

DMG MORI

NTX 1000

High-Precision, High-Efficiency Integrated Mill Turn Center

NTX 1000 2nd Generation



[NTX 1000 2nd Generation](#)

All-round machine for various fields

The NTX 1000 2nd Generation is a "all-rounder" machine capable of high-accuracy, high-efficiency machining of complex-shaped workpieces in the aircraft, medical equipment, automotive, die & mold and precision equipment industries. The outstanding combination of a turning center and a machining center allows for process integration for various machining from high-mix, low-volume production to mass production, bringing great profit to customers.





[Click here to watch the video of NTX 1000.](#)



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Medical Equipment

- 1** Hip joint
- 2** Acetabular Prosthesis
- 3** Knee joint

Tool

- 6** Tool Holder

Aerospace

- 7** Turbine blade

Industrial equipment

- 4** Screw rotor
- 5** Connection flange

NTX 1000 2nd Generation

Incorporating Two Cutting-edge Technologies: Turning centers and Machining Centers

The NTX 1000 2nd Generation equipped with DMG MORI's latest technologies enables process integration with higher accuracy, superior machining performance and a large work envelope, while achieving a smaller footprint than the first-generation NTX 1000 model.

The model offers two choices for the user interface "CELOS": Touch panel (both upper & lower screens) for "MAPPS" and Touch panel screen + Keyboard for "SIEMENS 840D sl."

The CELOS ensures easier setting for multi-axis machining.

The NTX 1000 2nd Generation brings the best performance for customers who seek high efficiency of 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
- + The B-axis rotation range of 240° and rotation speed of 100 min⁻¹, the X-axis travel of 455 mm (17.9 in.) <-105 - +350 mm (-4.1 - 13.7 in.)>
- + Equipped with a Capto C5 tool spindle as standard, max. spindle speed of 12,000 min⁻¹, 20,000 min⁻¹ (Option)

Operability

- + Digital tailstock adopted for the tailstock specifications
- + Two operation panels available: CELOS + MAPPS and CELOS + SIEMENS 840D sl

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

High precision

- + Thoroughly controlled thermal displacement by cooling oil circulation in the body

High rigidity

- + High-rigidity bed and linear motion guide achieve high rigidity

Peripheral equipment

- + A full range of optional equipment for automation, including an in-machine travelling robot and workpiece unloader

Energy-saving

- + Energy-saving setting and visualization of energy-saving effect



5-Axis-Champion

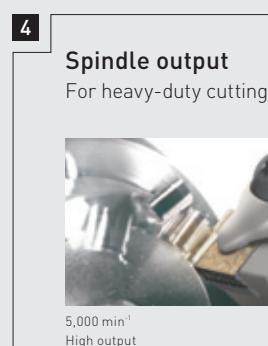
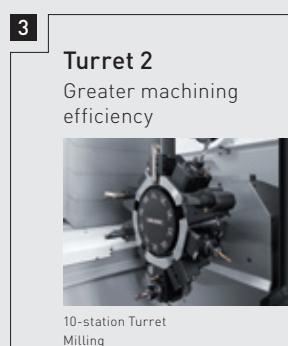
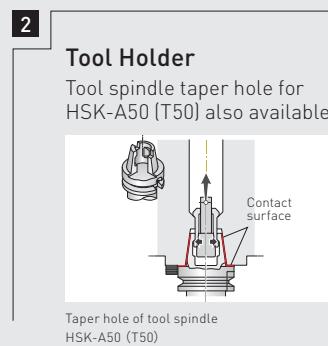
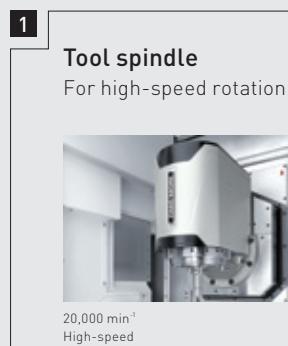
NTX 1000 2nd Generation

Best Solutions for Your Shop Floor

The NTX 1000 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 1000 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.



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Cutting technology

Improving machining efficiency with Technology Cycles all at once



Efficient Production Package
(High-speed canned cycle)



gearSKIVING

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Mass production, automation

Various automation / mass-production solutions



In-machine travelling type robot



Bar feeder



Workpiece unloader
(Spindle 2 side)

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Machining accuracy

Meeting high accuracy requirements



In-machine measuring system



Full closed loop control
(Scale feedback)



Tool balancer



Coolant chiller

8**10**

Better setup performance

Drastically shortened setup time



Automatic in-machine tool
presetter



3D quickSET

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External tool presetter

11

Chip disposal

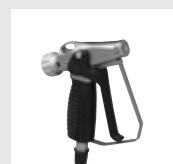
Higher cutting performance



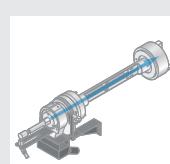
Chip conveyor



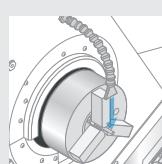
Super-high pressure
coolant system



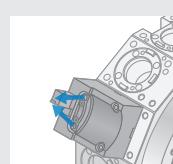
Coolant gun



Through-spindle coolant
system



Coolant in upper part of
chuck



Air blow (Tool tip)

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Maintenance

Improved production efficiency by preventive maintenance



DMG MORI Messenger

MPC (Machine Protection
Control)



Air dryer



Oil skimmer



Mist collector

NTX 1000 2nd Generation

Six Variations Selectable According to Purpose

The NTX 1000 2nd Generation offers the Spindle 2 specification and the tailstock specification, both of which can mount the Turret 2. A total of six specifications including the one with milling function on the Turret 2 is available.

Floor space required*
10.6 m²
(114.1 ft²)

CELOS
FROM DMG MORI



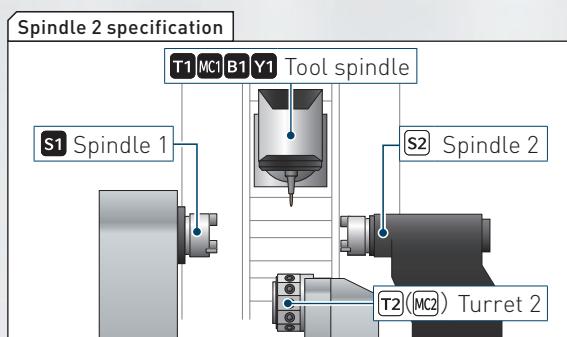
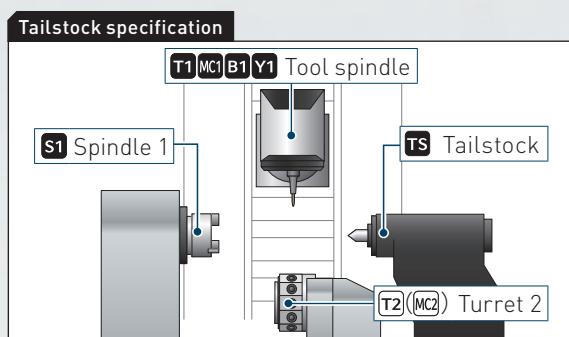
● Photo: Tool storage capacity 76 tools

*Control unit for FANUC, Tool storage capacity 38 tools, Including the chip conveyor

■: Standard □: Option
T1: Tool spindle **B1**: Tool spindle B-axis **S1**: Spindle 1
MC1: Tool spindle Milling **T2**: Turret 2 **S2**: Spindle 2
Y1: Tool spindle Y-axis **MC2**: Turret 2 Milling **TS**: Tailstock
 ● The Spindle 2 specification (S2) is not equipped with a tailstock (TS).



Specifications



Basic specification
Optional specifications
Tool spindle / Spindle 1
Spindle 2
Turret 2 (Without the milling function)
Turret 2 (Milling specifications)
Tailstock

	T1 MC1 B1 Y1 S1 TS					
	—	T2	T2 MC2	S2	T2 S2	T2 MC2 S2
Tool spindle / Spindle 1	●	●	●	●	●	●
Spindle 2	—	—	—	○	○	○
Turret 2 (Without the milling function)	—	○	—	—	○	—
Turret 2 (Milling specifications)	—	—	○	—	—	○
Tailstock	●	●	●	—	—	—

NTX 1000 2nd Generation

High-rigidity Construction with High Aging Resistance

DMG MORI pursues high rigidity machines from the basic designing stage by FEM analysis. The NTX 1000 2nd Generation equipped with a thick, high-rigidity bed is not affected by changes over years, maintaining high-accuracy machining for a long period of time.

compactMASTER

- + In-house manufactured tool spindle achieves high rigidity and high durability

In-house manufactured high-rigidity spindles

- + Highly reliable spindle designed to control thermal displacement

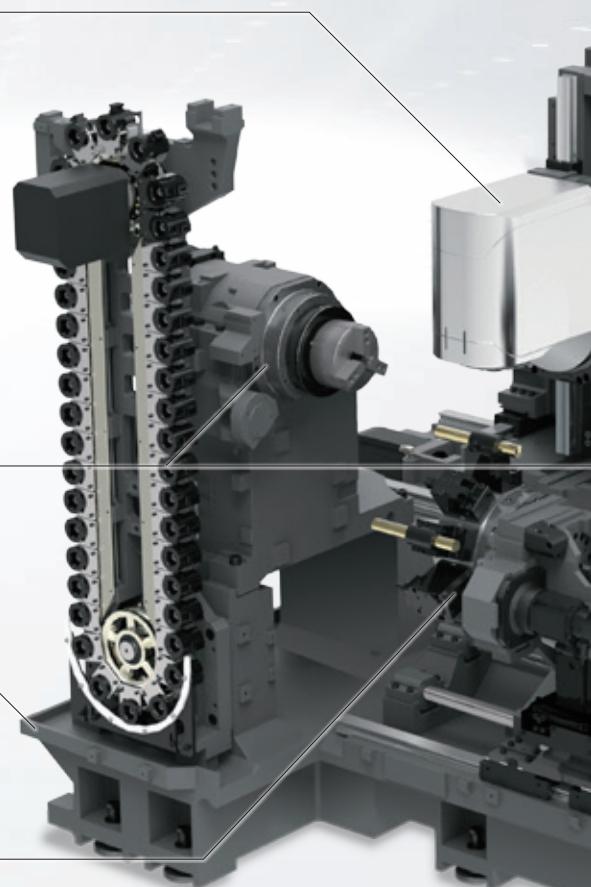
High-rigidity Machine Body

- + Thick and high-rigidity bed to stably support the moving units

Built-in motor turret <Mill specification>



- + BMT (Built-in Motor Turret) with high energy transmission efficiency controls heat generation and vibration.





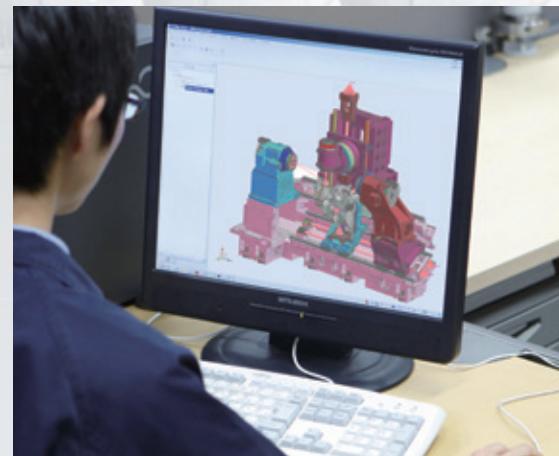
Increased ball screw rigidity

- + The double anchor method is employed for ball screws and support bearings, which ensures high rigidity for heavy-duty machining and high-accuracy machining.

linear motion guide

- + Smooth movements and high rigidity are realized by adopting linear motion guide.

