DMG MORI

High-Precision, High-Efficiency Integrated Mill Turn Center

NTX 2000 2nd Generation
NTX 2500 2nd Generation
NTX 3000 2nd Generation

NTX 2000
NTX 2500
NTX 3000

NTX 2000 / NTX 2500 / NTX 3000
2nd Generation

Higher Accuracy and Greater Productivity

DMGMORI.COM

NTX 2000 2nd Generation / NTX 2500 2nd Generation / NTX 3000 2nd Generation

Overwhelming Quality by Perfect Performance

The NTX 2000 2nd Generation / NTX 2500 2nd Generation / NTX 3000 2nd Generation are all-round machines capable of cutting complex-shaped workpieces with high accuracy and efficiency for the aircraft, medical equipment, automotive, die & mold and precision equipment industries. The models are equipped with a large machining envelop as well as flexible cutting abilities by combined features of a turning center and a machining center. This ensures a wide range of machining from micro machining to cutting of large workpieces.
The 2nd Generation models will bring great profit for you by efficiently integrating processes of the high-mix, low-volume production and mass production.

1


2


3


4


5


6


7


8


9


10

Aerospace

1 Landing gear
2 Turbine blade
3 Propeller

Medical equipment

4 Artificial knee joint
5 Artificial hip joint

Automobiles

6 Cylinder head
7 Crank shaft
8 Axle housing
9 Steering gear box

Industrial equipment

10 Drive shaft

● Figures in inches were converted from metric measurements.

NTX 2000 2nd Generation / NTX 2500 2nd Generation / NTX 3000 2nd Generation

Integrated Mill Turn Center at Highest Level of Accuracy and Efficiency

The NTX 2000 2nd Generation / NTX 2500 2nd Generation / NTX 3000 2nd Generation equipped with DMG MORI's new technologies are capable of integrating various machining processes with high accuracy, superb cutting abilities and wide machining envelops.
The models enable 6-face machining with Spindle 2 and complete a whole process of part machining on one machine. With the "CELOS," a user interface, setting of complex integrated machining has become easier than ever.
The 2nd Generation models deliver the highest performance for customers who aim at high-efficiency production processes and cost reduction.

Simultaneous 5-axis machining

+ Simultaneous 5-axis machining of complex parts with the direct drive motor (DDM) installed in the B-axis

High productivity

+ Higher machining flexibility by the compactMASTER with a full length of only 350 mm (13.8 in.)
+ Y-axis on Turret 2 (Option) for various use <±40 mm (±1.5 in.)>
+ The B-axis rotation range of 240° and rotation speed of 100 min^{-1}, the X-axis travel of 675 mm (26.5 in.) <-125 - +550 mm (4.9 - +21.6 in.)>, the Y-axis travel of 300 mm (11.8 in.)<±150 mm (±5.9 in.)>
+ Equipped with a Capto C6 tool spindle as standard, max. spindle speed of 12,000 min^{-1}, 20,000 min^{-1} (Option)
+ Spindle 2 (Option) for 6-face machining, and complete machining of parts on one machine

High precision

+ Thoroughly controlled thermal displacement by cooling water circulation in the body
+ Full-closed loop control on B- / C-axis <Scale feedback> equipped as standard

High rigidity

+ High-rigidity bed and roller guides

CELOS operating system

+ Comprehensive management, documentation and visualization of jobs, machining processes and machine data
+ Expansion of functions possible by adding applications. High affinity with existing information infrastracture and software

Unique energy-saving function

+ GREENmode for visualizing power saving settings and saving effect

CELOS: Control Efficiency Lead Operation System

NTX 2000 2nd Generation / NTX 2500 2nd Generation / NTX 3000 2nd Generation

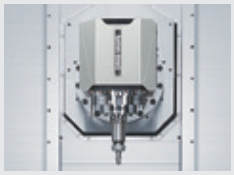
Best Solutions for Your Shop Floor

The NTX 2000 2nd Generation / NTX 2500 2nd Generation / NTX 3000 2nd Generation provides solutions for higher machining accuracy, higher production efficiency by automation, better chip disposal, maintainability and setup performance. With various cutting-edge solutions, the NTX 2000 2nd Generation / NTX 2500 2nd Generation / NTX 3000 2nd Generation demonstrates its capabilities to the full extent and achieves a higher level of machining.
DMG MORI offers the best solutions that solve your shop issues.

1

Tool spindle

For high-speed rotation

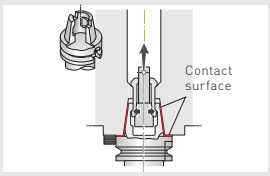


20,000 min^{-1}
High-speed

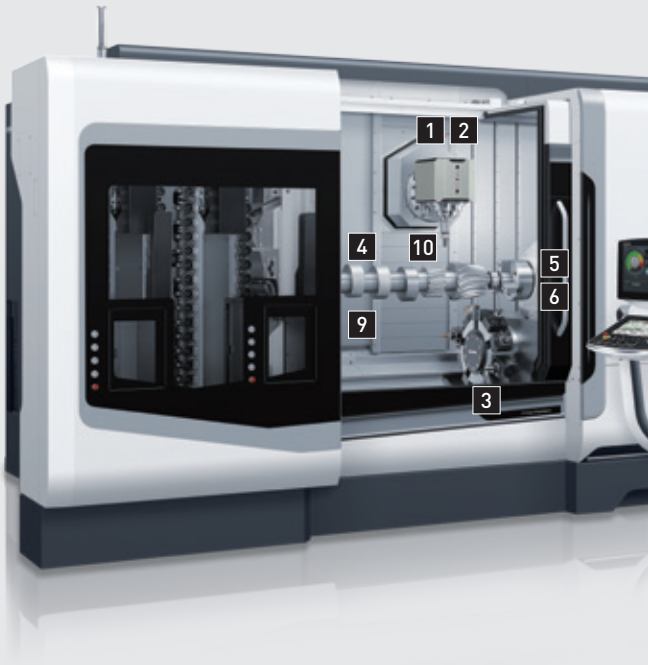
2

Tool Holder

Tool spindle taper hole for HSK-A63 (T63) also available



Taper hole of tool spindle
HSK-A63 (T63)



3

Turret 2

Greater machining efficiency

10-station Turret
Milling

4

Spindle output

For heavy-duty cutting

High output

5

Workpiece support

Workpiece support suitable for your workpiece and machining

Chuck

Center on Spindle 2

Center on Turret 2

6

Long workpieces

Chatter control

Alternating speed

Steady rest on Turret 2

7 Cutting technology

Improving machining efficiency with Technology Cycles all at once


Efficient Production Package (High-speed canned cycle)


gearSKIVING


MVC (Machine Vibration Control)

8 Mass production, automation

Various automation / mass-production solutions


Bar feeder


Workpiece unloader (Spindle 2 side)

9 Machining accuracy

Meeting high accuracy requirements


In-machine measuring system


Full closed loop control (Scale feedback)


Tool balancer


Coolant chiller

10 Better setup performance

Drastically shortened setup time


Automatic in-machine tool presetter


3D quickSET


External tool presetter

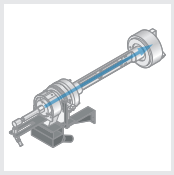
11 Chip disposal

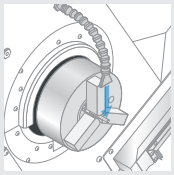
Higher cutting performance

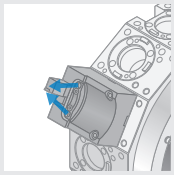

Chip conveyor


Super-high pressure coolant system


Coolant gun

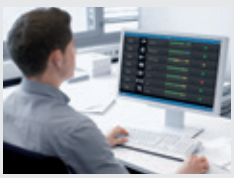

Through-spindle coolant system


Coolant in upper part of chuck


Air blow (Tool tip)

12 Maintenance

Improved production efficiency by preventive maintenance




DMG MORI Messenger

MPC (Machine Protection Control)


Air dryer


Oil skimmer


Mist collector

NTX 2000 2nd Generation / NTX 2500 2nd Generation / NTX 3000 2nd Generation

Various Functions Available for Your Best Choice

The Turret 2 (Option) is available for the Spindle 2 (Option) and the tailstock specifications, and the milling function and the Y-axis function are available for the Turret 2 as an option. The NTX 2000 2nd Generation / NTX 2500 2nd Generation / NTX 3000 2nd Generation offers the best eight variations in the NTX series' history to respond the customers' specific needs.

Floor space required*
16.5 m² (177.5 ft²)

NTX 2000 2nd Generation
NTX 2500 2nd Generation
NTX 3000 2nd Generation

● Photo: Tool storage capacity 76 tools, Spindle 2 and Turret 2
＊ NTX 2500 2nd Generation, Control unit for FANUC, Tool storage capacity 38 tools, Including the chip conveyor

■ : Standard　□ : Option

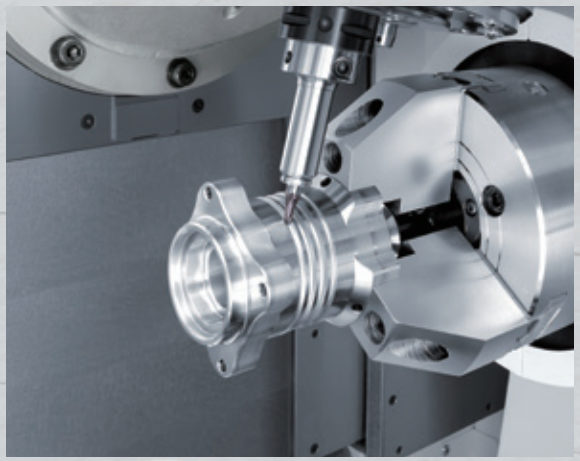
T1 : Tool spindle　**T2** : Turret 2　**S1** : Spindle 1

MC1 : Tool spindle Milling　**MC2** : Turret 2 Milling　**S2** : Spindle 2

Y1 : Tool spindle Y-axis　**Y2** : Turret 2 Y-axis　**TS** : Tailstock

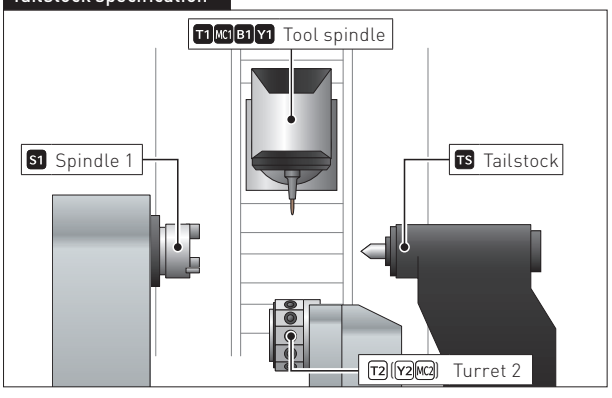
B1 : Tool spindle B-axis

● The Spindle 2 specification (S2) is not equipped with a tailstock (TS).

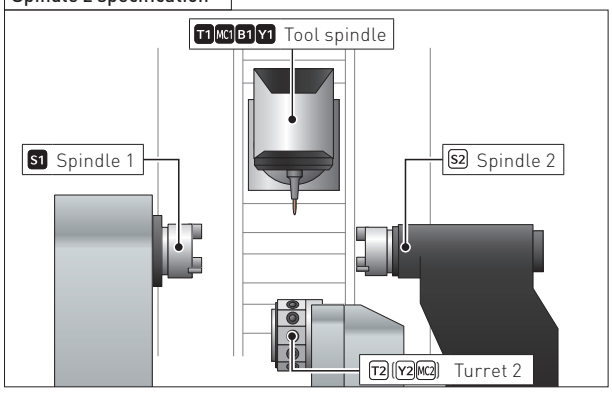


Specifications

Tailstock specification



Spindle 2 specification



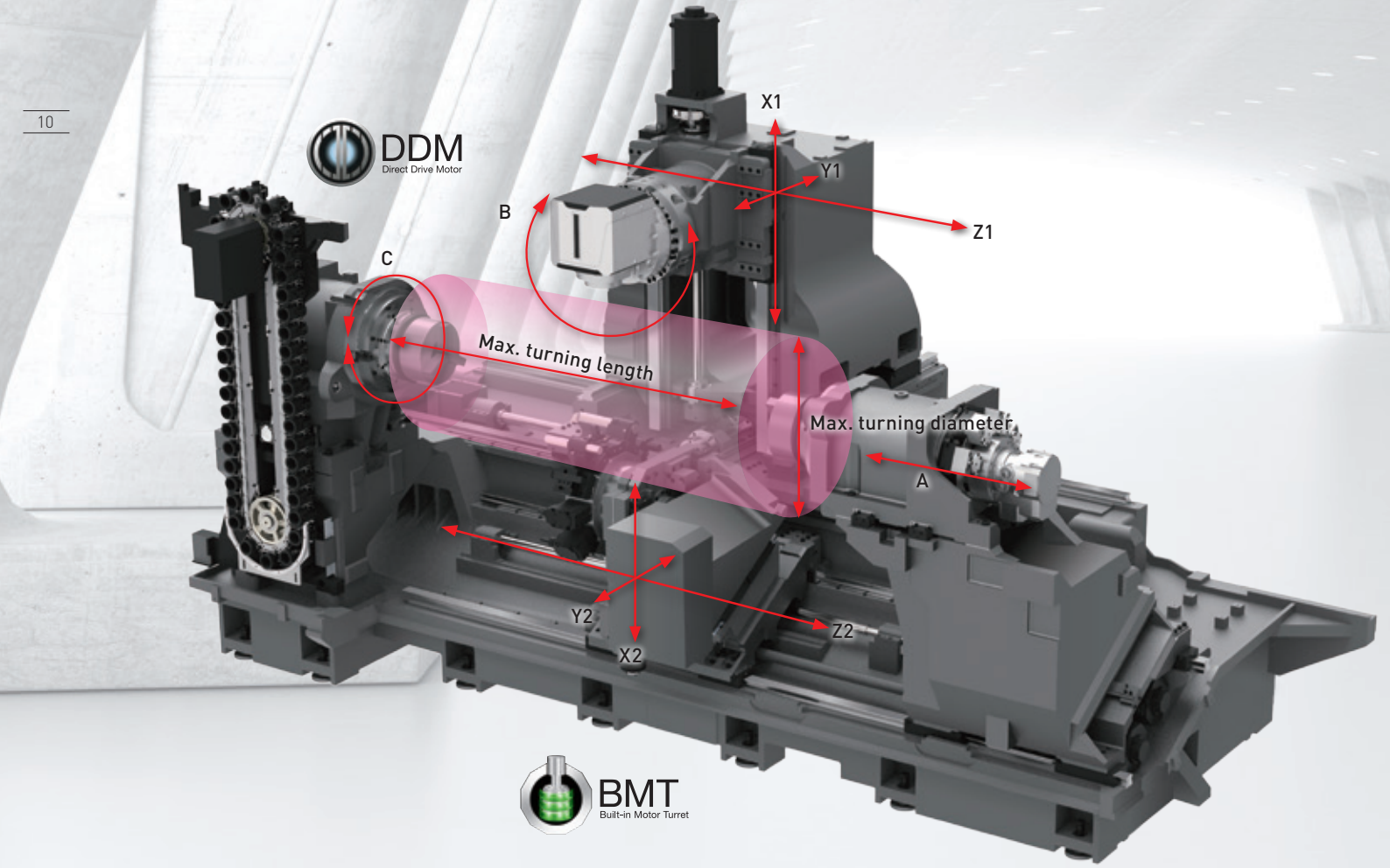
	NTX 2000 / NTX 2500 / NTX 3000							
Basic specification	T1 MC1 B1 Y1 S1 TS							
Optional specifications	—	T2	T2 MC2	T2 Y2 MC2	S2	T2 S2	T2 MC2 S2	T2 Y2 S2 MC2
Tool spindle / Spindle 1	●	●	●	●	●	●	●	●
Spindle 2	—	—	—	—	○	○	○	○
Turret 2 (Without the milling function)	—	○	—	—	—	○	—	—
Turret 2 (Milling specifications)	—	—	○	○	—	—	○	○
Turret 2 (Y-axis specifications)	—	—	—	○	—	—	—	○
Tailstock	●	●	●	●	—	—	—	—

