

**DMG MORI**

NLX 1500 | 500  
NLX 2000 | 500

Rigid and Precise Turning Center

# NLX 1500 / NLX 2000



DMGMORI.COM

NLX 1500 / NLX 2000

## Ultimate Performance for Parts Machining

The NLX 1500 and NLX 2000 are high-rigidity, high-precision turning centers capable of handling varieties of workpieces with superior turning capability ensured by the robust bed and outstanding milling performance achieved by the BMT (Built-in Motor Turret). The space-saving design allows for easy establishment of automation systems. Both models demonstrate outstanding performance in a wide range of machining from mass production of automotive parts for the automotive industry to highly-elaborate and high-quality machining for the aircraft industry.

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02





#### Industrial machinery

**1** Rod

**2** Connector

#### Automobiles

**3** Disk brake

**4** Outer race

**5** Hub

#### Construction machinery

**6** Spool

#### Hydraulic & Pneumatic equipment

**7** Joint

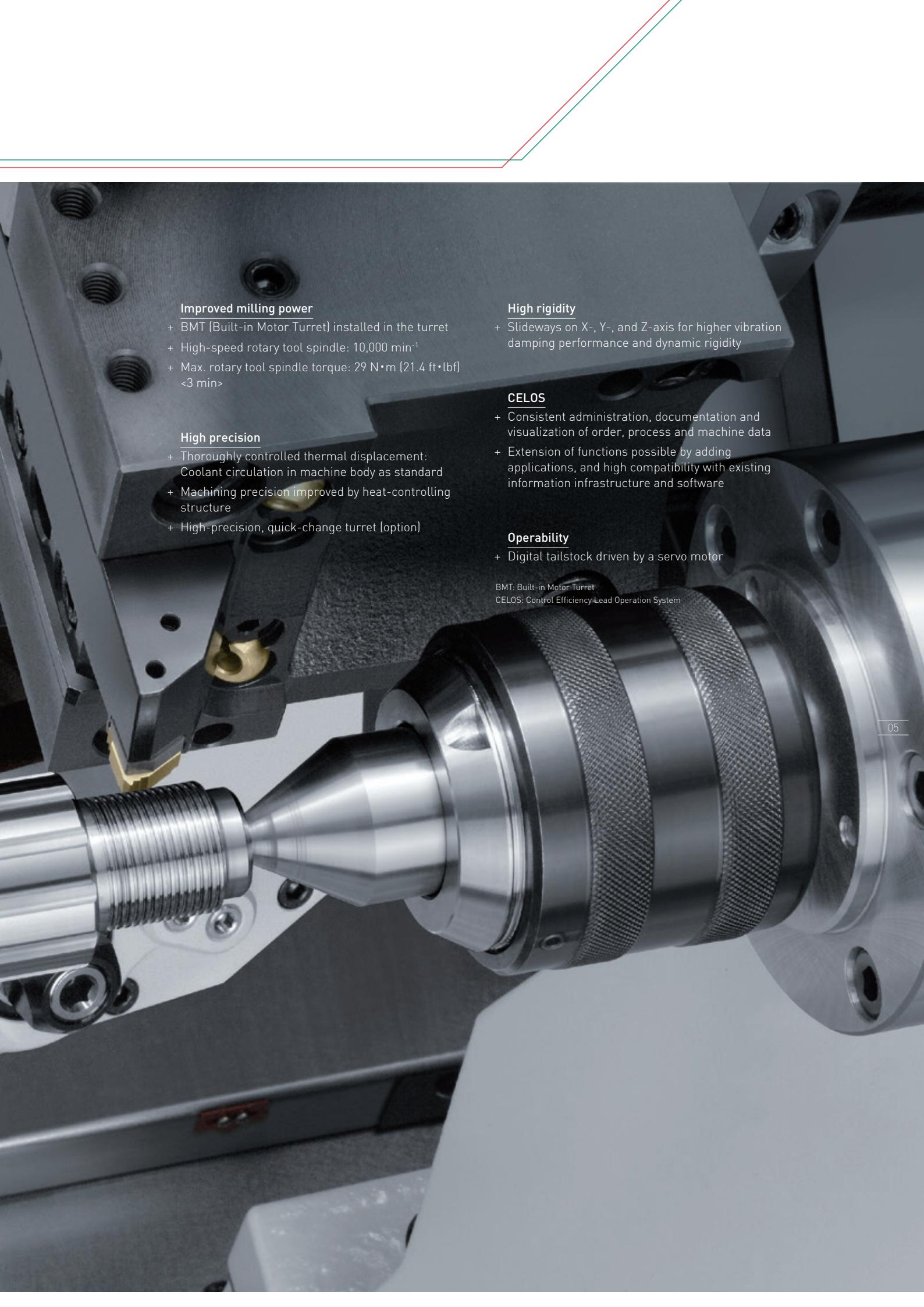
NLX 1500 / NLX 2000

## High-performance Achieved by Uncompromising Development

The NLX 1500 and NLX 2000 have been upgraded in the fundamental performance of turning centers such as reliability, accuracy, rigidity and operability, while inheriting the proven features of the previous models including high-rigidity slideways.

The ergonomically designed cover minimizes operators' work load. The models are also environmentally friendly, mitigating environmental burden with improved energy saving effect.





#### **Improved milling power**

- + BMT (Built-in Motor Turret) installed in the turret
- + High-speed rotary tool spindle: 10,000 min<sup>-1</sup>
- + Max. rotary tool spindle torque: 29 N·m (21.4 ft·lbf)  
<3 min>

#### **High precision**

- + Thoroughly controlled thermal displacement:  
Coolant circulation in machine body as standard
- + Machining precision improved by heat-controlling  
structure
- + High-precision, quick-change turret (option)

#### **High rigidity**

- + Slideways on X-, Y-, and Z-axis for higher vibration  
damping performance and dynamic rigidity

#### **CELOS**

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

#### **Operability**

- + Digital tailstock driven by a servo motor

BMT: Built-in Motor Turret

CELOS: Control Efficiency Lead Operation System

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NLX 1500 / NLX 2000

# Best Solutions for Your Shop Floor

The NLX 1500 and NLX 2000 provide solutions for higher machining accuracy, higher production efficiency by automation, better chip disposal, maintainability and setup performance.

