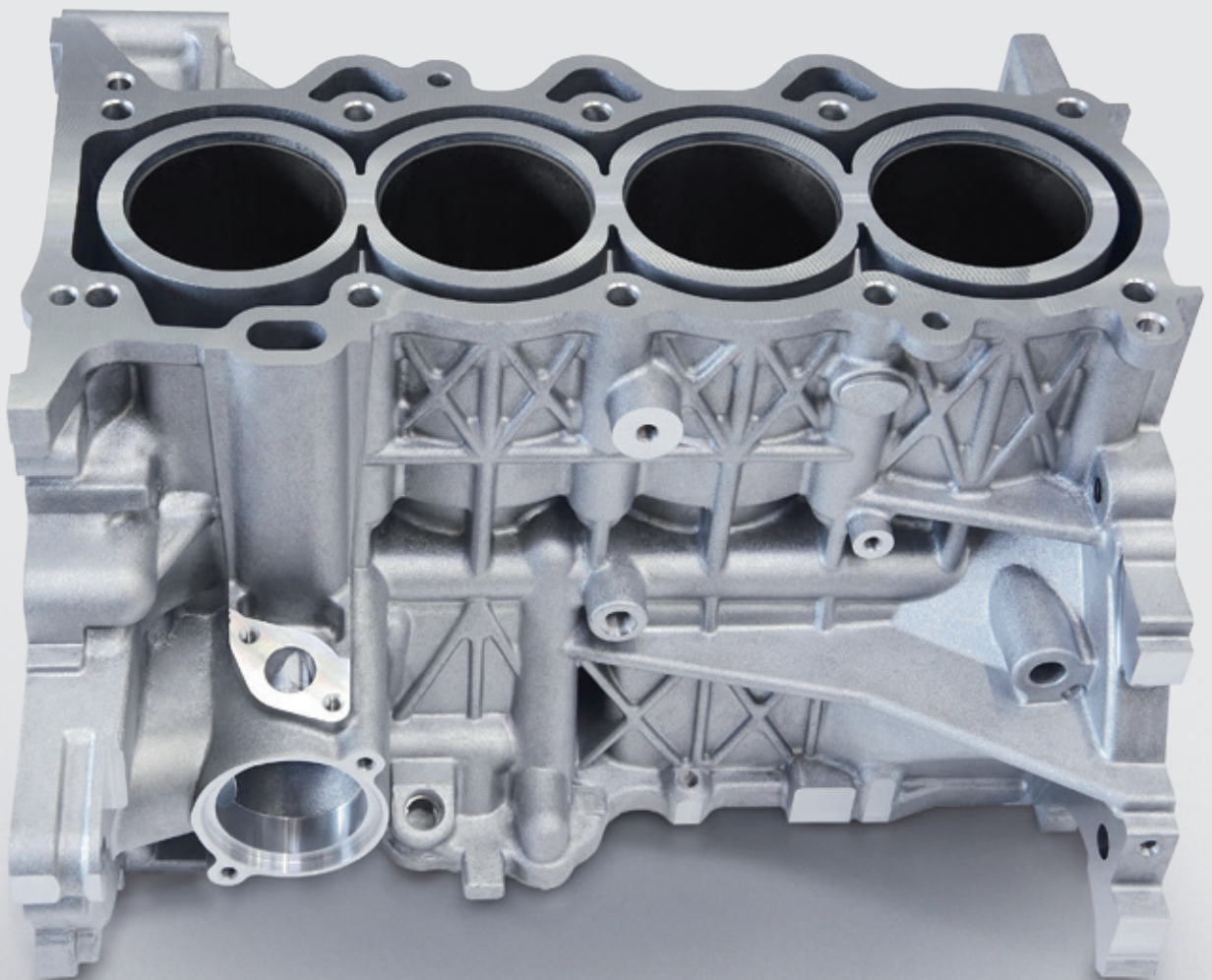
NHX 4000 3rd Generation NHX 5000 3rd Generation



NHX 4000 3rd Generation / NHX 5000 3rd Generation

Cutting-edge High-speed and High-precision Machining beyond Imagination

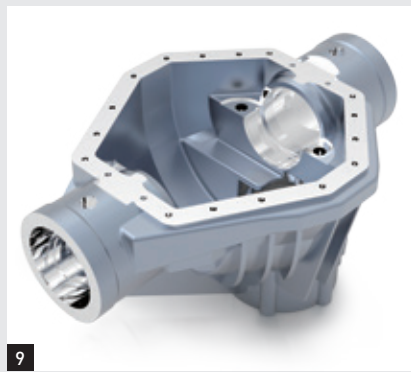
The NHX 4000 3rd Generation and NHX 5000 3rd Generation are standard horizontal machining centers enabling high-efficiency, continuous machining and mass production machining in various areas such as the automotive and other mechanical fields. Both models are equipped with our latest spindle, the speedMASTER, ensuring high-speed and stable high-precision machining with the thick, high-rigidity bed.



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Scan the QR code for the NHX 4000 / NHX 5000 3rd Generation movie



Automobiles

- 1** Cylinder block
- 2** Gear box housing
- 3** Pump body
- 4** Cylinder head
- 5** Transmission case

Aerospace

- 6** Structural part

Motorcycle

- 7** Case

Construction machinery

- 8** Control valve

Industrial machinery

- 9** Differential housing
- 10** Seat frame

NHX 4000 3rd Generation / NHX 5000 3rd Generation

Horizontal Machining Centers at DMG MORI's Highest Class

The NHX 4000 3rd Generation and NHX 5000 3rd Generation cutting-edge design ensures superior rigidity, speed, and accuracy.

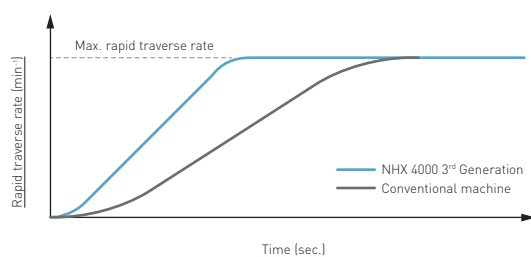
The cover design is the perfect balance of form + function—simultaneously increasing ergonomic operability, while aesthetically improving the shop environment.

All models are equipped CELOS which allows future expansion into IoT technologies, and the ability to flexibly respond to automation requirements.

CELOS: Control Efficiency Lead Operation System

Overwhelmingly High Acceleration

The 3rd Generation model with excellent speed achieves shorter non-cutting time by drastically improved acceleration compared to the conventional machine.



Acceleration

Conventional machine:

0.63 G {6.2 m/s² [20.3 ft/s²]}NHX 4000 3rd Generation:**1.2 G {11.8 m/s²
[38.7 ft/s²]}**

**90%
higher!**
Compared with
conventional
machine



High speed

- + Rapid traverse rate <X, Y and Z axes>:
60 m/min [2,362.2 ipm]
- + Max. acceleration:
NHX 4000 <X, Y and Z axes> //
1.2 G {11.8 m/s² [38.7 ft/s²]}
- NHX 5000 <X- / Y- / Z-axis> //
1.0 / 1.2 / 0.9 G
{9.8 / 11.8 / 8.8 m/s² [32.2 / 38.7 / 28.9 ft/s²]}
- 1.0 / 1.2 / 0.8 G
{9.8 / 11.8 / 7.8 m/s² [32.2 / 38.7 / 25.6 ft/s²]}*¹
- + Cutting feedrate <X, Y and Z axes>:
60 m/min [2,362.2 ipm]*²

*¹ Pallet loading capacity 700 kg [1,540 lb.]

*² When using high-precision control (look-ahead control)

High rigidity

- + Thick, high-rigidity bed
- + The 3-point support structure ensures a stable machine installation
- + Machining with shorter tools

High-precision equipment

- + High-resolution full closed loop control
(Scale feedback)
- + Draw-back function for through-spindle coolant

CELOS

- + Consistent administration, documentation and visualization of order, process and machine data
- + Extension of functions possible by adding applications, and high compatibility with existing information infrastructure and software

Power-saving

- + Function for energy-saving and visualization of the effect

NHX 4000 3rd Generation / NHX 5000 3rd Generation

Integrated Premium Model for Productivity and Reliability

+ Pallet size:

NHX 4000 // 400 × 400 mm (15.7 × 15.7 in.)

NHX 5000 // 500 × 500 mm (19.7 × 19.7 in.)

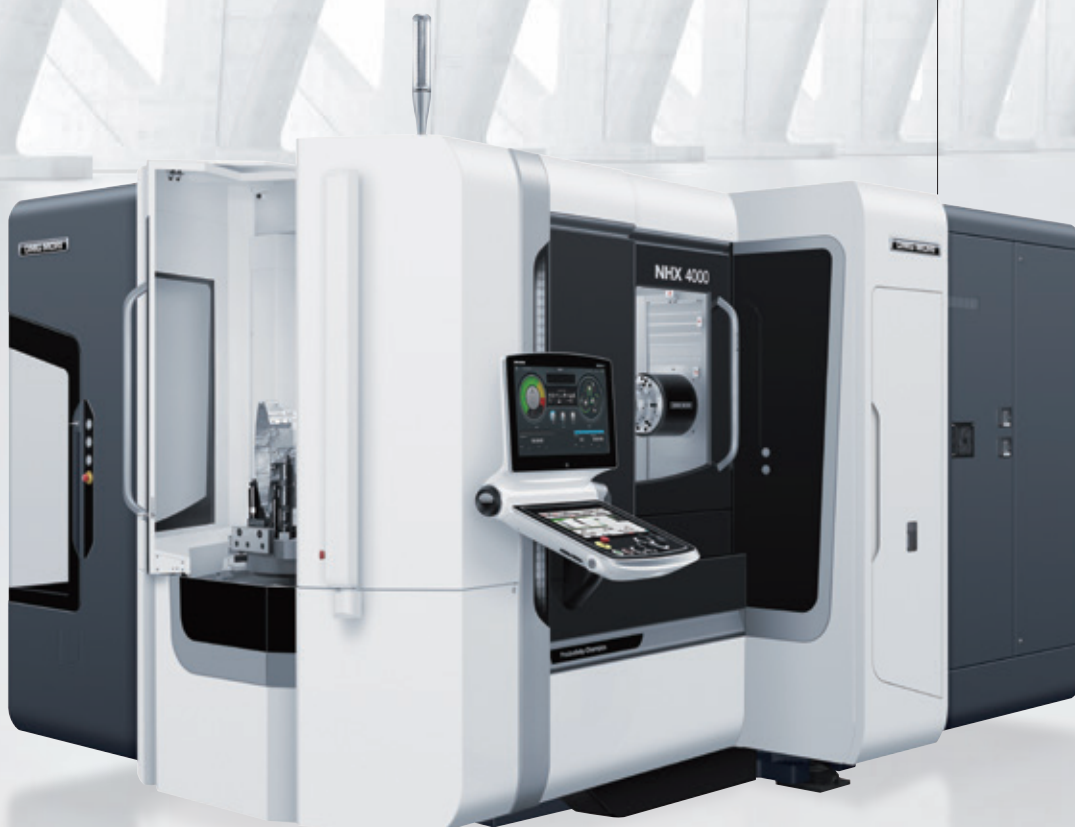
+ Max. weight per station:

NHX 4000 // 400 kg (880 lb.)

NHX 5000 // 500 kg (1,100 lb.), 700 kg (1,540 lb.)