●: Standard　○: Option　—: Not applicable

NTX 2000 2nd Generation / NTX 2500 2nd Generation / NTX 3000 2nd Generation

Perfect Specifications for Every Workpiece

The NTX 2000 2nd Generation / NTX 2500 2nd Generation / NTX 3000 2nd Generation provide a wide range of specifications. Options are available according to your needs. Please select optimal specifications and options suitable for your machining and workpiece sizes.



DDM: Direct Drive Motor
BMT: Built-in Motor Turret

■ : Standard　□ : Option

T1 : Tool spindle　**T2** : Turret 2　**S1** : Spindle 1

MC1 : Tool spindle Milling　**MC2** : Turret 2 Milling　**S2** : Spindle 2

Y1 : Tool spindle Y-axis　**Y2** : Turret 2 Y-axis　**TS** : Tailstock

B1 : Tool spindle B-axis

● The Spindle 2 specification (S2) is not equipped with a tailstock (TS).

Travel

			NTX 2000 / NTX 2500 / NTX 3000								
Basic specification			T1 MC1 B1 Y1 S1 TS								
Optional specifications			—	T2	T2 MC2	T2 Y2 MC2	S2	T2 S2	T2 MC2 S2	T2 Y2 S2 MC2	
Tool spindle	X1-axis	mm (in.)	675 (26.5)<-125 - +550 (-4.9 - +21.6)>								
	Y1-axis	mm (in.)	300 (11.8) <±150 (±5.9)>								
	Z1-axis	mm (in.)	1,562 (61.4) + 164 (6.4) <For ATC>								
	B-axis		240°								
Turret 2	X2-axis	mm (in.)	—	225 (8.8)			—	225 (8.8)			
	Y2-axis	mm (in.)		—		80 (3.1) <±40 (±1.5)>		—		80 (3.1) <±40 (±1.5)>	
	Z2-axis	mm (in.)	—	1,542 (60.7)			—	1,542 (60.7)			
Spindle 1 / Spindle 2	C-axis		360°				360° / 360°				
Tailstock, Spindle 2	A-axis	mm (in.)	1,542 (60.7), 1,542 (60.7)								

Workpiece size

			NTX 2000	NTX 2500	NTX 3000
Max. distance between centers		mm (in.)	1,822 (71.7)	1,842 (72.5)	1,862 (73.3)
Max. turning diameter (Tool spindle)		mm (in.)	ϕ670 (ϕ26.3)		
Max. turning diameter, Turret 2		mm (in.)	ϕ365 (ϕ14.3)<12-station>, ϕ325 (ϕ12.7) <10-station>		
Max. turning length		mm (in.)	1,538 (60.5)	1,530 (60.2)	1,519.3 (59.8)
Bar work capacity*1	Spindle 1	mm (in.)	ϕ65 (ϕ2.5)	ϕ80 (ϕ3.1)	ϕ102 (ϕ4.0)
	Spindle 2	mm (in.)	ϕ65 (ϕ2.5)	ϕ80 (ϕ3.1)	ϕ80 (ϕ3.1)

*1 Bar work capacity: Depending on the chuck / cylinder used and its restrictions, it may not be possible to reach full bar work capacity.

NTX 2000 2nd Generation / NTX 2500 2nd Generation / NTX 3000 2nd Generation

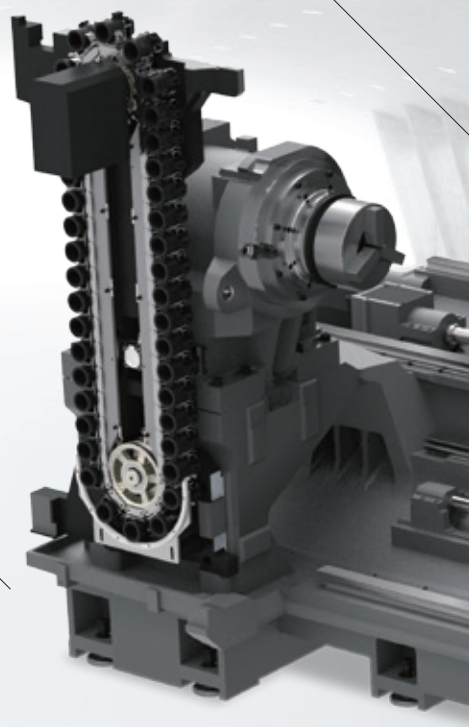
Ultimately High-Rigidity Structure to Bring Best Performance

DMG MORI pursues high-rigidity machines from the basic designing stage by FEM analysis. The NTX 2000 2nd Generation / NTX 2500 2nd Generation / NTX 3000 2nd Generation are equipped with a thick, high-rigidity bed to stably support the turnMASTER, a high-rigidity spindle; compactMASTER with a wide range of motion; and Turret 2 for heavy-duty cutting, and maximize the machining performance. The models have aging resistance, maintaining high-accuracy machining for a long period of time.

High-rigidity Machine Body

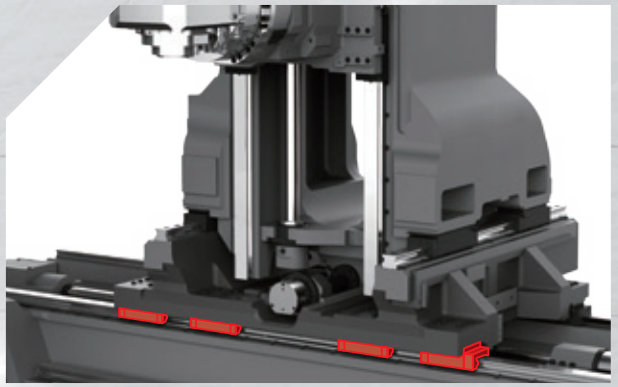
+ Thick and high-rigidity bed to stably support the moving units
+ Four sliders at the front bottom of the column
+ High-rigidity body designed using FEM analysis
+ Machine body with high vibration resistance designed by frequency response analysis
+ Roller guides allowing smooth movement and high rigidity for higher positioning accuracy
+ The double anchor method is employed for ball screws and support bearings, which ensures high rigidity for heavy-duty machining and high-accuracy machining

FEM: Finite Element Method



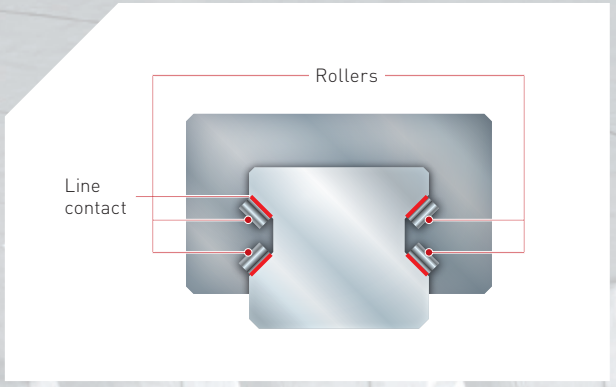
High Accuracy for Long Time

+ Circularity <Turning>
  Spindle 1 - Tool spindle: 0.532 µm (Actual results)
  Material: Brass
+ Circularity <Milling>
  X – Y plane: 1.8 µm (Actual results)
  X – Z plane: 1.3 µm (Actual results)
  X – Y - Z plane: 2.2 µm (Actual results)
  Material: Aluminum