With various cutting-edge solutions, both machines demonstrate their capabilities to the full extent and achieve a higher level of machining.

DMG MORI offers the best solutions that solve your shop issues.

**1****Turret**

For various types of machining



12-station



20-station

**2****Long workpieces**

Chatter control



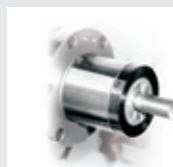
Alternating speed



Hydraulic steady rest

**3****Workpiece support**

Workpiece support suitable for your workpiece and machining



Collet chuck



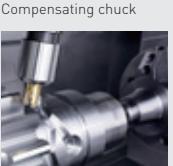
Compensating chuck



Spindle 2 specification



Tailstock specification



Counter spindle tip

**4****Spindle output**

For heavy-duty cutting

**5****Maintenance**

Improved production efficiency by preventive maintenance



DMG MORI Messenger



Air dryer



Oil skimmer

**6**

### Mass production, automation

Versatility, labor saving, quick setup changes

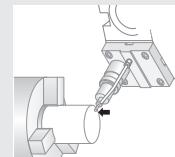



Gantry-type loader system      Workpiece unloader

**7**

### Machining accuracy

Meeting high accuracy requirements




In-machine measuring system      Coolant chiller

**8**

### Cutting technology

Improving machining efficiency with Technology Cycles all at once



Full closed loop control  
<Scale feedback>

**9**

### Cutting holder

Special holder for various machining and programming support function



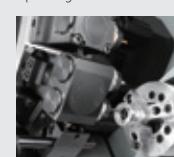


Spinning tool      Multi-axis holder      Double holder

**10**

### Better setup performance

Drastically shortened setup time





Double drill holder      Universal rotary tool holder      Hob cutting holder

**11**

### Chip disposal

Higher cutting performance



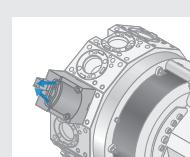

Automatic in-machine tool presetter      Quick-change holder

**11**

### Chip disposal

Higher cutting performance



Chip conveyor      Super-high-pressure coolant system      Coolant gun      Air blow for tool tip

• The photo shows the machine equipped with options.

NLX 1500 / NLX 2000

## Wide Range of Lineup for Your Best Choice

The Spindle 2 specification and the digital tailstock specification are available for the NLX 1500 with a 6-inch chuck and the NLX 2000 with an 8-inch chuck. Milling is possible for any specifications. The models offer eight specifications including the Y-axis specification and various spindles to meet the customers' various machining needs.

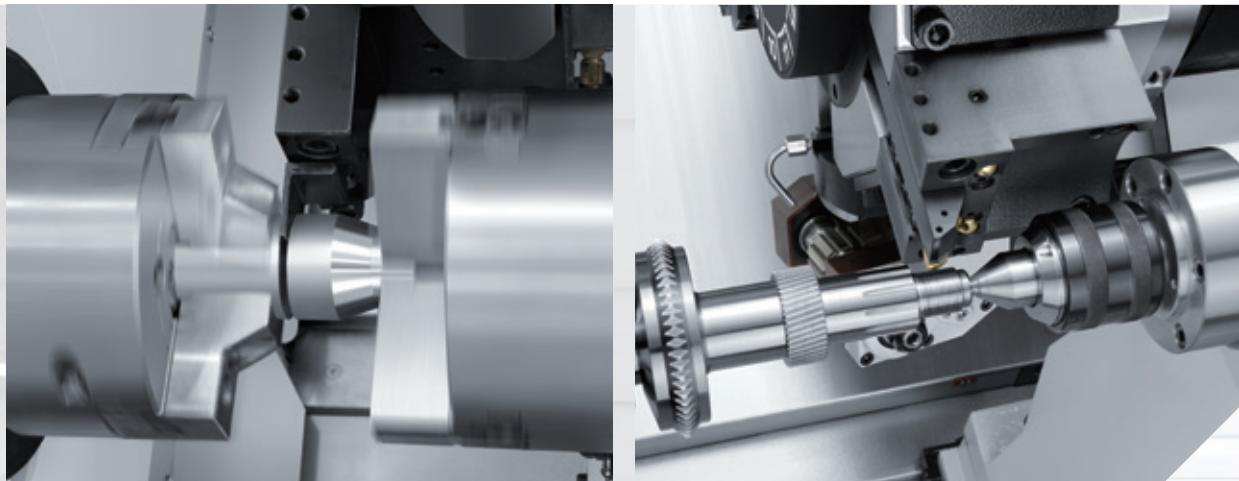


		NLX 1500   500	NLX 2000   500
Standard chuck size <spindle 1 / spindle 2> <sup>*1</sup>		6 / 6 inches	8 / 6 inches
Bar work capacity	mm (in.)	Ø 52 (Ø 2.0) <sup>*2</sup> Ø 34 (Ø 1.3) <8,000 min <sup>-1</sup> > <sup>*2</sup>	Ø 65 (Ø 2.5) <sup>*2</sup>
Number of tool stations		12, 16, 20	12, 10, 16, 20
Travel <X- / Z-axis>	mm (in.)	260 / 590 (10.2 / 23.2)	
Travel <Y-axis>	mm (in.)	100 <±50> (3.9 <±2.0>)	

\*1 The chuck is optional.

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

<b>S1</b> : Spindle 1	<b>T</b> : Turret
<b>MC</b> : Milling	<b>TS</b> : Tailstock
<b>Y</b> : Y-axis (option)	<b>S2</b> : Spindle 2 (option)
The basic model is equipped with <b>S1</b> , <b>T</b> , <b>MC</b> and <b>TS</b> .	