NHX 4000

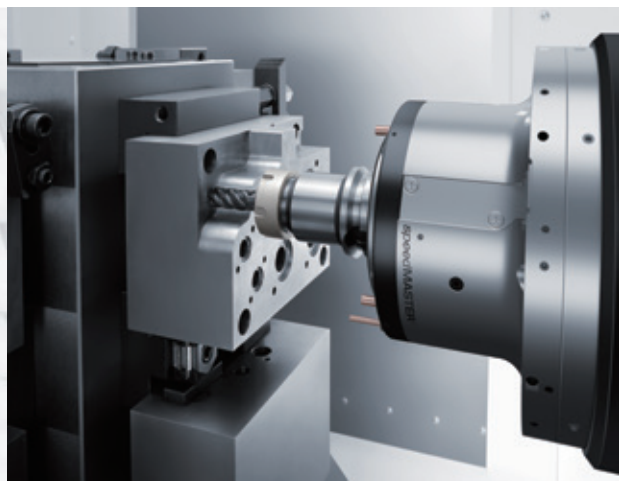
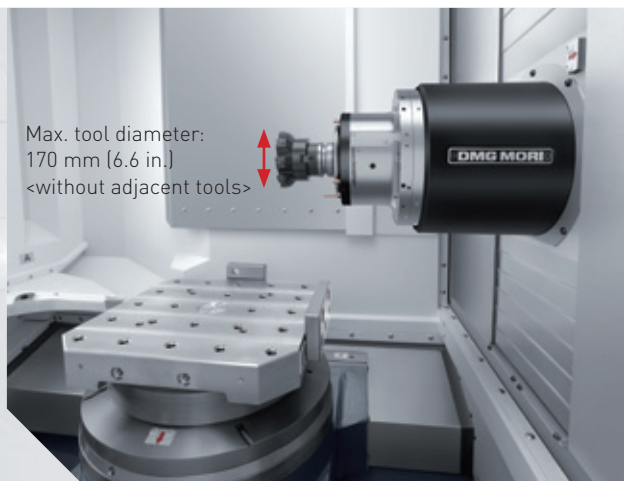
Unbeatable cutting performance,
speed and accuracy



		NHX 4000	NHX 5000
Travel <X- / Y- / Z-axis>	mm [in.]	560 / 560 / 660 [22.0 / 22.0 / 26.0]	730 / 730 / 880 [28.7 / 28.7 / 34.6]
Max. workpiece height	mm [in.]	900 [35.4]* ¹ , 880 [34.6]* ²	1,000 [39.4]
Max. workpiece swing diameter	mm [in.]	630 [24.8]	800 [31.4]
Pallet loading capacity	kg [lb.]	400 [880]	500 [1,100], 700 [1,540]
Floor space	FANUC mm [in.]	2,680 × 4,183 [105.5 × 164.7]	3,078 × 4,784 [121.2 × 188.3]
<width × depth* ³ >	SIEMENS mm [in.]	2,725 × 4,183 [107.3 × 164.7]	3,123 × 4,784 [123.0 × 188.3]

*1 Tap pallet *2 T-slot pallet

*3 Please consult our sales representative when the Hinge + Scraper 2-stage chip conveyor (with drum filter) is selected.

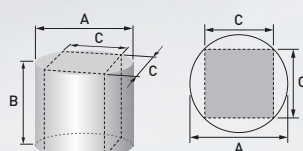


NHX 5000

Highest rigidity with a robust bed and powerful table / pallet clamping force



Max.
workpiece size mm (in.)



*1 Tap pallet *2 T-slot pallet *3 Length of one side of a square inscribed in a max. workpiece swing diameter range

NHX 4000	NHX 5000
Max. workpiece swing diameter: A	
630 [24.8]	800 [31.4]
Max. workpiece height: B	
900 [35.4]*1, 880 [34.6]*2	1,000 [39.4]
Length of one side of a workpiece*3: C	
445 [17.5]	565 [22.2]

NHX 4000 3rd Generation / NHX 5000 3rd Generation

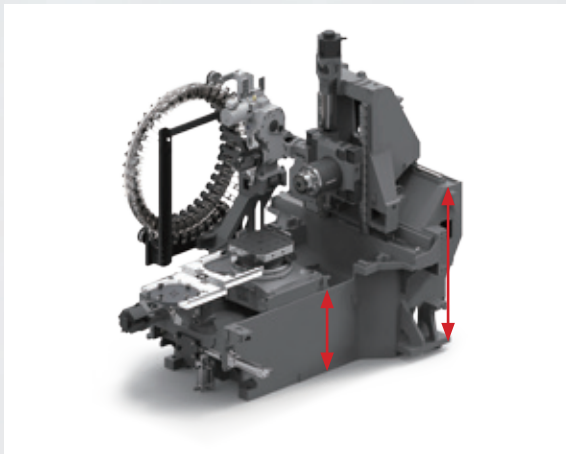
Outstanding Stability Dynamic High-rigidity Structure

A rigid bed is essential for stable and high-accuracy machining. The NHX 4000 3rd Generation and NHX 5000 3rd Generation employ a fully optimized bed structure to maximize machine rigidity and performance. The rear step on the X-axis guideways allows for higher cutting loads and better machine dynamics. The bed casting 3 point support is easy to setup and prolongs machine accuracy. The decreased distance between the spindle and pallet allows for shorter tools and better machine capability.

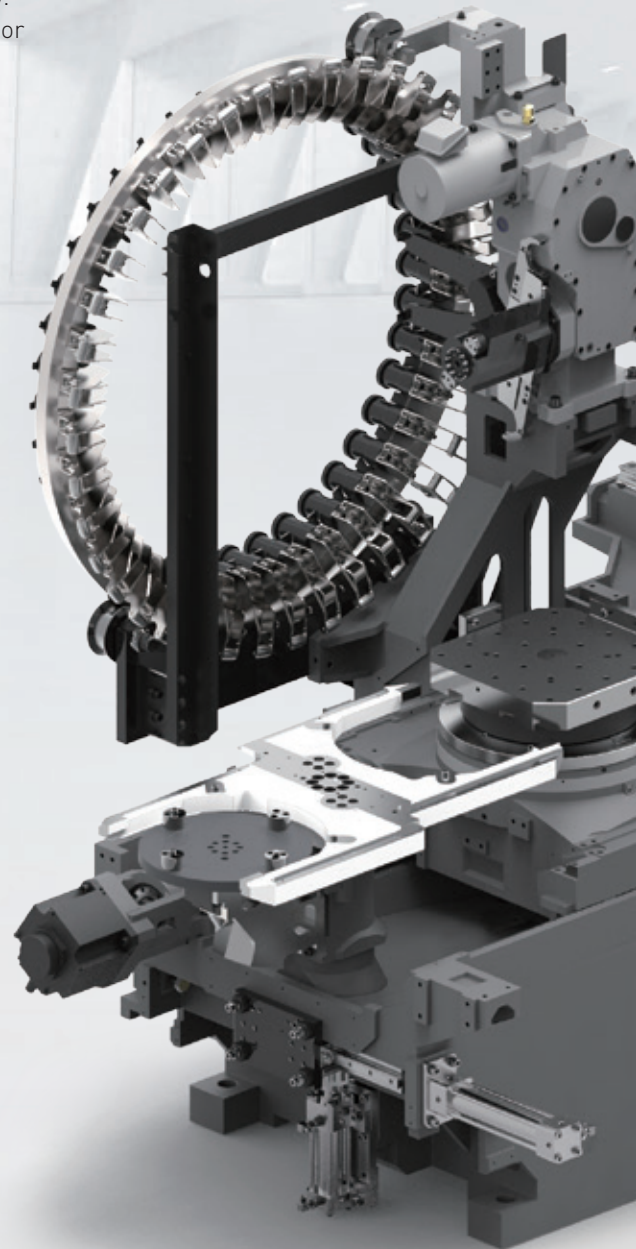
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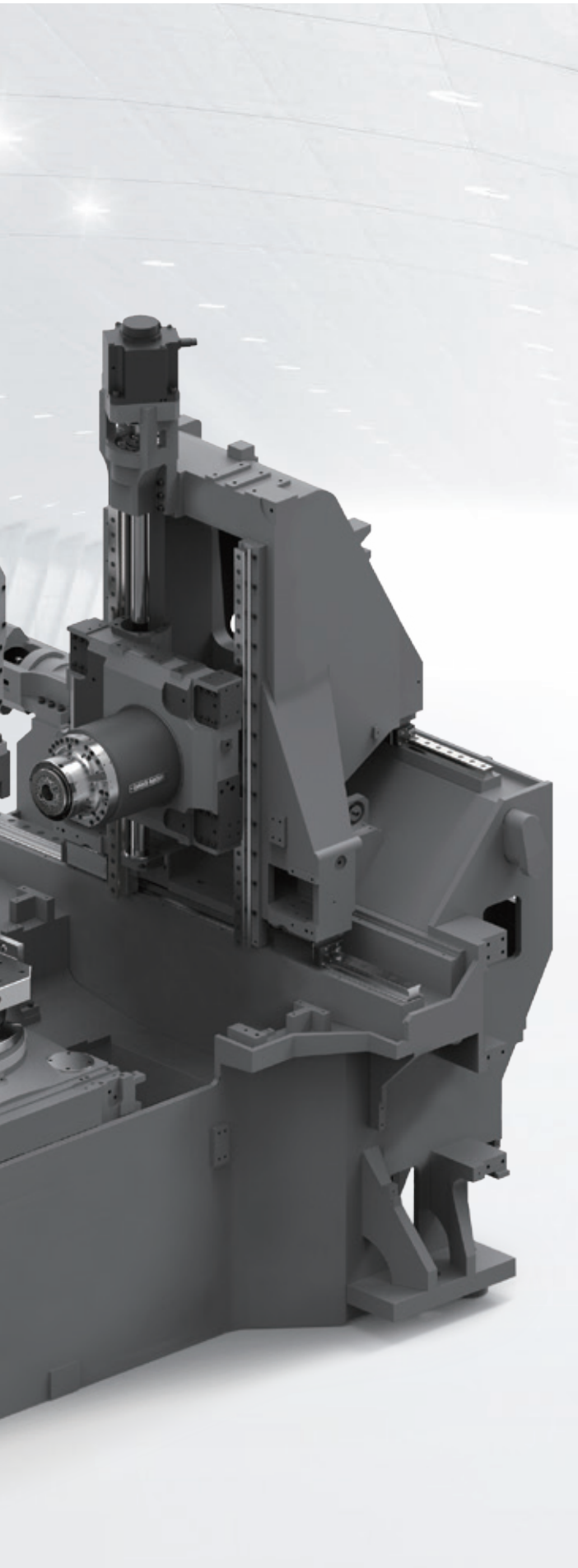
1 High-rigidity bed

- + Thick bed for maximum rigidity
- + The stepped X-axis guideways allow for increased cross-sectional inertia for superior rigidity