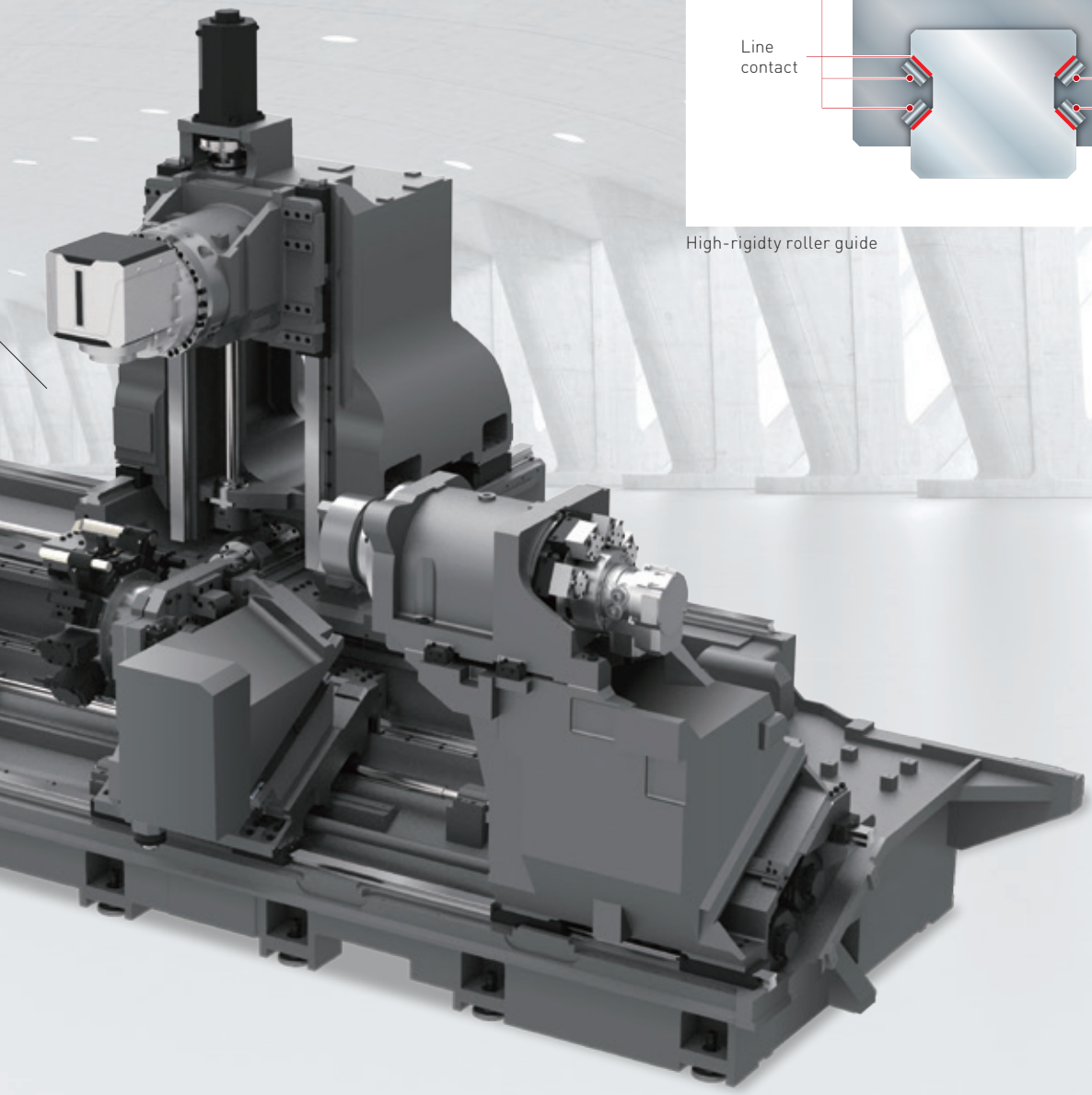


Four sliders at the front bottom of the column

turnMASTER



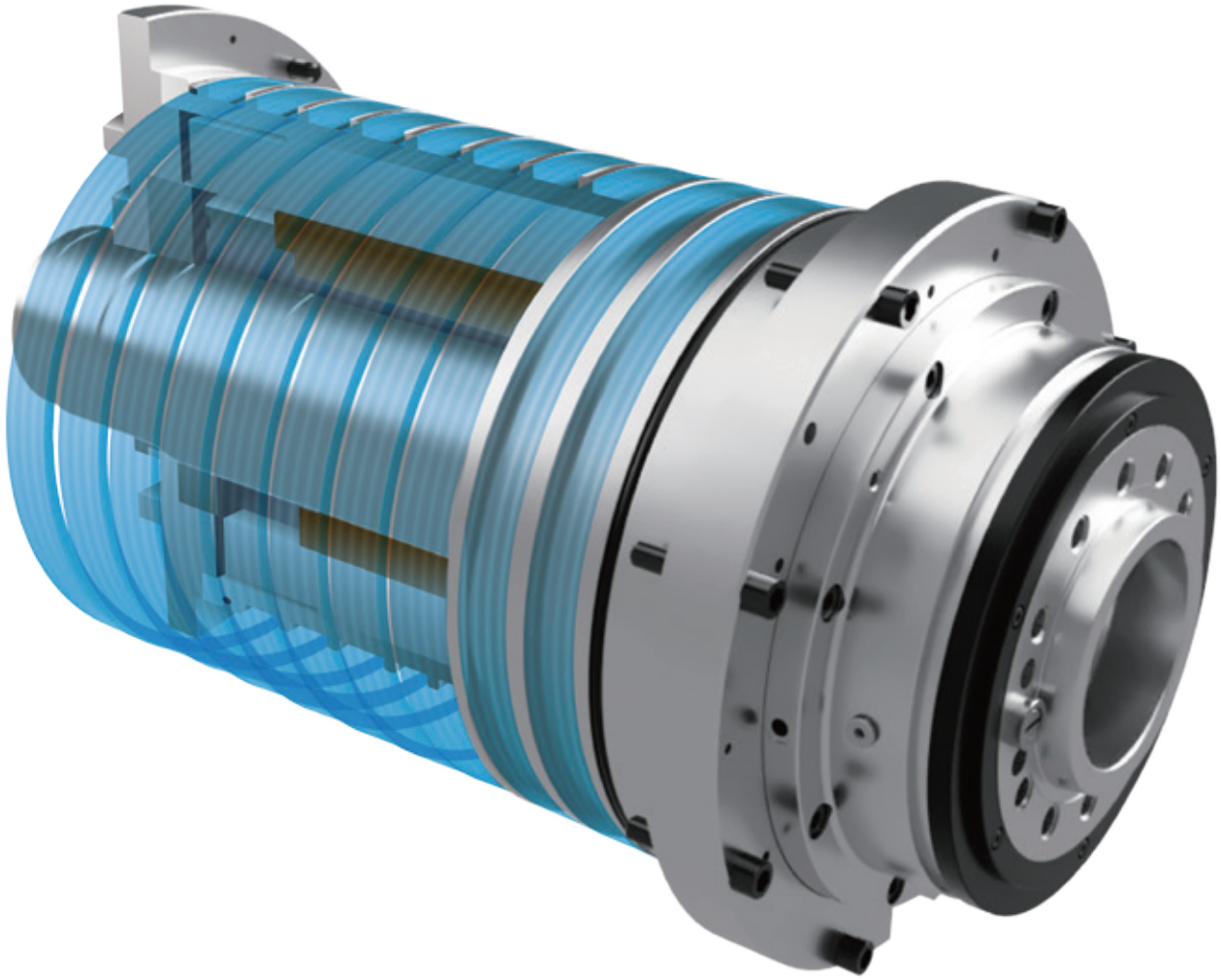
High-rigidty roller guide



NTX 2000 2nd Generation / NTX 2500 2nd Generation / NTX 3000 2nd Generation

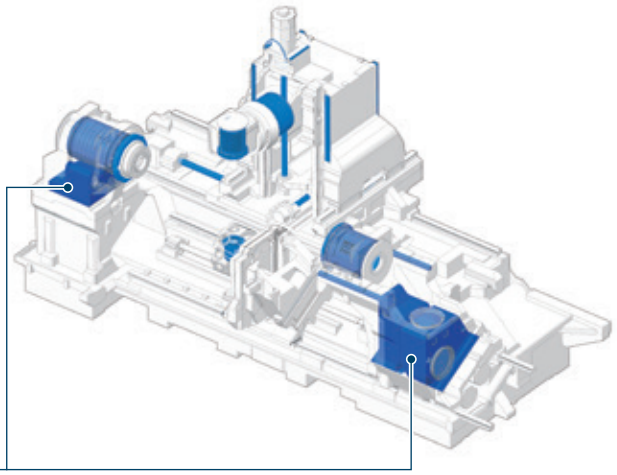
High-accuracy Machining by Thermal Displacement Control

The 2nd Generation models contrive innovative ways to achieve stable and high-accuracy machining. The models control thermal displacement by the cooling water circulating function that circulates cooling water around heat sources such as motors of the spindle, tool spindle and turret; ball screws and ball nuts. The optimized casting form can also help control the thermal displacement of the machine.



Cooling water circulation in the machine body

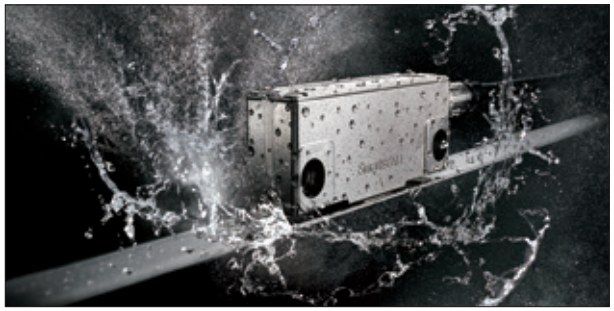
DMG MORI developed a new technology "Cooling water circulation in the machine body" as a countermeasure against thermal displacement that directly affects machining accuracy. Cooling water circulated to heat sources, which are motors of the spindle, tool spindle and turret; ball screws and ball nuts minimizes thermal displacement and contributes to high-accuracy machining.



Cooling water circulation in the machine body*

*Patent obtained in Japan, Germany, the U.S. and China

Full closed loop control <Scale feedback> (Option)



+ Superior precision with the Magnescale full closed loop control (Scale feedback)
+ Magnetic measuring system with a high resolution of 0.01 µm
+ Resistance to oil and condensation due to a magnetic detection principle
+ Impact resistance of 980 m/s² (38,582.6 in./s²)
+ Vibration resistance of 250 m/s² (9,842.5 in./s²)
+ High-accuracy machining achieved by the scale with the thermal expansion coefficient equivalent to the machine castings
+ Protection level of IP67 and bearingless non-contact structure for high reliability

Coolant chiller <Separate type> (Option)

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

When using oil-based coolant or a super-high-pressure coolant system, please be sure to consult our sales representative.

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

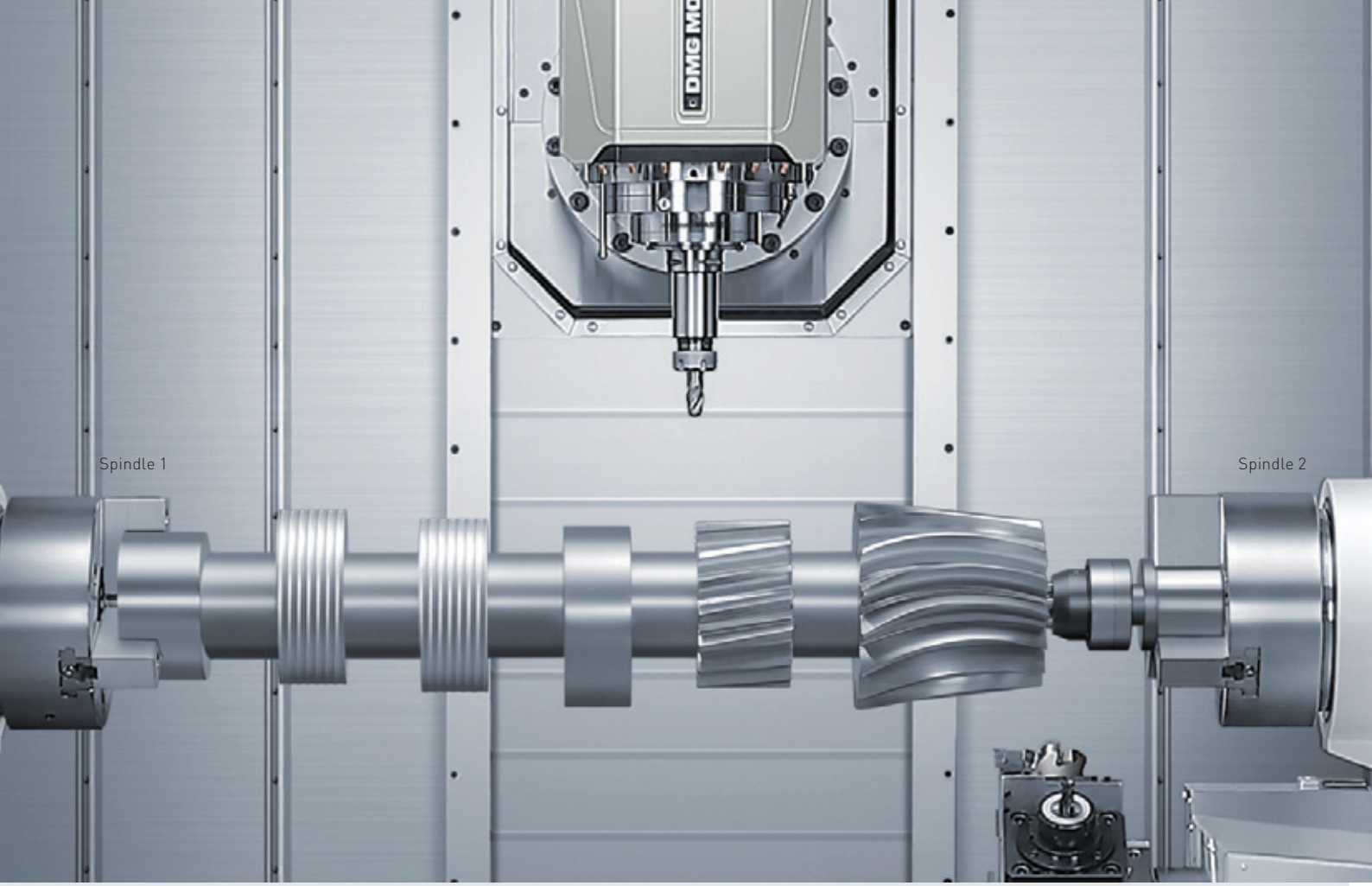
NTX 2000 2nd Generation / NTX 2500 2nd Generation / NTX 3000 2nd Generation

World's Highest Class Performance Spindle turnMASTER

The in-house manufactured spindle with the company's long years of expertise and know-how delivers overwhelming performance in heavy-duty cutting that requires rigidity.
The high-performance spindle equipped with outstanding cutting capabilities and durability contributes to increasing your shop floor productivity.

Sophisticated spindle labyrinth structure

+ More sophisticated labyrinth structure designed for frequent use of high-pressure coolant, and coolant ingress into the spindle prevented by featuring spindle air purge as standard, realizing high spindle durability



Chuck size <Spindle 1 / Spindle 2>

+ NTX 2000: 8-inch, 10-inch / 8-inch, 10-inch
+ NTX 2500: 10-inch, 12-inch / 10-inch, 12-inch
+ NTX 3000: 12-inch, 15-inch / 10-inch, 12-inch

Max. spindle speed <Spindle 1 / Spindle 2>

+ NTX 2000: 5,000 min^{-1} / 5,000 min^{-1}
+ NTX 2500: 4,000 min^{-1} / 4,000 min^{-1}
+ NTX 3000: 3,000 min^{-1} / 4,000 min^{-1}

Spindle output

+ NTX 2000: 15 / 15 / 11 kW (20 / 20 / 15 HP) <15%ED / 30 min / cont> <Spindle 1>
  15 / 15 / 11 kW (20 / 20 / 15 HP) <15%ED / 30 min / cont> <Spindle 2>
+ NTX 2500: 18.5 / 18.5 / 15 kW (24.7 / 24.7 / 20 HP) <25%ED / 50%ED / cont> <Spindle 1>
  18.5 / 18.5 / 15 kW (24.7 / 24.7 / 20 HP) <25%ED / 50%ED / cont> <Spindle 2>
+ NTX 3000: 30 / 25 kW (40 / 33.3 HP) <30 min / cont> <Spindle 1>
  18.5 / 18.5 / 15 kW (24.7 / 24.7 / 20 HP) <25%ED / 50%ED / cont> <Spindle 2>

● The chuck is optional.

NTX 2000 2nd Generation / NTX 2500 2nd Generation / NTX 3000 2nd Generation

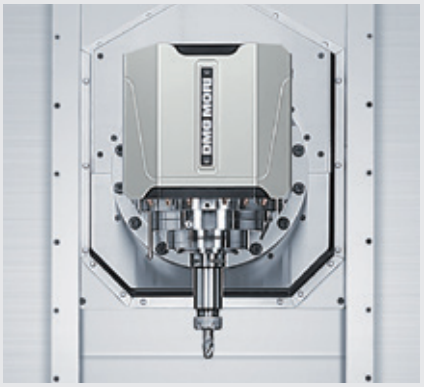
The compactMASTER, Most Compact Tool Spindle in its Class of only 350 mm (13.8 in.) with High Rigidity

The compactMASTER, a high-rigidity spindle with a compactness of only 350 mm (13.8 in.) in length is equipped with the DDS (Direct Drive Spindle). It is the smallest in its class, yet ensures a wide machining envelop. The spindle can handle a wider range of workpieces to further achieve process integration, contributing to boosting your productivity.

+ A direct drive spindle (DDS) adopted as the tool spindle
+ Max. tool spindle speed: 12,000 min^{-1}, 20,000 min^{-1}
+ B-axis driven by a direct drive motor (DDM)
+ Full-closed loop control on B-axis (Scale feedback)
+ Highly rigid two-face contact specification: Capto C6, HSK-A63
+ Tool storage capacity: 38 tools, 76 tools, 114 tools
+ Max. tool diameter: ϕ130 mm (ϕ5.1 in.) <Without adjacent tools>, ϕ70 mm (ϕ2.8 in.) <With adjacent tools>

compactMASTER

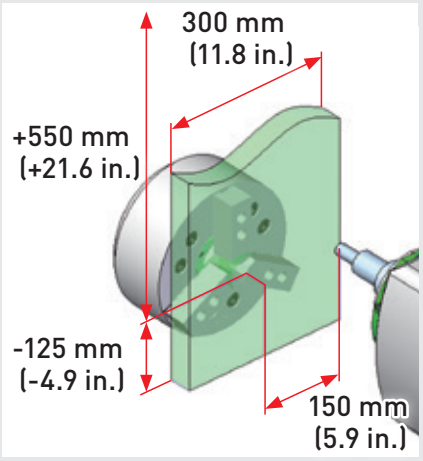
The spindle unit employs new bearings effective for continuous high-speed rotations of the tool spindle, and the labyrinth structure is enhanced for heavy use of high-pressure coolant. The air purge is provided as standard to prevent coolant from entering the tool spindle, ensuring high durability.