### NLX 2000

8-inch chuck compatible

Max. rotary tool spindle speed 10,000 min<sup>-1</sup>

Compatible with automation systems

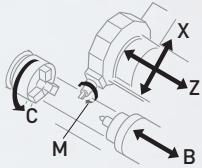


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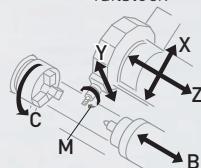
<Milling + Y-axis + Tailstock>

#### Variations

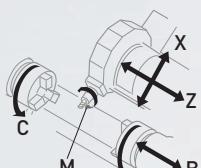
**S1 T MC TS** Milling + Tailstock



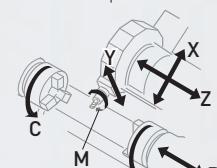
**S1 T MC Y TS** Milling + Y-axis + Tailstock



**S1 T MC S2** Milling + Spindle 2



**S1 T MC Y S2** Milling + Y-axis + Spindle 2



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NLX 1500 / NLX 2000

# Outstanding Rigidity

A robust machine construction is essential for a machine to demonstrate its best cutting performance. We carry out simulations for torsional rigidity by the FEM analysis at the development stage to produce a robust machine structure that reflects the DMG MORI technologies in every part of it. The slideways are employed on the X-, Y-, and Z-axis for higher vibration damping performance and dynamic rigidity, which realizes outstanding cutting capabilities.

## Turret

- + The turret with an optimum center of gravity location offers significantly improved tool tip rigidity

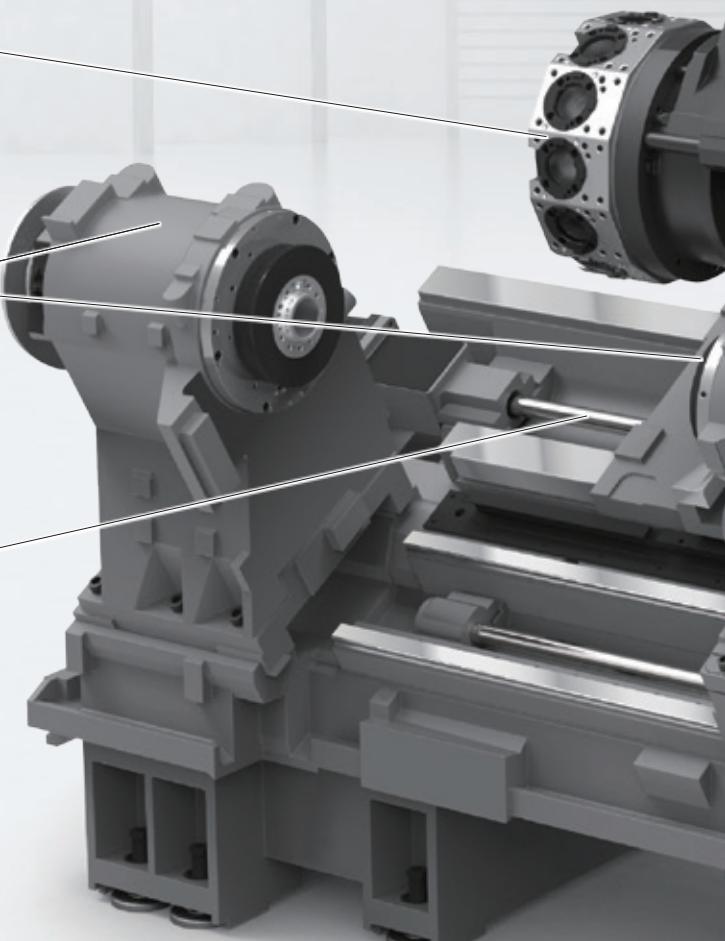
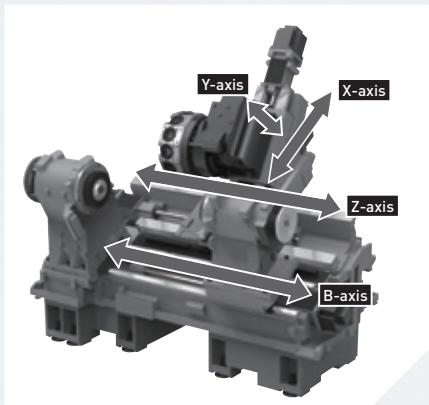
## In-house manufactured high-rigidity spindles

