

**DMG MORI**

Front Parallel Dual-Spindle Dual-Turret Turning Center

NRX 2000

**NRX 2000**



DMGMORI.COM

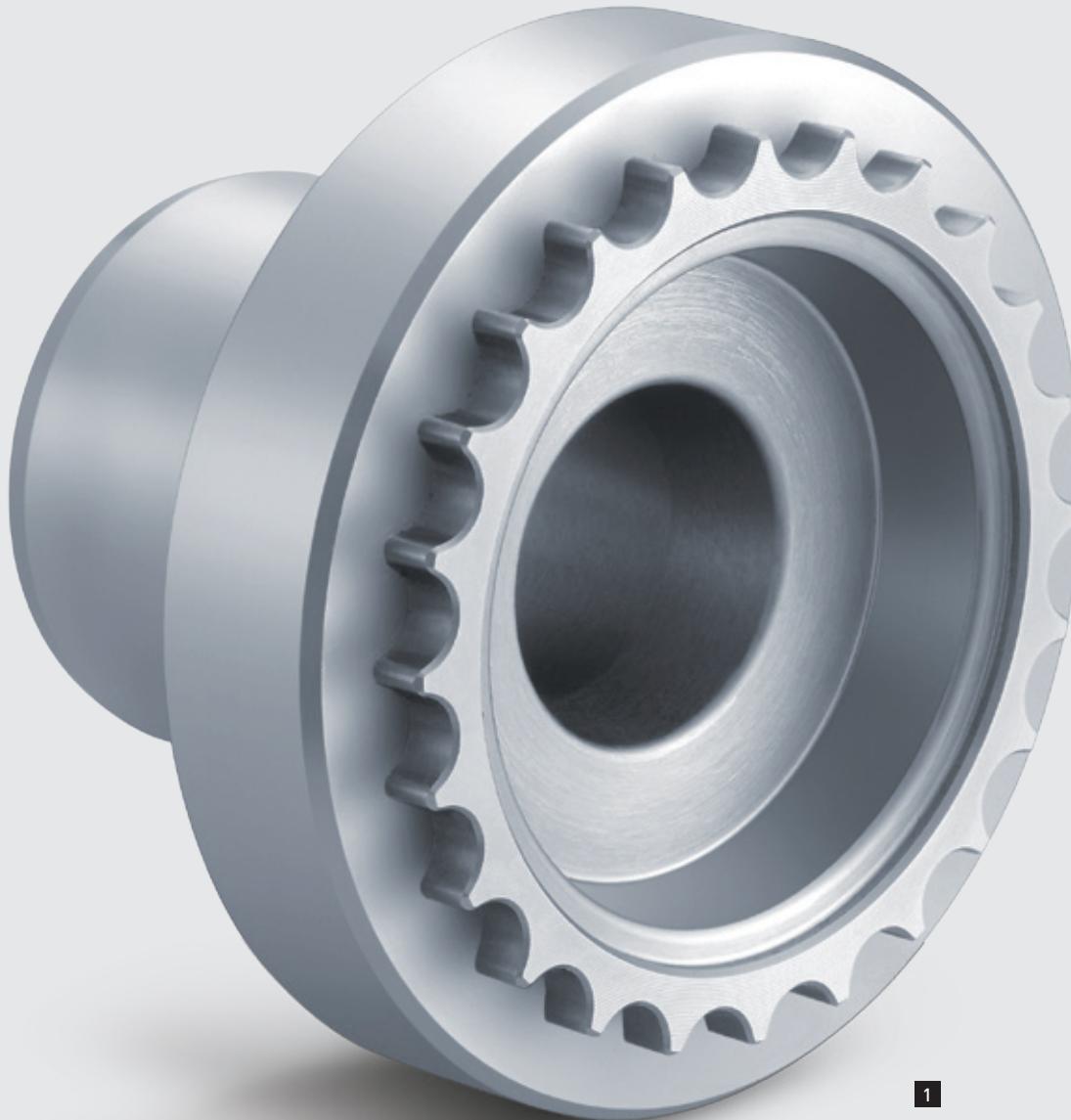
NRX 2000

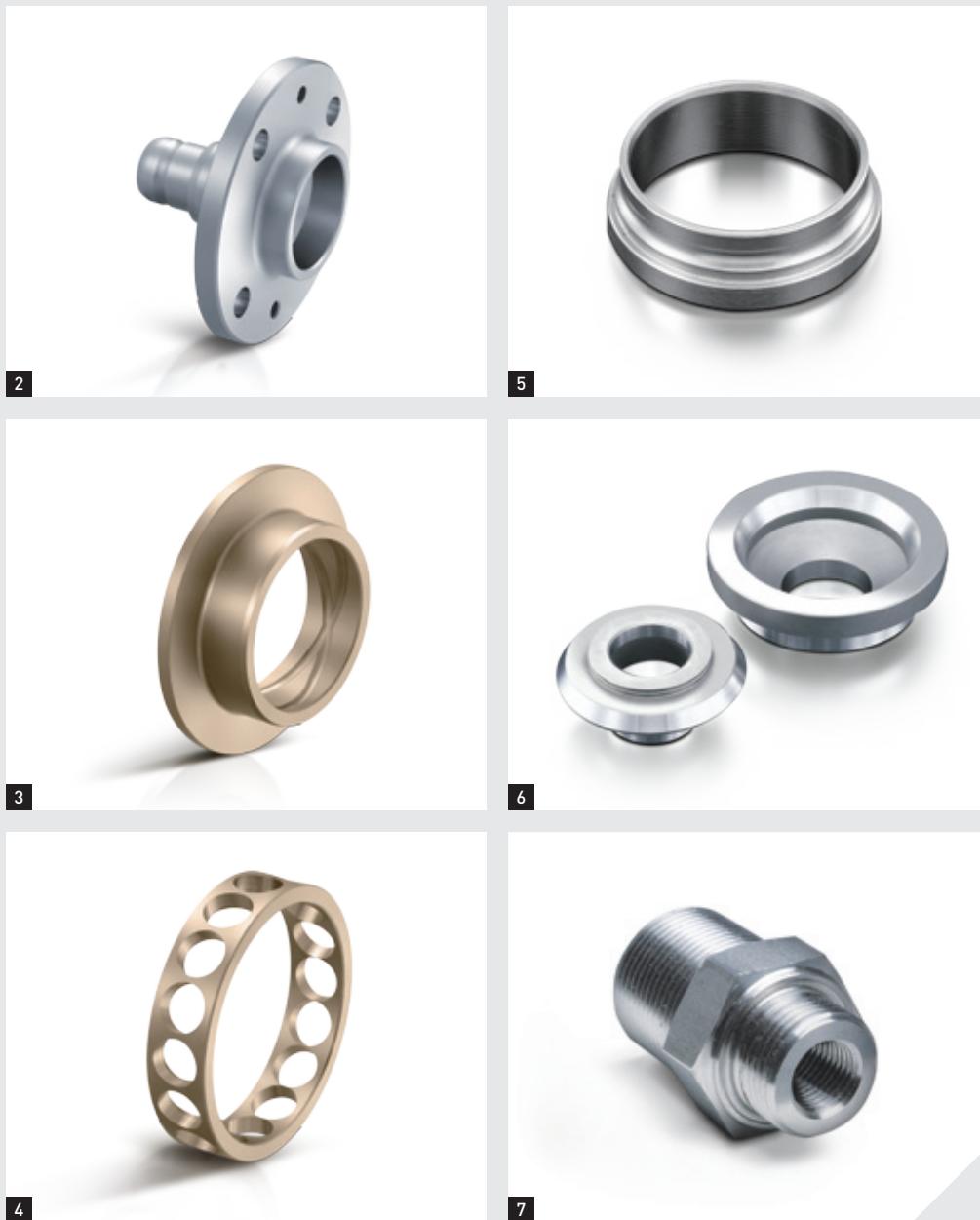
## Ideal for Mass-production of Flange Parts

The NRX 2000 is a front parallel dual-spindle dual-turret turning center born in response to a strong demand from the market. The model is ideal for mass-production of flange parts that are extensively used for automobile and various industrial equipment. Equipped with a gantry loader as standard, the NRX 2000 features a space-saving design with a machine width of 2,495 mm (98.2 in.) and high reliability in every mechanism including its improved chip disposal. This enables automatic operation for long hours to ensure outstanding productivity.

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#### Automobiles

- 1** Sprocket
- 2** Hub

#### Industrial machinery

- 3** Cylinder guide
- 4** Bearing retainer
- 5** Collar
- 6** Coupling

#### Hydraulic & Pneumatic equipment

- 7** Joint

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[Applications and Parts](#)[Highlights](#)[Machine and Technology](#)[Others](#)[Machine Specifications](#)

NRX 2000

## Front Parallel Dual-Spindle Dual-Turret Turning Center

The biggest feature of the NRX 2000 mechanism is a front parallel dual-spindle, dual-turret structure. The model is able to handle two machining processes with the Spindle 1 and Spindle 2 at the same time. With a gantry loader, the NRX 2000 establishes an integrated production system for unmanned operation in a space-saving installation area.

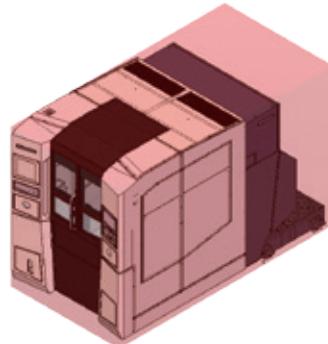
Thanks to the machine mechanism that the spindles travel on the X- and Z-axis and the turrets perform a turning movement only, the model provides improved access to the chucks and the transfer unit and better workability. The ergonomically designed new cover also minimizes operators' workload.





#### Space-saving design

- + The smallest level of machine in its class  $17.1 \text{ m}^3$  ( $603.9 \text{ ft}^3$ )  
<including gantry-type loader, workstocker and external chip conveyor  
{left discharge}>
- + Machine width: 1,650 mm (65.0 in.) <without gantry-type loader> /  
Machine height: 2,100 mm (82.7 in.)



**Floor space**  
 **$8.2 \text{ m}^2$  (88.3 ft $^2$ )**

<including gantry-type loader,  
workstocker and  
external chip conveyor  
{left discharge}>

● Workstocker and external chip conveyor  
(left discharge) available as an option

#### High rigidity

- + Light and high-rigidity body is achieved by FEM analysis

FEM: Finite Element Method

#### High efficiency

- + Running two machining processes at the same time with spindle 1 and spindle 2
- + Functions of two machines concentrated as one integrated manufacturing system to realize high productivity in unmanned operation
- + Automation with the gantry-type loader of the world's fastest class
- + Various system variations available

#### Improved workability

- + Machine structure with turrets at the front gives good accessibility to the chucks, turrets and transfer equipment, leading to excellent operating convenience
- + Higher chip disposal performance by the in-machine chute and varieties of conveyors
- + DMG MORI operation system equipped with MAPPS - COMPACTline
- + 12.1-inch multi-touch operation panel with outstanding functionality and stable operability

MAPPS: Mori Advanced Programming Production System

#### Reliability

- + New cover design based on ergonomics

NRX 2000

## Best Solutions for Your Shop Floor

The NRX 2000 provides solutions for higher machining accuracy, higher production efficiency by automation, better chip disposal, maintainability and setup performance. With various cutting-edge solutions, the NRX 2000 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

### Turret

Turning or milling



For turning



For milling

2

### Workpiece support

Workpiece support suitable for your workpiece and machining



Collet chuck



8-inch chuck



Index chuck

3

### Spindle output

For heavy-duty cutting



11 / 7.5 kW [15 / 10 HP]  
high output



4

### Maintenance

Improved production efficiency by preventive maintenance



DMG MORI Messenger



Air dryer



Oil skimmer

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### Mass production, automation

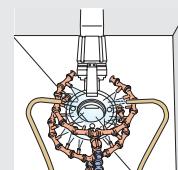
Versatility, labor saving, quick setup changes



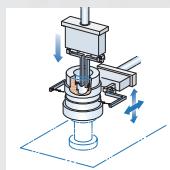
Robot system



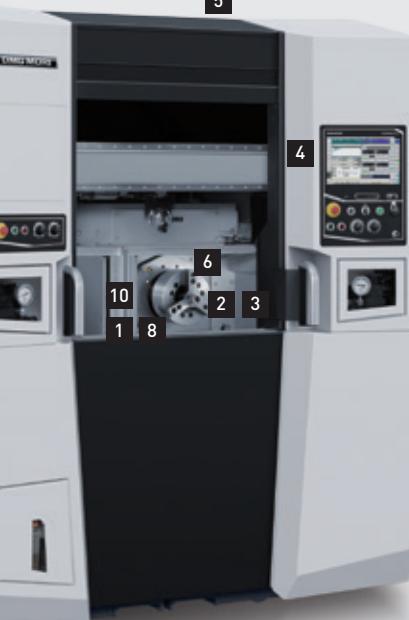
Loader module



Washing unit



Measuring system



• The photo shows the machine equipped with options.