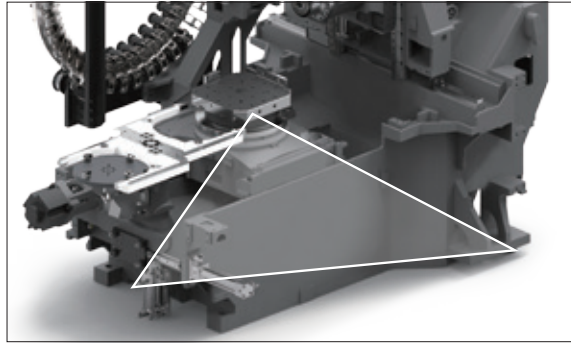
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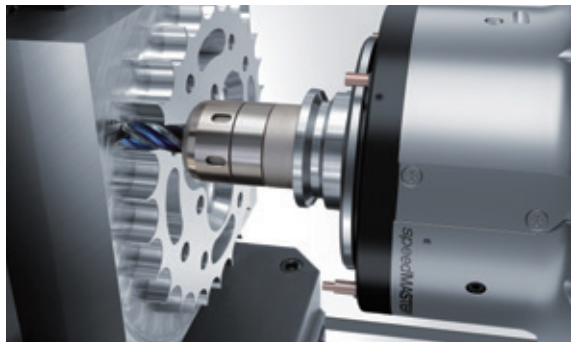
2 3-point support structure

- + 3-point support machine structure for easy horizontal adjustment drastically reduces installation time
- + Not affected by ground conditions or gradual changes



3 Machining with shorter tools

- + The minimum distance between the spindle end face and the center of the pallet is set to 70 mm (2.8 in.), which is 30 mm (1.2 in.) shorter than the conventional model



4 Analysis optimization

- + Optimal configuration achieved through extensive simulations
- + Advanced optimization techniques

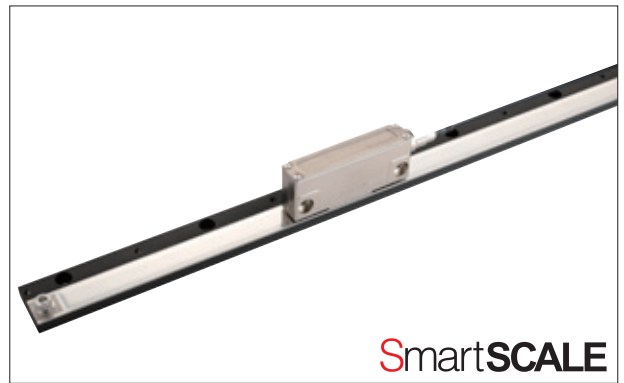
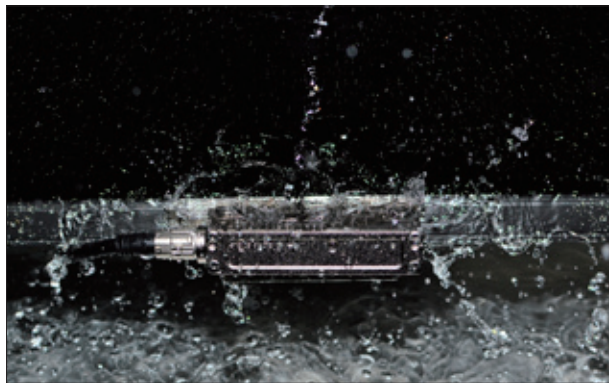


NHX 4000 3rd Generation / NHX 5000 3rd Generation

Perfect Equipment for Ultimate Machining Accuracy

The NHX 4000 3rd Generation and NHX 5000 3rd Generation models are equipped with everything required for stable high-precision machining. In addition to perfect spindle cooling, a highly reliable SmartSCALE (Magnescale) with extreme accuracy is employed on all axes as standard to ensure the best positioning accuracy for a long period of time.

Full closed loop control (Scale feedback) as standard on all axes (SmartSCALE)



Simple non-contact structure

- + Saves space bearingless compact design
- + Can be mounted in proximity to workpieces, enabling easy installation of multiple scales on one axis



Conventional model



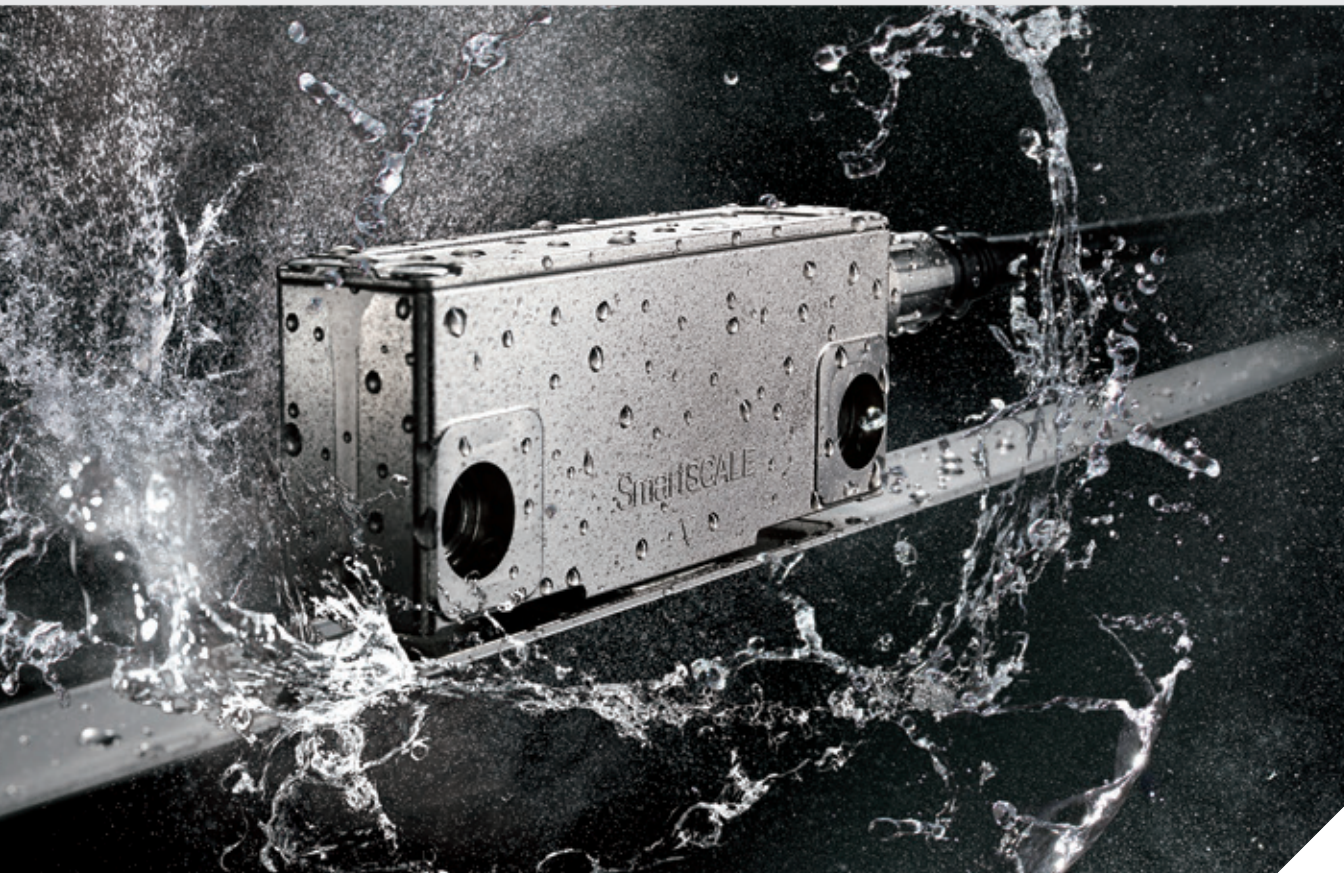
SmartSCALE

High resolution of 0.01 μm

- + Newly developed algorithm employed to improve the high-performance arithmetic processing circuit

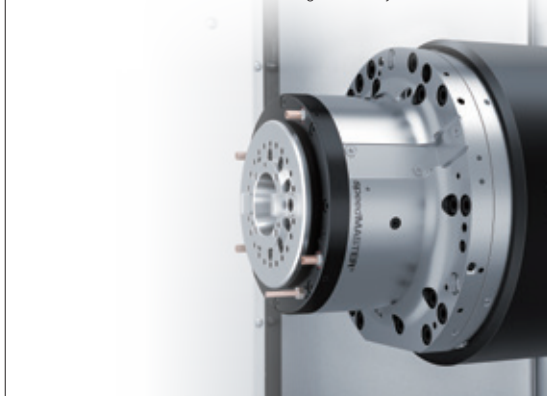
No air purge necessary thanks to the sealing structure with a protection degree of IP67

- + The magnetic scale and the detection device surfaces completely covered with a metal cover for even higher durability against coolant and chips



Draw-back function for through-spindle coolant

Any remaining coolant in the spindle is drawn back into the tank when the coolant flow is stopped, which minimizes the residue to ensure stable machining accuracy.



- + Prevent coolant from adhering to the spindle taper during ATC
- + Prevent mounting errors and rust caused by chips
- + Prevent coolant from entering the magazine

● This function is included in the through-spindle coolant specifications.

Coolant chiller (separate type) <option>



Increased coolant temperature causes thermal displacement in the fixtures and workpiece, affecting the machining accuracy of the workpiece. Use this unit to prevent the cutting 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 or a high-pressure coolant system, please be sure to consult our sales representative.

- + 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

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

NHX 4000 3rd Generation / NHX 5000 3rd Generation

3-year Warranty for Greater Peace of Mind High-speed, High-torque Spindle speedMASTER

DMG MORI has incorporated its know-how into creating the most reliable and high performance spindle to date. The speedMASTER utilizes a unique structure that maintains machining capability through the speed range, thus increasing productivity. The standard maximum spindle speed of 20,000 min⁻¹ is available for the evolved 3rd Generation models. With the increased maximum torque, the spindle is capable of delivering greater performance than ever.

The warranty period for the speedMASTER equipped with absolute reliability was extended to three years.



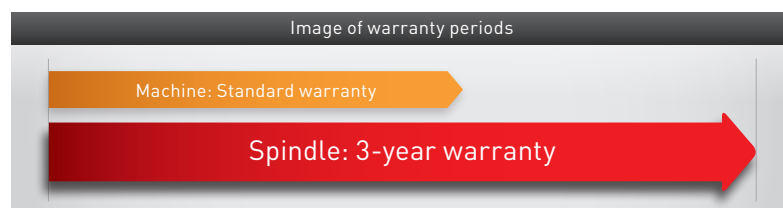
Cutting-edge spindle technologies

speedMASTER

- + No. 40 taper spindle achieves overwhelming high-speed machining
- + Stable high-accuracy machining made possible by drastically improved spindle run-out accuracy
- + Unique constant preload design achieves stable machining over the entire rotational range
- + Advanced spindle labyrinth structure prevents coolant from entering the spindle



Spindle: 3-year warranty



• The standard warranty period varies depending on the region. For details, please consult our sales representative.

Stable & lasting clamp force

- + Extended disk spring life allows the spindle to maintain long period consistent clamp force on the tool

Perfect spindle cooling function

- + Spindle covered with a cooling jacket that forcibly circulates coolant to control temperature rise



• The above is an image picture.