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FEM analysis

- + Simulation of structural deformation at the time of load application
- + Fine adjustment to every part, including the thickness of the bed, the shape and layout of the ribs, to achieve a high level of flexural rigidity

FEM: Finite Element Method

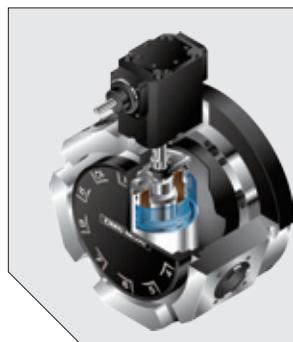
NTX 1000 2nd Generation

Fully Equipped to Support High-accuracy Machining

A variety of factors can bring about thermal displacement that has considerable influence on machining accuracy, including heat generation during machine operation, room temperature changes, and coolant temperature rises. DMG MORI has implemented original and comprehensive measures to suppress thermal displacement after examining each of these individual factors from all angles. As for the spindle, which is the biggest heat source, temperature rise is suppressed by oil jacket that spirally goes around the spindle.



Model: NLX 2500



Built-in motor turret with oil jacket

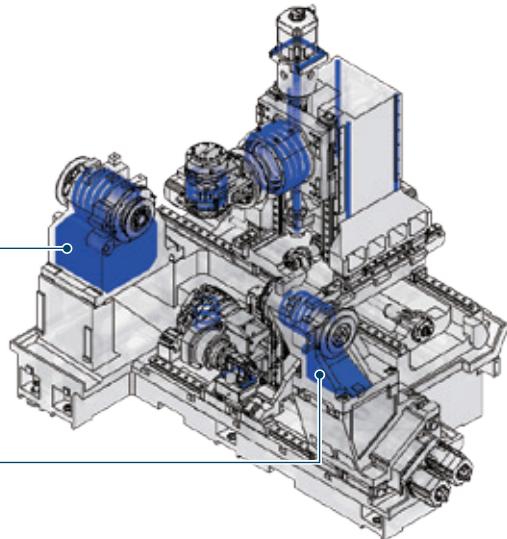
The oil jacket is spirally arranged around the motor of the rotary tool spindle to control thermal displacement caused by temperature rise, ensuring high machining accuracy.



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



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.

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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 450 m/s² (17,716.5 in./s²)
- + Vibration resistance of 250 m/s² (9,842.5 in./s²)
- + Thermal expansion coefficient as cast iron

NTX 1000 2nd Generation

High-accuracy Spindles Matched to the Customer's Requirements

The NLX 1000 2nd Generation offers the chuck sizes of 6 inches and 8 inches for both Spindle 1 and Spindle 2 (Option). Two types of output are available for the Spindle 1 to respond to customers' needs. As the spindle is a cartridge type, the whole unit can be replaced, which allows for easy maintenance.

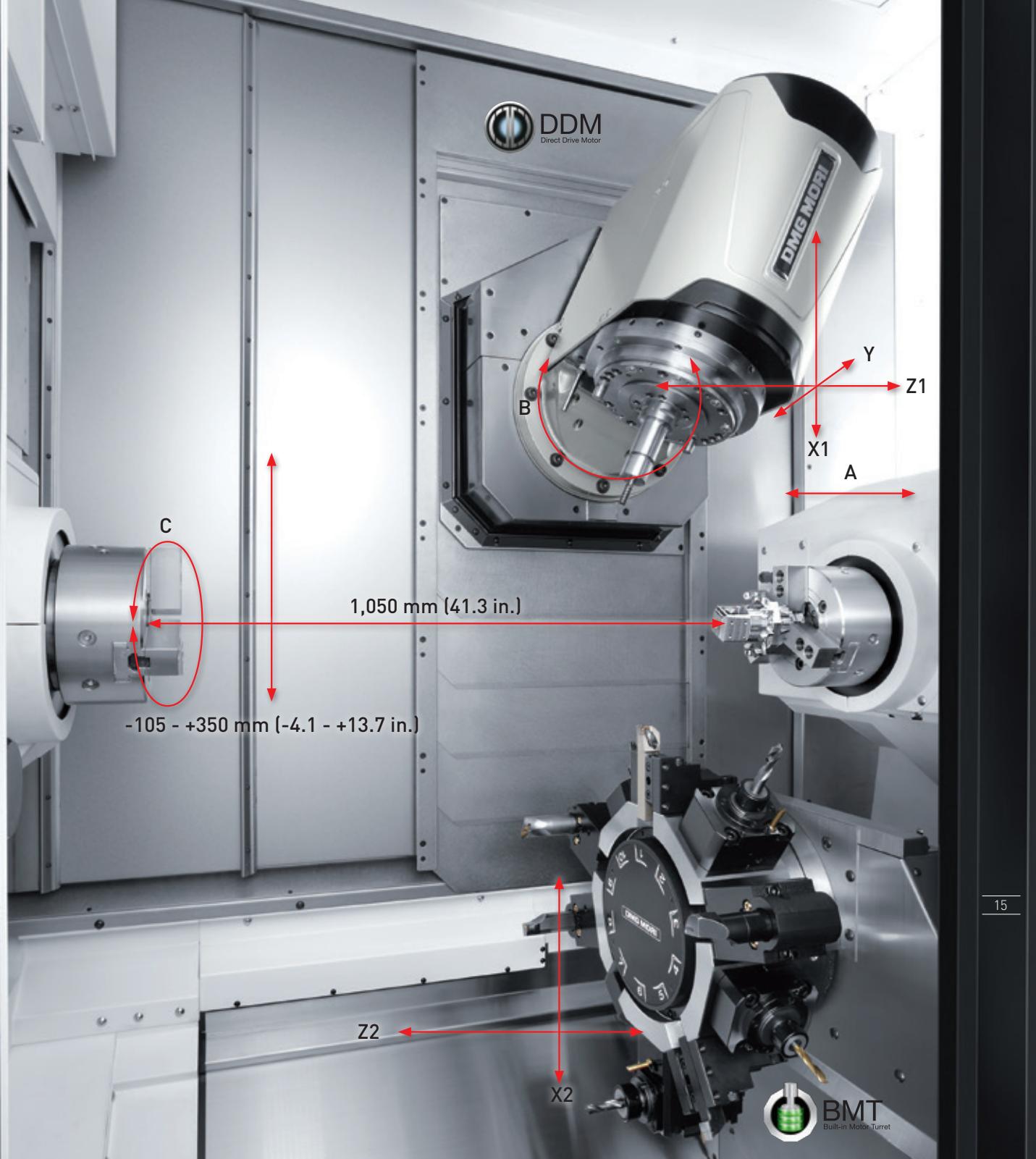
Sophisticated spindle labyrinth structure

- + 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

Spindle 2 and tailstock

- + The spindle 2 (Option) has the same maximum speed as the spindle 1, at 6,000 min⁻¹.
- + The tailstock is available in the optional built-in center MT3 specifications (tailstock center included) in addition to the standard live center MT4 specifications (tailstock center not included).

● The chuck is optional.



Travel

NTX 1000		
Tool spindle	X1-axis	mm (in.)
		455 (17.9)
		<-105 - +350 (-4.1 - +13.7)>
	Y-axis	mm (in.)
		±105 (±4.1)
	Z1-axis	mm (in.)
		800 + 165 (31.4 + 6.4)*1
	B-axis	
		240°
Turret 2	X2-axis	mm (in.)
		160 (6.2)
	Z2-axis	mm (in.)
		730 (28.7)
Spindle 1 / Spindle 2*2 C-axis		
		360° / 360°
Tailstock	A-axis	mm (in.)
		820 (32.2)

*1 for ATC

*2 Spindle 2 specification

Workpiece size

NTX 1000		
Max. distance between centers	mm (in.)	1,050 (41.3)
Max. turning diameter (Tool spindle / Turret 2)*1	mm (in.)	φ430 (φ16.9) φ274 (φ10.7)
Max. turning length	mm (in.)	800 (31.4)
Bar work capacity*2	mm (in.)	φ52 (φ2.0), φ65 (φ2.5)

*1 Same for both Spindle 1 and Spindle 2 (Option)

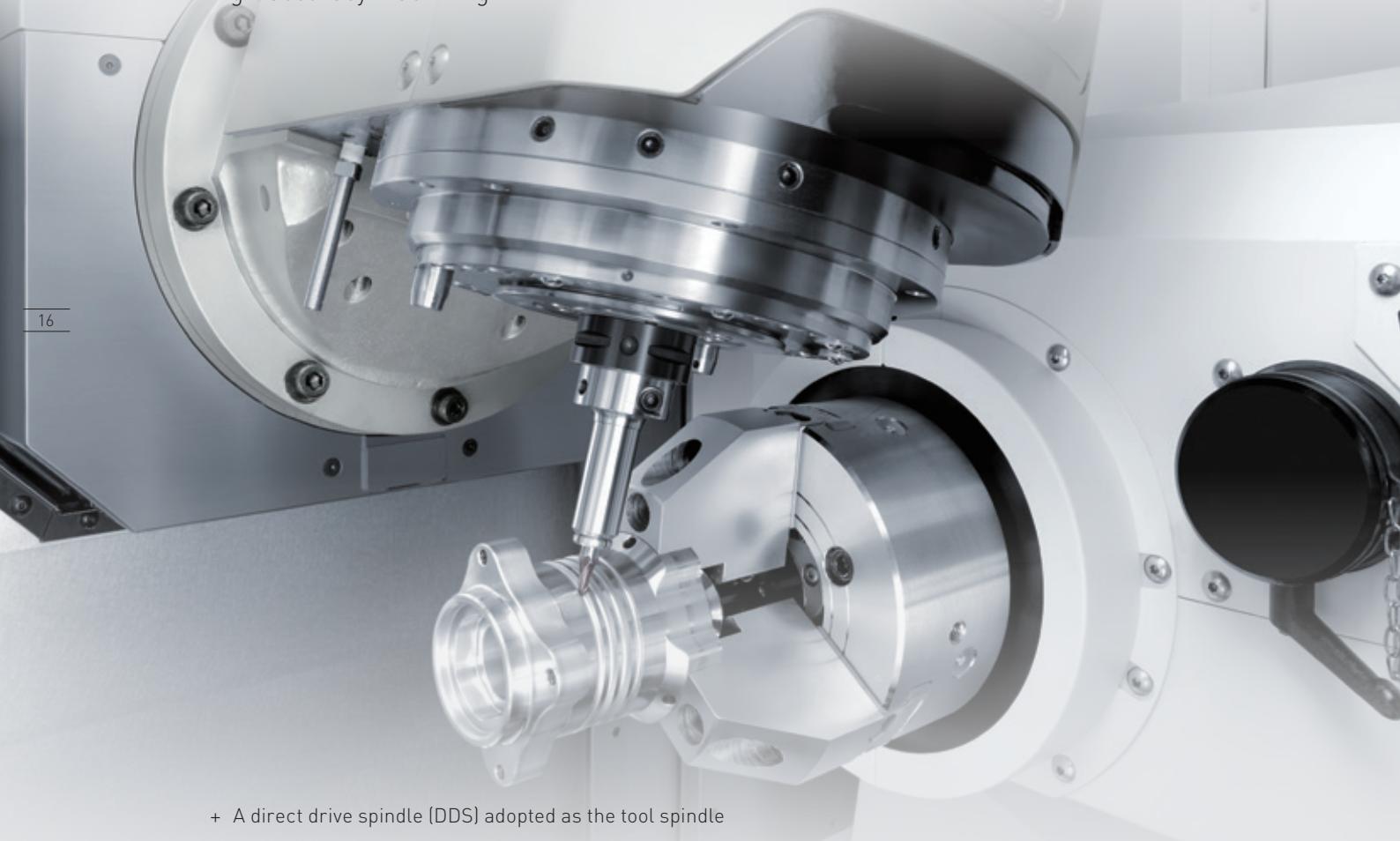
*2 Bar work capacity: Depending on the chuck /cylinder used and its restrictions, it may not be possible to reach full bar work capacity.