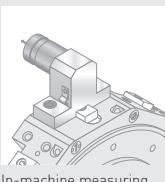
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### Machining accuracy

Meeting high accuracy requirements



SmartSCALE

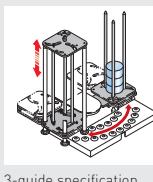


In-machine measuring system (workpiece)

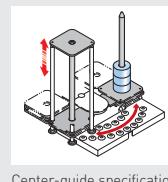
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### Mass production, automation

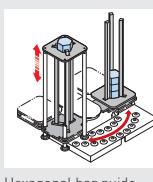
Labor saving for higher productivity



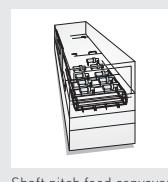
3-guide specification



Center-guide specification



Hexagonal bar guide specification

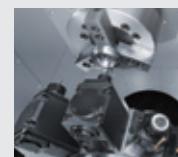


Shaft pitch feed conveyor

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### Cutting holder

Select according to the machining type



Milling holders



CAPTO holders

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### Monitoring

Support automation



Signal lamp



Coolant flow switch



Coolant chiller



Electrical cabinet chiller

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### Better setup performance

Drastically shortened setup time



Automatic in-machine tool presetter



Manual type in-machine tool presetter

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### Chip disposal

Higher cutting performance



Super-high-pressure coolant system



Coolant gun



Internal & external integrated chip conveyor (rear discharge, hinge type)



Internal chip conveyor (screw type) + external chip conveyor (left discharge, hinge type)

## NRX 2000

# Milling Specification to Meet Varieties of Needs

The NRX 2000 offers the Milling Specification equipped with the BMT (Built-in Motor Turret) as well as the Turning Specification. The Milling Specification model features the rotary tool spindle with the maximum speed of  $10,000 \text{ min}^{-1}$ . The standard number of tool stations of  $20 <10 \text{ tools} \times 2>$  ensures high-efficiency machining by use of various tools. The maximum turning diameter is 180 mm (7.0 in.) for the turning specification, and 150 mm (5.9 in.) for the milling specification.

BMT: Built-in Motor Turret



**NRX 2000**  
Standard number of tool stations for the turning specification:  $16 <8 \text{ tools} \times 2>$   
Milling specification is equipped with BMT as standard

Basic specification		S1 S2 T1 T2			
Optional specifications		—		MC1 MC2	
Max. turning diameter	mm (in.)	No. 1, No. 2: 180 (7.0)		No. 1, No. 2: 150 (5.9)	
Max. turning length	mm (in.)		No. 1, No. 2: 100 (3.9)		
Travel X-axis	mm (in.)		No. 1, No. 2: 100 (3.9)		
Z-axis	mm (in.)		No. 1, No. 2: 220 (8.7)		
Number of tool stations		No. 1, No. 2: 8, 10		No. 1, No. 2: 10	

No. 1: Turret 1 or Spindle 1    No. 2: Turret 2 or Spindle 2

**S1** : Spindle 1  
**S2** : Spindle 2  
**T1** : Turret 1  
**T2** : Turret 2  
**[M1]** : Milling (turret 1) <option>  
**[M2]** : Milling (turret 2) <option>  
The basic model is equipped with **S1**, **S2**, **T1** and **T2**.



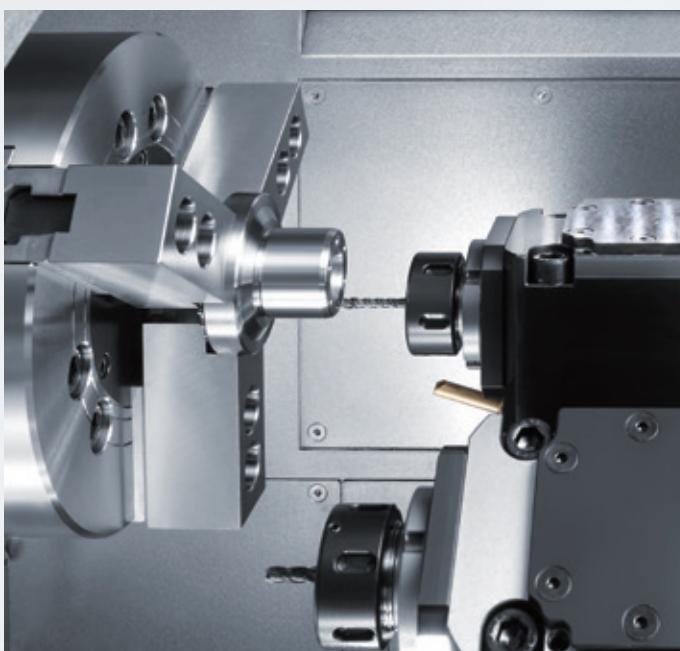
## Turning specifications

Most versatile specification ideal for mass-production of small flange parts.

Two different machining processes can be done with Spindle 1 and Spindle 2 at the same time.

- + Number of tool stations: 8 tools × 2  
10 tools × 2
- + Max. spindle speed: 5,000 min<sup>-1</sup>  
6,000 min<sup>-1</sup>
- + Shank height for square tool: 25 mm (1 in.)
- + Shank diameter for boring bar: Max. 40 mm (1½ in.)

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## Milling specifications

Capable of milling such as drilling.

The milling specification offers functions of two machines.  
Turning with Spindle 1 and milling with Spindle 2 is possible.

- + Number of tool stations: 10 tools × 2
- + Max. rotary tool spindle speed: 10,000 min<sup>-1</sup>
- + Shank height for square tool: 20 mm (¾ in.)
- + Shank diameter for boring bar: Max. 32 mm (1¼ in.)

NRX 2000

# Robust Machine Structure to Support Mass-production

The NRX 2000 equipped with a gantry loader as standard can achieve mass-production machining with automation systems and maintain high-quality machining throughout all processes.

Since the early stage of designing, we have pursued high-rigidity for the machine structure by the FEM analysis so that the structure can support automatic operation for long hours.

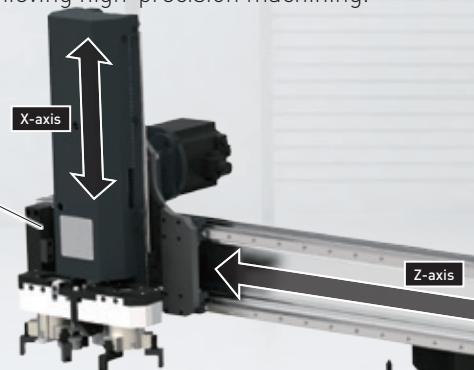
This contributes to high-precision positioning and repeatability.

Each mechanism is also designed to minimize thermal displacement, achieving high-precision machining.

## Gantry-type loader

- + Gantry loader equipped as standard\*
- + Max. workpiece size: ø 120 × 50 mm (ø 4.7 × 1.9 in.) / ø 150 × 100 mm (ø 5.9 × 3.9 in.)
- + Max. travel speed <X-axis: hand up / down>: 150 m/min (492.2 fpm)
- + Max. travel speed <Z-axis: loader unit left / right>: 240 m/min (787.4 fpm)

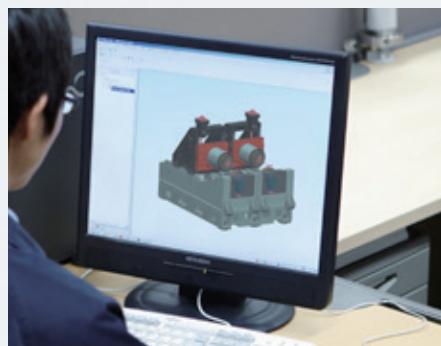
\* Workstocker is available as an option.



## FEM analysis

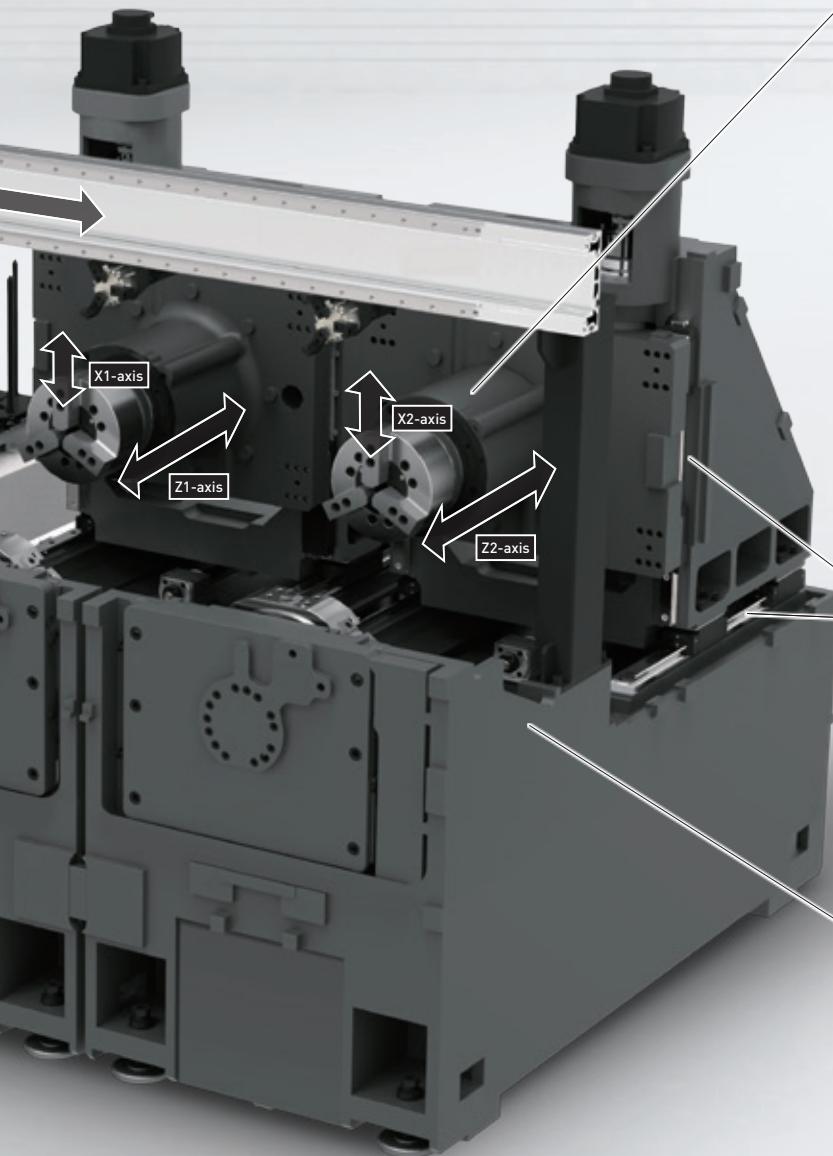
- + Simulation of structural deformation at the time of load application
- + Fine adjustment to every part, including the thickness of the bed, the shape and layout of the ribs, to achieve a high level of flexural rigidity

FEM: Finite Element Method



## 2 Spindle 2 Turret

- + Built-in spindle units move on X and Z axes
- + Turrets located at the front of the machine are fixed



## High-rigidity roller guides

- + Roller guides to improve responsiveness

## High-rigidity bed

- + High-rigidity bed to support the spindle unit movements
- + Rapid traverse rate: X1, X2, Z1 and Z2 axes  
30,000 mm/min  
(1,181.1 ipm)
- + Travel: X1 and X2 axes 100 mm (3.9 in.)  
Z1 and Z2 axes 220 mm (8.7 in.)

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NRX 2000

# Thoroughly Controlled Thermal Displacement

There are varieties of factors leading to thermal displacement that has a major influence on machining accuracy, including heat generation during machine operation, changes in room temperature and increase in coolant temperature.