No. 40 taper spindle

- + Type of tool shank: BT40 <two-face contact>*, BT40, CAT40, DIN40, HSK-A63 HSK-A63, SK40 <two-face contact>* <SIEMENS>
- + Max. spindle speed: 20,000 min⁻¹
15,000 min⁻¹ <high torque>
- + Output: 37 / 26 / 18.5 kW (50 / 34.7 / 24.7 HP) <15%ED / 30 min / cont>
37 / 26 / 22 kW (50 / 34.7 / 30 HP) <15%ED / 30 min / cont> {high torque}
42 / 25 kW (56.0 / 33.3 HP) <S3 40% / cont> <SIEMENS>
46 / 30 kW (61.3 / 40 HP) <S6 40% / S1 100%> {high torque} <SIEMENS>
- + Max. spindle torque: 221 N·m (163.0 ft·lbf) <10%ED>
250 N·m (184.4 ft·lbf) <10%ED> {high torque}
136 N·m (100.3 ft·lbf) <S3 25%> <SIEMENS>
200 N·m (147.5 ft·lbf) <S6 40%> {high torque} <SIEMENS>

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

NHX 4000 3rd Generation / NHX 5000 3rd Generation

Various Standard Units Fully Ready for Automation

The machine come standard with hydraulic / pneumatic interfaces that can fully integrate into automation and greatly improve customers' productivity.

The standard rotary table uses a high-speed rotary axis drive system DDM (Direct Drive Motor) that achieves zero backlash.



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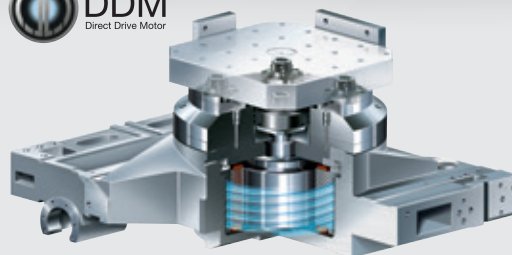
Direct drive motor

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 for highest accuracy.

- + High-speed rotation [B-axis max. rotational speed: 100 min⁻¹]
- + High-precision indexing
- + Less maintenance
- + Longer product life



DDM
Direct Drive Motor



DDM: Direct Drive Motor

Hydraulic / pneumatic interfaces essential for automation equipped as standard

Easy automation integration with standard hydraulic and pneumatic interface.



*1 Hydraulic 2 circuits 4 ports, workpiece seating detection 2 circuits 2 ports

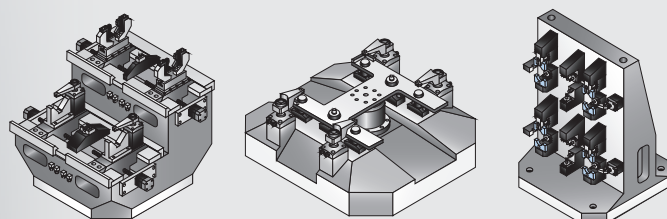


*2 For keeping clamp force of the hydraulic fixture
 • Hydraulic fluid is supplied to the machining table through two ports that diverge from one circuit.

- + Automatic workpiece clamping / unclamping by hydraulic pressure
- + Pallet through type
- + Hydraulic / pneumatic pressure can be supplied from above (option)

Hydraulic / pneumatic fixtures

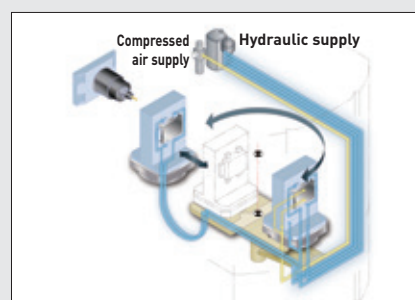
Offer optimal hydraulic / pneumatic fixtures based on our extensive experience and machining know-how.



- + Improve setup accuracy and reduce operators' burden compared to hand tightening fixtures
- + No variation in setup work according to operators
- + Prevent clamp errors with the seating detection function
- + Clamp / unclamp a workpiece with one push of a button

Pallet through specification

Easily transfer the pallets between the setup station and the work area and avoid external hoses and couplers.

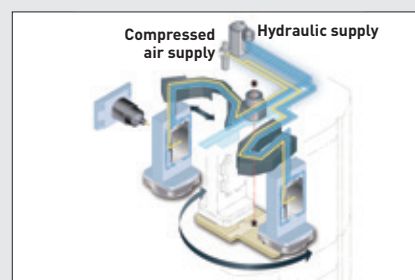


- + The hydraulic / pneumatic interfaces make it possible to supply hydraulic / pneumatic pressure to the table of the APC-equipped machines

Supply of hydraulic / pneumatic pressure from above (option)

Supplying from above the machine allows more ports to be added as needed by your fixture. Suitable for machining that requires high-pressure coolant and a number of ports.

Capable of clamping and unclamping workpieces inside the machine to achieve flexible machining.



Optimal acceleration / deceleration for each workpiece Servo Sense for Workpiece (Z-axis, B-axis)

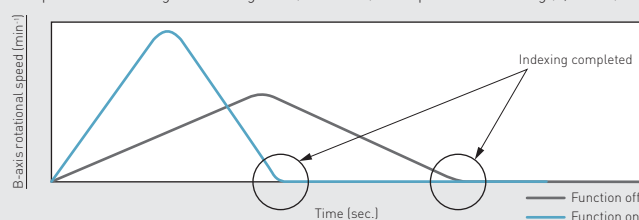
Drastically decrease overall cycle time by automatically finding the optimal acceleration / deceleration for each pallet (Z-axis and B-axis). The auto servo tuning function allows for efficient and smooth acceleration / deceleration, as well as ensuring stable positioning and higher machining accuracy. It automatically controls machine vibration and caused by gradual change in the machine and unbalanced fixtures.

- + Optimized acceleration / deceleration for reduction of machining time
- + Improved positioning accuracy
- + Reduced machine vibration

Example: Reduction in the B-axis indexing time

Increase acceleration according to workpiece mass and reduce positioning and machining time

Comparison of 180 degree indexing time (NHX 6300): Workpiece mass 500 kg (1,100 lb.)



Reduced by 40%!

• The data above is an example of a past test result. The results on the catalog may not be achieved according to workpieces or environmental conditions at the time of measurement.

NHX 4000 3rd Generation / NHX 5000 3rd Generation

Variety of Magazines

The smooth, high-speed indexing, ring type magazine (60-tool specification) is offered as standard. Three types of magazines (ring type, chain type, and rack type) are available with a max. tool storage capacity of up to 240*¹, so the customers can choose the one that best suits their production needs.

- + Tool storage capacity
Ring-type / chain-type*² / rack-type*²: 60 / 120 / 180, 240 tools
Ring-type / wheel-type*³: 60 / 123, 183, 243, 303 tools <SIEMENS>
- + Max. tool length: 450 mm (17.7 in.) <NHX 4000> / 550 mm (21.6 in.)*⁴ <NHX 5000>
- + Max. tool mass: 12 kg (26.4 lb.)
15 kg (33 lb.) <SIEMENS (wheel-type)>
- + Max. tool diameter <without adjacent tools / with adjacent tools>: 170 mm (6.6 in.)*⁵ / 70 mm (2.7 in.)
160 mm (6.2 in.) / 80 mm (3.1 in.) <SIEMENS (wheel-type)>

*¹ For machines with the FANUC NC unit only.

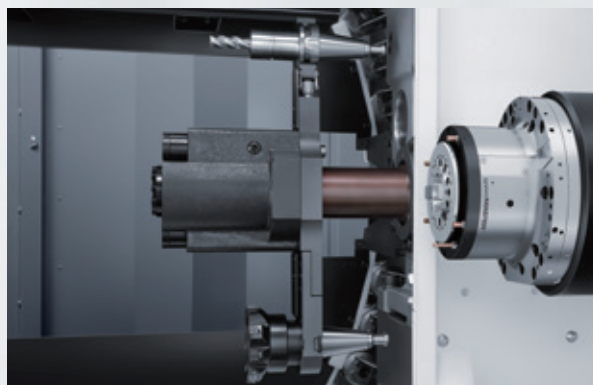
*² Dry anchor (option) is essential.

*³ For machines with the SIEMENS NC unit only.

*⁴ Some pots in the rack type magazine have a maximum tool length of 500 mm (19.6 in.). For details, please consult our sales representative.

*⁵ Chain-type, rack-type: ø 140 mm (ø 5.5 in.).

● Rack-type magazines (180- or 240-tool capacity) incorporate a pot transfer mechanism and the tool capacity includes one tool at the spindle side.

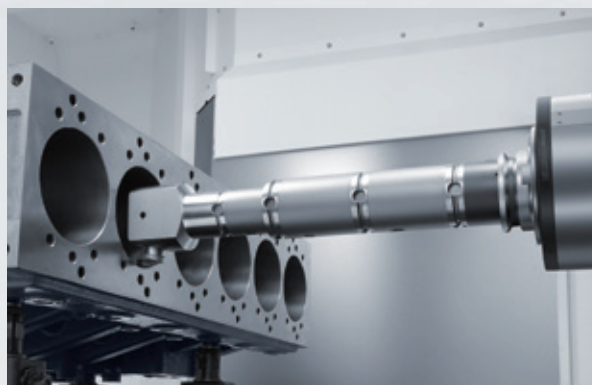


Reliable tool change

The ATC arm equipped with a holding lever for securing a tool tightly holds a long and heavy tool, offering reliable tool change.

- + Cut-to-cut (chip-to-chip):
2.2 sec. (NHX 4000) / 2.5 sec. (NHX 5000) <FANUC> (MAS)
3.0 sec. (NHX 4000) / 3.2 sec. (NHX 5000) <SIEMENS> (DIN)

● Depending on the arrangement of tools in the magazine, the cut-to-cut (chip-to-chip) time may be longer.



A maximum tool length exceeding the pallet size

For the conventional model with its maximum tool length being shorter than the pallet, the table needs to reverse on the B-axis to perform deep hole boring. As for the NHX 4000 3rd Generation and NHX 5000 3rd Generation, the maximum tool length is set to 50 mm (2.0 in.) longer than the pallet. So deep hole boring up to the maximum tool length is now possible without reversing the table. It also contributes to reducing cutting time and achieving high-precision machining.

- + Max. tool length:
450 mm (17.7 in.) <NHX 4000> / 550 mm (21.6 in.) <NHX 5000>

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

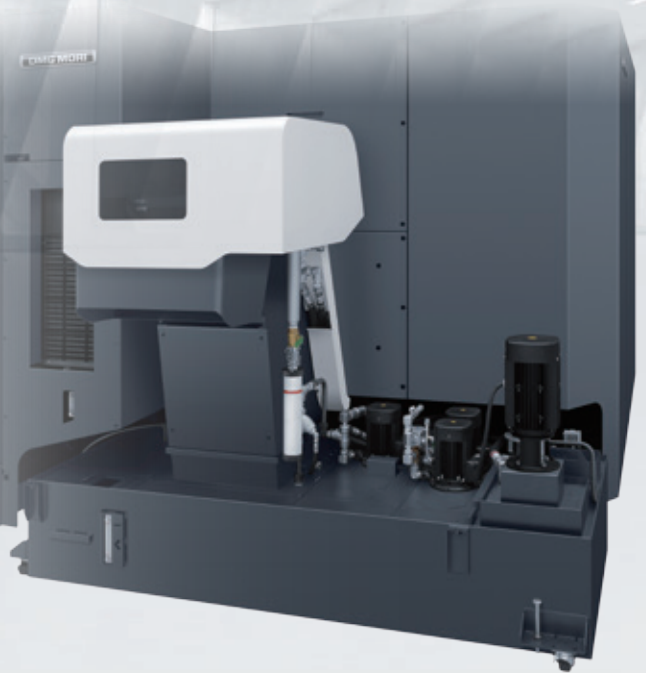


Ring-type (60 tools)

NHX 4000 3rd Generation / NHX 5000 3rd Generation

Cutting-edge Chip Disposal Solution

Chips can be one of the main causes leading to machining failure and machine stop. DMG MORI conducted an in-depth study on them by carrying out various experiments and analyses, and achieved outstanding chip disposal performance. We offer optimal chip disposal solutions according to a machining condition of each customer.