X-axis travel in the negative direction

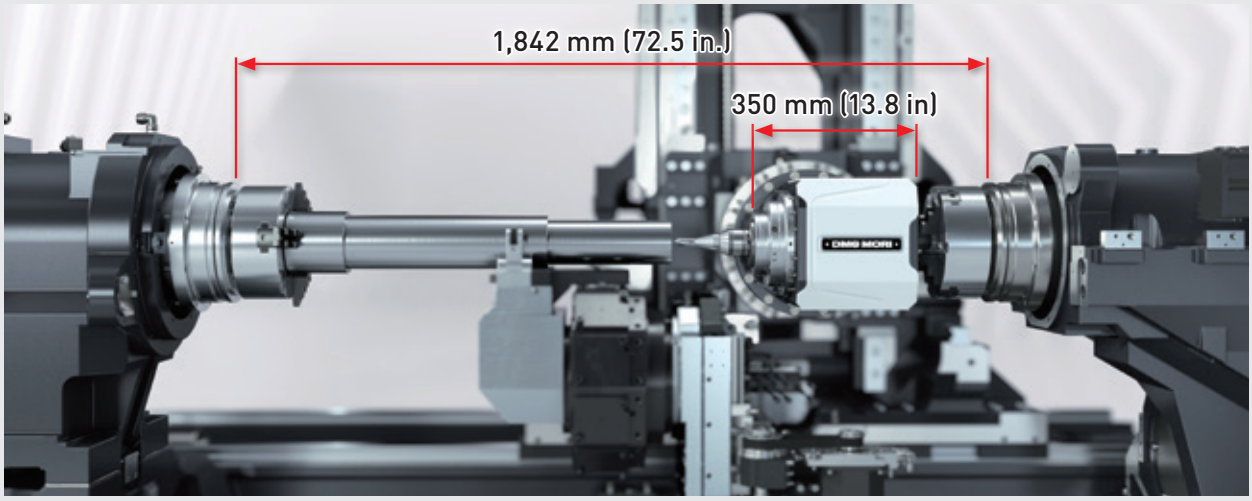
Thanks to the 125 mm (4.9 in.) X-axis stroke in the negative direction, the spindle can accurately machine to the lower side of the chuck only with the linear axis and no polar coordinate interpolation. Machining can be done with the X- / Y- / Z- / B-axis, and no C-axis is used, so operators can create programs in the same way as they do for machining centers.

Workpiece samples: Housing
Workpiece size: ϕ300 mm (ϕ11.8 in.)
Machining possible without the C-axis



Compact tool spindle with less interference with the machining envelop of Turret 2

Sufficient area is secured for machining even when the tool spindle is located in-between spindle 1 and spindle 2.



Zero backlash achieved by the world's fastest class Direct Drive Motor

Transmitting the drive power directly to the rotary axes without using gears eliminates backlash. Compared with conventional worm gear systems, this dramatically improves transmission efficiency and offers high-speed feed.

DDM Direct Drive Motor

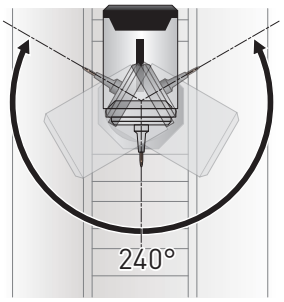
Effects of DDM

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

DDM: Direct Drive Motor

		NTX 2000 NTX 2500 NTX 3000
B-axis rotation range		240°
B-axis rotational speed	min^{-1}	100
Min. indexing increment		0.0001°

High-Flexibility B-axis

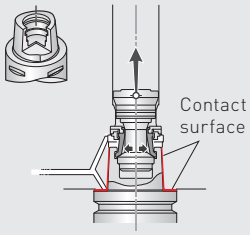


Flange contact specifications

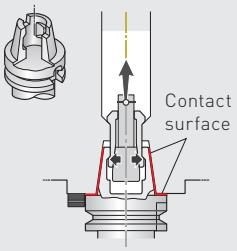
Flexural rigidity of tools has been improved by the contact with both the spindle taper and the end face.
This extends tool life and improves cutting performance and machining accuracy.

● DMG MORI manufactures all the spindles in- house, including the two-face contact specification.

Capto Specifications



HSK Specifications (Option)



Tool magazine

			NTX 2000 / NTX 2500 / NTX 3000
Tool storage capacity			38, 76, 114
Max. tool diameter	Without adjacent tools	mm (in.)	ϕ130 (ϕ5.1)
	With adjacent tools	mm (in.)	ϕ70 (2.7)
Max. tool length		mm (in.)	400 (15.7)
Max. tool mass		kg (lb.)	8 (17.6)
Max. tool mass moment (From spindle gage line)		N • m (ft • lbf)	7.84 (5.78)

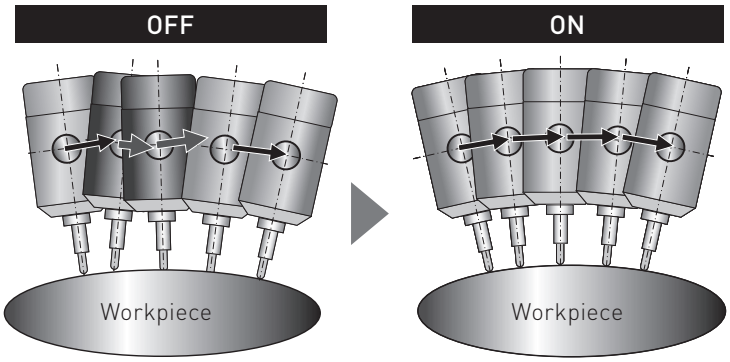
● Photo: Tool storage capacity 76 tools

Function for supporting simultaneous 5-axis machining

SVC function

The SVC function reads the program commands for tool tip control in advance and performs automatic compensation to achieve smooth tool feed. The combination use with the DDM (Direct Drive Motor) ensures higher surface quality and shorter cycle time in 5-axis machining.

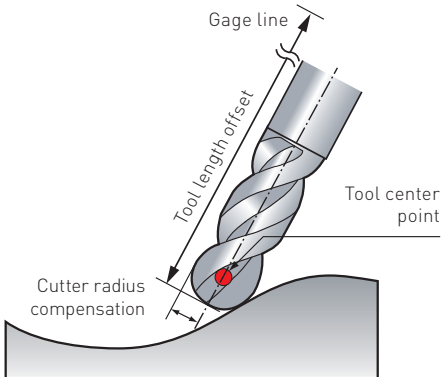
Motion of the SVC function



The SVC function includes the following functions:

+ AI contour control II
+ Nano smoothing II
+ Smooth TCP
+ G332 tolerance command

Tool center point (TCP) control



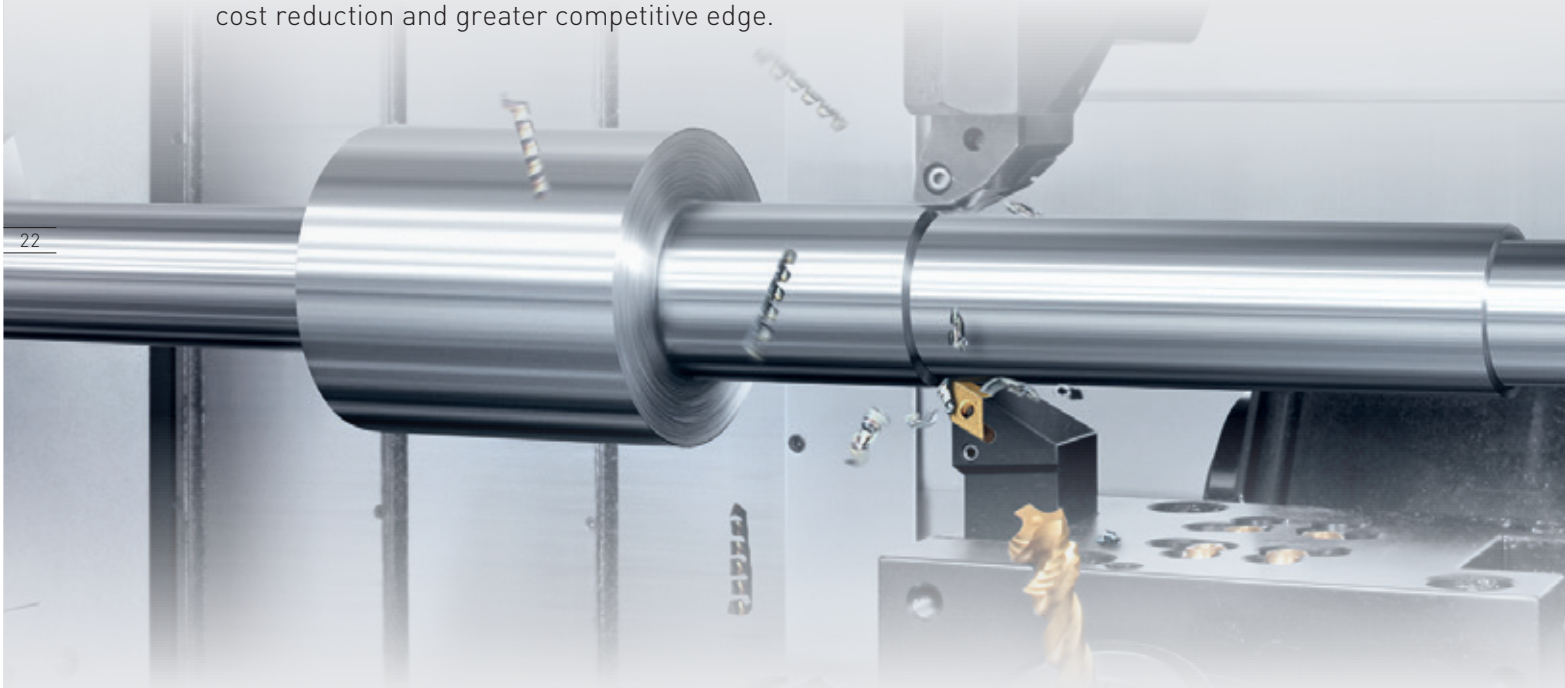
Main features

+ The tool path can be controlled from the tool center point.
+ No reprogramming is needed when the tool length and the tool diameter are changed.
+ NC automatically calculates cutter radius compensation and tool length offsets based on the program commands for tool tip control.

NTX 2000 2nd Generation / NTX 2500 2nd Generation / NTX 3000 2nd Generation

High-performance Turret 2 Broadens Machining Capabilities with Y-axis

By employing the high-performance Turret 2 (Option) that combines technologies and expertise DMG MORI has cultivated through turning center development, the machine achieves efficient and flexible turning, secondary processing and rear machining and reduces cycle times.
The milling specification model is equipped with the BMT (Built-in motor turret) which controls heat generation by jacket cooling, achieving outstanding machining accuracy.
The Y-axis specification with an axis travel of ±40 mm (±1.5 in.) is also available to allow for machining that has not been possible with the conventional Turret 2, thereby greatly contributing to cost reduction and greater competitive edge.

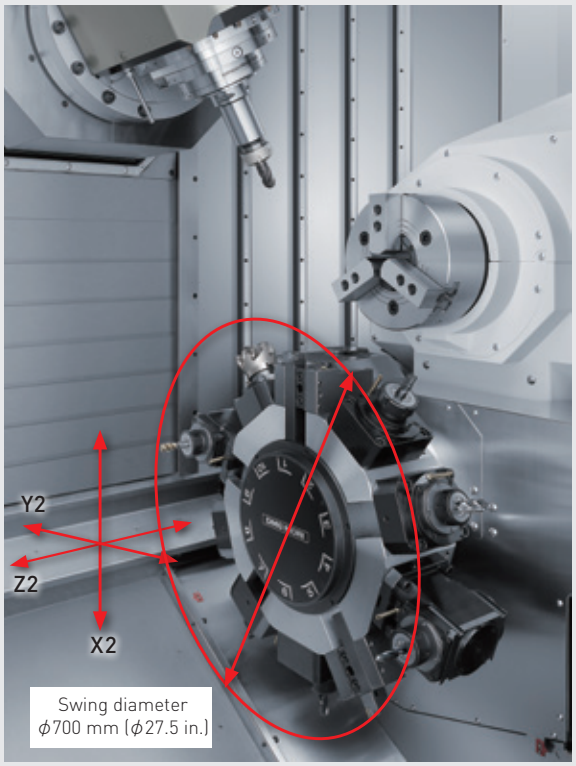


Turret 2 featuring BMT technology (Option)

+ Number of tool stations: 12 tools, 10 tools
+ Max. rotary tool spindle speed: 12,000 min^{-1}, 6,000 min^{-1}
+ The Y-axis specification (Option) with an axis travel of ±40 mm (±1.5 in.) offers hobbing with the tool spindle and Turret 2 synchronized

Large indexing diameter and tool holders for milling operation on the Spindle 2 side (Option)

The 12-station turret with a swing diameter of 700 mm (27.5 in.) offers less interference with adjacent tools and achieves flexible tooling.
An end face milling holder can be mounted on Turret 2 to carry out end face milling on the Spindle 2 side, which leads to shorter cycle times.

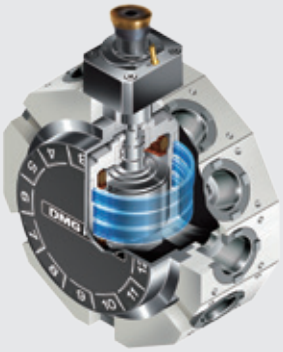


Turret 2 with Y-axis (Option)

Turret 2 is equipped with the Y-axis.
The ±40 (±1.5 in.) mm axis travel enables not only machining with Turret 2, but also heavy-load hobbing with the synchronized tool spindle and Turret 2.