DMG MORI tackles the factors one by one with the original method for thoroughly controlling thermal displacement from every aspect. For the spindle, which is the prime heat source, we spirally arrange the oil jacket around the spindle unit to regulate the temperature increase.



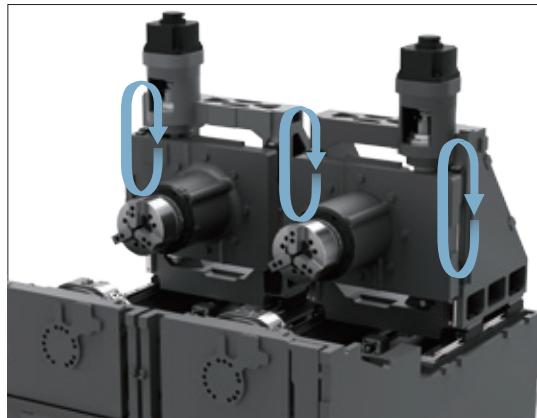
Milling turret designed to control thermal displacement (BMT)



- + Turret temperature increases (compared with conventional machine): 1/10 or less

BMT: Built-in Motor Turret

## Coolant circulation for casting parts



The model circulates coolant inside the castings on the spindle side as well as the turret side to uniform postural changes of the machine and minimize thermal displacement that can directly affect machining accuracy.

- + Uniform thermal displacement
- + Resistance to changes in ambient temperature
- + High-accuracy long-term machining

← Coolant circulation pathway

## Coolant chiller <separate type> (option)

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

**When using oil-based coolant or a 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)



- + Full closed loop control (Scale feedback) SmartSCALE as an option: Enhanced positioning accuracy
- + High-accuracy machining by use of the scale that has the thermal expansion coefficient equivalent to the machine casting

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Applications and Parts

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Highlights

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**Machine and Technology**

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Others

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Machine Specifications

NRX 2000

## Highly Reliable Built-in Spindles

The NRX 2000 employs reliable and proven built-in spindles that have been highly evaluated. The spindle with the latest front labyrinth structure is designed against chip and coolant intrusion, demonstrating superior durability for mass-production machining.





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- + 8-inch chuck compatible\*
- + Low-vibration, stable and highly efficient machining achieved with DDS motors
- + The spindle moves on the X and Z axes
- + Type of spindle nose: JIS A<sub>2</sub>-5

\* The chuck is optional.

DDS: Direct Drive Spindle

JIS: Japanese Industrial Standard

#### Max. spindle speed

- + 5,000 min<sup>-1</sup>
- + 6,000 min<sup>-1</sup> <high output>

#### Output

- + 7.5 / 7.5 / 5.5 kW {10 / 10 / 7.5 HP} <40%ED / 30 min / cont>
- + 11 / 7.5 kW {15 / 10 HP} <30 min / cont> {high output}

#### Spindle torque

- + 72.4 / 65.1 / 47.7 N·m {53.4 / 48.0 / 35.2 ft·lbf} <40%ED / 30 min / cont>
- + 95.5 / 65.1 N·m {70.4 / 48.0 ft·lbf} <30 min / cont> {high output}

NRX 2000

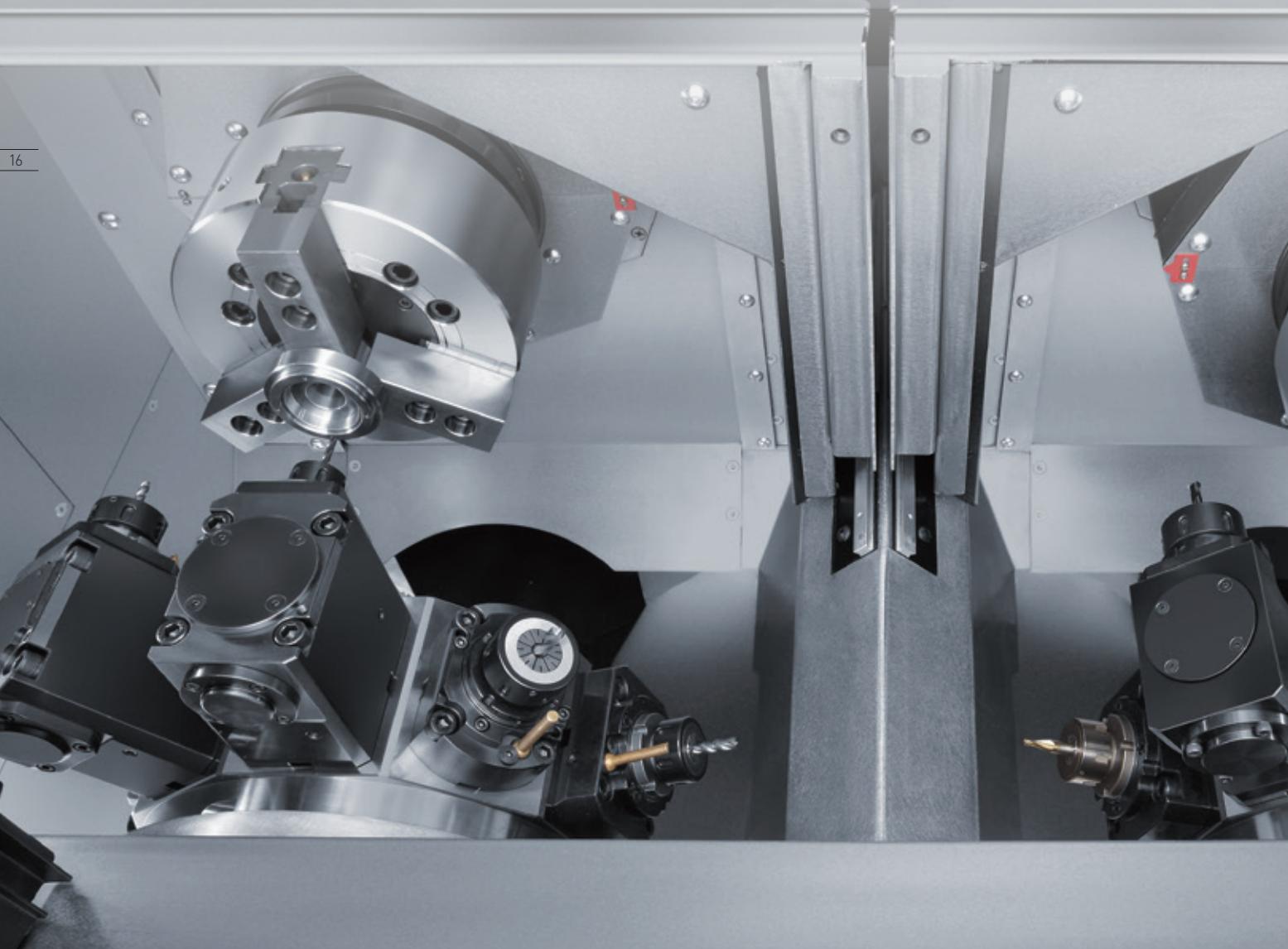
## Offering Milling Specification with BMT (Built-in Motor Turret)

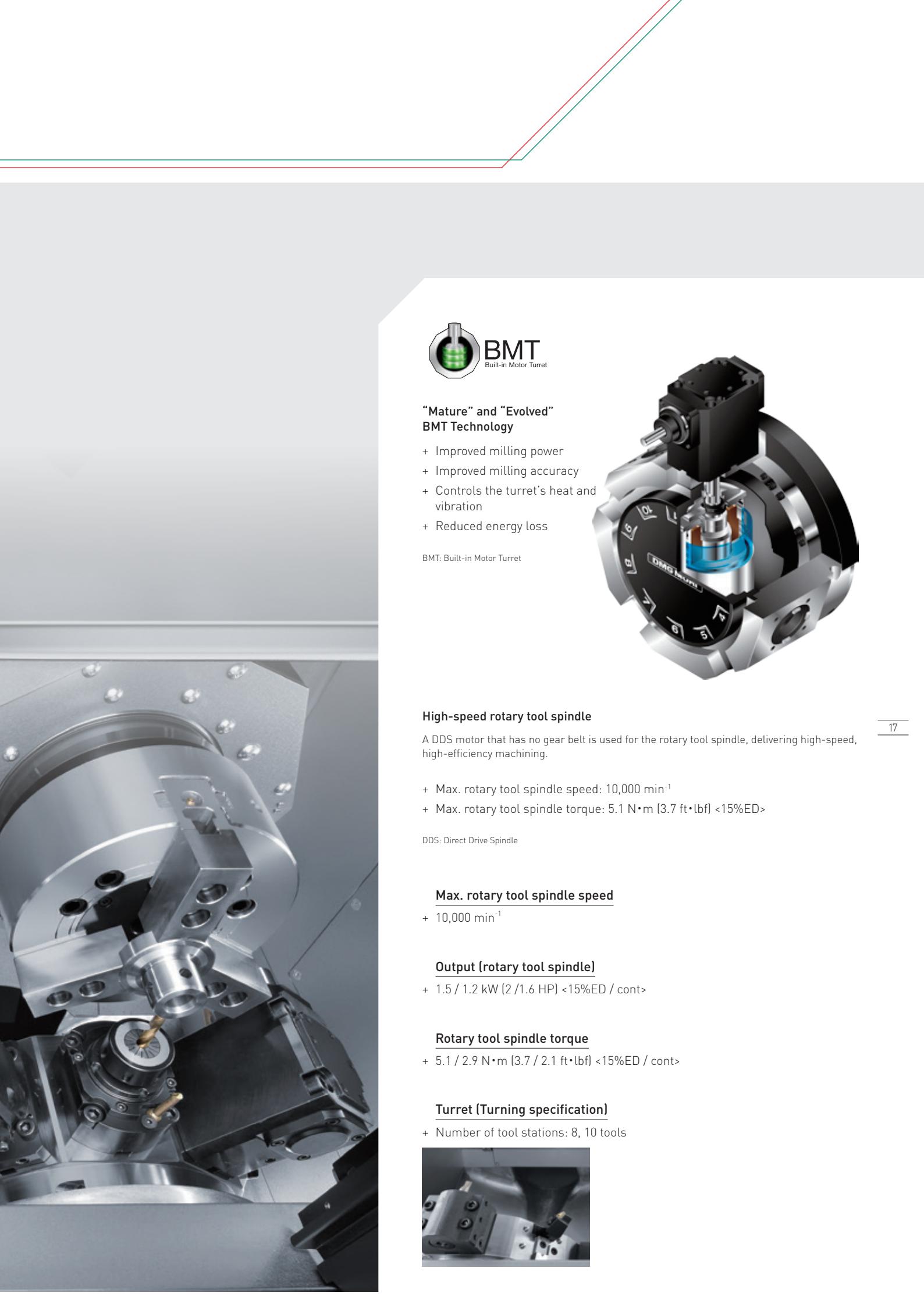
The model offers the milling specification equipped with the BMT as standard <10-station>.

The evolved BMT achieves the maximum speed of  $10,000 \text{ min}^{-1}$ , while maintaining low amplitude.

As the model has a structure that the turrets have no traveling axes, they are not affected by chips or coolant.

What's more, the cooling jacket cools down the BMT to control heat generation,  
achieving outstanding machining accuracy.





#### "Mature" and "Evolved" BMT Technology

- + Improved milling power
- + Improved milling accuracy
- + Controls the turret's heat and vibration
- + Reduced energy loss

BMT: Built-in Motor Turret



#### High-speed rotary tool spindle

A DDS motor that has no gear belt is used for the rotary tool spindle, delivering high-speed, high-efficiency machining.