NTX 1000 2nd Generation

Tool Spindle with Wide Range of Motion

The tool spindle travels on the X- / Y- / Z- / B-axis, achieving easy access to surfaces of complex-shaped workpieces to be machined. Machining that used to require several steps (chucking) can now be completed in one chucking, which leads to process integration.

The model equipped with the DDM (Direct Drive Motor) allows for high-speed, high-accuracy machining.



- + A direct drive spindle (DDS) adopted as the tool spindle
- + Max. tool spindle speed: 12,000 min⁻¹, 20,000 min⁻¹ (Option)
- + B-axis driven by a direct drive motor (DDM)
- + Highly rigid two-face contact specification: Capto C5, HSK-A50 (Option)
- + Tool storage capacity: 38 tools, 76 tools (Option)
- + Max. tool diameter: φ130 mm (φ5.1 in.) <Without adjacent tools>, φ70 mm (φ2.8 in.) <With adjacent tools>
- + Tool changing time: 2.26 sec. <Tool-to-tool>

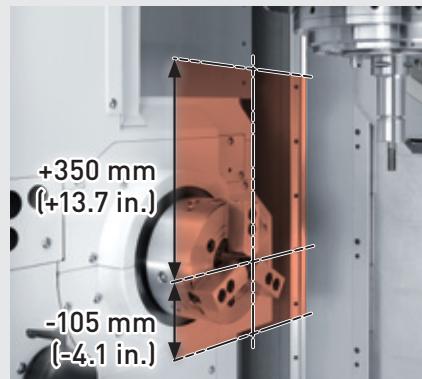
compactMASTER

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

The X-axis stroke in the negative direction has been extended from 50 mm (1.9 in.) to 105 mm (4.1 in.). This allows the linear axis to reach the lower part of the chuck and perform machining without decreasing accuracy. So, you can create programs for the mill turn center in the same way as for a machining center.



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.

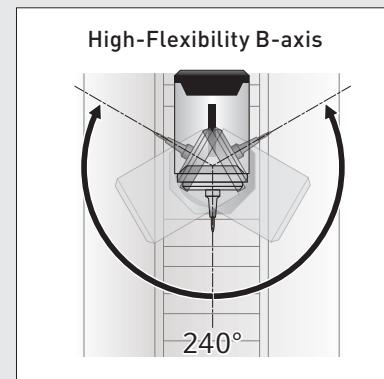


Effects of DDM

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

DDM: Direct Drive Motor

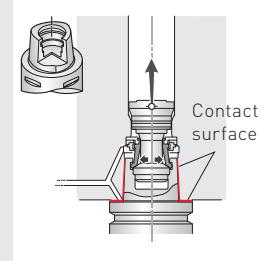
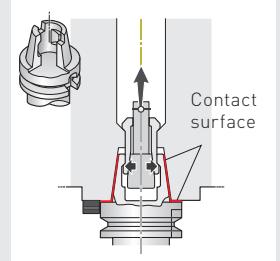
	NTX 1000	
B-axis rotation range	SIEMENS	-30° - +210°
	FANUC	±120°
B-axis rotational speed	min⁻¹	100
Min. indexing increment		0.0001°



Two-face contact specification

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.

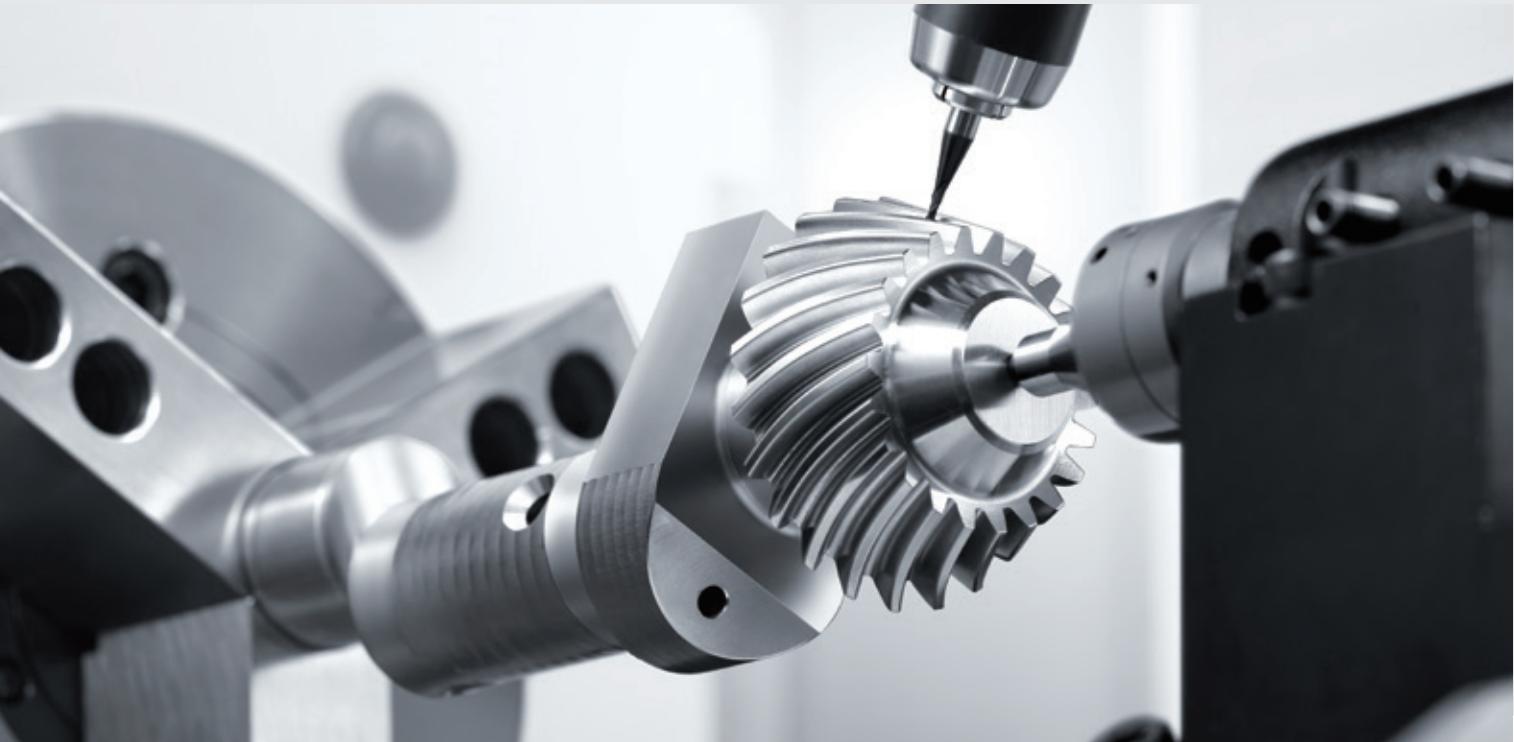
- DMG MORI builds all the spindles in house.

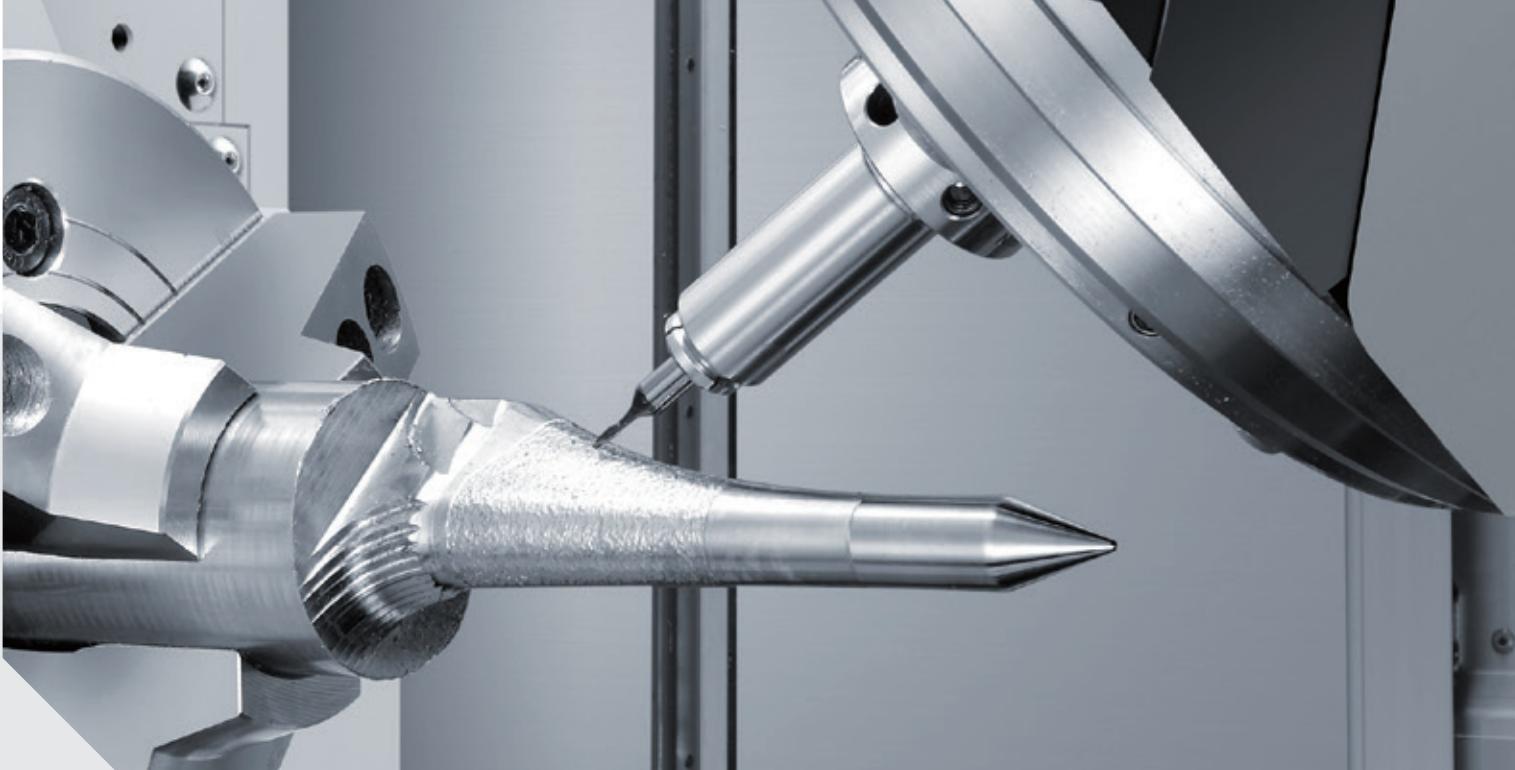
Capo Specifications**HSK Specifications (Option)****Tool magazine**