"Mature" and "Evolved" BMT Technology <Turret 2 milling specification> (Option)

BMT
Built-in Motor Turret



The built-in structure, in which the motor is placed inside the turret, minimizes heat generation and vibration, improves transmission efficiency and significantly increases cutting power, speed and accuracy.

Effects of the BMT

+ Improved milling power
+ Improved milling accuracy
+ Controls the turret' s heat and vibration
+ Reduced energy loss
+ Turret temperature increases: Compared with conventional machine 1/10 or less
+ Vibration amplitude: Compared with conventional machine 1/3 or less

BMT: Built-in Motor Turret

Holders for existing machines can be used

DMG MORI's holders are compatible with each other so that holders for existing machines can be used on a new machine. Please consult our sales representative for more details.

Compatible holders	
12-station Turret (Standard)	: NTX 1000 2nd Generation, NTX 2000
10-station Turret (Option)	: NT 4000 Series, NL Series

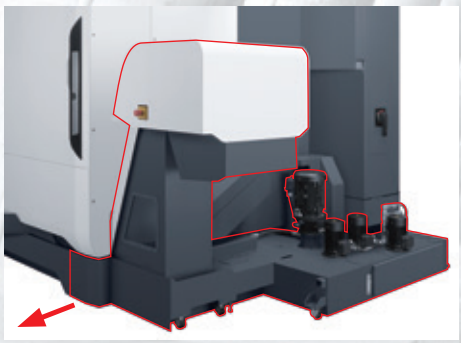
NTX 2000 2nd Generation / NTX 2500 2nd Generation / NTX 3000 2nd Generation

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.

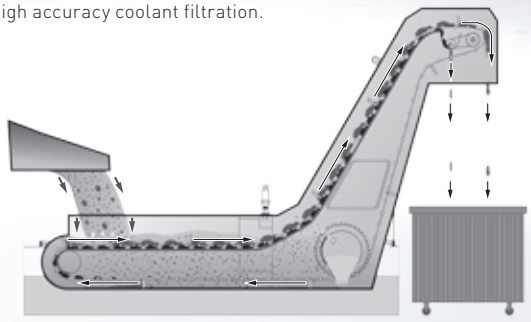
Coolant tank

The coolant tank can be pulled out to the front, minimizing the space for maintenance.



Handling of different types of chips and coolant filtration (Option)

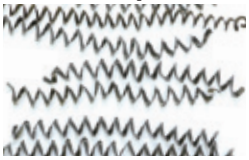
With the hinge type conveyor for long chips and the cleats (Scrapers) on the hinge belt for short and fine chips, the conveyor can handle any type of chip regardless of size and material.
The filter with the low-maintenance automatic washing function ensures high accuracy coolant filtration.



Hinge type + Drum filter type chip conveyor

Chip conveyor (Option)

+ Provides highly efficient chip disposal

	Workpiece material and chip size		
	Steel		20 mm (0.8 in.)
	Long	Short	Powdery
			
Hinge type + Drum filter type	○	○	△*
Hinge type	○	–	–

* Depending on chip size, chips may pass through the filter and the conveyor and accumulate in the coolant tank. Due to possible effect on machining accuracy, a second filtration device may need to be considered.

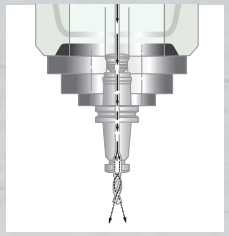
- Please consult our sales representative if the chip length exceeds 200 mm (7.9 in.).
- [Chip size criteria] Powdery: minute particles / Short: 50 mm (2.0 in.) or less in length, 40 mm (1.6 in.) or less in diameter (A lump of chips) / Long: over 50 mm (2.0 in.)

Chip flushing coolant

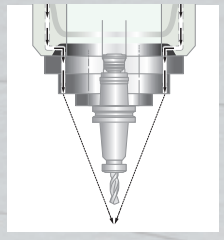
The standard chip flush coolant ensures better chip disposal directly beneath the spindle.

Through-spindle coolant system <Tool spindle>

+ 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



Center through



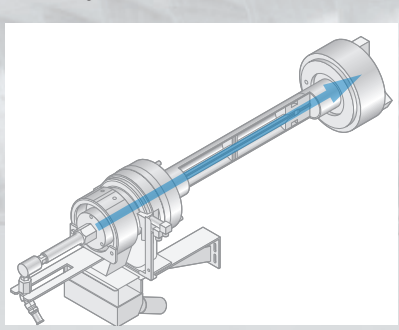
Side through

High pressure coolant pump mounted on the coolant tank (Option)

⚠ 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.

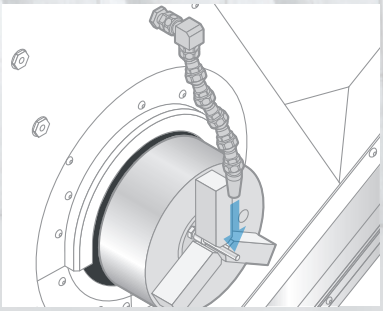
Through-spindle coolant system <Spindle1, 2> (Option)

Coolant supplied through the center of the chuck removes chips generated during I.D. machining.



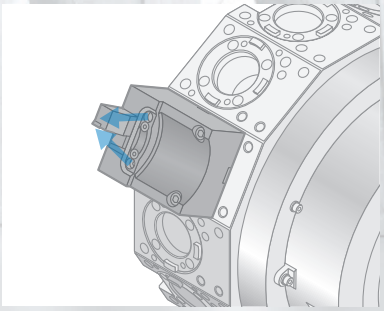
Coolant in upper part of chuck (Option)

Coolant supplied from above the chuck removes chips and minimizes heat generation in the workpiece.

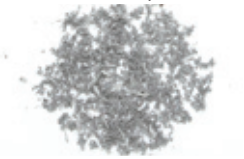


Air blow <Tool tip> (Option)

Air is blown toward the tool tip to blow away chips adhering to the tool.



○: Suitable △: Consideration required —: Not suitable

Workpiece material and chip size					
Cast iron			Aluminum, non-ferrous metal		
20 mm (0.8 in.)			20 mm (0.8 in.)		
Short	Powdery	Long	Short	Powdery	
					
○	△*	○	○	△*	
—	—	○	—	—	

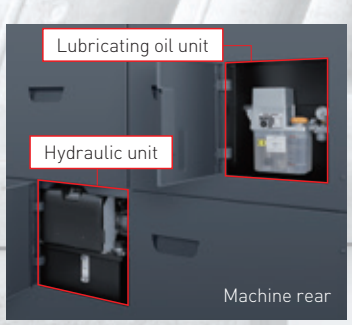
- The options table shows the general options when using coolant.
  Changes may be necessary if you are not using coolant, or depending on the amount of coolant, compatibility with machines, or the specifications required.
- Please select a chip conveyor to suit the shape of your chips. When using special or difficult-to-cut material (Chip hardness HRC45 or higher), please consult our sales representative.
- Chip conveyors are available in various types for handling chips of different shape and material. For details, please consult our sales representative.

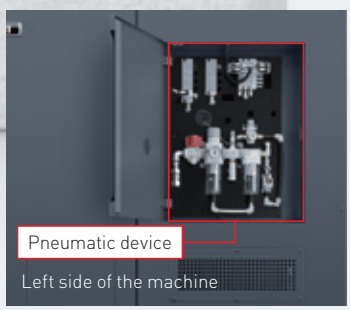
NTX 2000 2nd Generation / NTX 2500 2nd Generation / NTX 3000 2nd Generation

Pursuit of Usability

The NTX 2000 2nd Generation / NTX 2500 2nd Generation / NTX 3000 2nd Generation machines are designed with the highest priority on operator usability.
The usability-focused approach can be seen throughout the machine design, which includes a larger window for greater visibility, and the hydraulic units and other devices in an easily accessible location for better maintainability.

Easy-to-access Units & Devices





The equipment layout is designed for daily operation and maintenance.

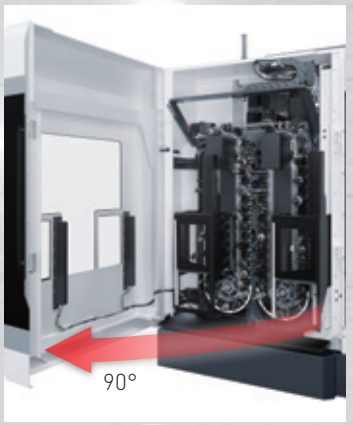
● Photo: Spindle 2 specification

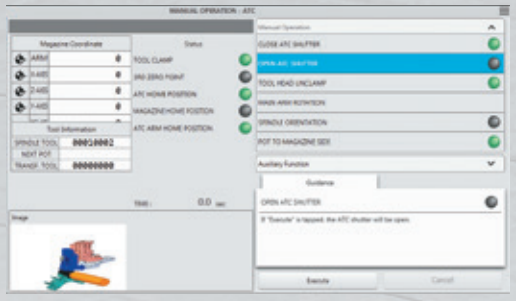
High-rigidity Digital Tailstock <Tailstock specification>

There are two types of tailstocks available: standard MT5 live center (Without center) and optional MT4 built-in center (With center).
The servo motor-driven, high-rigidity digital tailstock helps achieve significant reduction in setup time.

Tool Magazine with Outstanding Visibility

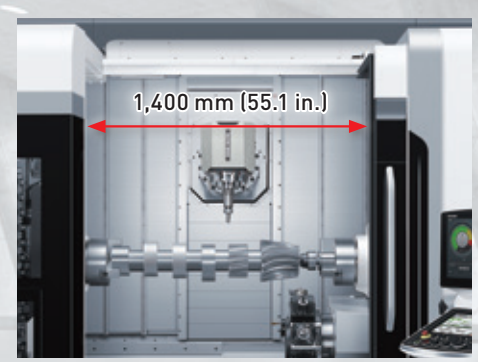
The tool magazine is located at the machine front to enable tool checking at the machine operation position and tool changes in front of the machine. Moreover, operators can attach / detach tools by simply pressing a button.
The optional tool magazines with storage capacity of 76 tools (Double chain type) and 114 tools (Triple chain type) are especially suitable for customers who want to attach / detach tools while one magazine is rotating.

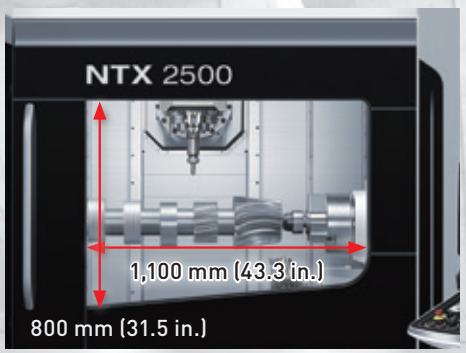




Independent operation of the ATC
ATC can be manually operated on the screen

Door with Outstanding Visibility





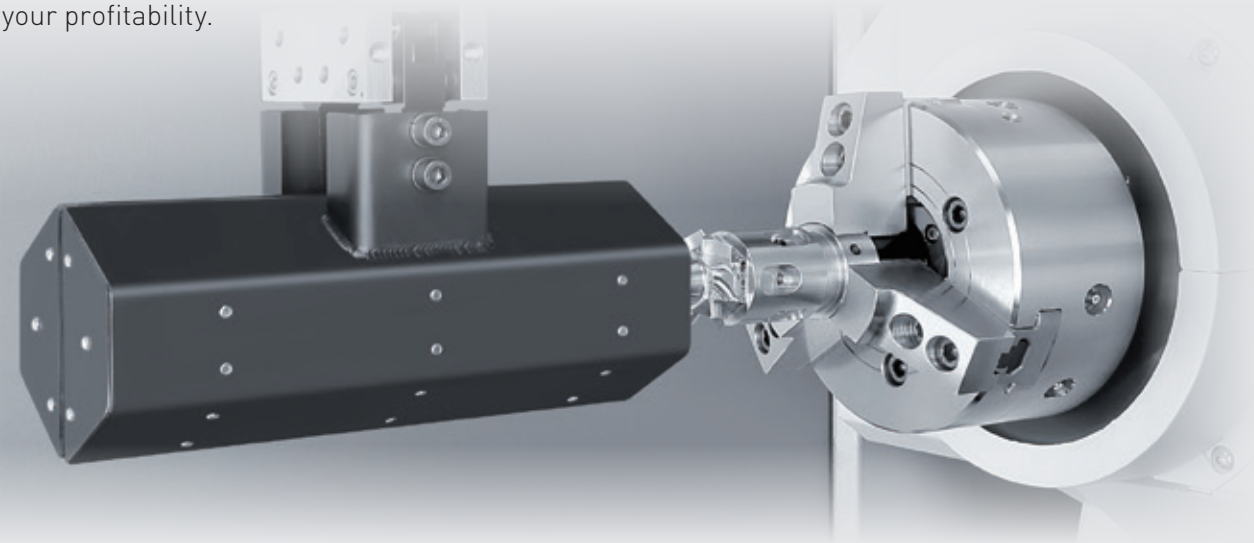
CELOS / ERGO*line* Touch with Superior Operability

The movable, swivel touch-screen operating panel can move 900 mm (35.4 in.) in both the left and right directions to ensure better accessibility to the spindle and the workpiece.

NTX 2000 2nd Generation / NTX 2500 2nd Generation / NTX 3000 2nd Generation

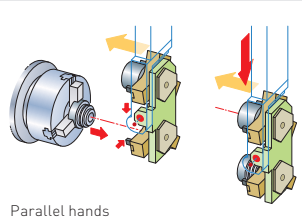
Automation Solutions

DMG MORI provides a variety of automation systems such as a gantry loader system and a bar feeder system, as well as various automation support functions.
The automation system completes a whole process from provision of materials to discharge of finished products on one machine and reduces non-cutting time, thereby contributing to increasing your profitability.