- + Max. rotary tool spindle speed:  $10,000 \text{ min}^{-1}$
- + Max. rotary tool spindle torque:  $5.1 \text{ N}\cdot\text{m}$  ( $3.7 \text{ ft}\cdot\text{lbf}$ ) <15%ED>

DDS: Direct Drive Spindle

#### Max. rotary tool spindle speed

- +  $10,000 \text{ min}^{-1}$

#### Output (rotary tool spindle)

- +  $1.5 / 1.2 \text{ kW}$  ( $2 / 1.6 \text{ HP}$ ) <15%ED / cont>

#### Rotary tool spindle torque

- +  $5.1 / 2.9 \text{ N}\cdot\text{m}$  ( $3.7 / 2.1 \text{ ft}\cdot\text{lbf}$ ) <15%ED / cont>

#### Turret (Turning specification)

- + Number of tool stations: 8, 10 tools



NRX 2000

# 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.

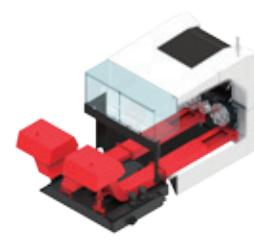


**Without chip conveyor (in-machine chute + manual scraping, external chip pan)**

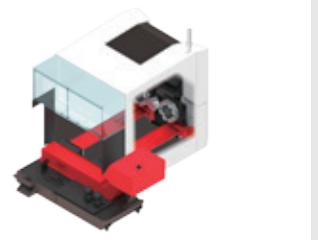


The bucket in the tank can be manually taken out to remove chips.

**Internal & external integrated chip conveyor (rear discharge, hinge type) <option>**



**Internal chip conveyor (screw type) + external chip conveyor (left discharge, hinge type) <option>**



Chips can be forcibly discharged by the in-machine chip conveyor that replaced the in-machine chute.

## Chip conveyor (option)

Handles various types of chips and ejects them in a highly efficient way.

Workpiece material

Chip form

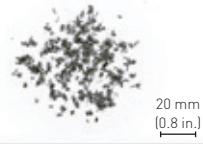
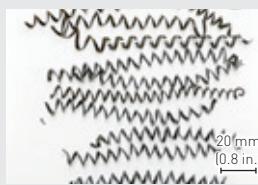
Chip size

Hinge type <Aluminum>

Scraper type

Internal chip conveyor (screw type)

Steel



Long

Short

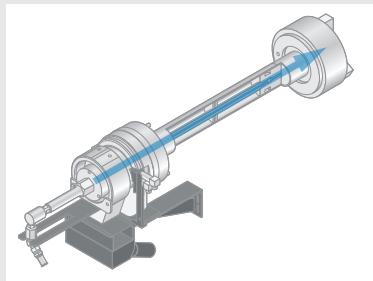
Powdery



\* 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.

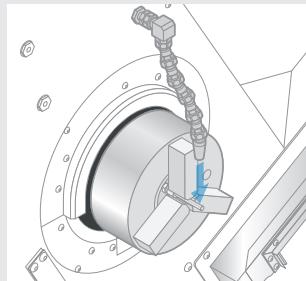
● <Chip size guidelines> Short: chips 50 mm (2.0 in.) or less in length, bundles of chips Ø 40 mm (Ø 1.6 in.) or less  
Long: bigger than the above  
Powdery: minute particles

#### Through-spindle coolant system\*



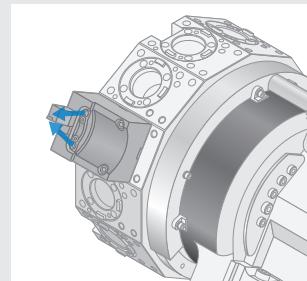
Coolant supplied through the center of the chuck removes chips generated during I.D. machining.

#### Chuck top coolant\*



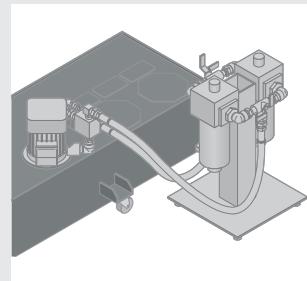
Coolant supplied from above the chuck removes chips and minimizes heat generation in the workpiece.

#### Air blow for tool tip\*



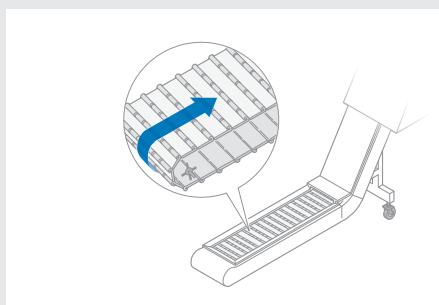
Air is blown toward the tool tip to blow away chips adhering to the tool.

#### Coolant line filter\*



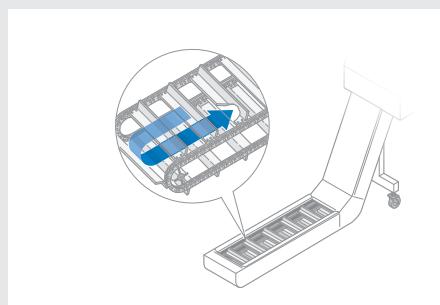
It removes foreign matter in the coolant coming from the coolant pump. The filter clogging detection function is available.

#### Chip conveyor (hinge type)\*



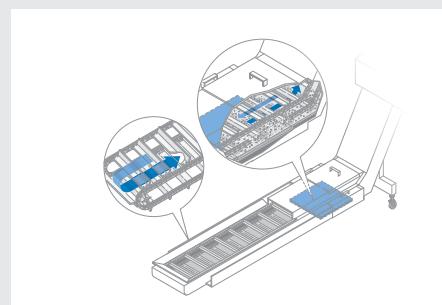
The hinge plate carries and discharges chips to the outside of the machine. Particularly effective for long chips.

#### Chip conveyor (scraper type)\*



Chips accumulated on the bottom of the chip conveyor are scraped up by a scraper and discharged to the outside. Suitable for short or powdery chips.

#### Chip conveyor (magnet scraper type)\*



Chips are forcibly precipitated by the magnet plate at the bottom of the tank and are scraped up by a scraper and discharged to the outside. Suitable for fine magnetic chips such as casting chips.

\* Option

○: Suitable △: Consideration required —: Not suitable

#### Cast iron



Short

Powdery

—

○

○

△

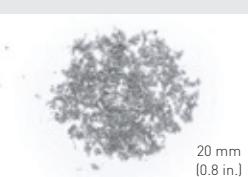
#### Aluminum / non-ferrous metal



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.

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

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

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

NRX 2000

## Pursuit of Usability

The NRX 2000 is designed with features for ease of maintenance to increase the machine operating rate. The NRX 2000 achieves shorter MTTR (Mean Time To Repair) by thorough analyses of customers' demands such as a wider door opening for better work efficiency and maintainability. This ensures the machine is always in the best condition, thereby bringing greater productivity to the customer.



- 1** Pneumatic equipment
- 2** Hydraulic unit
- 3** Water-glycol heat exchanger (fan-cooling type)

Various units and equipment are all arranged on the back of the machine for easy maintenance, reducing the operators' workload.



### Lubricating oil pump

- + The filler opening of the lubricant oil tank on the slidingways is placed on the front face of the machine, enabling easy oil feeding



## Accessibility

- + Outstanding access to the chuck, tool, loader and turnover unit
- + Comfortable standing posture to replace tools



## Wide door opening

- + Double slide doors with a large opening to ensure smooth setup work



## One-piece cover on the X-axis

- + As the spindle faces the turret, a one-piece cover is used instead of a multi-step type to prevent chips from getting entangled



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## Chuck pressure gage

- + Accessible from the front side for ease of pressure adjustments



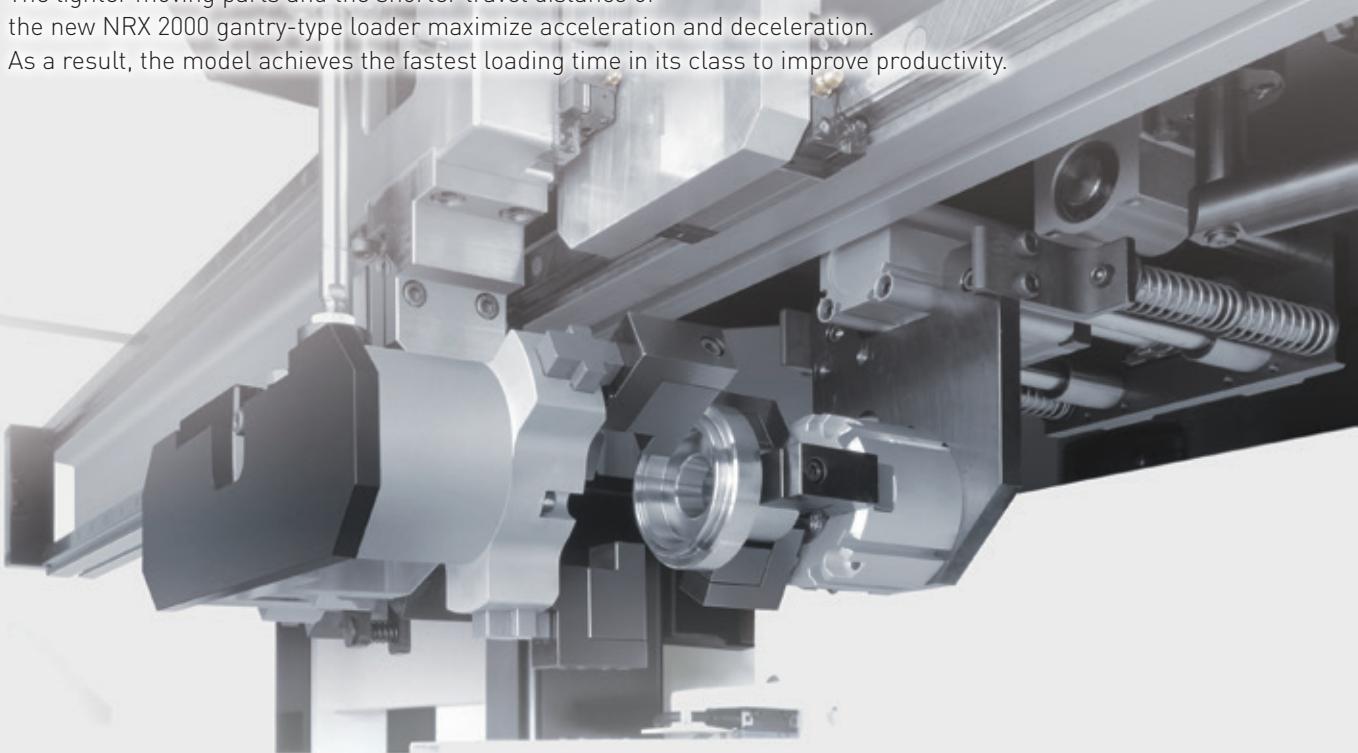
## Directly below structure

- + Chips falling directly below the machining point are received by the chute or the conveyor, and discharged to the rear side of the machine

NRX 2000

# Gantry-type Loader of the World's Fastest Class

The lighter moving parts and the shorter travel distance of the new NRX 2000 gantry-type loader maximize acceleration and deceleration. As a result, the model achieves the fastest loading time in its class to improve productivity.



## High productivity achieved with new loading system integrated with machine

- + Reduced cycle times: achieves shorter transfer distance / travel time, and lightweight construction maximizes acceleration / deceleration
  - + Lighter moving parts: mass of loader moving parts on the Z-axis reduced by 50% compared to the existing model
  - + Shorter X-axis transfer distance: X-axis transfer distance shortened by 53% compared to existing models
  - + Easy and outstanding accessibility: distance to the loader hands of 300 mm (11.8 in.), height of the loader hands of 1,360 mm (53.5 in.)
  - + Space-saving design: 8.2 m<sup>2</sup> (88.3 ft<sup>2</sup>) <Including gantry-type loader, workstocker and external chip conveyor {left discharge}>
- Workstocker and external chip conveyor {left discharge} as an option

## Gantry-type loader specification

Max. workpiece size	mm (in.)	ø 120 × 50 (ø 4.7 × 1.9), ø 150 × 100 (ø 5.9 × 3.9)
Max. transfer mass		3 kg (6.6 lb.) × 2
Max. travel speed <loader hand up / down>	m/min (fpm)	150 (492.2)
Max. travel speed <loader unit left / right>	m/min (fpm)	240 (787.4)

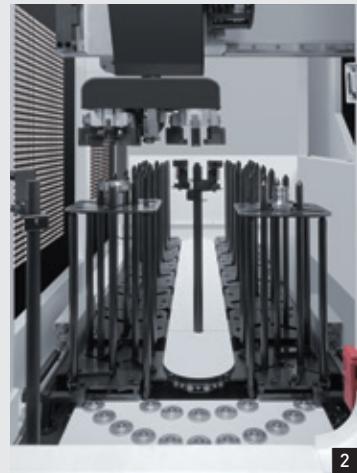
## **1 Gantry-type loader**

- + Non-cutting time shortened by speeding up all operations
- + Min. loading time: 5.6 sec. (stand-alone specification)

## **2 Workstocker <option>**

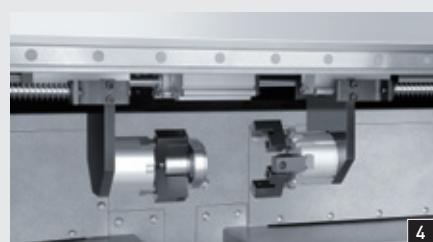
- + A ball caster wheel conveyor is used because it does not cause many chip problems
- + Number of pallet tables: 14, 20\*, 26\*
- + Max. mass per station: 35 kg [77 lb.] / pallet
- + Max. stack height: 300 mm [11.8 in.]
- + Applicable workpiece diameter:  
40 mm—150 mm [1.6 in.—5.9 in.]