Zero sludge coolant tank

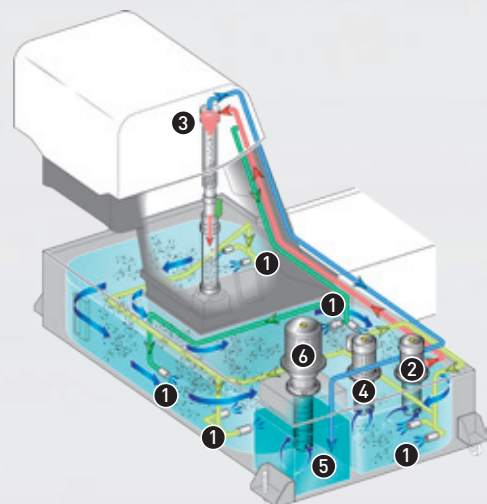
Multiple coolant nozzles are arranged to stir coolant and efficiently collect fine casting sludge with a highly accurate cyclone filter.

- + Reduce cleaning work of the coolant tank dramatically
- + Prevent clogging of pipes / coolant nozzles and pump breakage
- + Expand coolant life

- ❶ Coolant nozzle
- ❷ Inlet filter pump
- ❸ Cyclone filter
- ❹ Stirring nozzle coolant pump
- ❺ Clean coolant tank (from cyclone filter)
- ❻ Through-spindle coolant pump

• Not compatible with oil-based coolant.

Image of sludge collection



Click here to watch the video of the zero sludge coolant tank.



Through-spindle coolant system

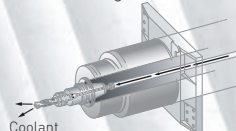
- + Coolant to be supplied to the tip through the holes of the spindle and tool
- + Effective for chip removal, cooling of machining points and extension of tool life

	Unit on coolant tank	Separate type <SIEMENS>
Discharge pressure MPa (psi)	1.5 / 7.0 (217.5 / 1,015)	4.0 / 8.0 (580 / 1,160)
Installation space <width × depth> mm (in.)	Not necessary	1,922 × 1,919 (75.7 × 75.6)
Water-soluble coolant	●	●
Oil-based coolant	—	●*

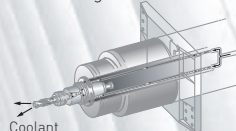
* Oil-based coolant may not be filtered appropriately depending on its viscosity. In such cases it is advisable to select the high-pressure coolant unit (special option), which uses a ceramic backwashing filter in the filtration system instead of a regular cyclone filter. For details, please consult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

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

Center through



Side through

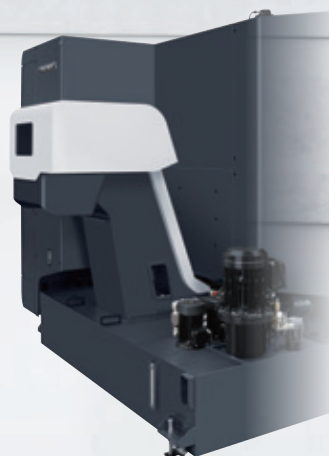


High-pressure coolant system
(unit on coolant tank)

Chip conveyor outside machine (rear discharge, drum filter type)

- + Regardless of shapes or materials, any types of chips including long / short chips can be transferred using one conveyor
- + Suitable for discharging various types of chips
- + Tank capacity*: 800 L (211.2 gal.)
- + Depth of tank*: 400 mm (15.7 in.)

* The tank capacity / depth are different for machines with the SIEMENS NC unit and the wheel-type magazine. For details, please consult our sales representative.



◎: Ideal ○: Suitable —: Not suitable

Workpiece material	Steel			Cast iron		Aluminum / non-ferrous metal		
Chip form								
Chip size	Long	Short	Powdery	Short	Powdery	Long	Short	Powdery
Scraper type (drum filter type)	○*1	◎	○*2	○	○*2	—	○*3	○*2
Hinge + Scraper 2-stage chip discharge (drum filter type)	◎	◎	○*2	○	○*2	◎	○	○*2

*1 For long chips <100 mm (3.9 in.) or longer>, select the optional "Hinge + Scraper 2-stage chip discharge (with drum filter)."

*2 Depending on the size, some chips may pass through the drum filter and accumulate in the coolant tank.

It is recommended to use the zero sludge coolant tank to minimize the impact on machining accuracy.

*3 When chips are easy to float on coolant (aluminum, titanium etc.) and lumps of over ø 40 mm (ø 1.6 in.) chips are often generated in large amount, please select "Hinge + Scraper 2-stage chip discharge (with drum filter)" <option>.

● <Chip size guidelines> Powdery: minute particles / Short: chips 50 mm (2.0 in.) or less in length, bundles of chips ø 40 mm (ø 1.6 in.) or less / Long: over 50 mm (2.0 in.)

● The options table shows the general options when using coolant.

Changes may be necessary if you are not using coolant, or depending on the amount of coolant, compatibility with machines, or the specifications required.

● Be sure to select a chip conveyor that suits the shape of your chips.

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

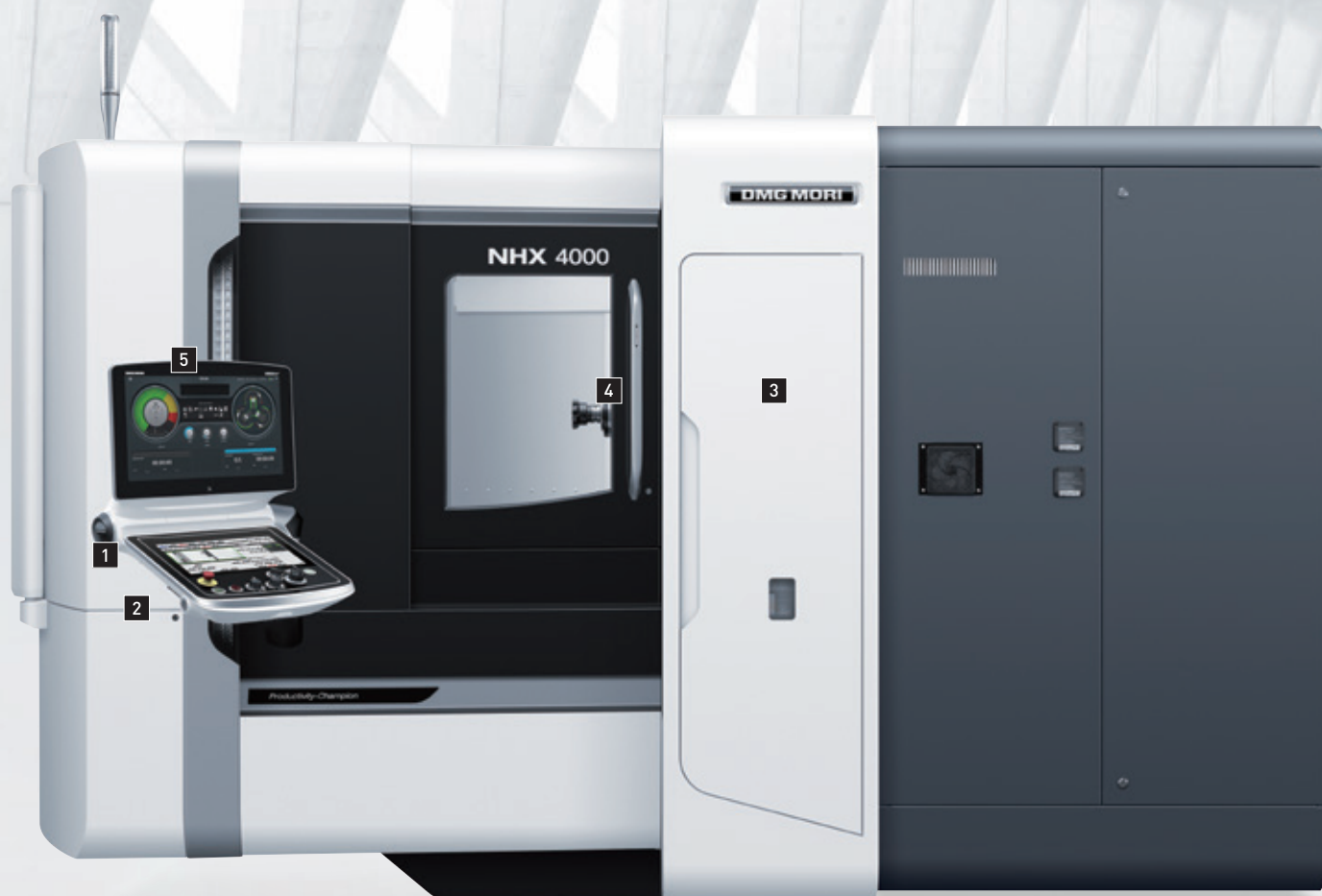
● Please consult our sales representative for dry machining, or machining of carbon fibers or resins.

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

NHX 4000 3rd Generation / NHX 5000 3rd Generation

Pursuit of Usability

The NHX Series is designed with operability in mind. Our goal of an ergonomic machine starts with large windows, clear of obstruction, down to the operators hand angle on the adjustable CELOS control. The hydraulic & pneumatic units are located together in an easy-to-access location to ensure proper maintenance and accessibility. Combined with our superior performance is a machining solution unrivaled in the market place.



● The photo shows CELOS (FANUC).

1 CELOS / ERGOline Touch

Improved access to the spindle and workpieces thanks to the adjustable touch screen operation panel.

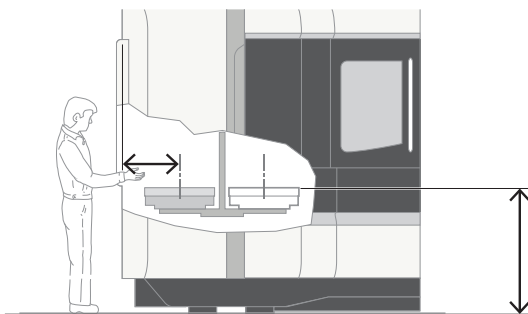


• The photo shows CELOS (FANUC).

+ Swivel angle: 110°

2 Setup station

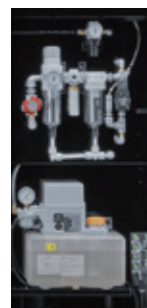
With excellent access to the table and a wide door opening, setup operations such as fixture adjustment can be done smoothly.