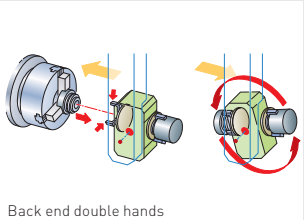


Gantry-type loader system (Option) <Consultation is required>

This is a high-speed mass production system that automates a whole process from provision of materials to discharge of finished products.



Parallel hands



Back end double hands

Gantry loader standard accessory / specification

+ 10-station rotary workstocker (LG-10)
+ Hand airblow
+ Chuck air-blow
+ Automatic power-off system
+ Workpiece counter (PC counter)
+ Spindle orientation
+ Low air pressure detecting switch

				LG-10 (Machine travel type)
Gantry loader	Max. travel speed	X-axis <Hand moves up and down>	m/min (fpm)	90 (295.2)
		Z-axis <Loader moves right and left>	m/min (fpm)	120 (393.7)
Work stocker	Applicable workpiece size	Outer diameter	mm (in.)	ϕ40 (1.6) - 200 (7.8)
	Number of pallet tables			10, 20
	Max. workpiece mass		kg (lb.) / Pallet	75 (165.0)
	Max. workpiece stacked height		mm (in.)	470 (18.5)
Loader hand	Hand type			Back end hands
	Applicable workpiece size	Outer diameter	mm (in.)	ϕ40 (1.6) - 200 (7.8)
		Length	mm (in.)	20 (0.8) - 150 (5.9)
		Max. mass	kg (lb.)	10 (22.0)

● Please consult our sales representative in the case that a workpiece diameter is less than 40 mm (1.6 in.), or a workpiece length is less than 20 mm (0.8 in.).

Workpiece unloader (Option)

It receives a machined workpiece from Spindle 2 and ejects it to the outside.

Gripper type

Receptor type

Unloader ready position

Unloader deployed

Receive position

Transfer conveyor and workpiece container

● Photo: NTX 1000 2nd Generation

In-machine traveling type,
Hand + Workpiece conveyor <For shafts>

Max. transfer mass	kg (lb.)	4 (8.8)
Maximum workpiece diameter	mm (in.)	ϕ75 (ϕ2.9)
Maximum workpiece length	mm (in.)	250 (9.8)

In-machine traveling type,
Workpiece receiver + Workpiece conveyor <For flanges>

Max. transfer mass	kg (lb.)	4 (8.8)
Maximum workpiece diameter	mm (in.)	ϕ75 (ϕ2.9)
Maximum workpiece length	mm (in.)	250 (9.8)
Feed rate (Z-axis direction)	m/min (fpm)	100 (328.1)

Bar feeder system (Option)<Consultation is required>

Integrated machining of bar materials can be achieved in combination with a parts catcher. The workpiece attachment / detachment system nor turnover system is not necessary.

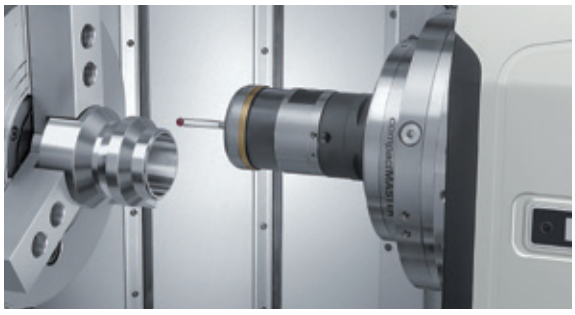
Recommended accessories for bar feeder specification

+ Bar feeder
+ Multi counter
+ Signal lamp
+ Guide bushing
+ Work stopper

Automation Support Options

A wide range of options for the best automation solutions

In-machine measuring system (Option)



A touch sensor is attached to the tool spindle to measure a machined workpiece.

Automatic in-machine tool presetter (Option)

It simplifies complex setup work after changing tools. Tool breakage detection is also possible by the comparison of measured values and setting values.

3D quickSET (Option)

It corrects the rotation center deviation of a rotary axis and the positional deviation caused by thermal displacement or aging of a machine.

NTX 2000 2nd Generation / NTX 2500 2nd Generation / NTX 3000 2nd Generation

DMG MORI Qualified Products One-stop Service for Various Needs

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
- Bar feeder

Shaping

- Oil skimmer
- Rotary window
- Super-high pressure coolant system
- Hydraulic steady rest
- Mist collector

Measuring

- In-machine tool presetter
- External tool measurement
- In-machine measuring system (Workpiece)
- Surface roughness measuring system

Monitoring

- Electrical cabinet chiller
- Coolant chiller
- Coolant float switch
- Signal lamp

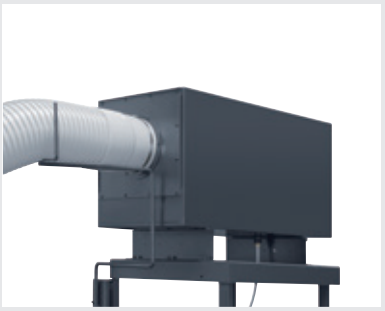
● The options above are examples. For details, please consult our sales representative.

DMQP: DMG MORI Qualified Products

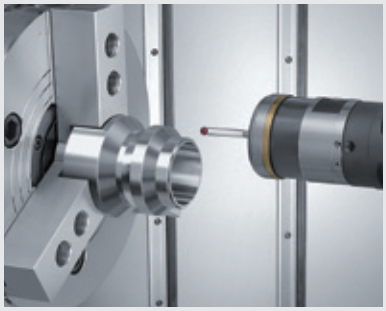
Bar feeder

Hydraulic steady rest

Mist collector



In-machine measuring system (Workpiece)



In-machine tool presetter

Tool balancer

Air dryer

Air compressor

Oil skimmer

Rotary window

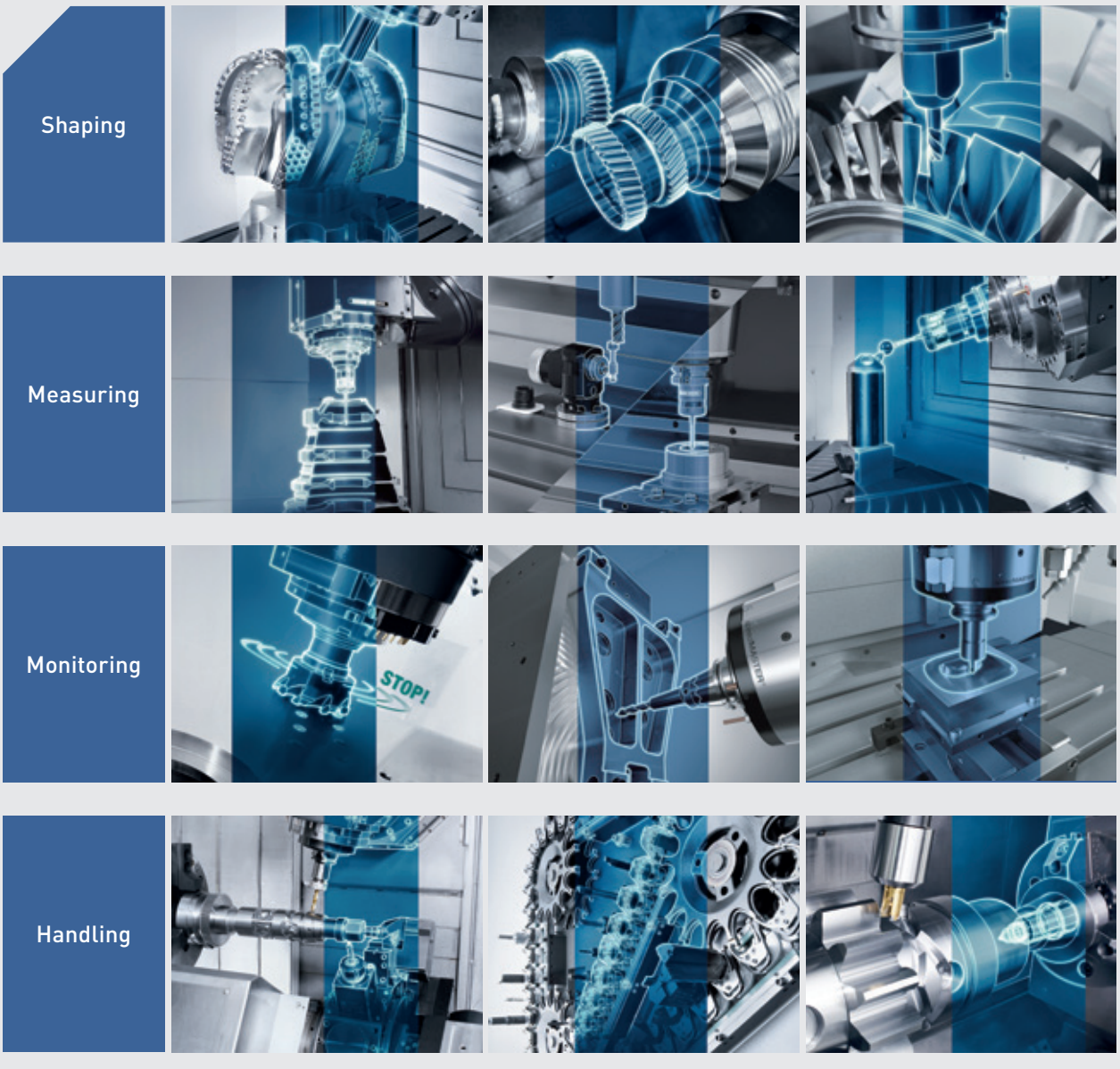
Tool cabinet

Cutting tool

NTX 2000 2nd Generation / NTX 2500 2nd Generation / NTX 3000 2nd Generation

DMG MORI Technology Cycles

Technology Cycles (Option) are total solutions that achieve complex machining easily in a short time. They enable every operator to easily perform high-quality machining, setups and measurement with general-purpose machine tools and standard tools / fixtures, which used to be done with specialized machines, programs and tools.



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

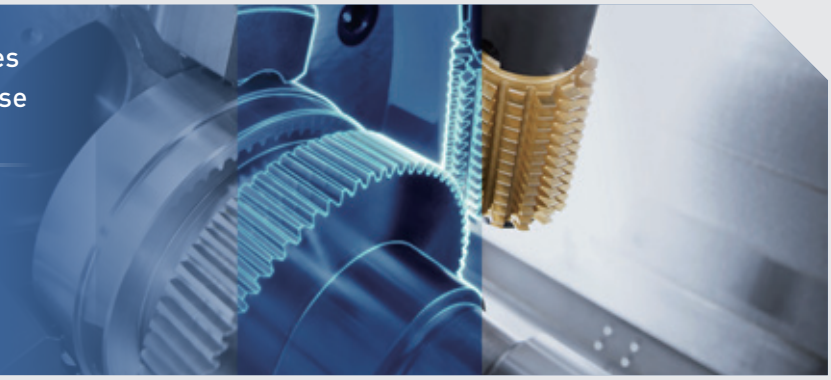
Respond to Various Technology Cycles

Shaping

Gear hobbing

Optimal programming achieves hobbing with a general-purpose machine

Efficient High-precision

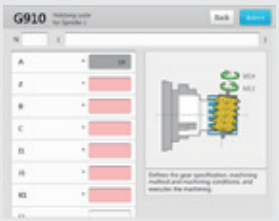


Issue (Before introduction)

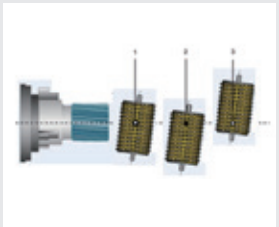
*

+ A gear machine is needed. After blank machining with a turning machine, gear machining needs to be performed with a gear machine after setup changes
+ Want to extend the tool life of expensive hob cutter

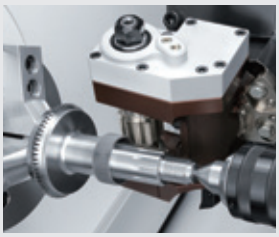
Results (After introduction)



+ Hobbing program can be easily created by conversational input



+ Hob cutter' s machining position can be changed, maximizing the tool life



+ Consolidation of machining operations into the general-purpose machine reduces setup time and enhances accuracy such as concentricity due to no setup change

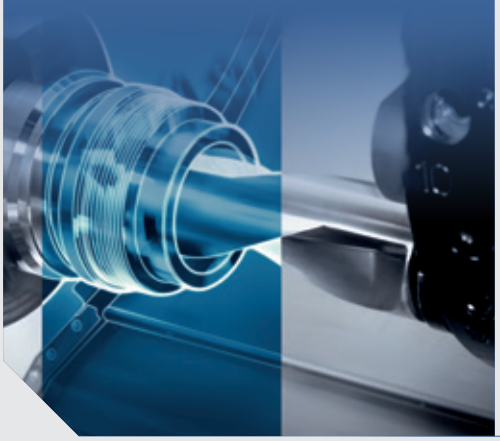
* <Reference> Wikipedia: Hobbing; https://ja.wikipedia.org/wiki/%E3%83%9B%E3%83%96%E7%9B%A4 (Quoted on September 19, 2018)

Monitoring

Easy tool monitoring

Monitoring load of spindle and traveling axes

Efficient Safe



Issue (Before introduction)

+ Abundant experience is needed to set cutting conditions
+ Want to prevent tool breakage and machine failure
+ Difficult to monitor load to the spindle and tools at all times

Results (After introduction)

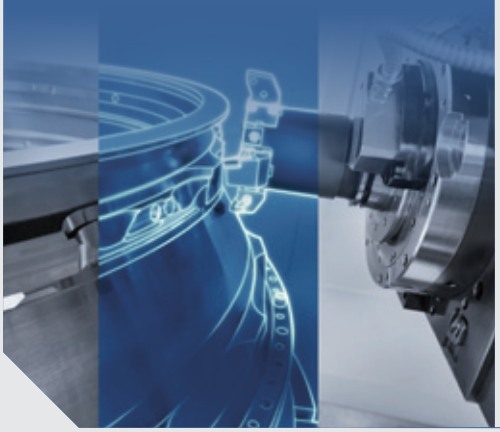
+ **Conditions can be set in advance, enabling digital cutting management not dependent on experience or expertise**
+ **Can reduce tool breakage and maintenance cost by maximizing the capacities of the tools and machine**
+ **Load to the traveling axis and spindle during machining is monitored at all times, and the machine stops when abnormal values are detected**