\* Consultation is required



## **3 Loader hand**

- + The hand is a low workpiece-interference parallel type which comes as a standard feature
- + Max. transfer mass: 3 kg [6.6 lb.] × 2
- + Applicable workpiece diameter × Length:  
150 mm × 100 mm [5.9 in. × 3.9 in.]
- + Jaw stroke (diameter): 28 mm [1.1 in.]

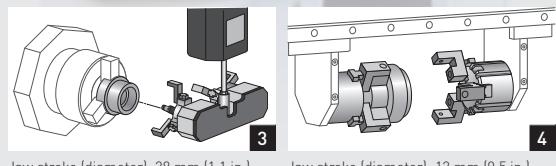


## **4 Turnover unit**

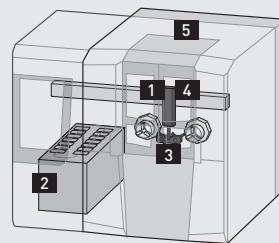
- + The turnover unit delivers workpieces quickly from Process 1 to Process 2
- + Max. transfer mass: 3 kg [6.6 lb.]
- + Applicable workpiece diameter × Length:  
120 mm × 50 mm [4.7 in. × 1.9 in.]  
150 mm × 100 mm [5.9 in. × 3.9 in.]
- + Jaw stroke (diameter): 12 mm [0.5 in.]

● The photo shows the machine equipped with options.

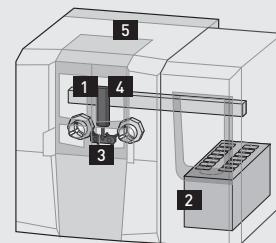
### Gantry-type loader system



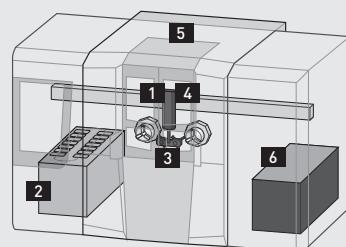
### Stand-alone (left discharge)



### Stand-alone (right discharge)



### Stand-alone (discharge from both sides) with the workstocker on the left



- 1** Gantry-type loader
- 2** Workstocker for raw materials (and finished workpieces)
- 3** Loader hand
- 4** In-machine turnover unit
- 5** Machine
- 6** Other peripheral equipment (customer-provided units can also be used)

---

NRX 2000

## Gantry-type Loader System

The NXR 2000, incorporating a gantry-type loader system for high-speed mass production, achieves complete automation of the entire process from supply of raw materials to ejection of finished products on a single machine.

The stand-alone machine with one spindle, the NXR 2000 Single, is also available. The dual-spindle NXR 2000 allows flexible line configurations and improves productivity when combined with the NXR 2000 Single, a robot system and / or peripherals.



2 spindles + 1 spindle specification

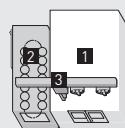


1 spindle + Robot system

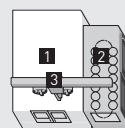
### Gantry-type loader system variations (option)

As the stand-alone machine with one spindle, the NXR 2000 Single, is also available, the flexible line configurations as below are possible.

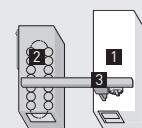
#### Stand-alone specification



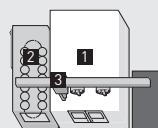
2 spindles  
Type A I



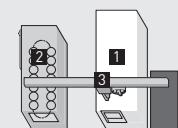
2 spindles  
Type A II



1 spindle  
Type A I

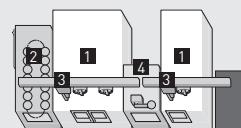


2 spindles  
Type A III

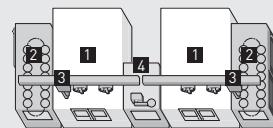


1 spindle  
Type A III

#### Combined specification



Type C III



Type E III

#### Units

- 1 Machine
- 2 Workstocker
- 3 Gantry-type loader
- 4 Transfer turnover unit



The system consisting of modularized units such as a robot system, a measuring system and a washing system is also available.

## Workstocker

### Rotary workstocker

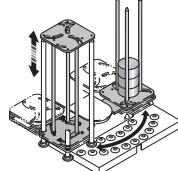
Workstocker left side



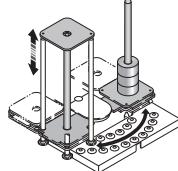
Workstocker right side



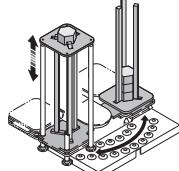
3-guide specification



Center-guide specification

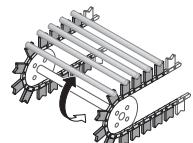


Hexagonal bar guide specification

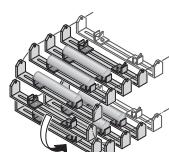


### Workstocker for shaft workpieces

Rotary type

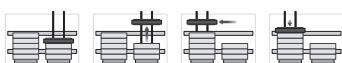
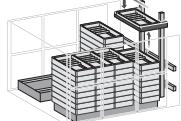


Gondola type



Pitch-feed conveyor

### Tray changer (for mass production)

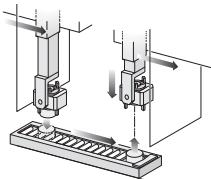


• For trays, consultation is required.

## Other peripheral equipment

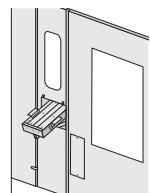
The standardized peripheral equipment enables flexible system changes after installation.

### Transfer unit



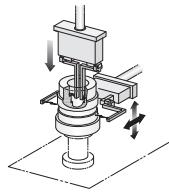
+ Transfers workpieces between gantry-type loaders

### Quality check / Chute for rejected parts



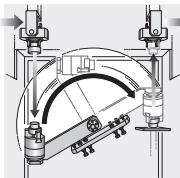
+ Inspects / measures workpieces, and ejects those that have not clear the seating and / or measurement criteria  
+ Ejected workpieces cannot be put back in the line

### External workpiece measuring system



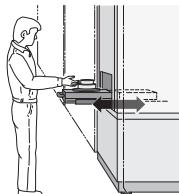
+ Able to send the measuring result (offset amount data) to the NC unit so that the data can be reflected to the following workpiece  
+ Prevents production of defective parts

### Transfer turnover unit



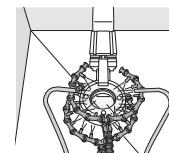
+ Transfers workpieces between gantry-type loaders while turning them over at the same time

### Quality inspection station



+ Operators inspect and measure machined workpieces  
+ Measured workpieces can be put back in the line

### Washing unit



+ Used to properly obtain measurement values  
+ Finished workpieces can be shipped out without cleaning

NRX 2000



## One Stop Service for Various Needs DMG MORI Qualified Products

The DMG MORI Qualified Products (DMQP) program <option> is designed to certify peripherals that meet DMG MORI standards in quality, performance and maintainability.

DMG MORI collaborates with our partners in the world and provides customers with peripherals required for their machining.

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

DMG MORI helps customers improve productivity by offering the total solutions including quality peripherals as well as machine tools.



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

### Four DMQP categories

#### Handling

Robot system

Chip conveyor

#### Shaping

Cutting tool

Super-high-pressure coolant system

Chuck

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

Chuck



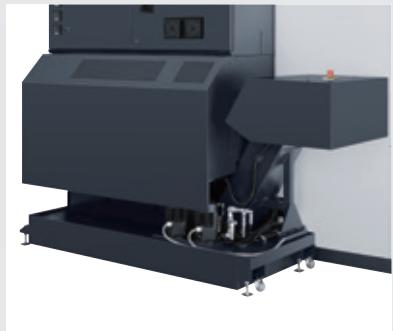
Super-high-pressure coolant system



Mist collector



External chip conveyor



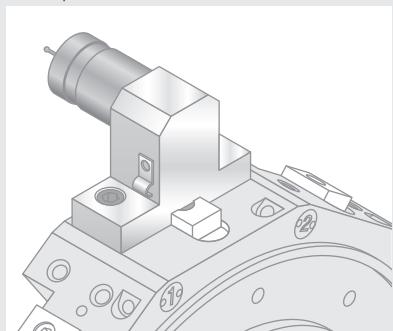
In-machine tool presetter



Coolant flow switch



In-machine measuring system  
(workpiece)



Coolant chiller



Air compressor



Robot system



Electrical cabinet chiller



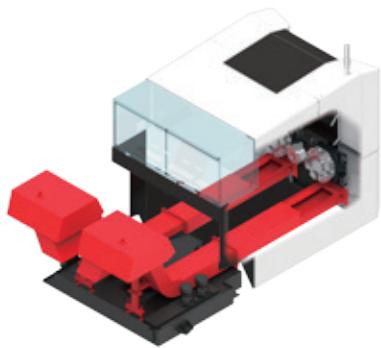
NRX 2000

## Peripheral equipment (option)

Major peripheral equipment for productivity improvement and their mounting locations.

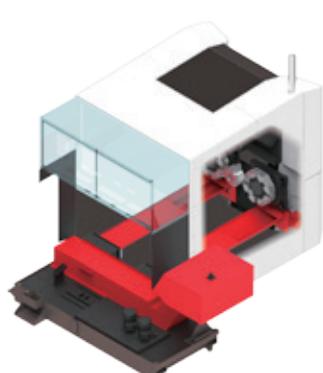
### Chip disposal

**Internal & external integrated chip conveyor (rear discharge, hinge type)**



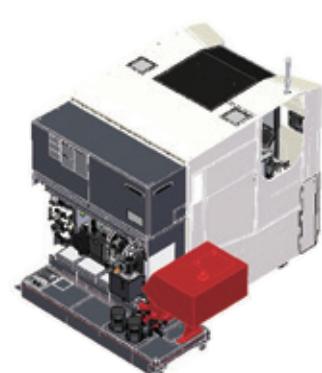
+ Chip transfer capacity:  
0.31 m<sup>3</sup>/h (10.9 ft<sup>3</sup>/h)

**Internal chip conveyor (screw type) + external chip conveyor (left discharge, hinge type)**



+ Chip transfer capacity:  
0.31 m<sup>3</sup>/h (10.9 ft<sup>3</sup>/h)

**In-machine chute + external chip conveyor (left discharge, magnet scraper type)**



+ Chip transfer capacity:  
0.02 m<sup>3</sup>/h (0.71 ft<sup>3</sup>/h)

### Measuring

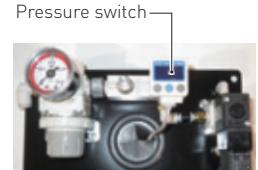
#### In-machine tool presetter



+ Repeatability:  
within 0.01 mm (0.0004 in.) or less

### Fixture

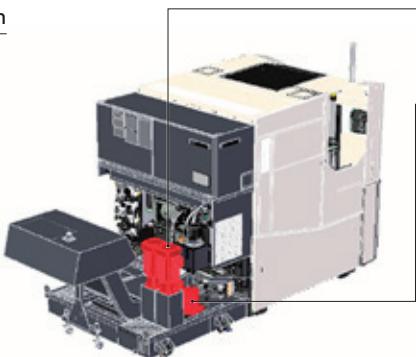
#### Workpiece holding detection



+ Setting range of pressure:  
-110—110 kPa (-16.0—16.0 psi)

## Coolant

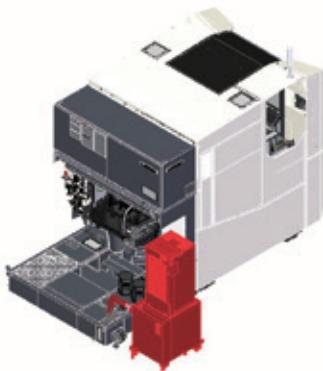
### Coolant system



- + High pressure specification:  
800 W / 1,100 W

- + High pressure specification:  
1 MPa / 1.5 MPa  
(145 psi / 217.5 psi)  
<1.1 kW / 2.2 kW  
(1.5 HP / 3 HP)>  
<50 Hz / 60 Hz>

### Coolant chiller



For details, please consult our sales representative.