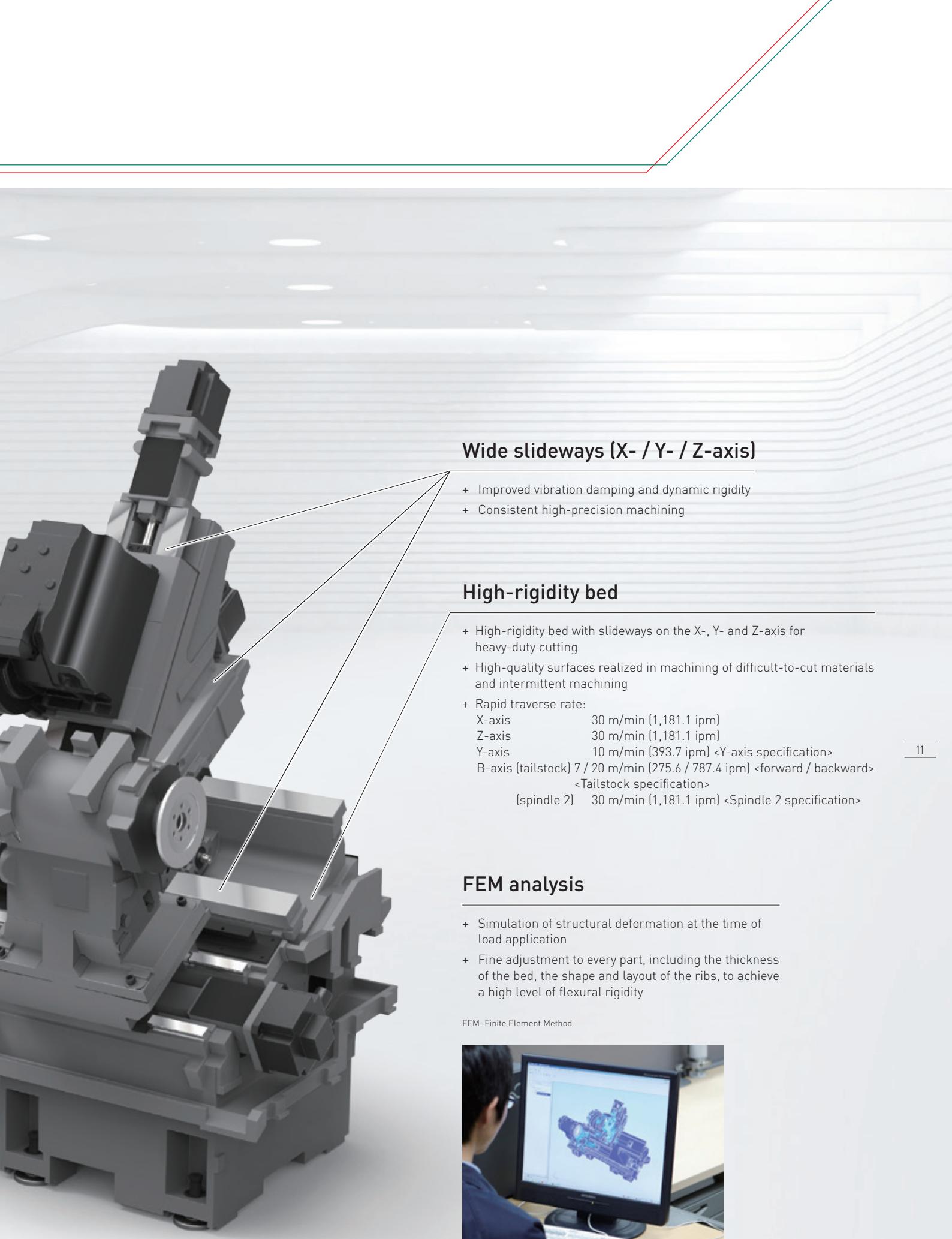
- + Highly reliable spindles with controlled thermal displacement

## Spacious work area

- + Travel:

X-axis	260 mm (10.2 in.)
Z-axis	590 mm (23.2 in.)
Y-axis	100 <±50> mm (3.9 <±2.0> in.) <Y-axis specification>
B-axis (tailstock)	564 mm (22.2 in.) <Tailstock specification>
(spindle 2)	624 mm (24.6 in.) <Spindle 2 specification>





### Wide slideways (X- / Y- / Z-axis)

- + Improved vibration damping and dynamic rigidity
- + Consistent high-precision machining

### High-rigidity bed

- + High-rigidity bed with slideways on the X-, Y- and Z-axis for heavy-duty cutting
- + High-quality surfaces realized in machining of difficult-to-cut materials and intermittent machining
- + Rapid traverse rate:

X-axis	30 m/min (1,181.1 ipm)
Z-axis	30 m/min (1,181.1 ipm)
Y-axis	10 m/min (393.7 ipm) <Y-axis specification>
B-axis (tailstock)	7 / 20 m/min (275.6 / 787.4 ipm) <forward / backward> <Tailstock specification>
(spindle 2)	30 m/min (1,181.1 ipm) <Spindle 2 specification>

### 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



<Milling + Y-axis + Spindle 2>

NLX 1500 / NLX 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.



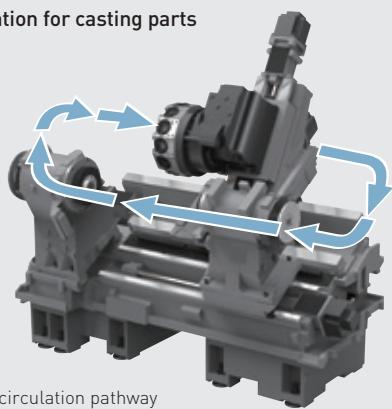
Milling turret designed to control thermal displacement (BMT)



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

BMT: Built-in Motor Turret

Coolant circulation for casting parts



DMG MORI has developed a new technology to circulate coolant through the casting parts as a measure against thermal displacement that directly affects machining accuracy. Thermal displacement is caused by various factors including non-uniform expansion and contraction due to difference in thickness of the casting; uneven heat generation in the slideways; operating environment; and changes in ambient temperature due to season and time of day. The coolant circulation maintains a uniform temperature inside the casting parts, and minimizes deformation in the machine.

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



[NLX 2500]

#### 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.

#### Full closed loop control (Scale feedback) <Magnescale> (option)



- + Superior precision with 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/s<sup>2</sup> [17,716.5 in./s<sup>2</sup>]
- + Vibration resistance of 250 m/s<sup>2</sup> [9,842.5 in./s<sup>2</sup>]
- + High-accuracy machining is ensured by a scale with the same thermal expansion rate as the cast iron machine structure

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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