Handling

Multi-tool

Maximizing number of tools & minimizing non-cutting time

Efficient



Issue (Before introduction)

+ Models with the Y-axis or Spindle 2 specification require tools for various cutting operations
+ More than one tool is mounted to one station in some cases, making their management complex
+ Including spare tools, it is necessary to prepare more tools than the number of turret stations

Results (After introduction)

+ **Tool compensation setting and life management can be easily performed for multiple tools of each station**
+ **Operator can set optimum tool information for each tool and maximize the number of tools**
+ **Prevent tool breakage and enhance production efficiency by switching to spare tools according to the operating time of the set tool**

Handling

Alternating speed

Stable machining in which chatter hardly occurs

Efficient High-precision

Issue (Before introduction)

+ Chatter occurs when using tools under its recommended conditions
+ Vibration in deep hole drilling using a long drill should be suppressed

Results (After introduction)

+ **Cutting resistance is changed by periodically changing the rotation speed of the spindle. This helps suppress chatter and enhance cutting conditions, which lead to shorter machining time**
+ **Surface quality is improved**

Shaping

Multi-threading

Cutting special thread

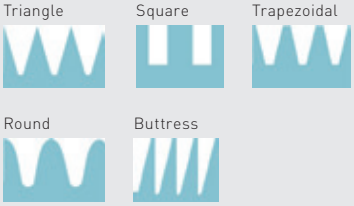
Efficient

Issue (Before introduction)

+ Hope to cut special thread shapes
+ Hope to simplify complicated programming

Results (After introduction)

+ **Easily create various thread shapes by conversational programming**
+ **Create a machining program of a special shape thread on the machine without CAD / CAM**

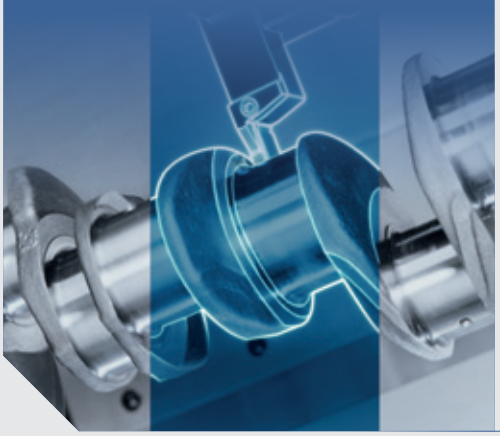


Shaping

Excentric machining

Easy programming of excentric machining

Efficient High-precision

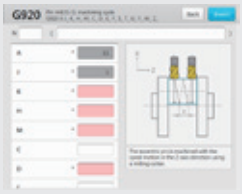


Issue (Before introduction)

+ Hope to perform excentric machining processes on one machine
+ Expensive jigs for excentric machining are necessary

Results (After introduction)

+ **Reduce setup time by consolidating machining operations performed with a special machine into a general-purpose machine**
+ **Complicated program for excentric machining can be created using the conversational programming style**
+ **Compatible with both turning and milling to achieve efficient machining**
+ **Require no eccentric machining jigs**



Shaping

gearSKIVING

High-speed gear cutting including internal teeth

Efficient High-precision

Issue (Before introduction)

+ Not sure how to create a program because it involves a special machining technique
+ Require multiple processes with a gear machine and a cutting machine

Results (After introduction)

+ **Can easily program a machining technique called gear skiving**
+ **Internal teeth that cannot be machined by hobbing can be cut**
+ **Consolidation of processing operations into the general-purpose machine reduces setup time and enhances accuracy such as concentricity due to no setup change**

Handling

Retraction cycle

Efficient Safe

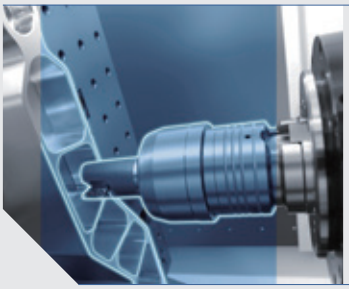
Automation allows for easy return to the zero return position without errors

+ Operational efficiency is enhanced, as one button push will enable return to the zero return position in the preset order
+ Can customize the order of axes to be moved according to the condition
+ Enhance efficiency of setup operation
+ Reduce the risk of accident

Shaping

Efficient Production Package (High-speed canned cycle)

Efficient Safe High-precision



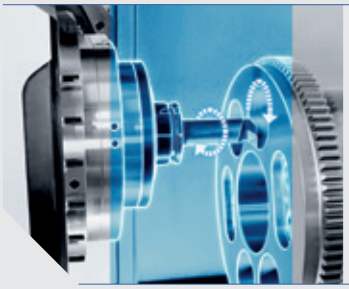
Easy inputting of various machining patterns

+ A program will be automatically created just by entering a complex shape in a conversational style
+ Safe cutting is ensured by confirming cutting details using the simulation function
+ Optimal tool path and cutting conditions enhance cutting quality

Shaping

Interpolation turning

Efficient High-precision



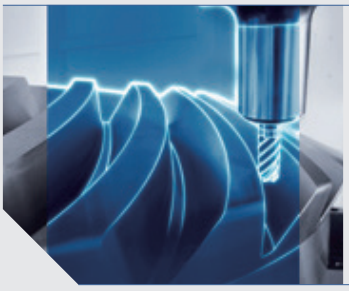
Easy programming of interpolation turning

+ Interpolation turning can be programmed using the conversational programming style
+ O-ring groove and sealing surface can be cut
+ Tuning process can be performed at the eccentric position in one chucking, enabling process integration

Shaping

DMG MORI gearMILL

Efficient High-precision



Integrating gear cutting into Turning / Milling

+ PC software for gear cutting
+ All processes of Turning, Milling, and gear cutting are done on one machine
+ Investment cost can be reduced by use of commercially available tools and generalpurpose machines

Shaping

Simultaneous 5-axis machining

Efficient High-precision

Most suited for simultaneous 5-axis control machining

+ Tool center point (TCP) control
+ Workpiece setting error offset
+ Tool radius offset for 5-axis control machining
+ High-speed, high-precision machining II
+ Tilted Working Plane Command
+ SSS Control package

Measuring

3D quickSET

Efficient High-precision

Easy offset of deviation of rotary / Tilted axes on 5-axis control machine

+ Automatic offset with the dedicated program
+ Easy programming in accordance with guidance
+ Possible to offset even while fixtures and workpieces are being mounted*
+ Higher accuracy by minimized deviation of rotary / Tilted axes

*Be cautious about interference which may occur depending on the mounting position of the calibration sphere

Handling

ATC (Application Tuning Cycle)

Efficient

Easy setting of optimum feed according to the machining operation

+ Only by selecting either the time priority mode or accuracy priority mode, smoothness of look-ahead interpolation can be changed
+ Feedrate can be changed freely while programs are running, and optimum machining method can be set according to surfaces to be machined

Handling

Tailstock for turret

Efficient

Support for programming of the tailstock operation when the tailstock is mounted on Turret 2

+ Simple operation by the guidance screen
  - Setting of tailstock pressures
  - Tailstock movement from the retract position to approach position, and then the workpiece support position
  - Tailstock retraction

Handling

Steady rest for turret

Efficient

Support for programming of the steady rest operation when the automatic centering steady rest is mounted on Turret 2

+ Approach and clamp / unclamp of steady rest can be executed in the same cycle

Handling

Counter spindle tip

Efficient

Support for programming when Spindle 2 is used as a tailstock for long workpieces

+ Simple operation by the guidance screen
  - Setting of tailstock pressures
  - Tailstock movement from the retract position to approach position, and then the workpiece support position
  - Tailstock retraction

Monitoring

MVC (Machine Vibration Control)

Efficient

Vibration data of the spindle-mounted sensor analyzed to suggest optimal conditions for preventing chatter on the screen

+ Automatic calculation of efficient cutting conditions for preventing chatter
+ Quick and easy reflection of recommended cutting conditions to a program
+ Less time and effort because optimal conditions can be determined by one trial machining

Monitoring

MPC (Machine Protection Control)

Efficient Safe

Tool spindle vibration detected by the sensor

+ Preventive maintenance by regular diagnosis of bearings
+ Detection of subtle changes in vibration caused by tool chipping
+ Quick stop when excessive vibration is detected
+ Minimized load on the spindle at the time of interference

NTX 2000 2nd Generation / NTX 2500 2nd Generation / NTX 3000 2nd 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.

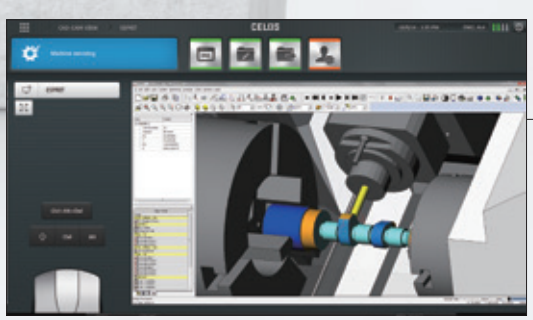
CELOS APPs facilitate quick and easy operation: three examples »»»

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 windowsbased 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: Control Efficiency Lead Operation System

ERGO*line* Control with 21.5-inch multi-touch-screen and FANUC

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

NTX 2000 2nd Generation / NTX 2500 2nd Generation / NTX 3000 2nd 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.

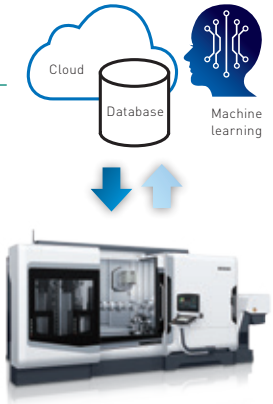
* An industrial society in which new added value will be created through connected humans, machines, and technologies – A new vision for the future of Japanese industries that the Ministry of Economy, Trade and Industry advocates.

AI Solution

AI-based thermal displacement compensation (Ultra Thermal Precision)

Research is underway toward the practical use of thermal displacement compensation based on AI-based information analysis.

+ In order to improve machining accuracy, AI estimates and compensates thermal displacement by learning the information received from the sensors mounted on the machine.
+ The speed of learning is effectively improved by accumulating data from multiple machines in a single server for integrated data management.



The speed of learning is increased by accumulating data from multiple machines in the DMG MORI's server for integrated data management.

Machine status monitoring

Various machine data generated by sensors can be easily checked on the CELOS.

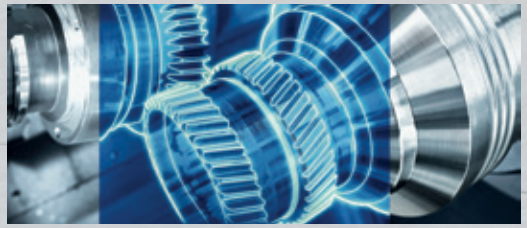
Each monitoring value is displayed in an easy-to-understand manner

CELOS: Control Efficiency Lead Operation System

CELOS Machine Extremely Easy-to-Use Machine

+ This machine is loaded with the cutting-edge operating 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

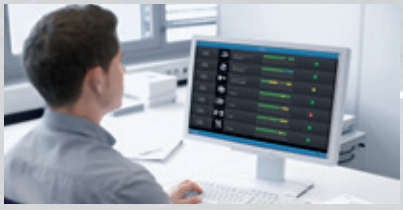
* The information needed to machine a workpiece (Setups, tools, programs, etc.)



JOB MANAGER
Job* preparation / process planning

JOB SCHEDULER
Machining preparation

JOB ASSISTANT
Machining / checking



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 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.

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

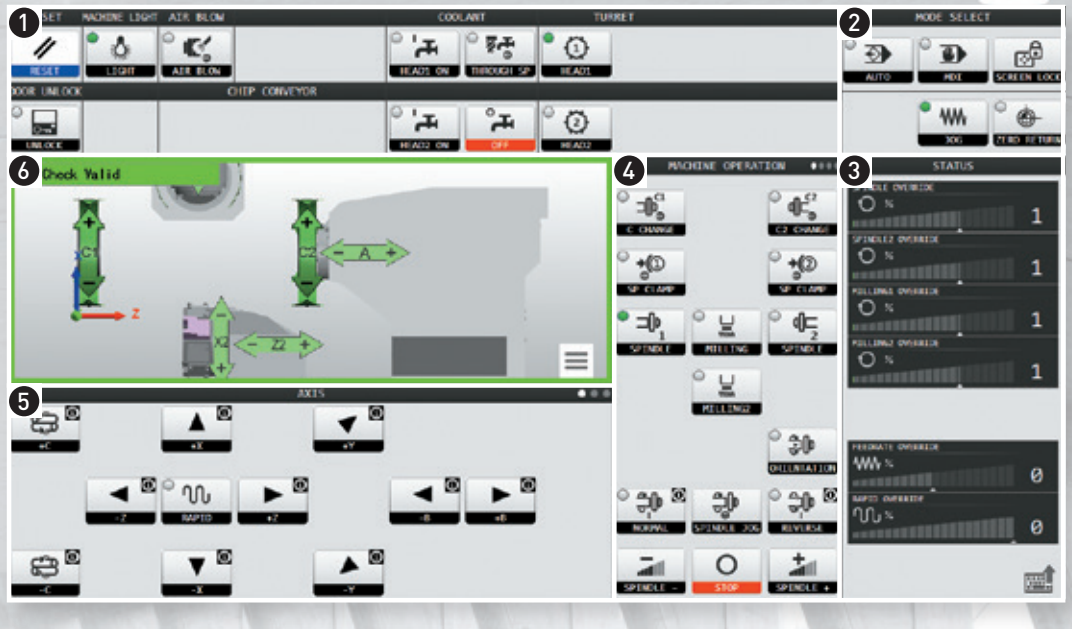
● Please consult our sales representative for more detailed information, including the release time in your country.

NTX 2000 2nd Generation / NTX 2500 2nd Generation / NTX 3000 2nd Generation

High-Performance Operation System MAPPS

MAPPS is a high-performance, smart operation system mounted on CELOS.
It enables operators to easily control machine operation with touch operation.