### Coolant gun



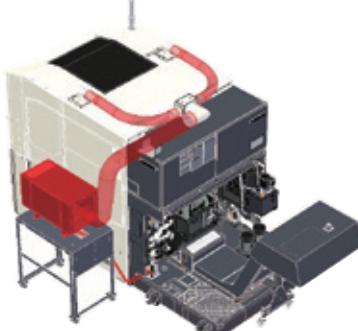
- + The magnet type handle can be flexibly attached to the machine cover

### Coolant flow switch



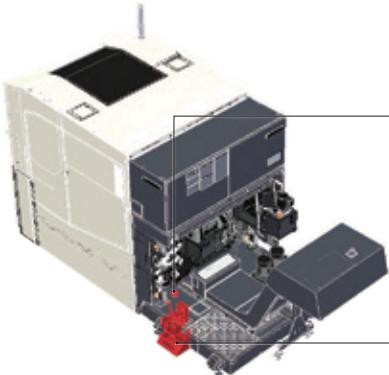
- + Setting range of velocity:  
3–300 cm/s  
(1.18—118.1 in./s)

### Mist collector



- + Air volume:  
10 m<sup>3</sup>/min  
(353.2 ft<sup>3</sup>/min)

### Coolant float switch



- + Monitors the lowest level of coolant in the coolant tank

### Oil skimmer



- + The rotating belt collects oil floating on the coolant tank by making the oil adhere to its surface and remove it to prevent coolant deterioration
- + Suitable for water-soluble coolant

NRX 2000

## COMPACTline Suitable for Mass Production Machining

The COMPACTline, a simple and compact operation system, is equipped with various helpful functions, allowing the operators to customize display contents according to machining situations.

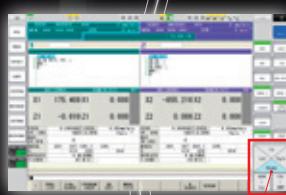
- + 3-window display for checking necessary machine information all at once
- + Customizable machine information on the 3-window display according to customers' needs
- + Improved setups by displaying necessary machine information according to operation
- + Enhanced workability by displaying machine information and machine operation buttons on one touch panel
- + Compact design for space-saving



### Overlapping display on MAPPS Pro

The machine operation panel and screen keyboard can be overlappingly displayed on the MAPPS Pro. The operators can easily switch the display position (upper / lower, left / right sides) according to the task.

MAPPS Pro



Button for switching display

Machine operation panel



Screen keyboard



Ten-key



NRX 2000

# MAPPS Pro

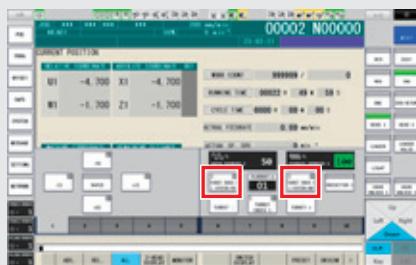


A new function further enhances operational efficiency

## Turret 1 station indexing function

### Enhanced setup capability

**[Issue]** "In order to index the adjacent station, we need to press "+" or "-" button to choose the turret station number and operate the indexing button."



#### 💡 Improvement point

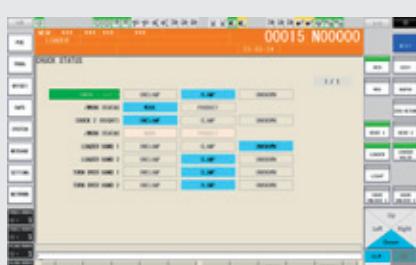
A button was added to index one station of the turret.

Moreover, position indexing can be performed with one button

## Chuck status

### Support for system machine

**[Issue]** "For the loader specification, we cannot restart the system after rechecking and measuring a finished workpiece. It is caused by inability to determine whether the workpiece after rechucking was cut or not."



#### 💡 Improvement point

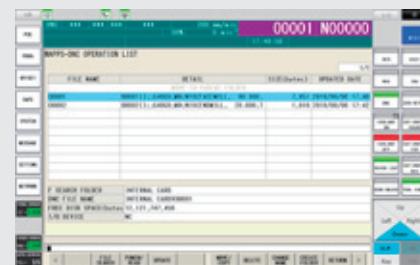
The cycle can be restarted in a middle of the cycle by setting whether the workpiece was cut or not in the screen of chuck state.

Moreover, the status of chuck and hands can be checked at the same time

## Mass program storage area

### Enhanced setup capability

**[Issue]** "Due to limitations in the program storage area, input and output of machining program needs to be repeated. It is troublesome to manage a processing program outside the machine."



#### 💡 Improvement point

It enables data storage up to 6 GB in the user area, reducing setup time.

Moreover, possible to perform DNC operation of machining program from the user area\*

\* DNC operation possible only for 1-control path operation, not for 2-control path operation.  
● Macro programs such as GOTO, IF and WHILE cannot be used in DNC operating programs.

## Startup condition display

### Visualization

**[Issue]** "When we completed setup and pressed the cycle start button while looking at the program screen, the screen changes to an alarm screen when all start-up conditions are not ready."



#### 💡 Improvement point

The status lamp icon shows whether all start-up conditions are ready before cycle start.

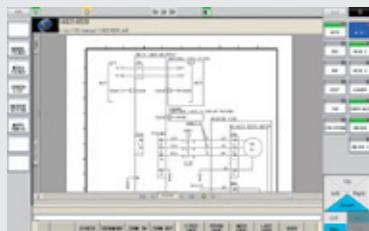
Moreover, you can check the details of start-up conditions as a list

NRX 2000

# MAPPS Pro

The cutting process is powerfully supported by the installation of an interactive automated programming function and maintenance function.

## Improved ease of setup



### File display and Memo function

- + Setup data such as operating instructions, drawing data, and text data can be browsed on MAPPS

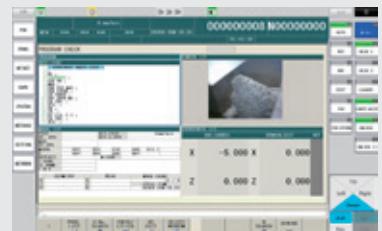
## Improved ease of maintenance



### Alarm help function

- + MAPPS gives an instruction of a countermeasure against an alarm issued

## Improved work efficiency



### Fixed-point in-machine camera\*

- + Monitored information can be browsed on a program screen via a camera installed on the machine

\* Option (consultation is required)

## Conversational automatic programming



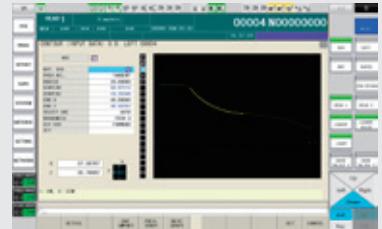
### Machining menu

- + Just enter a finish form and cutting conditions will be automatically determined



### List display function

- + In addition to the standard screen, a list display function enabling conversational data entry on one screen is prepared. It can be used by switching parameters



### Contour input

- + Just enter dimensions in the drawing and coordinates of the intersection point and contact point will be automatically calculated



### DMG MORI SMARTkey

Personalized user authentication function permits individually adapted access privileges to the control system and the machine (with integrated USB storage).

# DMG MORI's Connected Industries for Manufacturing Innovations

DMG MORI contributes to bringing IoT to your factories with DMG MORI Messenger, an application enabling visualization of machine operational status, and DMG MORI-SERVER, a data input / output application.

## Example of use of DMG MORI Messenger

Contribute to the improvement of production processes by visualizing the operational status of machines linked to a network. Operational status can be checked anytime, anywhere via smartphones and tablet devices.\*

\* To check operating status via the Internet, it is required to use a VPN or the like to ensure a secure connection to the LAN.

### Live view function

- + Real-time remote monitoring of machine operational status (running status, program name, alarm status, axis coordinate, axial load)



### Notification function

- + Send e-mail notification of machine stop during automatic operation or long-term cutting at night to persons in charge



### Higher operation rate with the alarm

- + Contribute to the enhancement of productivity by displaying the causes of machine stop in order of descending frequency and resolving them in order



### Operation rate report for higher rate

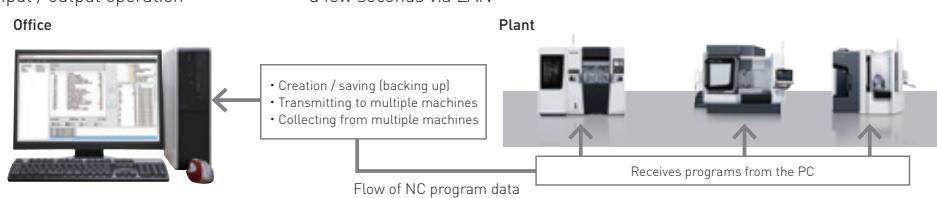
- + Contribute to boosting productivity by visualizing waste
- + Calculate the cost of each workpiece by grasping the machining time
- + Level the operation rates of machines to reduce lopsided overtime work of operators



## Application for Data Transmission DMG MORI-SERVER

The DMG MORI-SERVER enables the transfer of programming data between your office PC and a machine, reducing the lead time of pre-machining processes.

- + Quickly transfer the data created in a computer to machines
- + Realize easy storage of back-ups and high-speed input / output operation
- + Can collect programs in machines in a computer
- + Can input / output a large amount of data in a few seconds via LAN
- + Can perform input / output operation to multiple machines using a computer via LAN



NRX 2000

## Unique Energy-saving Function GREENmode



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

SDGs: Sustainable Development Goals

### Power-saving Functions

- + The latest, energy-efficient components with low power consumption and LED lighting are employed

### Reduced Cycle Times

- + The next M-code command can be specified before the previous command is completed. This enables multiple operations to be overlapped, resulting in shorter cycle times

### GREENmode

#### GREEN device

- + High-brightness LED light

#### GREEN idle reduction

- + Cut-off power of motors, pumps, etc., at the time of machine stop\*

#### GREEN control

- + Quicken standard M codes

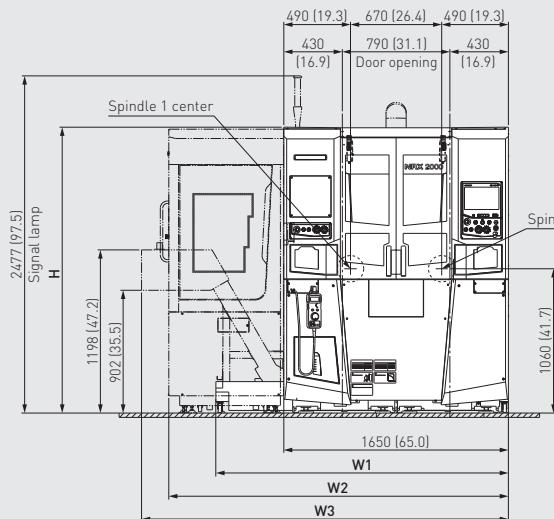
\* Only for machines not for system operation

NRX 2000

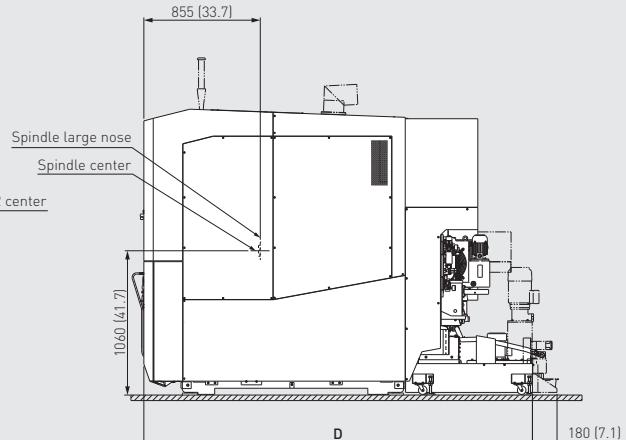
# Machine Size

mm (in.)  
NRX 2000 Standard / in-machine chute + external chip conveyor (left discharge, magnet scraper type) <option>