- + Distance to the center of the pallet:
385 mm (15.2 in.) <NHX 4000> /
510 mm (20.1 in.) <NHX 5000>
- + Distance from floor surface to pallet surface:
1,050 mm (41.3 in.) <NHX 4000> /
1,200 mm (47.2 in.) <NHX 5000>
- + Door opening:
650 mm (25.6 in.) <NHX 4000> /
825 mm (32.5 in.) <NHX 5000>

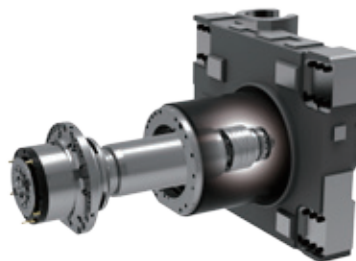
3 Centralized layout of devices

Peripherals requiring periodic maintenance are located in one place, which contributes to improving operators' work efficiency.



4 Replacement of spindle unit

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



5 Display of Manuals

As well as viewing operation manuals on the CELOS screen, you can perform full-text search with keyword and jump to links in the same way as you do on a PC. This is particularly convenient when searching for information during maintenance.



CELOS: Control Efficiency Lead Operation System

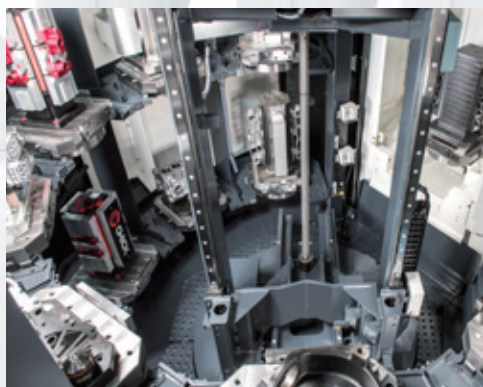
NHX 4000 3rd Generation / NHX 5000 3rd Generation

Flexible Automation Solutions

DMG MORI provides number of proven automation solutions for our customer diverse production requirements. We have installed automation systems around the world. With the advanced know-how we provide our customers with modular of fully customized solutions best suited for your floor.

1 RPS system (Rotary Pallet Storage)

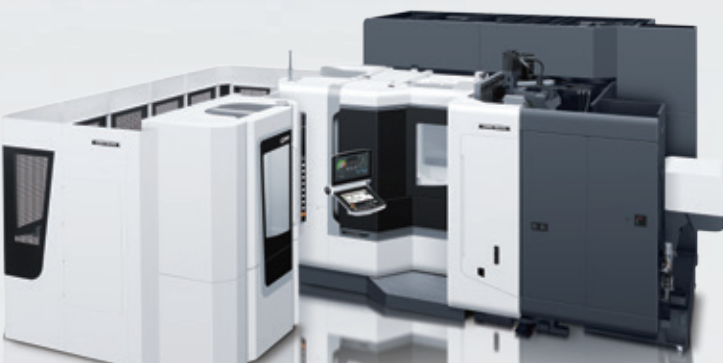
This system features outstanding space savings and setup capabilities, and can hold more pallets per unit area than any other pallet pool system. Up to three levels of pallet shelves available according to customers' production needs.



NHX 5000

2 CPP system (Carrier Pallet Pool)

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.

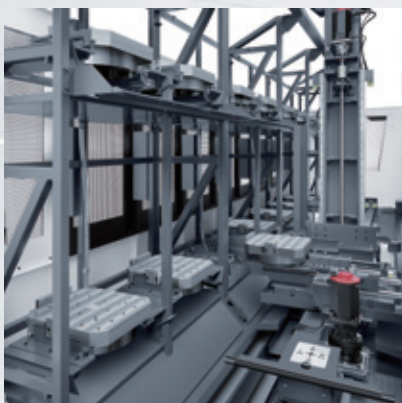


NHX 5500

RPS: Rotary Pallet Storage CPP: Carrier Pallet Pool LPP: Linear Pallet Pool

3 LPP system (Linear Pallet Pool)

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



NHX 5000 3rd Generation

- The 60-tool specification (ring-type magazine) cannot be selected with the CPP, and LPP specifications.
- For details, please consult our sales representative.

Simple Control System

PALLET MANAGER*

* MAPPS V function, available to RPS and CPP only.

Easy check of pallet status on CELOS



- + Displays the entire system layout in an easy-to-see manner
- + Able to check the latest pallet status and shorten setup time
- + Able to transfer pallets by drag and drop of the pallet icon on the screen

Tool check to prevent troubles in advance



- + Automatically identifies and displays tools that are not suitable for machining by central tool management
- + Prevents machining failure and troubles caused by tool breakage
- + Improves productivity by minimizing problem-caused rework

MCC-LPSIII (Linear Pallet Pool Control System)

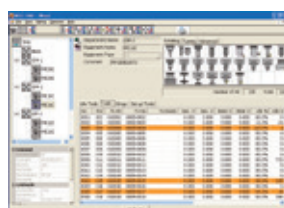


- + Easy operation / management of the pallet transfer system
- + Machining programs can be managed and automatically downloaded
- + Able to flexibly change production priority in response to urgent requests

• Not applicable with the SIEMENS NC unit.

MAPPS: Mori Advanced Programming Production System
CELOS: Control Efficiency Lead Operation System

MCC-TMS (The Tool Management System)



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

• Not applicable with the SIEMENS NC unit.

NHX 4000 3rd Generation / NHX 5000 3rd Generation

One Stop Service for Various Needs DMG MORI Qualified Products

The DMG MORI Qualified Products (DMQP) program <option> is designed to certify peripherals that meet DMG MORI standards in quality, performance and maintainability. DMG MORI collaborates with our partners in the world and provides customers with peripherals required for their machining. We take care of the arrangement from selection to installation to support best-quality machining. DMG MORI helps customers improve productivity by offering the total solutions including quality peripherals as well as machine tools.

- + Offer peripheral equipment optimal for each customer at one stop
- + Provide support including connection and setup of machines and peripheral equipment
- + Achieve efficient connections with optimal interfaces



Four DMQP categories

Handling

Robot system

Chip conveyor (external)

Shaping

Rotary window

High-pressure coolant system

Oil skimmer

Mist collector

Measuring

In-machine measuring system (tool)

Tool presetter

In-machine measuring system (workpiece)

Surface roughness measuring system

Monitoring

Electrical cabinet chiller

Coolant chiller

Coolant float switch

Signal lamp

Robot



In-machine measuring system (workpiece)



Tool presetter



Tool balance measuring system



Shrink fit system



Coolant filtration filter



Air dryer



Air compressor



Electrical cabinet chiller



Chip conveyor (external)



Tool



NHX 4000 3rd Generation / NHX 5000 3rd Generation

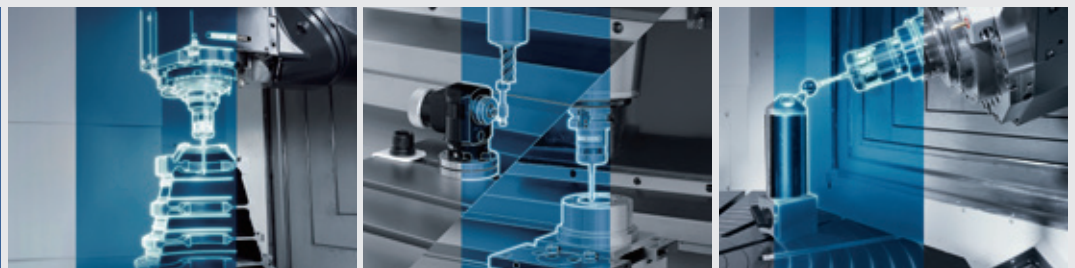
DMG MORI Technology Cycles

Technology Cycles are complete solutions that achieve complex machining easily in a short time. They enable every operator to easily perform high-quality machining, setups and measurements with general-purpose machine tools and standard tools / fixtures, which used to require specialized machines, programs and tools.

Shaping



Measuring



Monitoring



Handling



- The availability of the functions differ depending on the machine. For details, please consult our sales representative.
- The above is an image picture.

Interpolation turning*¹



Easy programming of interpolation turning

DMG MORI gearMILL*²



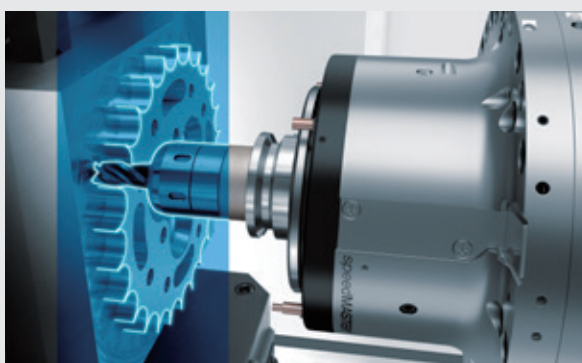
Integrating gear cutting into milling

MVC (Machine Vibration Control)*¹*³



Selects optimum conditions for preventing chatter

ATC (Application Tuning Cycle)



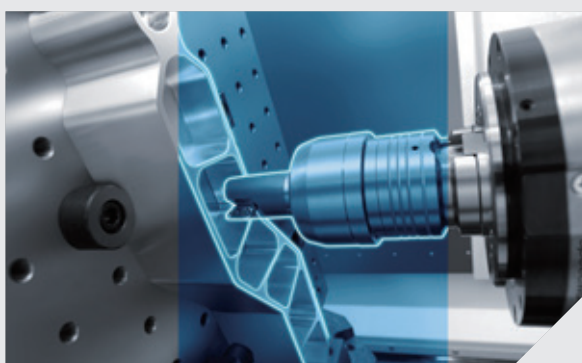
Easy setting of optimum feed according to the machining operation

MPC (Machine Protection Control)*¹



Minimizing load to the spindle when interference occurs

Efficient Production Package (High-speed canned cycle)*¹



Easy inputting of various machining patterns

*¹ Option *² Consultation is required *³ For machines with the SIEMENS NC unit, it is not available.

NHX 4000 3rd Generation / NHX 5000 3rd Generation

From the Idea to the Finished Product

DMG MORI's cutting-edge operation system, CELOS, enables consistent management, documentation and visualization of orders, processes and machine data. CELOS can be extended with apps and is also compatible with your company's existing infrastructures and programs.

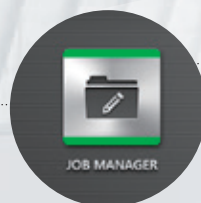
CELOS APPs facilitate quick and easy operation: three examples »»



JOB MANAGER

Systematic planning, administration and preparation of work orders

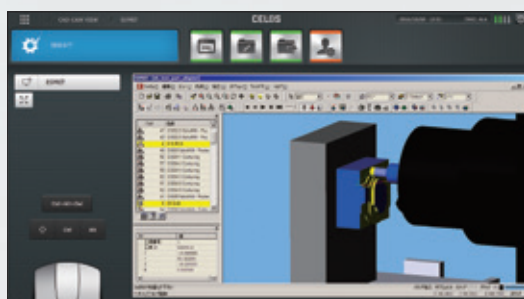
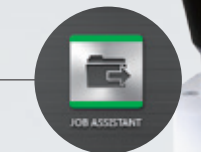
- + Machine related creation and configuration of new work orders
- + Structured storage of all production related data and documents
- + Easy visualization of job information on drawings, models, tools, fixtures, etc.