Tool storage capacity

	NTX 1000
Tool storage capacity	38, 76
Max. tool diameter	mm (in.)
Without adjacent tools	φ130 (φ5.1)
With adjacent tools	φ70 (φ2.7)
Max. tool length	mm (in.)
Tool diameter smaller than φ70 mm (φ2.8 mm)	250 (9.8)
Tool diameter larger than φ70 mm (φ2.8 mm)	210 (8.2)
Max. tool mass	kg (lb.)
Max. tool mass moment (from spindle gauge line)	N·m (ft·lbf)
Tool changing time <Tool-to-tool>	sec.
	5 (11)
	3.9 (2.87)
	2.26

- Photo: Tool storage capacity 76 tools



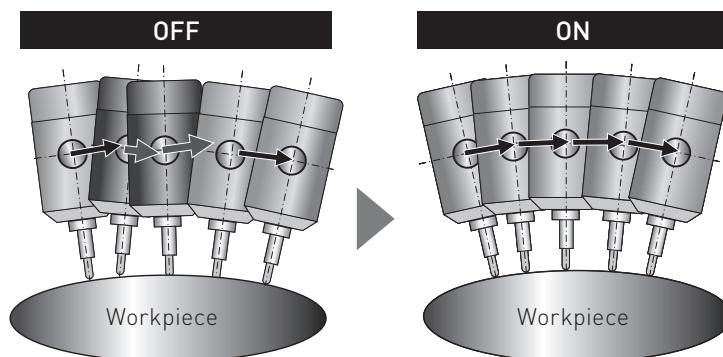


Function for supporting simultaneous 5-axis machining

SVC function <FANUC> / Advanced Surface (CYCLE832) <SIEMENS>

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

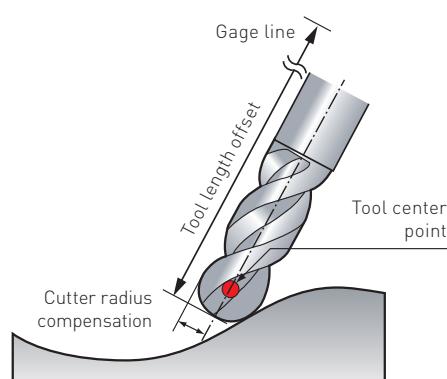


The SVC function includes the following functions:

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

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Tool center point (TCP) control <FANUC> / TRAORI <SIEMENS>



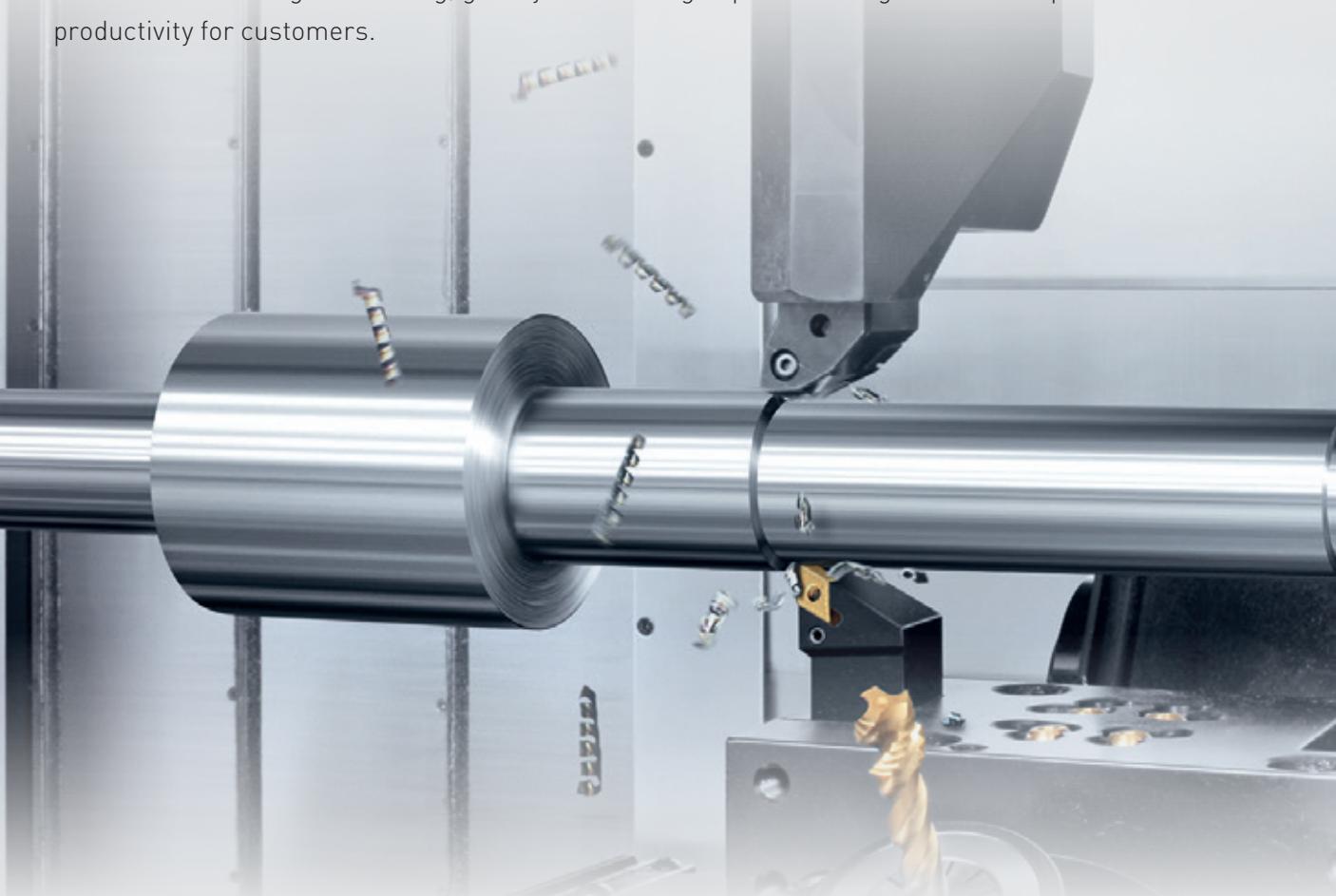
Main features

- + 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 1000 2nd Generation

Turret 2 for Flexible Machining

Turret 2 (Option) enables flexible machining, from turning to secondary machining and back side milling, of workpieces on Spindle 1 and 2 (Option) sides. The milling specification is equipped with the BMT (Built-in Motor Turret). The heat is controlled with jacket cooling, which ensures outstanding machining accuracy. The NTX 1000 2nd Generation is capable of coherent and simultaneous milling and turning, greatly contributing to process integration and improvement of productivity for customers.

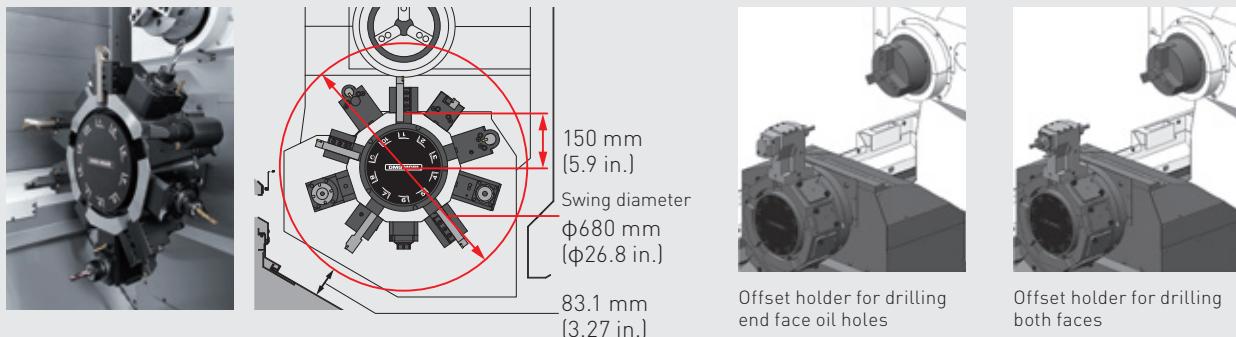


Turret 2 featuring BMT technology (Option)

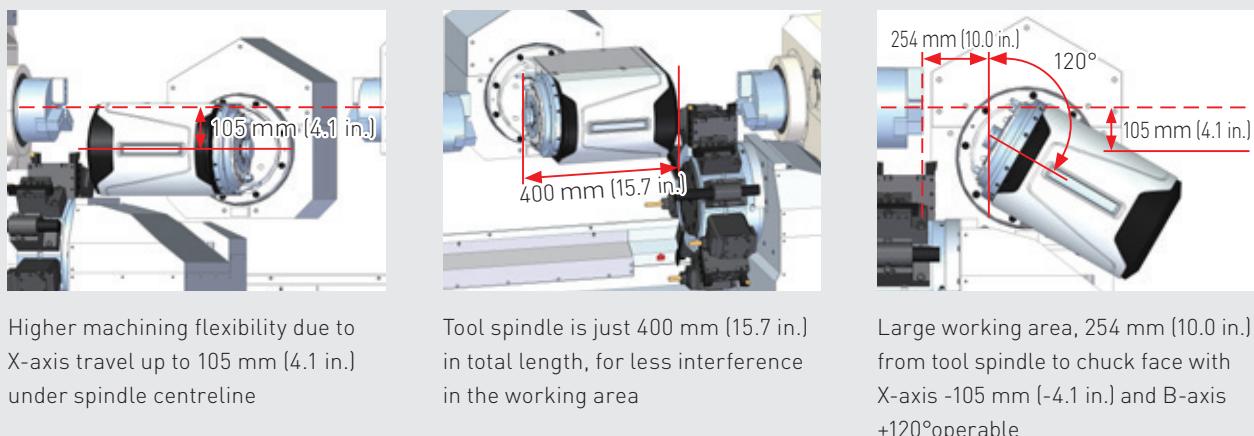
- + Number of tool stations: 10 tools
- + Max. rotary tool spindle speed: 10,000 min⁻¹
- + Turret indexing time (1-station): 0.19 sec.
- + Milling tools can be mounted on Turret 2, enabling milling operation on the Spindle 2 side. (Option)

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

The swing diameter of the 10-station turret is 680 mm (26.8 in.), enabling flexible tooling. The holders for end face milling can be used for end face milling of workpieces on the Spindle 2 side using Turret 2, which leads to shorter cycle times.