Front view



Side view



35

Q56320C01

	Width				Depth	Height
	Machine	W1	W2	W3		
Standard: without chip conveyor (in-machine chute + manual scraping, external chip pan)	1,650 [65.0]	2,149 [84.6]	2,495 [98.2]	—	2,855 [112.4]	2,100 [82.7]
In-machine chute + external chip conveyor (left discharge, magnet scraper type)	1,650 [65.0]	2,149 [84.6]	2,495 [98.2]	2,695 [106.1]	2,855 [112.4]	2,100 [82.7]

\* Including coolant tank

NRX 2000

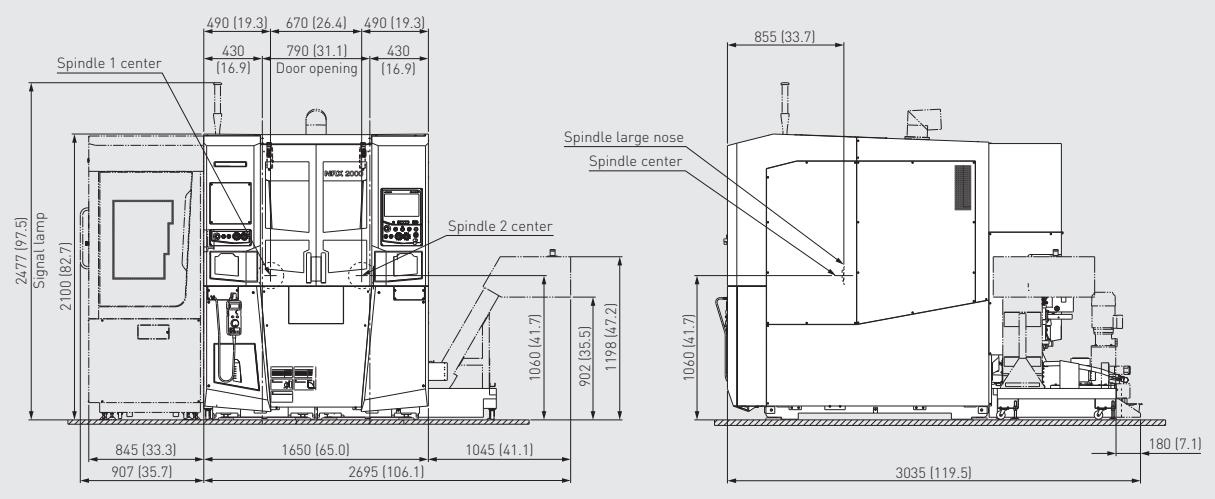
# Machine Size

mm (in.)

NRX 2000 In-machine chute + external chip conveyor (right discharge, magnet scraper type) &lt;option&gt;

Front view

Side view



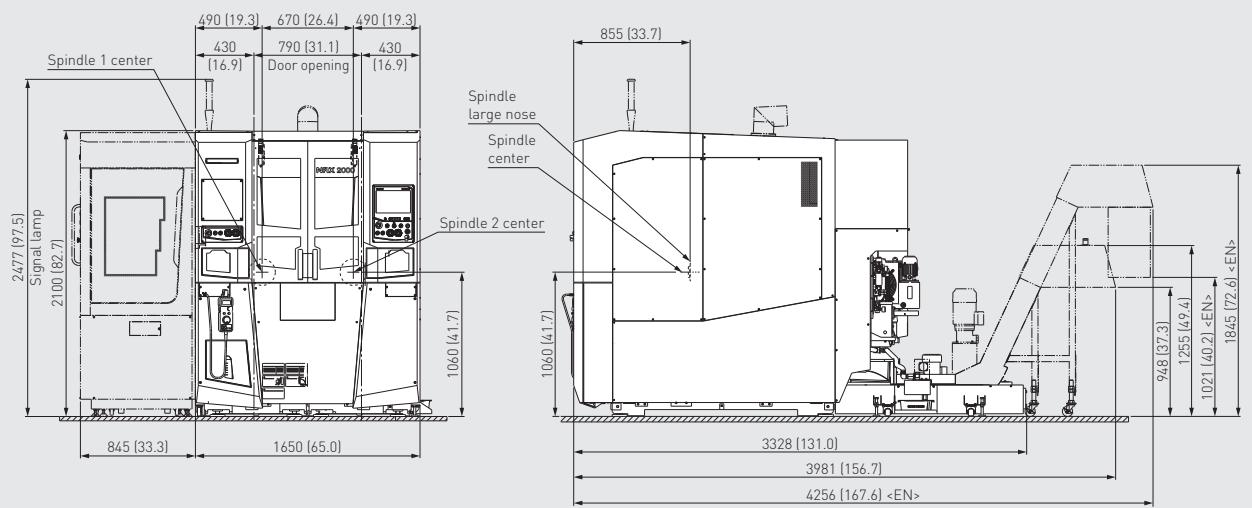
Q56504A01

mm (in.)

NRX 2000 In-machine chute + external chip conveyor (rear discharge, magnet scraper type) &lt;option&gt;

Front view

Side view

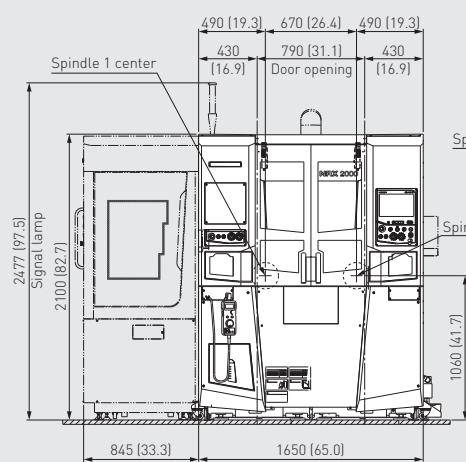


Q56283D01

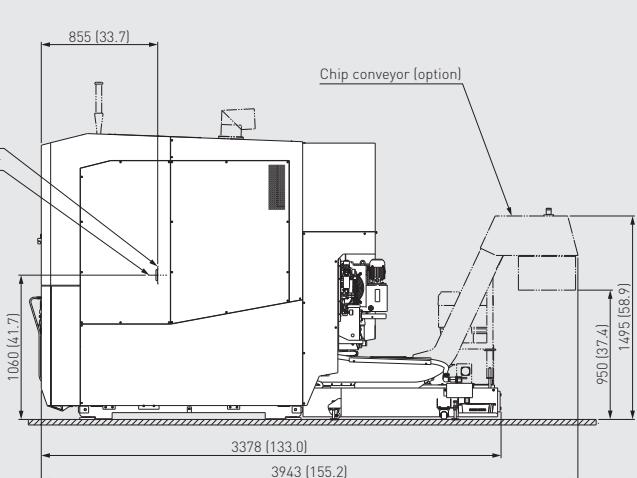
mm (in.)

**NRX 2000 Internal & external integrated chip conveyor (rear discharge, hinge type) <option>**

Front view



Side view



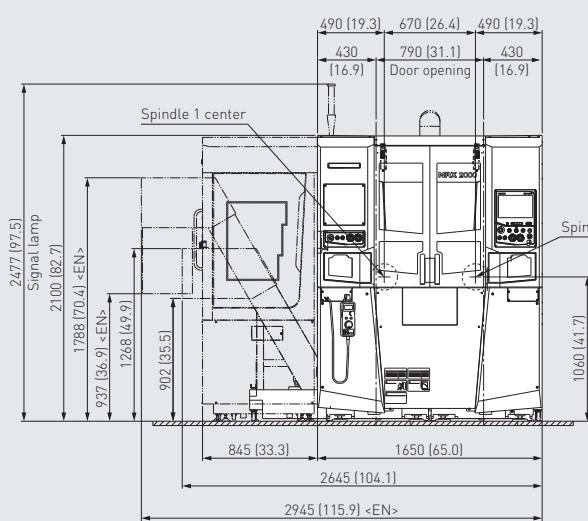
Q56499A01

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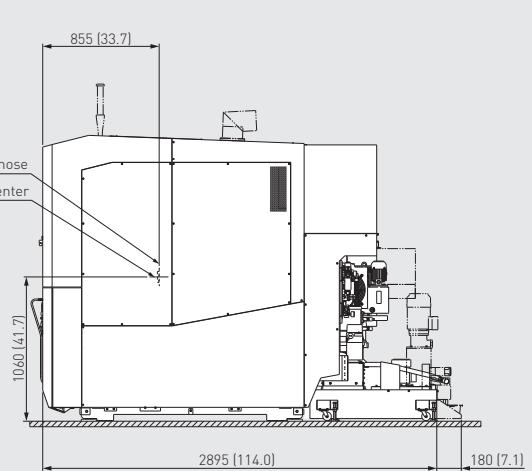
mm (in.)

**NRX 2000 Internal chip conveyor (screw type) + external chip conveyor (left discharge, hinge type) <option>**

Front view



Side view



Q56502A01

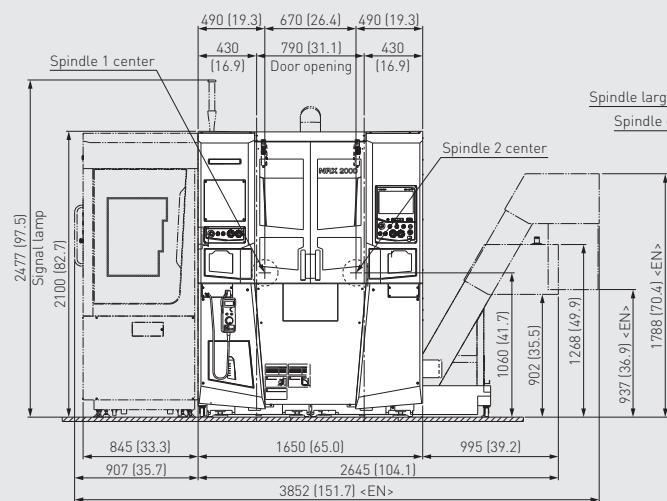
NRX 2000

# Machine Size

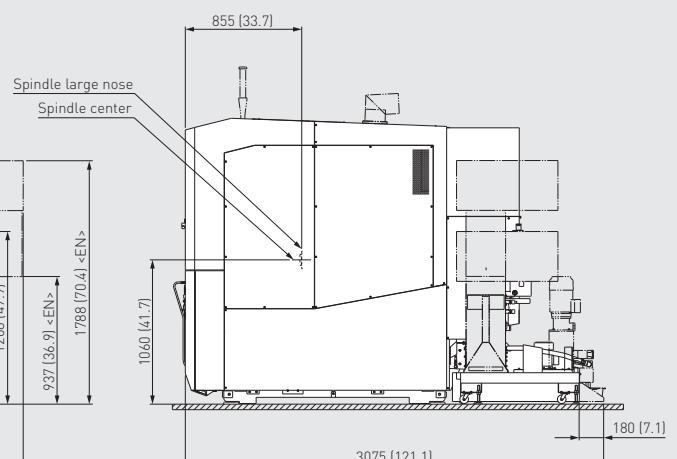
mm (in.)

NRX 2000 Internal chip conveyor (screw type) + external chip conveyor (right discharge, hinge type) &lt;option&gt;

Front view



Side view

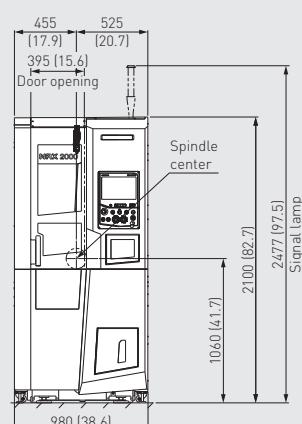


Q56503A01

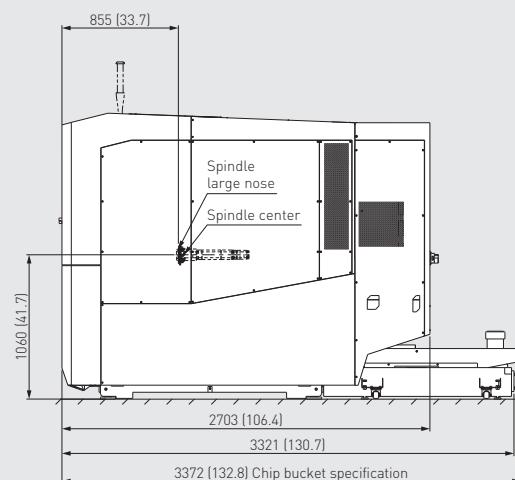
mm (in.)