JOB ASSISTANT

Process-defined orders

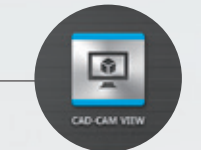
- + Menu guided set-up of the machine and conversational processing of production orders
- + Reliable error prevention thanks to windows-based assistance instructions with a mandatory acknowledgement function



CAD-CAM VIEW

Visualize workpieces and improve program data

- + Direct remote access to external CAD / CAM workstations
- + Central master data as basis for component viewing
- + Immediate change options for machining steps, NC programs and CAM strategies, directly in the CNC system



CELOS |

APP menu:

Central access to all available applications



ERGOline operation panel with 21.5-inch multi-touch screen and NC unit from FANUC or SIEMENS

29

STANDARD

Standard user interfaces for all new high technology machines from DMG MORI

CONSISTENT

Consistent administration, documentation and visualization of order, process and machine data

COMPATIBLE

Compatible with PPS and ERP systems
Can be networked with CAD / CAM products
Open to trendsetting CELOS APP extensions

PPS: Production Planning and Scheduling System
ERP: Enterprise Resource Planning

NHX 4000 3rd Generation / NHX 5000 3rd Generation

Revolutionary Productivity with Cutting-edge Technology DMG MORI's Connected Industries

By making full use of cutting-edge technology, DMG MORI realizes its Connected Industries* to help improve your productivity and profitability significantly. Our Connected Industries is structured in three layers. Centering around the cutting-edge operation system "CELOS," our Connected Industries networks not just individual machines but also production systems and the entire plant. This network will help clearly define your problems, offering the best and customized solutions.

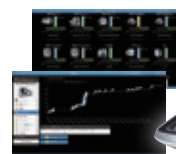
* An industrial society in which new added value will be created through connected humans, machines, and technologies – A new vision for the future of Japanese industries that the Ministry of Economy, Trade and Industry advocates.

Digital Factory

Your office



CELOS Club



CELOS Manufacturing

Your plant



CELOS Machine

Your machines



AI-based
solutions

MPC (Machine Protection Control)



Early detection of machine and machining problems by visualizing spindle vibration.

- + Minimizing the effect on the machine by stopping the spindle within 0.01 seconds after vibration of a certain level or higher is detected
- + Learning tool-dependent machining vibration in advance to compare the data with the actual value and to determine abnormal vibration at the time of mass-production
- + Diagnosing the spindle bearing status for preventive maintenance

MVC (Machine Vibration Control)



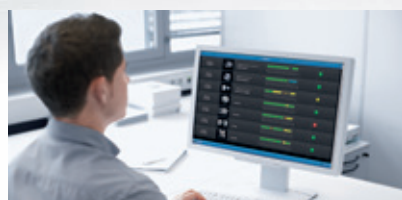
Easy operation just by pressing the button for no-chatter condition (left and right) for the current machining (center).

- + Automatically calculating the optimal cutting conditions to control chatter by detecting it with the sensor mounted on the spindle
- + No advanced skill necessary due to easy operation with a button
- + Capable of reflecting the automatically calculated optimal cutting conditions in the NC program right away

CELOS Machine Extremely easy-to-use machine

- + This machine is loaded with the cutting-edge operation system CELOS, offering various applications useful for your machining
- + By accumulating machining know-how on the CELOS, all operators are able to make products at the same level of quality
- + Productivity will be improved by streamlining time-consuming and burdensome setups to reduce the operator's workloads
- + Complex machining, which used to require dedicated machines and technical knowledge, is made simpler and faster with Technology Cycles
- + The use of AI prevents the occurrence of machine problems

* The information needed to machine a workpiece (setups, tools, programs, etc.)



CELOS Manufacturing Connected production processes

- + A CELOS application called "MESSENGER" connects machines in your plant, visualizing the status of machine operation
- + The causes of machine stops will be identified easily, contributing to improved machine operation rates
- + CELOS applications can be upgraded to their latest versions through CELOS Club, allowing for smooth IoT deployment
- + The machine's operational status can be monitored through smartphones and tablets even from outside your plant

Digital Factory Digitization accelerates connected plants

- + Your plant can be connected to external business partners by the utilization of IoT, significantly streamlining the flow of your entire production system
- + CELOS Club can maximize the ability of CELOS
- + ADAMOS* offers an open platform for IoT

* Please consult our sales representative for more detailed information, including the service start time in your country.

CELOS: Control Efficiency Lead Operation System



CELOS Club



Continuously supporting your productivity improvements

- + Latest functions always available through version upgrades
 - + Centralized machine management and streamlined programming
 - + Maximizing operating time
 - + CELOS Club Platinum (option)
- Japan only.

MAPPS: Mori Advanced Programming Production System

WERKBLiQ



Productivity improvements through cutting-edge machine maintenance services

- + Streamlined maintenance work based on digitized plant equipment information
- + Minimizing down time by promptly identifying the cause of machine stop
- + The integrated management of maintenance procedures and standards eliminates dependency on individual operator skills

● Please consult our sales representative for more detailed information, including the release time in your country.

NHX 4000 3rd Generation / NHX 5000 3rd Generation

High-Performance Operation Systems

MAPPSV is a high-performance, smart operation system mounted on CELOS. It enables operators to easily control machine operation with touch operation. SIEMENS 840D solutionline: This powerful state-of-the-art operation system with a variety of functions as standard will ensure optimal productivity.



The 6-window display provides access to a variety of information at the same time >>>

The screen combinations can be freely customized >>>



CELOS with FANUC

- + User memory area with large capacity of 6 GB as standard
- + Equipped with simple and easy-to-follow conversational programming function
- + Quick access to necessary information in manual data by searching function
- + Two multi-touch panels
- + 3D machining simulation for easy geometry check
- + 6-window display for checking necessary machine information all at once
- + Improved setups by displaying necessary machine information according to operation



CELOS with SIEMENS

- + Highly simplified interactive programming
- + SINUMERIK Operate new user interface
- + ATC*, 3D quickSET*
- + Fast block processing time of approx. 0.6 ms
- + Look-ahead function for up to 150 NC blocks (capable of parameterisation)
- + Graphic simulation of the machining process with overhead view, triple-plane display and 3D display; synchronised display during the machining process
- + 3D machining, optional 3D tool correction via the surface normal vector

* Option

NHX 4000 3rd Generation / NHX 5000 3rd Generation

Unique Energy-saving Function GREENmode



DMG MORI has developed the energy-saving function "GREENmode" to accomplish sustainable development goals (SDGs).

SDGs: Sustainable Development Goals

The function reduces power consumption by approximately 34% compared to the conventional machine by using efficient machining programs to minimize unnecessary stand-by power*.

* Comparison between the NHX 5000 3rd Generation and the existing model (SH-503).

The effect indicated above may not be achieved depending on the machines, cutting conditions, environmental conditions at measurement.

- + Improve cutting conditions to reduce machining time by bringing the best out of machine tools and tools
- + Reduce unnecessary power consumption during stand-by time by shutting off power of the spindle, chip conveyor and coolant pump at a time of machine stop
- + Visualize power consumption and CO₂ emission amount

GREENmode

GREEN monitoring

- + Visualize power consumption and CO₂ emission amount on the CELOS operation screen



GREEN device

- + High-brightness LED light
- + Accumulator pressure-keeping hydraulic pump

GREEN idle reduction

- + Shut off the power of the servo motor, spindle and coolant pump at a time of machine stop
- + Turn off the operation panel screen when a machine is not in operation for a certain time

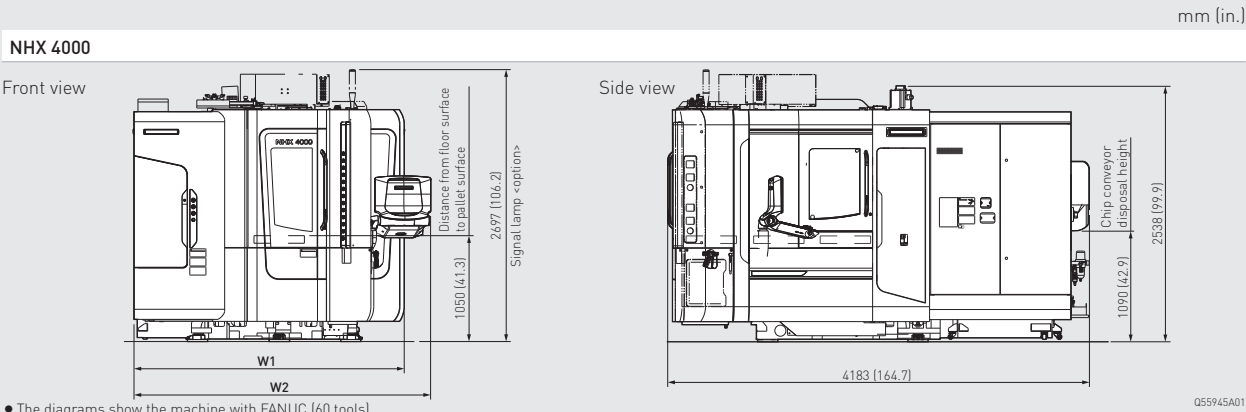
GREEN control

- + Reduce machining power by energy-saving pecking cycles
- + Quicken standard M codes
- + Simultaneous acceleration / deceleration of the spindle and feed axes
- + Control coolant and chip discharge amount with the inverter

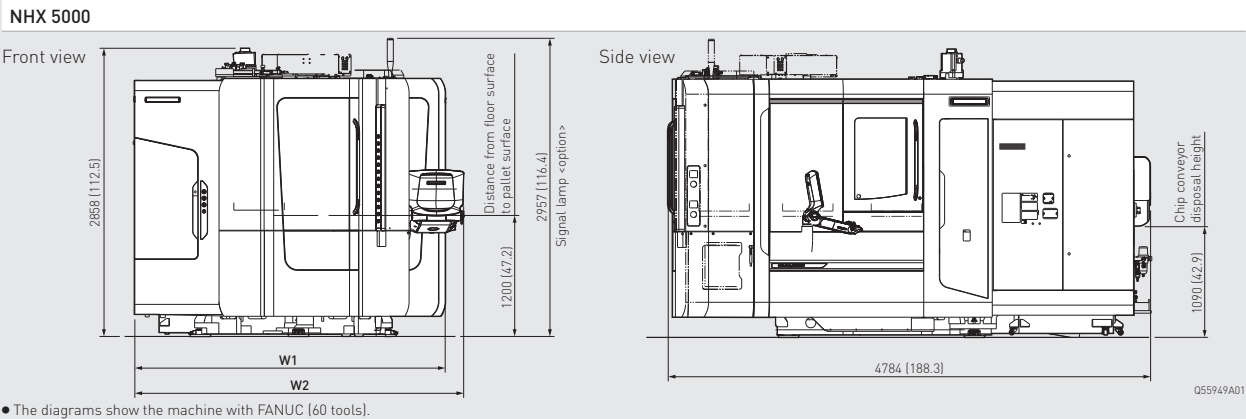
CELOS: Control Efficiency Lead Operation System

• The photo shows CELOS (FANUC).

Machine Size



		NHX 4000				
Tool storage capacity	Height		Width			Depth*
	FANUC	SIEMENS	W1		W2	
			FANUC	SIEMENS		
Ring-type: 60	2,538 [99.9]	2,592 [102.0]	2,680 [105.5]	2,725 [107.3]	2,942 [115.8]	4,183 [164.7]
Chain-type: 120	3,042 [119.8]	—	3,091 [121.7]	—	3,353 [132.0]	
Rack-type: 180, 240	3,310 [130.3]	—	3,873 [152.5]	—	4,135 [162.8]	
Wheel-type: 123	—	2,592 [102.0]	—	2,890 [113.8]	3,150 [124.0]	4,191 [165.0]
* Please consult our sales representative when the Hinge + Scraper 2-stage chip conveyor (with drum filter) is selected.						
mm (in.)						