Synchronous machining with tool spindle and turret 2



Higher machining flexibility due to X-axis travel up to 105 mm (4.1 in.) under spindle centreline

Tool spindle is just 400 mm (15.7 in.) in total length, for less interference in the working area

Large working area, 254 mm (10.0 in.) from tool spindle to chuck face with X-axis -105 mm (-4.1 in.) and B-axis +120° operable

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

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



NTX 1000 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

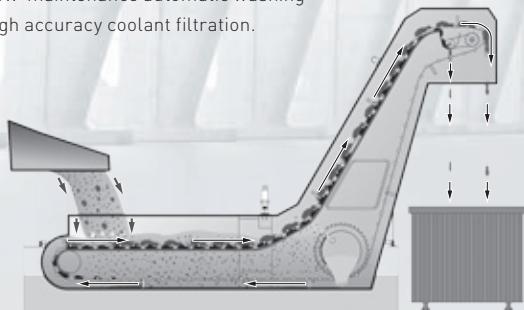
The coolant tank can be pulled out to the front, minimizing the space for maintenance.



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, $\phi 40$ mm [$\phi 1.6$ in.] or less in diameter (a lump of chips) / Long: over 50 mm [2.0 in.].

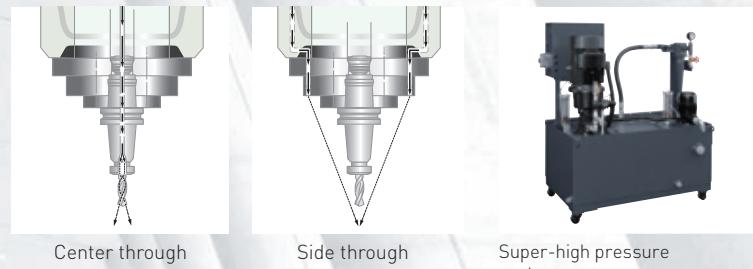
Chip flushing coolant

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



Through-spindle coolant system <Tool spindle>

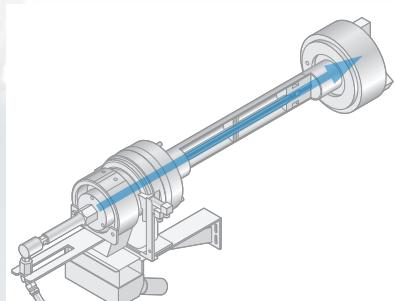
- + Coolant to be supplied to the tip through the holes of the spindle and tool
- + Effective for chip removal, cooling of machining points and extension of tool life



⚠ 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.

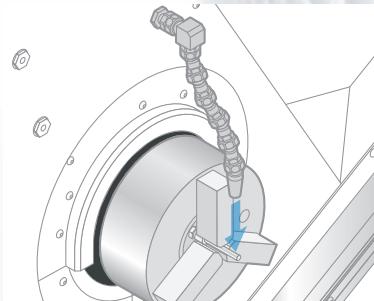
Through-spindle coolant system <Spindle1, 2> (Option)

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



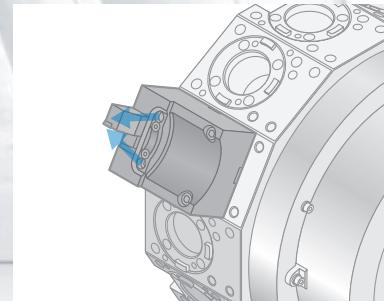
Coolant in upper part of chuck (Option)

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		
Short	Powdery	Long	Short	Powdery
○	△*	○	○	△*
—	—	—	—	—

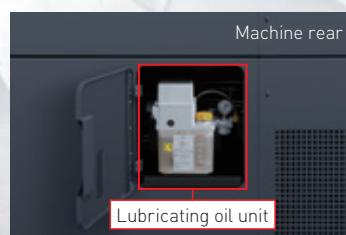
- The options table shows the general options when using coolant.
Changes may be necessary if you are not using coolant, or depending on the amount of coolant, compatibility with machines, or the specifications required.
- Please select a chip conveyor to suit the shape of your chips. When using special or difficult-to-cut material [chip hardness HRC45 or higher], please consult our sales representative.
- We have prepared several options for different chip shapes and material. For details, please consult our sales representative.

NTX 1000 2nd Generation

Pursuit of Usability

The NTX 1000 2nd Generation is 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.



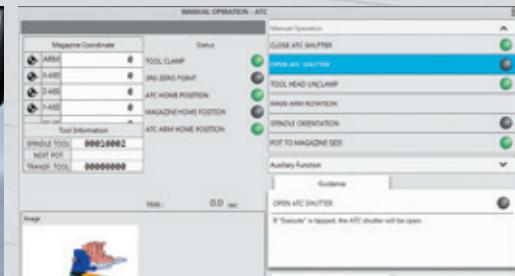
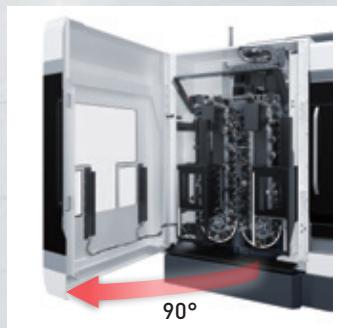
● Photo: Spindle 2 specification

High-rigidity Digital Tailstock <Tailstock specification>

There are two types of tailstocks available: standard MT4 live center (without center) and optional MT3 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.

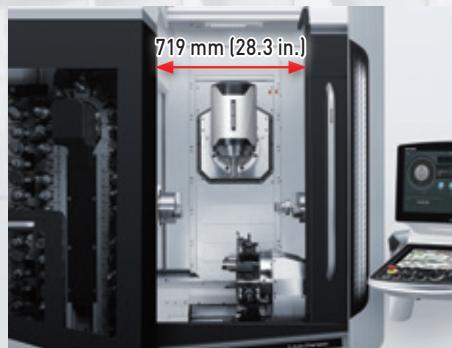


Independent operation of the ATC

ATC can be manually operated on the screen

● Photo: NTX 2500 2nd Generation

Door with Outstanding Visibility



25

CELOS / ERGOline Touch with Superior Operability

The swivel, touch screen operation panel provides better access to the spindle and the workpiece.



NTX 1000 2nd Generation

Various Automation Solutions

The NTX 1000 2nd Generation provides various automation systems including in-machine travelling robot and workpiece unloaders. With automation systems, it is possible to handle a whole process from blank workpieces to finished products. Reduction in non-cutting times maximizes customer profit.



● Machine appearance varies depending on the specification.

In-machine travelling type robot (Option)

Robot loads material into spindle 1 and unloads finished workpiece from spindle 2 (Option). Additionally robot can manage different shapes of workpieces, washing and deburring as well.

NTX 1000	
Maximum Mass (Robot hand + workpiece)	kg (lb.) FANUC: 7 (15.7) KUKA: 10 (22.0)

● 2 types of hands: single hand and double hand



Tray system



● Machine appearance varies depending on the specification.

Robot package (Option)

The robot carries a workpiece on a tray to the inside of the machine to attach it to the spindle, and then receives a machined workpiece from the spindle to return it to a tray. The tray can be manually put in and taken out from the stocker, making continuous machining possible.



Stores a machined part, picks up a material



Detaches a machined part, attaches a material

<input checked="" type="checkbox"/>	Standard	<input type="checkbox"/>	Option
<input checked="" type="checkbox"/>	T1: Tool spindle	<input type="checkbox"/>	B1: Tool spindle B-axis S1: Spindle 1
<input checked="" type="checkbox"/>	MC1: Tool spindle Milling	<input type="checkbox"/>	T2: Turret 2 S2: Spindle 2
<input checked="" type="checkbox"/>	Y1: Tool spindle Y-axis	<input type="checkbox"/>	MC2: Turret 2 Milling TS: Tailstock
●The Spindle 2 specification (S2) is not equipped with a tailstock (TS).			

Workpiece unloader (Option)

The NTX 1000 2nd Generation offers three types of workpiece unloaders: the Spindle 2 type, the turret turning type and the swing type. Each customer can select the optimal type according to their needs.

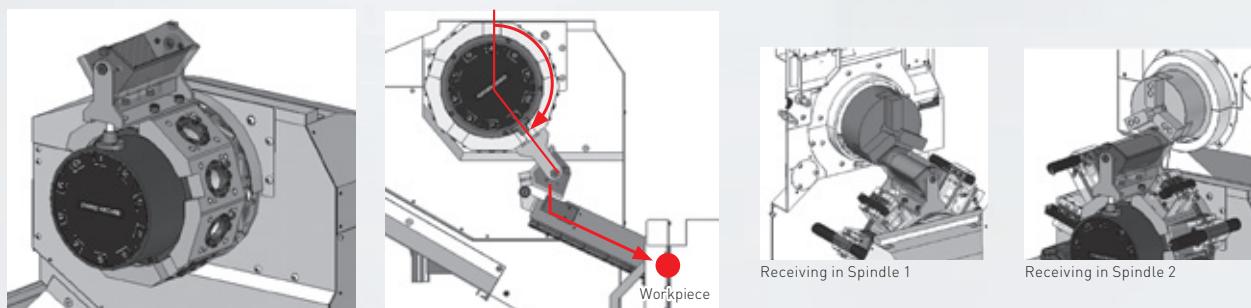
	Basic specification					
	T1	MC1	B1	Y1	S1	TS
Optional specifications	—					
Spindle 2 type	—	—	—	●	●	●
Turret turning type	—	●	●	—	●	●
Swing type	●	—	—	●	—	—

	Max. workpiece size		
	Diameter	Length	Max. mass
Spindle 2 type	φ65 mm [φ2.5 in.]	230 mm [9.0 in.]	3 kg [6.6 lb.]
Turret turning type	φ65 mm [φ2.5 in.]	150 mm [5.9 in.]	3 kg [6.6 lb.]
Swing type	φ65 mm [φ2.5 in.]	150 mm [5.9 in.]	3 kg [6.6 lb.]

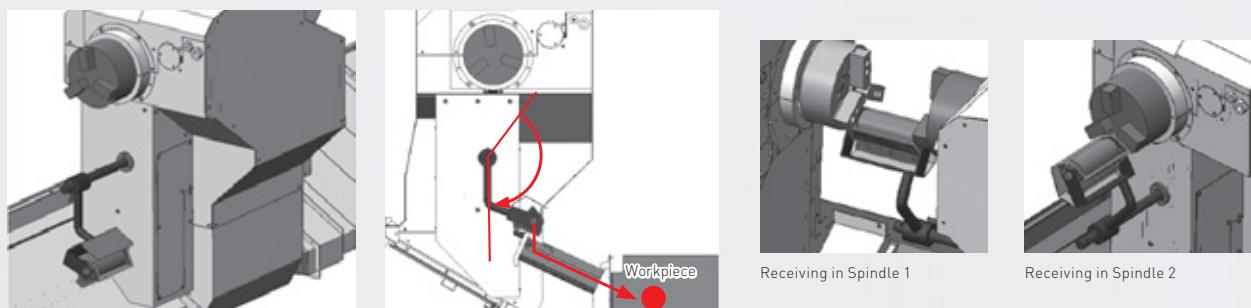
Workpiece unloader (Spindle 2 side)



Workpiece unloader (Turret turning type)



Workpiece unloader (Swing type)



NTX 1000 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.