NRX 2000 Single

Front view



Side view



Q56428A01

**S1**: Spindle 1  
**S2**: Spindle 2  
**T1**: Turret 1  
**T2**: Turret 2  
**[MC1]**: Milling (turret 1) <option>  
**[MC2]**: Milling (turret 2) <option>  
 The basic model is equipped with **S1**, **S2**, **T1** and **T2**.

## NRX 2000

# Machine Specifications

NRX 2000		
<b>Basic specification</b>	<b>S1 S2 T1 T2</b>	
<b>Optional specifications</b>	—	<b>[MC1] [MC2]</b>
<b>Capacity</b>		
Max. turning diameter	mm (in.)	No. 1, No. 2: 180 [7.0]*1 No. 1, No. 2: 150 [5.9]*2
Standard turning diameter	mm (in.)	No. 1, No. 2: 120 [4.7]
Max. turning length	mm (in.)	No. 1, No. 2: 100 [3.9]
<b>Travel</b>		
X-axis travel	mm (in.)	No. 1, No. 2: 100 [3.9]
Z-axis travel	mm (in.)	No. 1, No. 2: 220 [8.7]
<b>Spindle</b>		
Number of spindles		2
Max. spindle speed	min <sup>-1</sup>	No. 1, No. 2: 5,000, 6,000
Type of spindle nose		No. 1, No. 2: JIS A <sub>2</sub> -5
<b>Turret</b>		
Number of turrets		2
Number of tool stations		No. 1, No. 2: 8, 10 No. 1, No. 2: 10
Shank height for square tool	mm (in.)	No. 1, No. 2: 25 [1] No. 1, No. 2: 20 [3/4]
Max. rotary tool spindle speed	min <sup>-1</sup>	— 10,000
<b>Feedrate</b>		
Rapid traverse rate	mm/min (ipm)	X1, X2, Z1, Z2: 30,000 (1,181.1)
<b>Motor</b>		
Spindle drive motor <40%ED / 30 min / cont>	kW (HP)	No. 1, No. 2: 7.5 / 7.5 / 5.5 (10 / 10 / 7.5) 11 / 7.5 (15 / 10) <30 min / cont>
Rotary tool spindle drive motor <15% ED / cont>	kW (HP)	— No. 1, No. 2: 1.5 / 1.2 (2 / 1.6)
<b>Machine size</b>		
Machine height	mm (in.)	2,100 {82.7} <including gantry-type loader> 2,100 {82.7} <without loader>
Floor space <width × depth>	mm (in.)	2,495 × 3,035 {98.2 × 119.5} <including gantry-type loader> 2,695 × 3,035 {106.1 × 119.5} <gantry-type loader + in-machine chute + external chip conveyor (left discharge, magnet scraper type)> 2,495 × 3,943 {98.2 × 155.2} <gantry-type loader + internal & external integrated chip conveyor (rear discharge, hinge type)>
Mass of machine	kg (lb.)	5,600 (12,320) <including gantry-type loader> 5,330 (11,726) <without loader> + 600 (1,320) <workstocker>
<b>Control unit</b>		
Mitsubishi Electric		M730UM

JIS: Japanese Industrial Standard

No. 1: Turret 1 or Spindle 1

No. 2: Turret 2 or Spindle 2

\*1 For O.D. cutting tool with an overhang of 35 mm (1.37 in.).

\*2 For O.D. cutting tool with an overhang of 20 mm (0.78 in.).

● 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.

● For details, please check the Detailed Specifications.

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

**S1** : Spindle 1**T1** : Turret 1**M1** : Milling [turret 1] <option>The basic model is equipped with **S1** and **T1**.

## NRX 2000

# Machine Specifications

NRX 2000 Single		
Basic specification	<b>S1</b>	<b>T1</b>
<b>Optional specifications</b>		<b>M1</b>
<b>Capacity</b>		
Max. turning diameter	mm (in.)	180 (7.0)*1
Standard turning diameter	mm (in.)	120 (4.7)
Max. turning length	mm (in.)	100 (3.9)
<b>Travel</b>		
X-axis travel	mm (in.)	100 (3.9)
Z-axis travel	mm (in.)	220 (8.7)
<b>Spindle</b>		
Number of spindles		1
Max. spindle speed	min <sup>-1</sup>	5,000, 6,000
Type of spindle nose		JIS A <sub>2</sub> -5
<b>Turret</b>		
Number of turrets		1
Number of tool stations		8, 10
Shank height for square tool	mm (in.)	25 (1)
Max. rotary tool spindle speed	min <sup>-1</sup>	—
10,000		
<b>Feedrate</b>		
Rapid traverse rate	mm/min (ipm)	X, Z: 30,000 (1,181.1)
<b>Motor</b>		
Spindle drive motor <40%ED / 30 min / cont>	kW (HP)	7.5 / 7.5 / 5.5 (10 / 10 / 7.5) 11 / 7.5 (15 / 10) <30 min / cont>
Rotary tool spindle drive motor <15% ED / cont>	kW (HP)	—
		1.5 / 1.2 (2 / 1.6)
<b>Machine size</b>		
Machine height	mm (in.)	2,100 (82.7)
Floor space <width × depth>	mm (in.)	980 × 3,372 (38.6 × 132.8) <without chip conveyor, without loader>
Mass of machine	kg (lb.)	2,930 (6,446)
<b>Control unit</b>		
Mitsubishi Electric		M730UM

JIS: Japanese Industrial Standard

\*1 For O.D. cutting tool with an overhang of 35 mm (1.37 in.).

\*2 For O.D. cutting tool with an overhang of 20 mm (0.78 in.).

● 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.

● For details, please check the Detailed Specifications.

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

<b>S1</b>	: Spindle 1
<b>S2</b>	: Spindle 2
<b>T1</b>	: Turret 1
<b>T2</b>	: Turret 2
<b>[M1]</b>	: Milling (turret 1) <option>
<b>[M2]</b>	: Milling (turret 2) <option>
The basic model is equipped with <b>S1</b> , <b>S2</b> , <b>T1</b> and <b>T2</b> .	

## NRX 2000

# Standard & Optional Features

- : Standard features
- : Options
- ☆: Consultation is required
- : Not applicable

NRX 2000				
	<b>S1</b>	<b>S2</b>	<b>T1</b>	<b>T2</b>
<b>Basic specification</b>	—	—	<b>[M1]</b>	<b>[M2]</b>
<b>Optional specifications</b>				
<b>Spindle</b>				
5,000 min <sup>-1</sup> : 7.5 / 7.5 / 5.5 kW (10 / 10 / 7.5 HP) <40%ED / 30 min / cont>	●	●	—	—
6,000 min <sup>-1</sup> : 11 / 7.5 kW (15 / 10 HP) <30 min / cont> {high output}	○	○	—	—
<b>Turret</b>				
8-station bolt-tightened turret	●	—	—	—
10-station bolt-tightened turret	○	—	●	—
Rotary tool spindle	—	—	●	—
<b>Coolant</b>				
Coolant system (large capacity type)	●	●	—	—
High-pressure coolant system	○	○	—	—
<b>Chip disposal</b>				
Without chip conveyor	●	●	—	—
Internal chip conveyor (screw type) + external chip conveyor	○	○	○	○
Internal & external integrated chip conveyor	○	○	○	○
In-machine chute <sup>*1</sup> + external chip conveyor	○	○	○	○
Right discharge, hinge type	○	○	○	○
Left discharge, hinge type	○	○	○	○
Rear discharge, hinge type	○	○	○	○
Right discharge, scraper type	○	○	○	○
Left discharge, scraper type	○	○	○	○
Rear discharge, scraper type	○	○	○	○
Right discharge, magnet scraper type	○	○	○	○
Left discharge, magnet scraper type	○	○	○	○
Rear discharge, magnet scraper type	○	○	○	○
Chip conveyor interface (including in-machine chute)	○	○	○	○
Right discharge	○	○	○	○
Left discharge	○	○	○	○
Rear discharge	○	○	○	○
<b>Measurement</b>				
Manual type in-machine tool presetter	○	—	☆	—
Automatic in-machine tool presetter <sup>*2</sup>	○	—	○	—
Full closed loop control [Scale feedback]	○	—	○	—
<b>Automation</b>				
Auto power off	●	●	●	●
Gantry-type loader	●	●	●	●
Gantry-type loader	○	○	○	○
Workstocker right side	○	○	○	○
Workstocker left side	○	○	○	○
Workstocker installed at both left and right	☆	☆	☆	☆
<b>Other</b>				
Built-in worklight (LED)	●	●	—	—
Signal lamp	○	○	—	—
Chuck foot switch	○	○	—	—

\*1 For dry machining, please select the chip conveyor (internal), screw type.

\*2 Not available for the optional high-output spindle <6,000 min<sup>-1</sup>, 11 / 7.5 kW (15 / 10 HP)>.

● For details, please check the Detailed Specifications.

● The information in this catalog is valid as of June 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.

**NRX 2000**

# Standard & Optional Features

●: Standard features  
 ○: Options  
 ☆: Consultation is required  
 -: Not applicable

## NRX 2000 Single

	<b>S1</b>	<b>T1</b>
<b>Basic specification</b>	-	<b>M1</b>
<b>Optional specifications</b>		
<b>Spindle</b>		
5,000 min <sup>-1</sup> : 7.5 / 7.5 / 5.5 kW [10 / 10 / 7.5 HP] <40%ED / 30 min / cont>	●	●
6,000 min <sup>-1</sup> : 11 / 7.5 kW [15 / 10 HP] <30 min / cont> {high output}	○	○
<b>Turret</b>		
8-station bolt-tightened turret	●	-
10-station bolt-tightened turret	○	●
Rotary tool spindle	10,000 min <sup>-1</sup> : 1.5 / 1.2 kW (2 / 1.6 HP) <15%ED / cont>	-
<b>Coolant</b>		
Coolant system (large capacity type)	350 / 550 W <50 / 60 Hz>	●
High-pressure coolant system	800 / 1,100 W <50 / 60 Hz>	○
<b>Chip disposal</b>		
Without chip conveyor	In-machine chute <sup>*1</sup> + manual scraping, external chip pan	●
Internal & external integrated chip conveyor	Rear discharge, hinge type	☆
In-machine chute <sup>*1</sup> + external chip conveyor	Rear discharge, scraper type	☆
Chip conveyor interface (including in-machine chute)	Rear discharge, magnet scraper type	☆
Chip conveyor interface (including in-machine chute)	Rear discharge	☆
<b>Measurement</b>		
Manual type in-machine tool presetter	Removable type	○
Automatic in-machine tool presetter <sup>*2</sup>		○
Full closed loop control [Scale feedback]	X- / Z-axis	○
<b>Automation</b>		
Auto power off		●
Gantry-type loader	Gantry-type loader without workstocker	○
	Workstocker left side	○
	Workstocker installed at both left and right	☆
Robot interface		☆
<b>Other</b>		
Built-in worklight (LED)		●
Signal lamp	4 colors (LED type: red, yellow, green, blue)	○
Chuck foot switch	Single	○
	Double	○

\*1 For dry machining, please select the chip conveyor (internal), screw type.

\*2 Not available for the optional high-output spindle <6,000 min<sup>-1</sup>, 11 / 7.5 kW (15 / 10 HP)>.

● For details, please check the Detailed Specifications.

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

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

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- The tool cabinet is DMQP (DMG MORI Qualified Products), not standard equipment.

DMQP: Please see Page 26 for details.  
DMQP: DMG MORI Qualified Products

## Front Parallel Dual-Spindle Dual-Turret Turning Center NRX 2000

### Compliance with safety standards

The X-class machine complies with safety standards of the respective countries around the world.  
(CE marking, UL, ANSI and other standards)

CE marking: a conformance display

CE: Communauté Européenne

UL: Underwriters Laboratories Inc.

ANSI: American National Standards Institute

#### <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 July 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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