NLX 1500 / NLX 2000

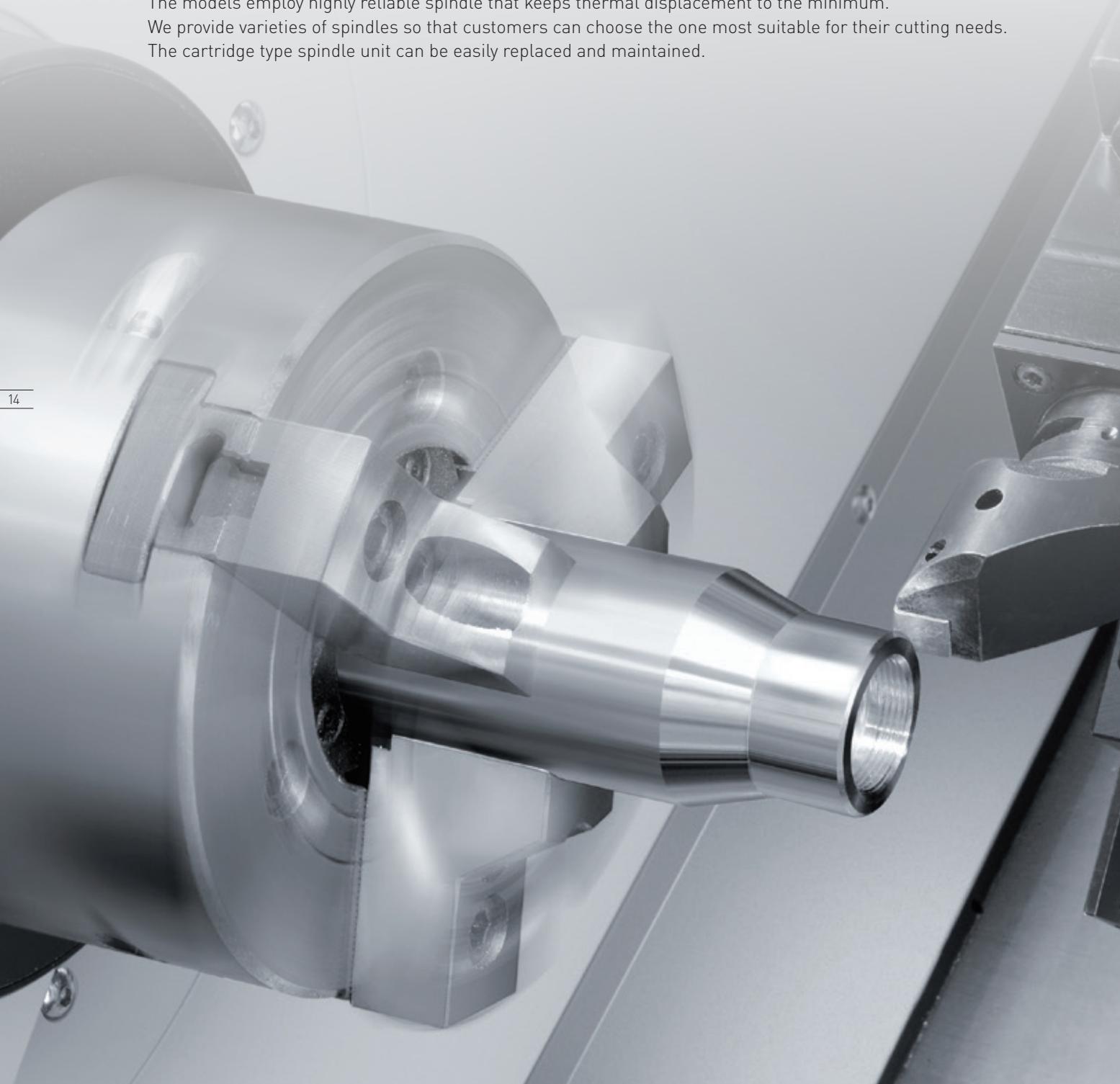
## High-performance Spindle with Excellent Reliability

The NLX 1500 and the NLX 2000 offer a 6-inch chuck and an 8-inch chuck for the Spindle 1, respectively.

The models employ highly reliable spindle that keeps thermal displacement to the minimum.

We provide varieties of spindles so that customers can choose the one most suitable for their cutting needs.

The cartridge type spindle unit can be easily replaced and maintained.





#### **Sophisticated spindle labyrinth + Air purge for spindle**

- + The labyrinth structure has been enhanced, taking into account frequent use of high-pressure coolant
- + Spindle air purge offered as standard
- + Prevent coolant entry and improve spindle durability

#### **Max. spindle speed (spindle 1)**

- + NLX 1500: 6,000 min<sup>-1</sup>  
6,000 min<sup>-1</sup> {high output}  
8,000 min<sup>-1</sup> {high speed}
- + NLX 2000: 5,000 min<sup>-1</sup>  
5,000 min<sup>-1</sup> {high output}

#### **Output (spindle 1)**

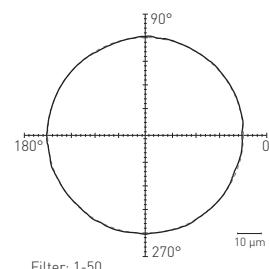
- + NLX 1500:  
11 / 11 / 7.5 kW (15 / 15 / 10 HP) <50%ED / 30 min / cont>  
15 / 15 / 11 kW (20 / 20 / 15 HP) <50%ED / 30 min / cont> {high output}  
11 / 7.5 kW (15 / 10 HP) <25%ED / cont> {high speed}
- + NLX 2000:  
15 / 15 / 11 kW (20 / 20 / 15 HP) <15%ED / 30 min / cont>  
22 / 22 / 15 kW (30 / 30 / 20 HP) <15%ED / 30 min / cont> {high output}

#### **Standard chuck size (spindle 1)\***

- + NLX 1500: 6 inches
- + NLX 2000: 8 inches

\* The chuck is optional.

## Circularity data (turning)



**NLX 2000**

**Circularity: 0.28 µm Ra (actual result)**

**Material: Brass <outer diameter: 54.2 mm (2.1 in.)>**

Tool	mm	Diamond tool <Nose radius 0.4 [0.016]>
Spindle speed	min <sup>-1</sup>	500
Feedrate	mm/rev (ipr)	0.05 [0.0020]

• The cutting test results indicated in this catalog are provided as examples. The results indicated in this catalog may not be obtained due to differences in cutting conditions and environmental conditions during measurement.

NLX 1500 / NLX 2000

## Process Integration by Continuous Machining of Both Surfaces

Continuous machining of both surfaces is possible with the Spindle 2. The combination of rotary tools and the Y-axis function enables integrated machining, from turning to secondary / back face machining, and multi-axis machining, allowing for process integration. We also offer the digital tailstock, which directly controls thrust force of the tailstock spindle and improves machining precision with an accurate workpiece pressing force.