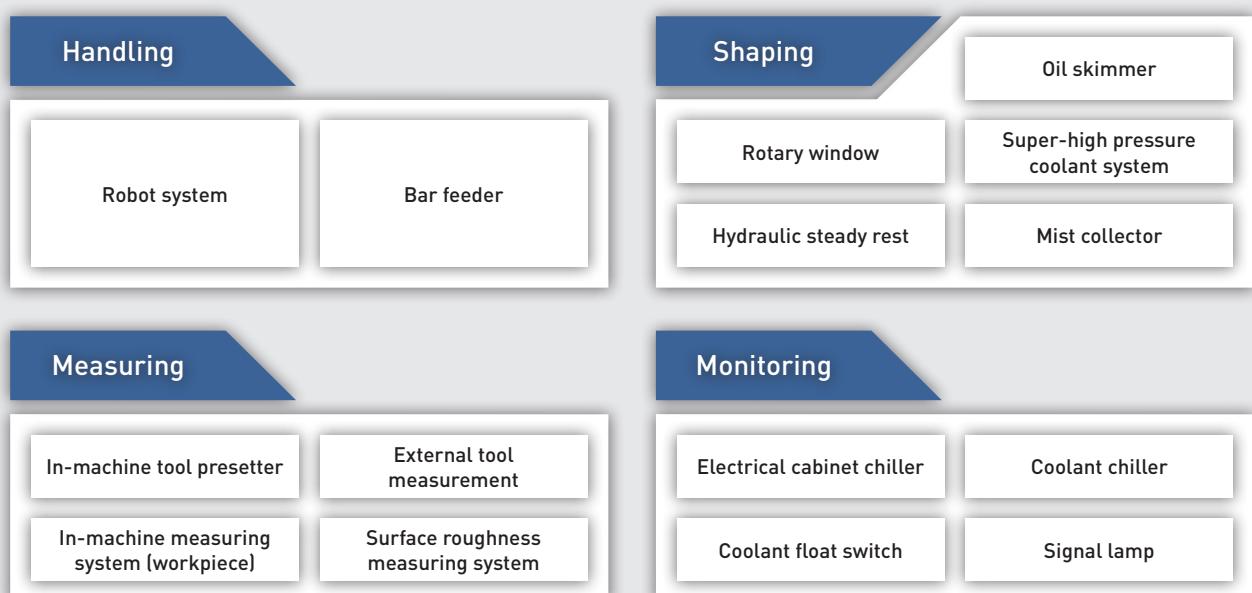
We take care of the arrangement from selection to installation to support best-quality machining.

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



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

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



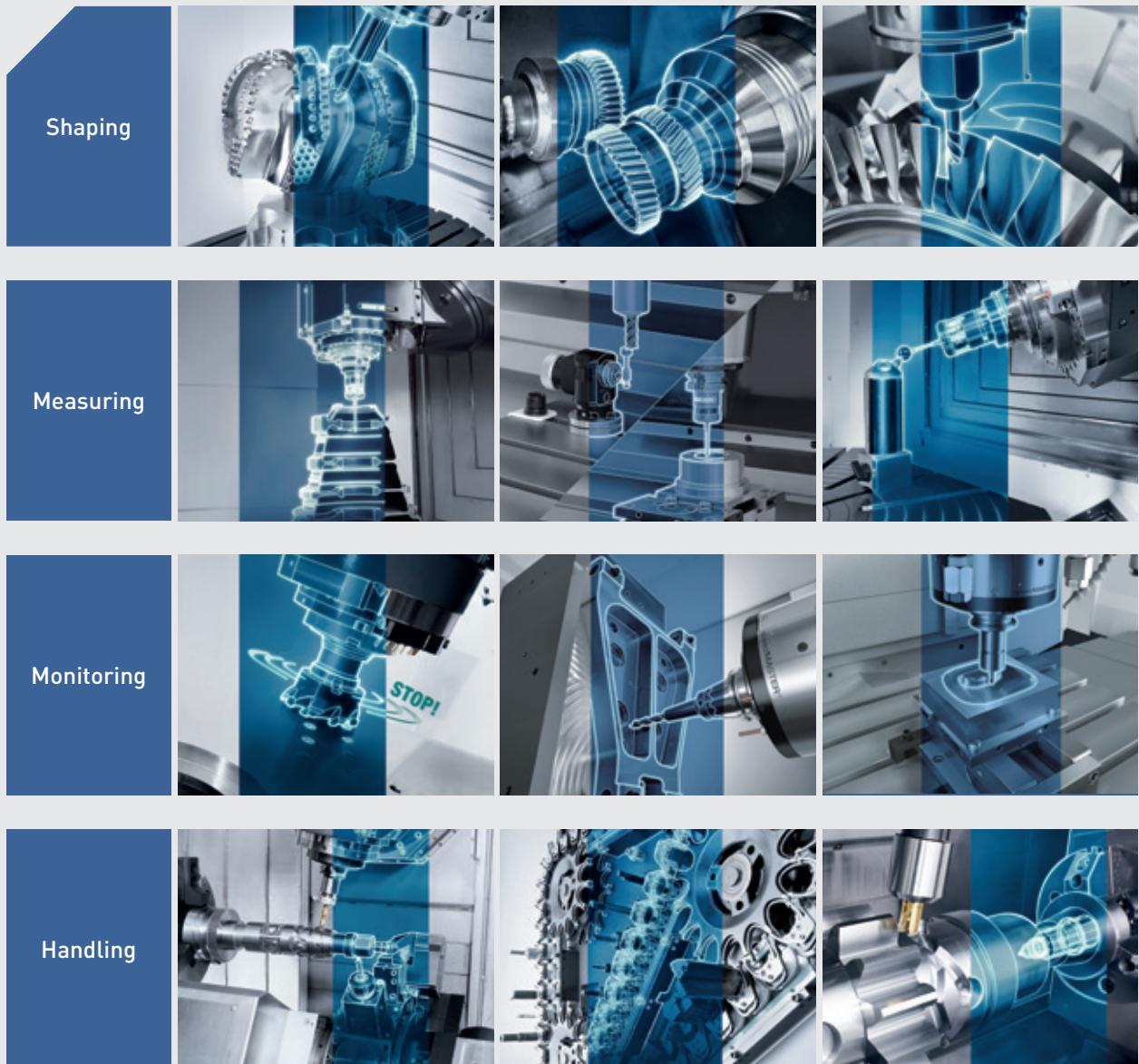
Cutting tools



NTX 1000 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



Issue (before introduction)

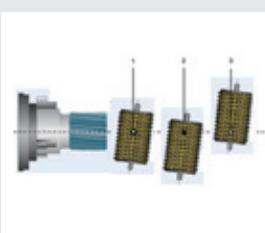


- + A gear machine is needed. After blank machining with a turning machine, gear machining needs to be performed with a gear machine after setup changes
- + Want to extend the tool life of expensive hob cutter

Results (after introduction)



- + Hobbing program can be easily created by conversational input



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

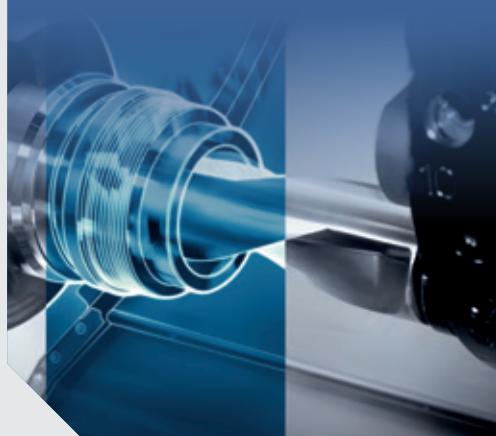


- + Consolidation of machining operations into the general-purpose machine reduces setup time and enhances accuracy such as concentricity due to no setup change

Monitoring

Easy tool monitoring

Monitoring load of spindle and traveling axes

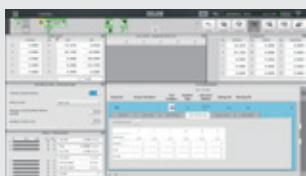


Issue (before introduction)

- + 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



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

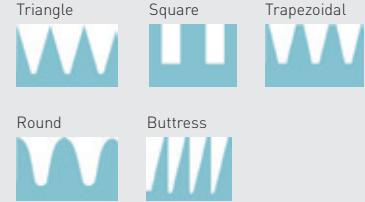


Issue (before introduction)

- + 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)



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

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Shaping

Interpolation turning



Mounting tailstock center on Spindle 2

- + 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



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

NTX 1000 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.



ERGOline Control
with 21.5-inch
multi-touch-screen
and SIEMENS

CELOS

APP MENU:

Central access to all available applications



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



STATUS MONITOR

Status monitoring of the machine and machining



ORGANIZER

Schedule management function



CAD / CAM VIEW

Visualize workpieces and improve program data



TECH CALCULATOR

Calculation support for cutting conditions and dimensions conforming to industrial standards

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

ERGOline Control
with 21.5-inch
multi-touch-screen
and FANUC

NTX 1000 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.

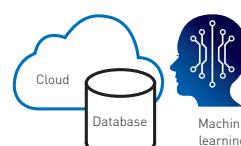
* An industrial society in which new added value will be created through connected humans, machines, and technologies – A new vision for the future of Japanese industries that the Ministry of Economy, Trade and Industry advocates.



AI-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.



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

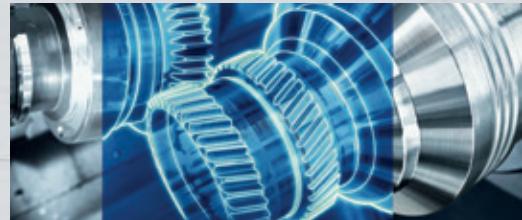
Machine status monitoring

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

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.)



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

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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

● 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 1000 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.



Lower Touch Panel Screen Layout

- ① Individual function operation area : Displays function buttons at all times regardless of the operation mode.
- ② Operation mode selection area : Displays mode selection buttons at all times.
- ③ Status display area : Displays the override status.
- ④ Machine operation area : Displays buttons related to spindle / turret operation and optional functions over multiple pages.
- ⑤ 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.
- ⑥ In-machine display area : Displays the image showing the controlled axes and their travel directions.

NTX 1000 2nd Generation

Easy Programming with SIEMENS

Automatic programming is made possible with the interactive programming function and simple illustrations, which results in a 60% shorter programming time.



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WITHOUT technology cycles

Classical DIN-programming

WITH technology cycles

Dialog based programming

NTX 1000 2nd Generation

Unique Energy-saving Function GREENmode



DMG MORI has developed the energy-saving function "GREENmode" in an effort to achieve sustainable development goals (SDGs).

SDGs: Sustainable Development Goals

The machine's power consumption is reduced by cutting unnecessary standby power and using efficient machining programs to shorten machining time.