		NHX 5000				
Tool storage capacity	Height		Width			Depth*
	FANUC	SIEMENS	W1		W2	
			FANUC	SIEMENS		
Ring-type: 60	2,858 [112.5]	2,906 [114.4]	3,078 [121.2]	3,123 [123.0]	3,261 [128.4]	4,784 [188.3]
Chain-type: 120	3,042 [119.8]	—	3,391 [133.5]	—	3,574 [140.7]	
Rack-type: 180, 240	3,310 [130.3]	—	4,173 [164.3]	—	4,356 [171.5]	
Wheel-type: 123	—	2,913 [114.7]	—	3,350 [131.9]	3,533 [139.1]	4,783 [188.3]

* Please consult our sales representative when the Hinge + Scraper 2-stage chip conveyor (with drum filter) is selected.

NHX 4000 3rd Generation / NHX 5000 3rd Generation

Machine Specifications

				NHX 4000		NHX 5000	
Travel							
X-axis travel <longitudinal movement of saddle>		mm (in.)		560 [22.0]		730 [28.7]	
Y-axis travel <vertical movement of spindle head>		mm (in.)		560 [22.0]		730 [28.7]	
Z-axis travel <cross movement of pallet>		mm (in.)		660 [26.0]		880 [34.6]	
Distance from pallet center to spindle gage plane		mm (in.)		70—730 [2.8—28.7]		70—950 [2.8—37.4]	
Pallet							
Pallet working surface		mm (in.)		400 × 400 [15.7 × 15.7]		500 × 500 [19.7 × 19.7]	
Pallet loading capacity		kg (lb.)		400 [880]		500 (1,100), 700 (1,540)	
Max. workpiece swing diameter		mm (in.)		630 [24.8]		800 [31.4]	
Max. workpiece height*1		mm (in.)		Tap pallet: 900 [35.4] T-slot pallet: 880 [34.6]		1,000 [39.4]	
Pallet indexing time [90°]		s		0.73*2 <full 4th axis rotary table>		0.94*2 <full 4th axis rotary table>	
Spindle							
Max. spindle speed		min ⁻¹		20,000 15,000 <high torque>			
Feedrate							
Rapid traverse rate		mm/min (ipm)		X, Y, Z: 60,000 [2,362.2]			
Cutting feedrate		mm/min (ipm)		X, Y, Z: 0—60,000 [0—2,362.2] {when using high-precision control <look-ahead control>}			
ATC							
Type of tool shank		FANUC		BT40 <two-face contact>*3, BT40, CAT40, DIN40, HSK-A63			
		SIEMENS		HSK-A63, SK40 <two-face contact>*3			
Tool storage capacity		FANUC		Ring-type: 60 Chain-type*4: 120 Rack-type*4: 180, 240			
		SIEMENS		Ring-type: 60 Wheel-type: 123, 183, 243, 303			
Max. tool diameter <with adjacent tools>		mm (in.)		70 [2.7] / 80 [3.1] <SIEMENS (wheel-type)>			
Max. tool diameter <without adjacent tools>		mm (in.)		170 [6.6]: ring-type 140 [5.5]: chain-type, rack-type 160 [6.2] <SIEMENS (wheel-type)>			
Max. tool length		mm (in.)		450 [17.7]		550 [21.6]*5	
Max. tool mass		kg (lb.)		12 [26.4] / 15 [33] <SIEMENS (wheel-type)>			
Tool changing time	Cut-to-cut (chip-to-chip)	FANUC <MAS>	s	2.2: 60 tools <ring-type>		2.5: 60 tools <ring-type>	
		SIEMENS <DIN>	s	3.0: 60 tools <ring-type>		3.2: 60 tools <ring-type>	
APC							
Number of pallets				2			
Pallet changing time*6			s	8.0		9.0, 12.5*7	

			NHX 4000	NHX 5000
Motor				
Spindle drive motor	20,000 min ⁻¹	kW (HP)	37 / 26 / 18.5 [50 / 34.7 / 24.7] <15%ED / 30 min / cont>	
<FANUC>	15,000 min ⁻¹ <high torque>	kW (HP)	37 / 26 / 22 [50 / 34.7 / 30] <15%ED / 30 min / cont>	
Spindle drive motor	20,000 min ⁻¹	kW (HP)	42 / 25 [56.0 / 33.3] <S3 40% / cont>	
<SIEMENS>	15,000 min ⁻¹ <high torque>	kW (HP)	46 / 30 [61.3 / 40] <S6 40% / S1 100%>	
Machine size				
Machine height	FANUC	mm (in.)	2,538 (99.9)	2,858 (112.5)
<from floor>	SIEMENS	mm (in.)	2,592 (102.0)	2,906 (114.4)
Floor space*8	FANUC	mm (in.)	2,680 × 4,183 (105.5 × 164.7)	3,078 × 4,784 (121.2 × 188.3)
<width × depth*>	SIEMENS	mm (in.)	2,725 × 4,183 (107.3 × 164.7)	3,123 × 4,784 (123.0 × 188.3)
Mass of machine <including coolant tank>		kg (lb.)	8,500 (18,700)	12,000 (26,400)
Control unit				
FANUC			F31iB	
SIEMENS			SINUMERIK 840D sl	

*1 Max height of 700 mm (27.5 in.) when RPS21 (option) <Consultation is required> is selected. (NHX 4000 / NHX 5000)

*2 Including unclamping time.

*3 When the two-face contact specification is selected, two-face contact tools and non-two-face contact tools cannot be used together.

*4 Dry anchor (option) is essential.

*5 Some pots in the rack type magazine have a maximum tool length of 500 mm (19.7 in.). For details, please consult our sales representative.

*6 When equipped with the auto-coupler, time taken to shut off / supply hydraulic pressure to the fixture is not included.

*7 Pallet loading capacity 700 kg (1,540 lb.)

*8 Floor space may differ between different control versions.

*9 Please consult our sales representative when the Hinge + Scraper 2-stage chip conveyor (with drum filter) is selected.

● 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 15,000 min⁻¹ or higher.

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

● For details, please check the Detailed Specifications.

● The information in this catalog is valid as of December 2019.

RPS: Rotary Pallet Storage

NHX 4000 3rd Generation / NHX 5000 3rd Generation

Standard & Optional Features

●: Standard features
○: Options
—: Not applicable

			NHX 4000	NHX 5000
Spindle				
Type of tool shank	FANUC	BT40 <two-face contact>*1	●	●
		BT40	○	○
		CAT40	○	○
		DIN40	○	○
	SIEMENS	HSK-A63	○	○
		HSK-A63	●	●
		SK40 <two-face contact>*1	○	○
Output	FANUC	20,000 min ⁻¹ : 37 / 26 / 18.5 kW (50 / 34.7 / 24.7 HP) <15%ED / 30 min / cont>	●	●
		15,000 min ⁻¹ : 37 / 26 / 22 kW (50 / 34.7 / 30 HP) <15%ED / 30 min / cont> {high torque}	○	○
	SIEMENS	20,000 min ⁻¹ : 42 / 25 kW (56.0 / 33.3 HP) <S3 40% / cont>	●	●
		15,000 min ⁻¹ : 46 / 30 kW (61.3 / 40 HP) <S6 40% / S1 100%> {high torque}	○	○
Table				
Minimum table indexing angle	Full 4th axis rotary table		●	●
Pallet / APC				
Hydraulic / pneumatic interface (with pallets)	Hydraulic 2 circuits + workpiece seating detection 2 circuits		●*2	●*2
Magazine				
Tool storage capacity	FANUC	60 tools (ring-type)	●	●
		120 tools (chain-type)*3	○	○
		180 tools (rack-type)*3	○	○
		240 tools (rack-type)*3	○	○
	SIEMENS	60 tools (ring-type)	●	●
		123 tools (wheel-type)	○	○
		183 tools (wheel-type)	○	○
		243 tools (wheel-type)	○	○
		303 tools (wheel-type)	○	○
Coolant				
Coolant system		●	●	
Shower coolant (used at the same time as spindle coolant)		●	●	
Coolant gun		●	●	
Through-spindle coolant / air (switching specifications)		○	○	
Through-spindle coolant system (unit on coolant tank)*4 center through	1.5 MPa (217.5 psi) <water-soluble>	●	●	
	7.0 MPa (1,015 psi) <water-soluble>	○	○	
Through-spindle coolant system (unit on coolant tank)*4 side through	1.5 MPa (217.5 psi) <water-soluble>	○	○	
	7.0 MPa (1,015 psi) <water-soluble>	○	○	

- : Standard features
- : Options
- : Not applicable

			NHX 4000	NHX 5000
Coolant				
Coolant chiller (separate type)	For standard coolant only		○*5	○*5
Mist collector HVS-150	Including stand*6		○*5*7	—
Mist collector HVS-220	Including stand*6		—	○*5*7
Mist collector AFS-1100*8	Including stand		○*5	—
Mist collector AFS-1600*9	Including stand		—	○*5
Oil skimmer*10			●	●
Chip disposal				
Chip conveyor	Rear discharge, scraper type (drum filter type)		●	●
	Rear discharge, Hinge + Scraper 2-stage chip discharge (drum filter type)		○	○
Zero sludge coolant tank*10			●	●
Measurement				
In-machine measuring system (table)*11	Touch sensor	(M)	○	○
	Touch sensor	(R)	○	○
	Touch sensor + tool setter function (tool length + diameter)	(M)	○	○
	Touch sensor + tool setter function (tool length + diameter)	(R)	○	○
In-machine measuring system (spindle)*11*12	Touch sensor (optical signal transmission type) + workpiece setter function	(R)	●	●
Tool breakage detection system (magazine)			●	●
Improved accuracy				
Full closed loop control (Scale feedback)			●	●
Spindle water-glycol chiller (chilling unit)			●	●
Other				
Signal lamp	4 colors (LED type: red, yellow, green, blue)		○	○
Manual pulse generator (separate type)			●	●

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

*2 Optional for the CPP and LPP specifications (consultation required). It is not available for RPS specification.

*3 Dry anchor (option) is essential.

*4 Zero sludge coolant tank is included.

*5 DMQP (DMG MORI Qualified Products)

*6 Cannot be used in Europe.

*7 For machines with the SIEMENS NC unit, it is not available.

*8 Not compatible with oil-based coolant. If using oil-based coolant, select the HVS-150.

*9 Not compatible with oil-based coolant. If using oil-based coolant, select the HVS-220.

*10 Not compatible with oil-based coolant.

*11 The specifications vary depending on the manufacturers. (M: made by Magnescale R: made by RENISHAW)

*12 Equipped with the high-speed spindle for which the spindle bearing uses a ceramic ball. So the energization type touch sensor cannot be used.

● DMQP: Please see Page 24 for details.

● For details, please check the Detailed Specifications.

● The information in this catalog is valid as of December 2019.

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

● Some options are not available in particular regions. For details, please consult our sales representative.

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

CPP: Carrier Pallet Pool LPP: Linear Pallet Pool RPS: Rotary Pallet Storage

<Precautions for Machine Relocation>

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

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

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

+ If you have any questions regarding the content, please consult our sales representative.

+ The information in this catalog is valid as of January 2020. 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.

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