### **Spindle 2 specification**

- + "Milling + Y-axis specification" for advanced multi-axis machining as well as "Milling specification" available

### **Max. spindle speed (spindle 2)**

- + NLX 1500: 6,000 min<sup>-1</sup>  
8,000 min<sup>-1</sup> {high speed}
- + NLX 2000: 6,000 min<sup>-1</sup>  
5,000 min<sup>-1</sup> {through-spindle hole diameter 73 mm [2.9 in.] specification}

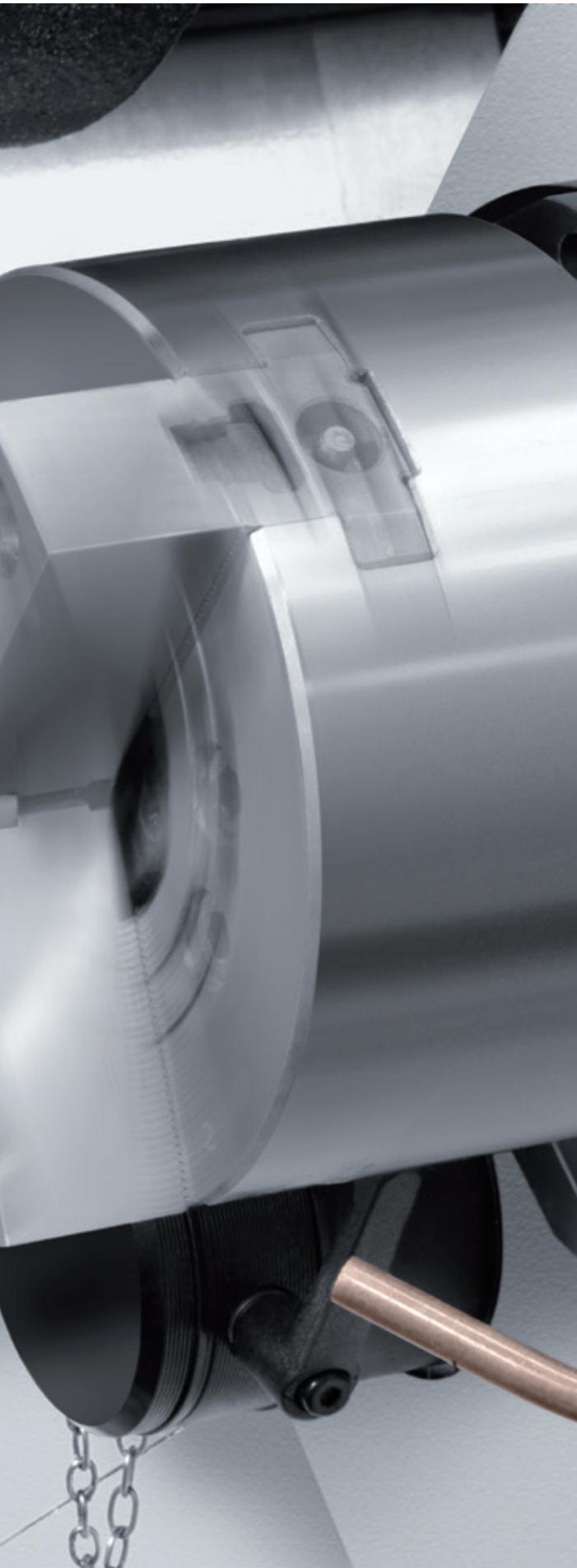
### **Output (spindle 2)**

- + NLX 1500: 11 / 7.5 kW (15 / 10 HP) <25%ED / cont>  
11 / 7.5 kW (15 / 10 HP) <25%ED / cont> {high speed}
- + NLX 2000: 11 / 7.5 kW (15 / 10 HP) <25%ED / cont>  
11 / 7.5 kW (15 / 10 HP) <25%ED / cont>  
{through-spindle hole diameter 73 mm [2.9 in.] specification}

### **Standard chuck size (spindle 2)\***

- + NLX 1500: 6 inches
- + NLX 2000: 6 inches

\* The chuck is optional.



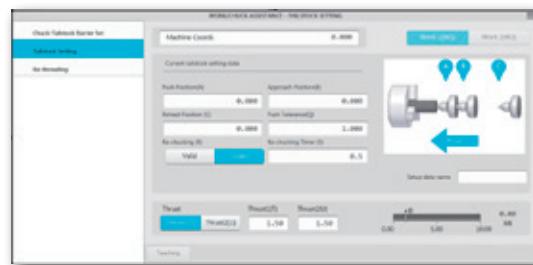
### Tailstock specification

The high-rigidity digital tailstock driven by a servo motor significantly reduces setup time.



### Digital tailstock

- + Fewer steps requiring operation of the tailstock
- + Setup time: Reduced by over 50%
- + Tailstock spindle operating time: Reduced by over 20%
- + Variable pressure control using program instructions
- + Simple operation using MAPPS



MAPPS: Mori Advanced Programming Production System

### Chip flushing coolant

Chip flushing coolant is featured as standard at the base of the digital tailstock, improving chip processing capability.