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



Lower Touch Panel Screen Layout

❶ Individual function operation area : Displays function buttons at all times regardless of the operation mode.

❷ Operation mode selection area : Displays mode selection buttons at all times.

❸ Status display area : Displays the override status.

❹ Machine operation area : Displays buttons related to spindle / turret operation and optional functions over multiple pages.

❺ Mode-by-mode operation area : Displays buttons related to axis feed, zero return or automatic operation over multiple pages. The available buttons will change depending on the mode selected.

❻ In-machine display area : Displays the image showing the controlled axes and their travel directions.

NTX 2000 2nd Generation / NTX 2500 2nd Generation / NTX 3000 2nd 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 25%* compared to the conventional machine by using efficient machining programs to minimize unnecessary stand-by power.

* 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 CO_2 emission amount

GREENmode

GREEN monitoring

+ Visualize power consumption and CO_2 emission amount on the CELOS operation screen

GREEN device

+ High-brightness LED light

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

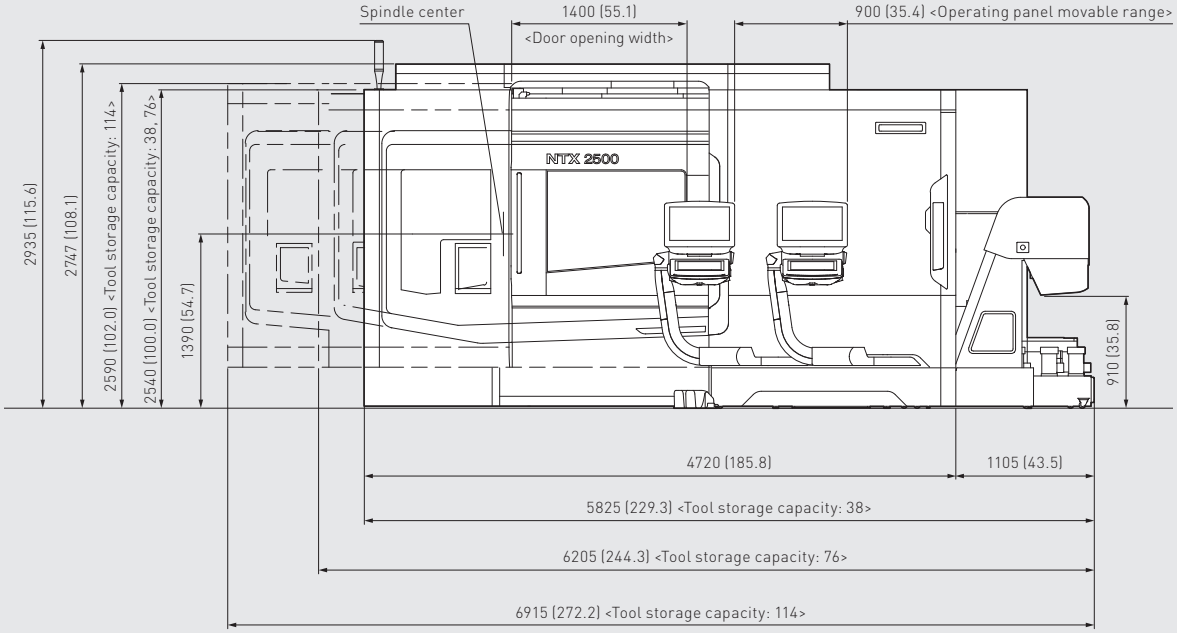
+ Reduce machining power by energy-saving pecking cycles
+ Quicken standard M codes
+ Simultaneous acceleration / deceleration of the spindle and feed axes
+ Inverter-controlled coolant supply

Machine size

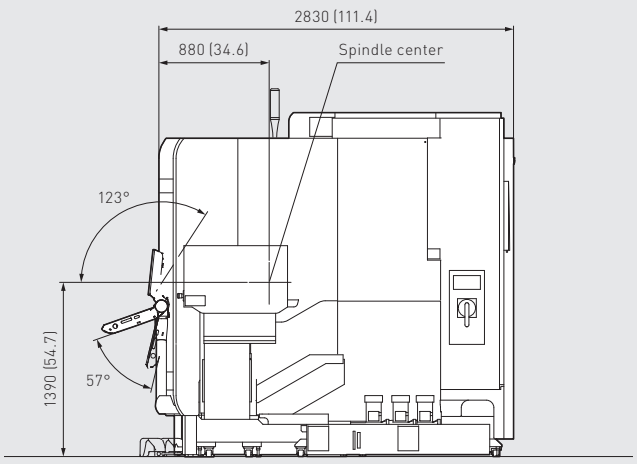
mm (in.)

NTX 2000 2nd Generation / NTX 2500 2nd Generation / NTX 3000 2nd Generation

Front view



Side view



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NTX 2000 2nd Generation / NTX 2500 2nd Generation / NTX 3000 2nd Generation

Machine specifications (FANUC F31iB5)

		NTX 2000 / NTX 2500 / NTX 3000							
Basic specification		T1 MC1 B1 Y1 S1 TS							
Optional specifications		—	T2	T2 MC2	T2 Y2 MC2	S2	T2 S2	T2 MC2 S2	T2 Y2 S2 MC2
Capacity									
Swing over cross slide	mm (in.)	ϕ700 (ϕ27.5)							
Max. turning diameter (Tool spindle / Turret 2)	mm (in.)	ϕ670 (ϕ26.3)	ϕ670 (ϕ26.3) / ϕ365 (ϕ14.3)<12-station>, ϕ325 (ϕ12.7) <10-station>			ϕ670 (ϕ26.3)	ϕ670 (ϕ26.3) / ϕ365 (ϕ14.3)<12-station>, ϕ325 (ϕ12.7) <10-station>		
Max. turning length	mm (in.)	1,538 (60.5) <NTX 2000> 1,530 (60.2) <NTX 2500> 1,519.3 (59.8) <NTX 3000>							
Bar work capacity	mm (in.)	ϕ65 (ϕ2.5) <NTX 2000> ϕ80 (ϕ3.1) <NTX 2500> ϕ102 (ϕ4.0) <NTX 3000>							
Travel									
X1-axis (Tool spindle)	mm (in.)	675 (26.5) <-125 - +550 (-4.9 - +21.6)>							
Y1-axis travel (Tool spindle)	mm (in.)	300 (11.8) <±150 (±5.9)>							
Z1-axis (Tool spindle) + for ATC	mm (in.)	1,562 (61.4) + 164 (6.4) <For ATC>							
B-axis (Tool spindle)		240° (±120°)							
Spindle 1									
Max. spindle speed	min-1	5,000 <NTX 2000> 4,000 <NTX 2500> 3,000 <NTX 3000>							
Spindle 2									
Max. spindle speed	min-1	—				5,000 <NTX 2000> 4,000 <NTX 2500> 4,000 <NTX 3000>			
Tool spindle (Turret 1)									
B-axis min. indexing increment		0.0001°							
Max. tool spindle speed	min-1	12,000, 20,000 (High-speed)							
Taper hole of tool spindle		Capto C6, HSK-A63 (T63)							
Tool storage capacity		38, 76, 114							
Max. tool diameter (With adjacent tools)	mm (in.)	ϕ70 (ϕ2.7)							
Max. tool diameter (Without adjacent tools)	mm (in.)	ϕ130 (ϕ5.1)							
Max. tool length	mm (in.)	400 (15.7)							
Max. tool mass	kg (lb.)	8 (17.6)							
Turret 2									
Number of tool stations		—	12, 10			—	12, 10		
Shank height for square tool	mm (in.)	—	20 (0.8), 25 (1.0)			—	20 (0.8), 25 (1.0)		
Max. rotary tool spindle speed	min-1	—	12,000, 6,000			—	12,000, 6,000		
Tailstock									
Taper hole of tailstock spindle		Live center (MT5), Built-in center (MT4)				—			
Motors									
Spindle 1 drive motor	kW (HP)	15 / 15 / 11 (20 / 20 / 15) <15%ED / 30 min / cont> <NTX 2000> 18.5 / 18.5 / 15 (24.7 / 24.7 / 20) <25%ED / 50%ED / cont> <NTX 2500> 30 / 25 (40 / 33.3 HP) <30 min / cont> <NTX 3000>							
Spindle 2 drive motor	kW (HP)	—				15 / 15 / 11 (20 / 20 / 15) <15%ED / 30 min / cont> <NTX 2000> 18.5 / 18.5 / 15 (24.7 / 24.7 / 20) <25%ED / 50%ED / cont> <NTX 2500> 18.5 / 18.5 / 15 (24.7 / 24.7 / 20) <25%ED / 50%ED / cont> <NTX 3000>			
Tool spindle drive motor <40%ED / cont>	kW (HP)	23 / 22.2 (30.7 / 29.6), 23 / 22.2 (30.7 / 29.6)							
Turret 2 rotary tool spindle drive motor <15%ED / 25%ED / cont>	kW (HP)	—		5.5 / 5.5 / 3.7 (7.5 / 7.5 / 5) 16 / 16 / 11.5 (21.3 / 21.3 / 15.3) <25%ED / 40%ED / cont>		—		5.5 / 5.5 / 3.7 (7.5 / 7.5 / 5) 16 / 16 / 11.5 (21.3 / 21.3 / 15.3) <25%ED / 40%ED / cont>	
Machine size									
Machine height	mm (in.)	2,750 (108.3)							
Floor space (Width × Depth)	mm (in.)	5,825 × 2,830 (229.4 × 111.5) <Including a conveyor with the hinge type + drum filter>							

- Bar work capacity: Depending on the chuck/cylinder used and its restrictions, it may not be possible to reach full bar work capacity.
- 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.
- Power sources, Machine size: the actual values may differ from those specified in the catalogue, depending on the optional features and peripheral equipment.
- The information in this catalog is valid as of February 2019.

■ : Standard　□ : Option

T1 : Tool spindle　**T2** : Turret 2　**S1** : Spindle 1
MC1 : Tool spindle Milling　**MC2** : Turret 2 Milling　**S2** : Spindle 2
Y1 : Tool spindle Y-axis　**Y2** : Turret 2 Y-axis　**TS** : Tailstock
B1 : Tool spindle B-axis

● The Spindle 2 specification (S2) is not equipped with a tailstock (TS).

NTX 2000 2nd Generation / NTX 2500 2nd Generation / NTX 3000 2nd Generation

Standard & optional features (FANUC F31iB5)

●: Standard　○: Option　—: Not applicable

		F31iB5
Fixture		
Automatic centering type steady rest	SLU-X1 <ϕ8 - 70 mm (ϕ0.3 - 2.8 in.)>, SLU-X2 <ϕ11 - 101 mm (ϕ0.4 - 4.0 in.)> <Fixed at Turret 2> <Traveling in clamped state during machining is not possible>*1	○
	SLU-X1 <ϕ8 - 70 mm (ϕ0.3 - 2.8 in.)>, SLU-X2 <ϕ11 - 101 mm (ϕ0.4 - 4.0 in.)>, SLU-X3 <ϕ14 - 152 mm (ϕ0.6 - 6.0 in.)> <Servo-Driven> <Traveling in clamped state during machining is not possible>	○
Coolant		
Water-soluble coolant unit	800 / 1,100 W (50 / 60 Hz)	●
Through-spindle coolant system (Tool spindle)	Standard pressure (800 / 1,100 W <50/60 Hz>) <Center through / Side through>	●
	Super-high-pressure*2 <3.5 Mpa (507.5 psi)> <Center through>	○*
	Super-high-pressure*2 <7.0 Mpa (1,015 psi)> <Center through>	○*
	Super-high-pressure interface*2 <Center through>	○
Chip disposal		
Chip conveyor	Right discharge, Hinge type	○
	Right discharge, Hinge type + Drum filter type	○
Measurement		
Manual in-machine tool presetter	Spindle 1 (Removable)*3	●
Tool breakage detector	Touch type (Blum)	○
In-machine measuring system (Tool spindle)	Touch sensor (Radio signal transmission type)*4	○
High-precision control		
Full closed loop control (Scale feedback) <Tool spindle>	X1-, Y1-, Z1-axis	○
Automation		
Robot interface		○
Others		
• Built-in worklight (LED) • Leveling block • Hand tools		●
Chuck foot switch	1 foot switch	●
	2 foot switches	○
Dry anchor		○
Multi dry filter		○
Signal lamp	4 colors (LED type: Red, Yellow, Green, Blue)	○

Basic specification		T1 MC1 B1 Y1 S1 TS							
Optional specifications		—	T2	T2 MC2	T2 Y2 MC2	S2	T2 S2	T2 MC2 S2	T2 Y2 S2 MC2
Measurement									
Manual in-machine tool presetter	Spindle 2 (Removable)*3	—	—	—	—	—	●	●	●
Automatic in-machine tool presetter (In-out type)	For tool spindle <In-out type>	○	—	—	—	○	—	—	—
	For tool spindle (Metrol) + Turret 2 (Renishaw)	—	○	○	○	—	○	○	○
	For tool spindle (Metrol) + Turret 2 (BLUM)	—	○	○	○	—	○	○	○
High-precision control									
Full closed loop control (Scale feedback) <Turret 2>	X2-, Z2-axis	—	○	○	○	—	○	○	○
	Y2-axis	—	—	—	○	—	—	—	○

∗ DMQP (DMG MORI Qualified Products)
∗1 Not available for Turret 2 with the milling function.
∗2 When using a super-high-pressure coolant system, a coolant chiller is recommended. For details, please consult our sales representative.
∗3 In-machine tool presetter is shared between Spindle 1 and Spindle 2. For details, please consult our sales representative.
∗4 Please note that there are a few countries where the radiowave type cannot be used because no radiowave license in those countries has been obtained yet. For further details, please consult our sales representative.

- DMQP: Please see Page 30 for details.
- The information in this catalog is valid as of February 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.

<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 or its distributor representative.
DMG MORI 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 and its distributor representative shall have no obligation to re-enable such Equipment.
DMG MORI 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.

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

+ The information in this catalog is valid as of February 2019. 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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