- + Improve cutting conditions to reduce machining time by bringing the best out of machine tools and cutting 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

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

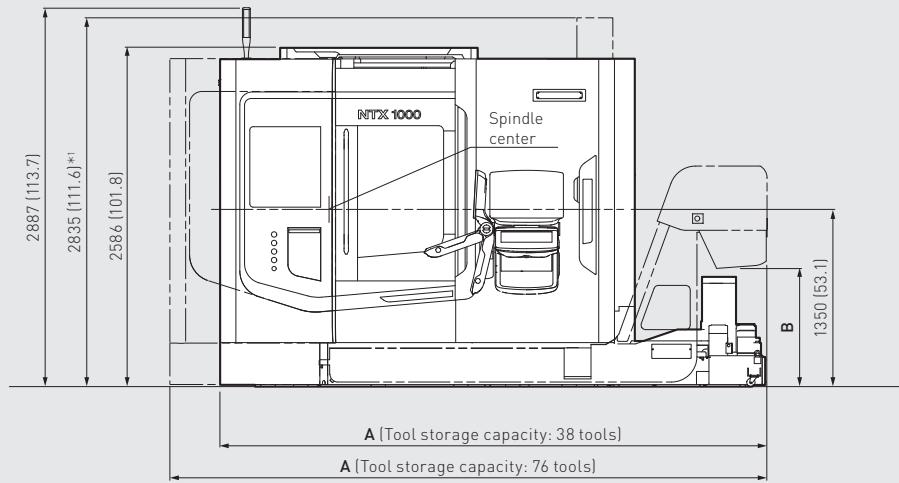


NTX 1000 2nd Generation

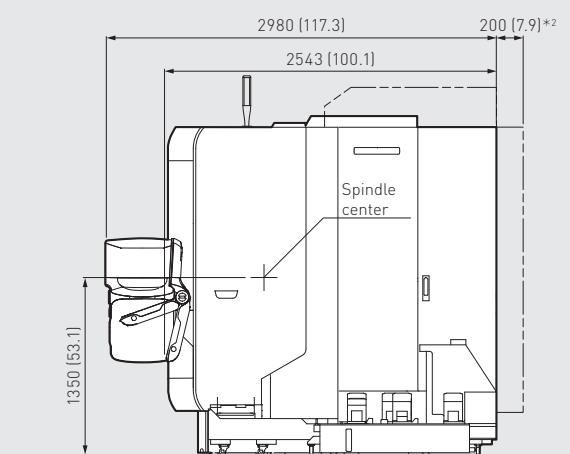
Machine Size

NTX 1000	mm (in.)
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Front view



Side view



*1 Transformer for SIEMENS
*2 Electrical cabinet for SIEMENS

Q56254B03
Q56255B03

NTX 1000					
Chip conveyor		No conveyor	Hinge type	Hinge type (EN type)	Hinge type + Drum filter type (EN type)
A Machine width	Tool storage capacity: 38 tools	mm (in.)	4,155 [163.6]	4,160 [163.8]	4,366 [171.9]
	Tool storage capacity: 76 tools	mm (in.)	4,535 [178.5]	4,540 [178.7]	4,746 [186.9]
B Discharge height of chip conveyor		mm (in.)	—	965 [38.0]	829 [32.6]
					901 [35.5]

NTX 1000 2nd Generation

Machine Specifications (SIEMENS 840D sl)

		T1	M1	B1	Y1	S1	T5	T2	S2	T2	S2	T2	M2	S2		
Basic specification																
Optional specifications		—		T2		T2	M2		S2		T2	S2		T2	M2	S2
Capacity																
Swing over cross slide	mm (in.)															
Max. turning diameter (Tool spindle / Turret 2)	mm (in.)															
Max. turning length	mm (in.)															
Bar work capacity	mm (in.)															
X1-axis (Tool spindle)	mm (in.)															
Y-axis (Tool spindle)	mm (in.)															
Z1-axis (Tool spindle) + for ATC	mm (in.)															
B-axis (Tool spindle)																
Spindle 1																
Max. spindle speed	min ⁻¹															
Spindle 2 (option)																
Max. spindle speed	min ⁻¹							—							6,000	
Tool spindle (Turret 1)																
Min. B-axis indexing increment															0.0001°	
Tool spindle speed	min ⁻¹														12,000, 20,000 <High-speed>	
Taper hole of tool spindle															Capo C5, HSK-A50 (T50)	
Tool magazine															38, 76	
Max. tool diameter	mm (in.)														φ70 (φ2.7)	
With adjacent tools															φ130 (φ5.1)	
Without adjacent tools	mm (in.)															
Max. tool length	mm (in.)														250 (9.8) <Tool diameter smaller than φ 70 mm (φ2.8 in.)> 210 (8.2) <Tool diameter larger than φ 70 mm (φ2.8 in.)>	
Max. tool mass	kg (lb.)														5 (11)	
Turret 2 (option)																
Number of tool stations (Rotary tool mounting capacity)		—	10		10 [10]		—	10		10 [10]						
Shank height for square tool	mm (in.)	—			20 [0.8]		—			20 [0.8]						
Max. rotary tool spindle speed	min ⁻¹	—			10,000		—			10,000						
Tailstock																
Taper hole of tailstock spindle						Live center (MT4) Built-in center (MT3)									—	
Feedrate																
Rapid traverse rate	mm/min (ipm)															
		Tool spindle X: 40,000 (1574.8) Y: 40,000 (1574.8) Z: 50,000 (1968.5)	Tool spindle X: 40,000 (1574.8) Y: 40,000 (1574.8) Z: 50,000 (1968.5) Turret 2 X2: 28,000 (1102.4) Z2: 36,000 (1417.3)	Tool spindle X: 40,000 (1574.8) Y: 40,000 (1574.8) Z: 50,000 (1968.5) Turret 2 X2: 28,000 (1102.4) Z2: 36,000 (1417.3)	Tool spindle X: 40,000 (1574.8) Y: 40,000 (1574.8) Z: 50,000 (1968.5) Turret 2 X2: 28,000 (1102.4) Z2: 36,000 (1417.3)	Tool spindle X: 40,000 (1574.8) Y: 40,000 (1574.8) Z: 50,000 (1968.5) Turret 2 X2: 28,000 (1102.4) Z2: 36,000 (1417.3)	Tool spindle X: 40,000 (1574.8) Y: 40,000 (1574.8) Z: 50,000 (1968.5) Turret 2 X2: 28,000 (1102.4) Z2: 36,000 (1417.3)	Tool spindle X: 40,000 (1574.8) Y: 40,000 (1574.8) Z: 50,000 (1968.5) Turret 2 X2: 28,000 (1102.4) Z2: 36,000 (1417.3)	Tool spindle X: 40,000 (1574.8) Y: 40,000 (1574.8) Z: 50,000 (1968.5) Turret 2 X2: 28,000 (1102.4) Z2: 36,000 (1417.3)	Tool spindle X: 40,000 (1574.8) Y: 40,000 (1574.8) Z: 50,000 (1968.5) Turret 2 X2: 28,000 (1102.4) Z2: 36,000 (1417.3)	Tool spindle X: 40,000 (1574.8) Y: 40,000 (1574.8) Z: 50,000 (1968.5) Turret 2 X2: 28,000 (1102.4) Z2: 36,000 (1417.3)	Tool spindle X: 40,000 (1574.8) Y: 40,000 (1574.8) Z: 50,000 (1968.5) Turret 2 X2: 28,000 (1102.4) Z2: 36,000 (1417.3)	Tool spindle X: 40,000 (1574.8) Y: 40,000 (1574.8) Z: 50,000 (1968.5) Turret 2 X2: 28,000 (1102.4) Z2: 36,000 (1417.3)	Tool spindle X: 40,000 (1574.8) Y: 40,000 (1574.8) Z: 50,000 (1968.5) Turret 2 X2: 28,000 (1102.4) Z2: 36,000 (1417.3)	Tool spindle X: 40,000 (1574.8) Y: 40,000 (1574.8) Z: 50,000 (1968.5) Turret 2 X2: 28,000 (1102.4) Z2: 36,000 (1417.3)	Tool spindle X: 40,000 (1574.8) Y: 40,000 (1574.8) Z: 50,000 (1968.5) Turret 2 X2: 28,000 (1102.4) Z2: 36,000 (1417.3)
															B:100 C:250	
Motors																
Motor for Spindle 1 <40%ED / 40%ED / cont>	kW (HP)						22 / 18.5 / 15 (30 / 24.7 / 20), 26 / 22 (34.7 / 30) <40%ED / cont> <High output>									
Motor for Spindle 2 <40%ED / 40%ED / cont>	kW (HP)						—			22 / 18.5 / 15 (30 / 24.7 / 20)						
Tool spindle drive motor (25%ED / 15 min / cont)	kW (HP)						9 / 7.5 / 5.5 (12.0 / 10 / 7.5)									
Turret 2 rotary tool spindle drive motor (15%ED / cont)	kW (HP)						—	4.6 / 2.4 (6.1 / 3.2)		—					4.6 / 2.4 (6.1 / 3.2)	
Machine size																
Machine height	mm (in.)														2,835 [111.6]	
Floor space (width × depth) <Including a conveyor with the hinge type + drum filter>	mm (in.)														4,155 × 2,743 [163.6 × 108.0] [*] , 4,535 × 2,743 [178.5 × 108.0] ^{*2} <excluding chip conveyor> <4,169 × 2,743 [164.1 × 108.0] ^{*1} , 4,549 × 2,743 [179.1 × 108.0] ^{*2}	

*1 Tool storage capacity: 38 tools

*2 Tool storage capacity: 76 tools

- 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 October 2018.

<input checked="" type="checkbox"/>	Standard	<input type="checkbox"/>	Option
T1 :	Tool spindle	B1 :	Tool spindle B-axis S1 : Spindle 1
MC1 :	Tool spindle Milling	T2 :	Turret 2 S2 : Spindle 2
Y1 :	Tool spindle Y-axis	MC2 :	Turret 2 Milling TS : Tailstock
● The Spindle 2 specification (S2) is not equipped with a tailstock (TS).			