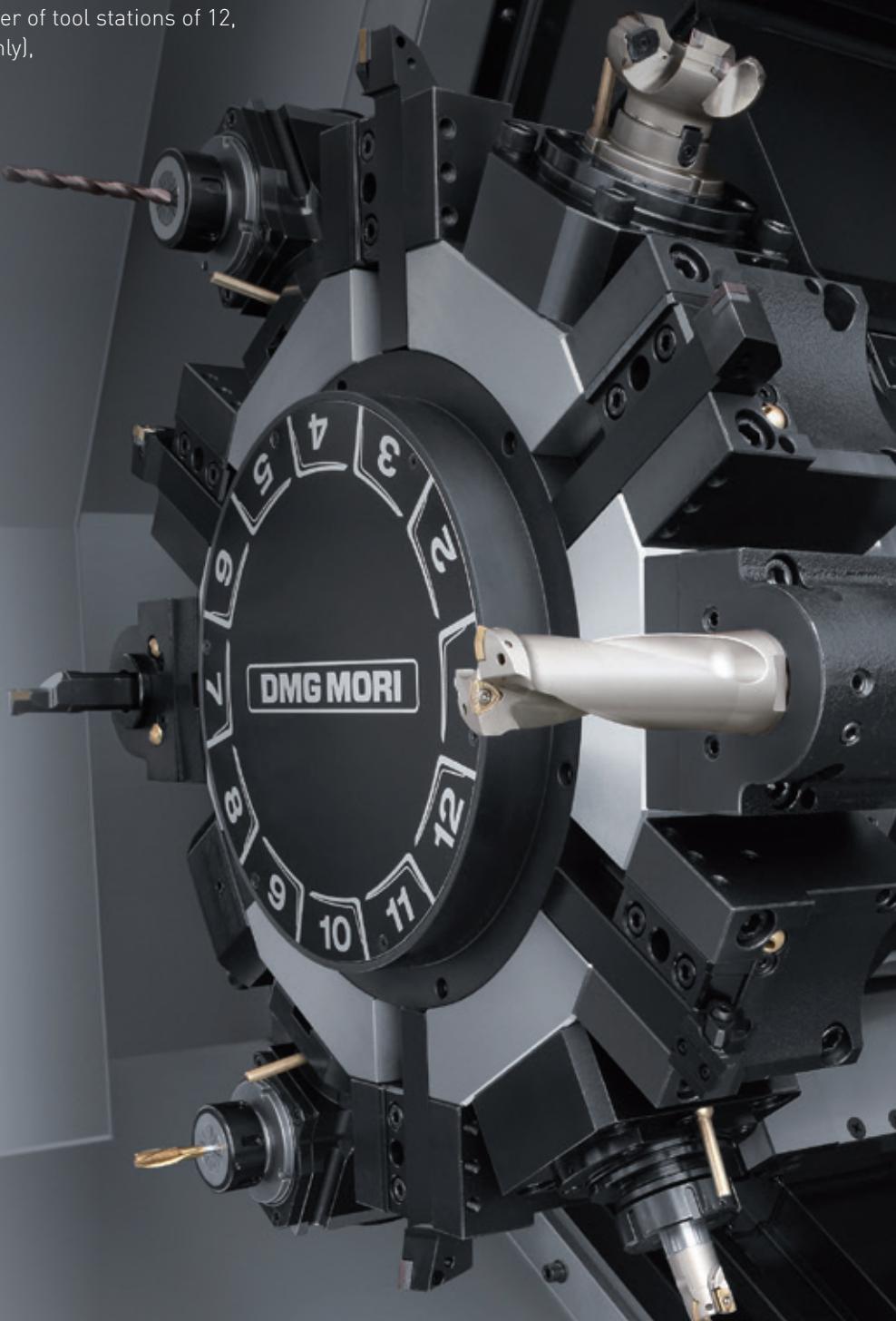


NLX 1500 / NLX 2000

## BMT (Built-in Motor Turret) Equipped as Standard

All types are equipped with the BMT with a max. rotary tool spindle speed of 10,000 min<sup>-1</sup> as standard. Outstanding machining precision is achieved by heat control with the cooling jacket.

In addition to the standard number of tool stations of 12, the models offer 10 (NLX 2000 only), 16 and 20 stations as options.





**The turret with an optimum center of gravity location offers significantly improved tool tip rigidity**

- + Turret indexing time (1-station): 0.25 sec.
- + Overhang of O.D. cutting rotary tool: 50 mm (2.0 in.), 100 mm (3.9 in.)



**Number of tool stations**

- + NLX 1500: 12, 16, 20 tools
- + NLX 2000: 12, 10, 16, 20 tools



**“Mature” and “Evolved”  
BMT Technology**

- + Improved milling power
  - + Improved milling accuracy
  - + Controls the turret’s heat and vibration
  - + Reduced energy loss
- 
- + Displacement amount: 3.05  $\mu\text{m}$   
(previous model / 5,000  $\text{min}^{-1}$ )  
→ 0.43  $\mu\text{m}$  (NLX 2500 / 10,000  $\text{min}^{-1}$ )
  - + Turret temperature increases: 1/10 or less  
(compared with conventional machine)
  - + Vibration amplitude: 1/3 or less  
(compared with conventional machine)



**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  $\text{min}^{-1}$  <29 / 26 / 14 N·m (21.3 / 19.1 / 10.3 ft·lbf)>  
10,000  $\text{min}^{-1}$  <40 / 30 / 14 N·m (29.5 / 22.1 / 10.3 ft·lbf)>  
{high torque}  
10,000  $\text{min}^{-1}$  <24 / 20 / 14 N·m (17.7 / 14.7 / 10.3 ft·lbf)>  
{20-station turret head}

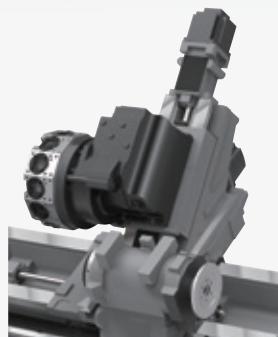
NLX 1500 / NLX 2000

# Y-axis Specification Achieving High-precision Machining

The NLX 1500 and NLX 2000 with the Y-axis specification enables high-efficiency, high-precision machining of complex-shaped workpieces.

The 20-station turret is also available as an option. With varieties of tools available, customers can facilitate automation for multiple process-requiring workpieces.

## Y-axis specification

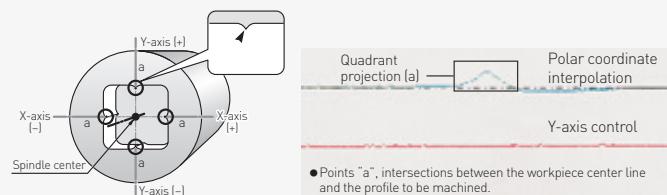


We also independently developed a powerful platform for maximizing performance in the Y-axis specification. This has achieved rigidity between the spindle and the tool tip that exceeds that of conventional two-axis turning centers.

- + Y-axis travel:  $\pm 50$  mm ( $\pm 2.0$  in.)