NTX 1000 2nd Generation

Standard & Optional Features (SIEMENS 840D sl)

●: Standard ○: Option
—: not applicable

840D sl

Fixture						
Automatic centering type steady rest	SLU-X1 <φ8 - 70 mm (φ0.3 - 2.8 in.)> <Fixed at Turret 2> <Traveling in clamped state during machining is not possible>*1				○	
	SCHUNK ZENTRICO THL plus 100 <φ4 - 66 mm (φ0.2 - 2.6 in.)> <Steady rest body only>				○	
	SCHUNK ZENTRICO THL plus 200 <φ8 - 101 mm (φ0.3 - 4.0 in.)> <Steady rest body only>				○	
Coolant						
Water-soluble coolant unit	800 / 1,100 W (50 / 60 Hz)				●	
	Standard pressure (800 / 1,100 W <50/60 Hz>) <Center through / Side through>				●	
Through-spindle coolant system (Tool spindle)	Super-high-pressure*2 <3.5 Mpa (507.5 psi)> <Center through>				○*	
	Super-high-pressure*2 <7.0 Mpa (1,015 psi)> <Center through>				○*	
Chip disposal						
Chip conveyor	Right discharge, Hinge type				○	
	Right discharge, Hinge type + Drum filter type				○	
Measurement						
Manual type in-machine tool presetter	Spindle 1 (removable)				●	
	For tool spindle <In-out type> (Machines not equipped with Turret 2)				○	
Automatic in-machine tool presetter	For tool spindle [Metrol] + For Turret 2 [Renishaw] <Turret 2 specification>				○	
	For tool spindle [Metrol] + For Turret 2 [BLUM] <Turret 2 specification>				○	
Tool breakage detector	Laser type [Renishaw] / touch type [Blum]				○	
In-machine measuring system (Tool spindle)	Touch sensor (Radio signal transmission type)*3				○	
Improved accuracy						
Full closed loop control <Scale feedback> (Tool spindle)	X1-, Y-, Z1-axis				○	
Automation						
Workpiece handling system (in-machine traveling type robot specification)	Separate stocker, hand, and cover are not included.				○	
	Turret turning type				○	
Workpiece unloader	Swing type				○	
	Spindle 2 type				○	
Robot interface					○	
Other						
• Built-in worklight (LED) • Leveling block • Hand tools					●	
Chuck foot switch	1 foot switch				●	
Dry anchor					○	
Multi dry filter					○	
Signal lamp	4 layers (LED type Red, Yellow, Green, Blue)				○	

Basic specification		T1	MC1	B1	Y1	S1	TS
Optional specifications		—		T2		T2 MC2	S2
Measurement		—		—		—	—
Manual in-machine tool presetter	Spindle 2 (removable)	—		—		●	●
Automatic in-machine tool presetter (In-out type)	For tool spindle	○		—		○	—
	Tool spindle + Turret 2	—	○	○	—	○	○
Improved accuracy		—		○		—	○
Full closed loop control <Scale feedback> (Turret 2)	X2-, Z2-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 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 details, please consult our sales representative.

● DMQP: Please see Page 28 for details.

● The information in this catalog is valid as of October 2018.

● 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.

NTX 1000 2nd Generation

Machine Specifications

(FANUC F31iB5)

		T1	M1	B1	Y1	S1	TS							
		—		T2		T2	M2		S2		T2 S2		T2 M2 S2	
Basic specification														
Optional specifications														
Capacity														
Swing over cross slide	mm (in.)												φ450 (φ17.7)	
Max. turning diameter (Tool spindle / Turret 2)	mm (in.)												φ430 (φ16.9) / φ274 (φ10.7)	
Max. turning length	mm (in.)												800 (31.4)	
Bar work capacity	mm (in.)												φ52 (φ2.0), φ65 (φ2.5) <High output>	
Travel														
X1-axis (Tool spindle)	mm (in.)												455 (17.9) <-105 - +350 (-4.1 + 13.7)>	
Y-axis (Tool spindle)	mm (in.)												±105 (±4.1)	
Z1-axis (Tool spindle) + for ATC	mm (in.)												800 + 165 (31.4 + 6.4) <for ATC>	
B-axis (Tool spindle)													±120°	
Spindle 1														
Max. spindle speed	min ⁻¹												6,000, 5,000 <High output>	
Spindle 2 (option)														
Max. spindle speed	min ⁻¹												6,000	
Tool spindle (Turret 1)														
Min. B-axis indexing increment													0.0001°	
Tool spindle speed	min ⁻¹												12,000, 20,000 <High-speed>	
Taper hole of tool spindle													Capt o C5, HSK-A50 (T50)	
Tool magazine													38, 76	
Max. tool diameter	mm (in.)												φ70 (φ2.7)	
With adjacent tools													φ130 (φ5.1)	
Without adjacent tools	mm (in.)													
Max. tool length	mm (in.)												250 (9.8) <Tool diameter smaller than φ 70 mm (φ2.8 in.)> 210 (8.2) <Tool diameter larger than φ 70 mm (φ2.8 in.)>	
Max. tool mass	kg (lb.)												5 (11)	
Turret 2 (option)														
Number of tool stations (Rotary tool mounting capacity)		—	10		10 [10]		—	10		10 [10]				
Shank height for square tool	mm (in.)	—		20 [0.8]			—		20 [0.8]					
Max. rotary tool spindle speed	min ⁻¹	—			10,000		—			10,000				
Tailstock														
Taper hole of tailstock spindle						Live center (MT4) Built-in center (MT3)							—	
Feedrate														
Rapid traverse rate	mm/min (ipm)													
		Tool spindle X: 40,000 [1574.8] Y: 40,000 [1574.8] Z: 50,000 [1968.5]	Tool spindle X: 40,000 (1574.8) Y: 40,000 (1574.8) Z: 50,000 (1968.5)	Turret 2 X2: 28,000 (1102.4) Z2: 36,000 (1417.3)	Tool spindle X: 40,000 [1574.8] Y: 40,000 [1574.8] Z: 50,000 [1968.5]	Tool spindle X: 40,000 (1574.8) Y: 40,000 (1574.8) Z: 50,000 (1968.5)	Tool spindle X: 40,000 (1574.8) Y: 40,000 (1574.8) Z: 50,000 (1968.5)	Tool spindle A: 36,000 (1417.3) X2: 28,000 (1102.4) Z2: 36,000 (1417.3)	Tool spindle X: 40,000 (1574.8) Y: 40,000 (1574.8) Z: 50,000 (1968.5)	Tool spindle A: 36,000 (1417.3) X2: 28,000 (1102.4) Z2: 36,000 (1417.3)	Tool spindle A: 36,000 (1417.3) X2: 28,000 (1102.4) Z2: 36,000 (1417.3)	Tool spindle A: 36,000 (1417.3) X2: 28,000 (1102.4) Z2: 36,000 (1417.3)	Tool spindle A: 36,000 (1417.3) X2: 28,000 (1102.4) Z2: 36,000 (1417.3)	Tool spindle A: 36,000 (1417.3) X2: 28,000 (1102.4) Z2: 36,000 (1417.3)
		min ⁻¹											B:100 C:250	
Motors														
Motor for Spindle 1 <40%ED / 30 min / cont>	kW (HP)	11 / 11 / 7.5 [15 / 15 / 10], 18.5 / 15 [24.7 / 24.7 / 20] <25%ED / 30 min / cont> <High output>												
Motor for Spindle 2 <40%ED / 30 min / cont>	kW (HP)	—											11 / 11 / 7.5 [15 / 15 / 10]	
Tool spindle drive motor (25%ED / 15 min / cont)	kW (HP)												9 / 7.5 / 5.5 [12.0 / 10 / 7.5]	
Turret 2 rotary tool spindle drive motor (15%ED / cont)	kW (HP)	—											1.5 / 1.2 [2 / 1.6]	
Machine size														
Machine height	mm (in.)												2,586 [101.8]	
Floor space (width × depth)	mm (in.)												4,155 × 2,543 [163.6 × 100.1] ^{*1} , 4,535 × 2,543 [178.5 × 100.1] ^{*2} , [excluding chip conveyor] <4,169 × 2,543 [164.1 × 100.1] ^{*1} , 4,549 × 2,543 [179.1 × 100.1] ^{*2} >	

*1 Tool storage capacity: 38 tools

*2 Tool storage capacity: 76 tools

- 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 October 2018.

<input checked="" type="checkbox"/>	Standard	<input type="checkbox"/>	Option
T1	Tool spindle	B1	Tool spindle B-axis S1 : Spindle 1
MC1	Tool spindle Milling	T2	Turret 2 S2 : Spindle 2
Y1	Tool spindle Y-axis	MC2	Turret 2 Milling TS : Tailstock
● The Spindle 2 specification (S2) is not equipped with a tailstock (TS).			

NTX 1000 2nd Generation

Standard & Optional Features (FANUC F31iB5)

●: Standard ○: Option
—: not applicable

F31iB5

Chuck	
Automatic centering type steady rest	<input type="checkbox"/> SLU-X1 < ϕ 8 - 70 mm (ϕ 0.3 - 2.8 in.)> <Fixed at Turret 2> <Traveling in clamped state during machining is not possible> ^{*1}
	<input type="checkbox"/> SCHUNK ZENTRICO THL plus 100 < ϕ 4 - 66 mm (ϕ 0.2 - 2.6 in.)> <Steady rest body only>
	<input type="checkbox"/> SCHUNK ZENTRICO THL plus 200 < ϕ 8 - 101 mm (ϕ 0.3 - 4.0 in.)> <Steady rest body only>
Coolant	
Water-soluble coolant unit	<input checked="" type="checkbox"/> 800 / 1,100 W (50 / 60 Hz) <input checked="" type="checkbox"/> Standard pressure (800 / 1,100 W <50/60 Hz>) <Center through / Side through>
Through-spindle coolant system (Tool spindle)	<input type="checkbox"/> Super-high-pressure ^{*2} <3.5 Mpa (507.5 psi)> <Center through> <input type="checkbox"/> Super-high-pressure ^{*2} <7.0 Mpa (1,015 psi)> <Center through>
Chip disposal	
Chip conveyor	<input type="checkbox"/> Right discharge, Hinge type <input type="checkbox"/> Right discharge, Hinge type + Drum filter type
Measurement	
Manual type in-machine tool presetter	<input checked="" type="checkbox"/> Spindle 1 (removable) <input type="checkbox"/> For tool spindle <In-out type> (Machines not equipped with Turret 2)
Automatic in-machine tool presetter	<input type="checkbox"/> For tool spindle (Metrol) + For Turret 2 (Renishaw) <Turret 2 specification> <input type="checkbox"/> For tool spindle (Metrol) + For Turret 2 (BLUM) <Turret 2 specification>
Tool breakage detector	<input type="checkbox"/> Laser type (Renishaw) / touch type (Blum)
In-machine measuring system (Tool spindle)	<input type="checkbox"/> Touch sensor (Radio signal transmission type)*3
Improved accuracy	
Full closed loop control <Scale feedback> (Tool spindle)	<input type="checkbox"/> X1-, Y-, Z1-axis
Automation	
Workpiece handling system (in-machine traveling type robot specification)	<input type="checkbox"/> Separate stocker, hand, and cover are not included. <input type="checkbox"/> Turret turning type
Workpiece unloader	<input type="checkbox"/> Swing type <input type="checkbox"/> Spindle 2 type
Robot interface	<input type="checkbox"/>
Other	
• Built-in worklight (LED) • Leveling block • Hand tools	<input checked="" type="checkbox"/>
Chuck foot switch	<input checked="" type="checkbox"/> 1 foot switch
Dry anchor	<input type="checkbox"/>
Multi dry filter	<input type="checkbox"/>
Signal lamp	<input type="checkbox"/> 4 layers (LED type Red, Yellow, Green, Blue)

Basic specification		T1	MC1	B1	Y1	S1	TS				
Optional specifications		—	T2	T2	MC2	S2	T2	S2	T2	MC2	S2
Measurement											
Manual in-machine tool presetter	Spindle 2 (removable)	—	—	—	●	●	●	—	—	—	—
Automatic in-machine tool presetter (In-out type)	For tool spindle Tool spindle + Turret 2	○	—	—	○	—	—	○	—	—	—
Improved accuracy		—	○	○	—	—	○	○	—	○	○
Full closed loop control <Scale feedback> (Turret 2)	X2-, Z2-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 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.

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<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.

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

+ The information in this catalog is valid as of October 2018. 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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