The Y-axis is created by linking the feed of the X-axis and the simulating axes. We have made the axis unit compact and restricted the height of the machine.

### Comparison between polar coordinate interpolation and Y-axis control (contouring)



With polar coordinate interpolation, the X-axis movement reverses at the intersections [a] between the workpiece center line and the profile, which changes cutting conditions and affects form accuracy.

- + Y-axis control: High form accuracy is achieved as machining surfaces are not affected by cutting condition changes



#### **Support for 20-station turret (option)**

The 20-station turret is offered as an option for long-hour operation at night and machining of complex-shaped workpieces.

- + Able to handle multi-process-requiring workpieces which had been considered not applicable for automation
- + Comes with the high-rigidity, compact tooling system



#### **High-precision, quick-change turret (option)**

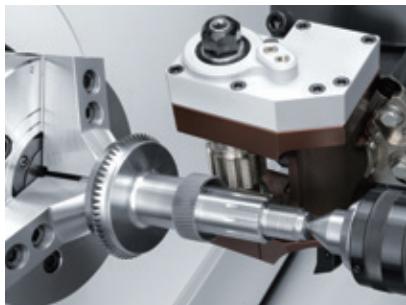
This is a turret with the high-rigidity, high-accuracy quick-change specifications conforming to the VDI tooling system. It reduces setup time by substantially shortening tool mounting time.

- + Mounting repeatability: 6 µm / 200 mm (7.9 in.)

• The photo shows the NLX 2500

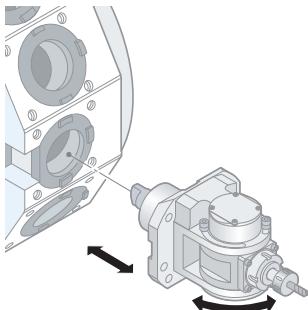
#### **Hob cutting (option)**

With the rotary tool spindle and the C-axis movement synchronized, gear cutting or spline machining is performed by a hob cutter attached to the turret.



#### **Universal holder <Consultation is required>**

This holder is suitable for inclined hole machining as it can adjust and set a tool to any required angle in advance. In the automatic operation mode machining can be performed right after turret indexing.



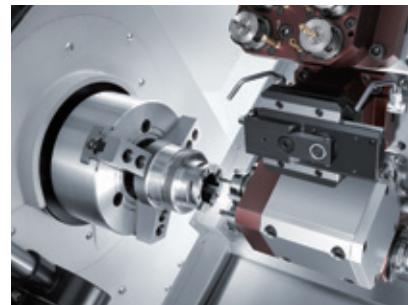
• Only suitable for the NL holder.



Inclined hole machining using a universal tool holder

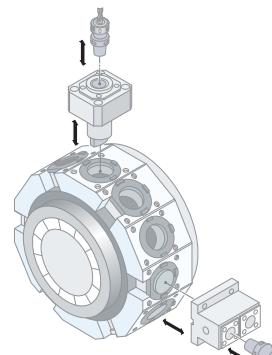
#### **Multi-axis holder <Consultation is required>**

As multiple tools can be attached to one station, the number of tools can be flexibly increased. Tools can be replaced without turret indexing, which reduces cycle times.



#### **Capto-compatible holder (option)**

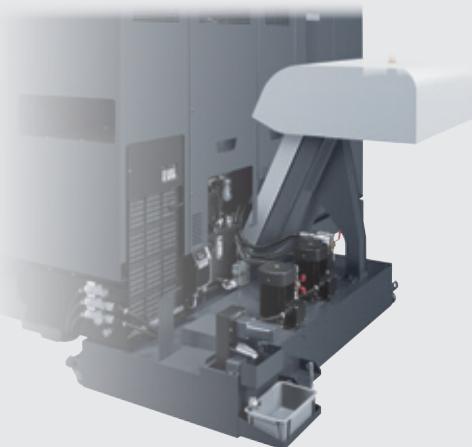
The Coramant Capto modular tooling system, with much faster tool-changing time than conventional machines.



NLX 1500 / NLX 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.



## Pull out the coolant tank in front

With the new design, the coolant tank can be pulled out in front without having to pull out the chip conveyor. It can be pulled out easily and does not take up extra space in the back.

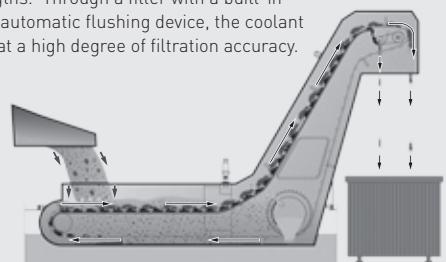


## Chip conveyor (option)

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

## Chip disposal solutions suited for various types of chips and coolant treatments (option)

Many types of chips can be processed regardless of their materials and lengths. Through a filter with a built-in maintenance-free automatic flushing device, the coolant can be processed at a high degree of filtration accuracy.



### Workpiece material

### Chip form

### Chip size

Right discharge, hinge type + drum filter type

Hinge type

Hinge type <aluminum>

Scraper type

Magnet scraper type

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

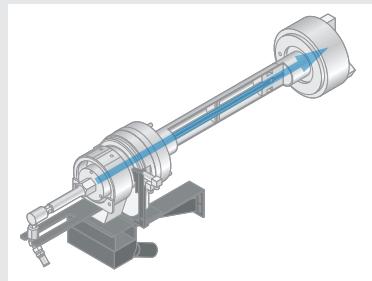
\* Depending on chip size, chips may pass through the filter and the conveyor and accumulate in the coolant tank. Due to possible effect on machining accuracy, a second filtration device may need to be considered.

• <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

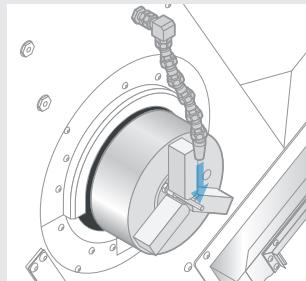
Powdery: minute particles

#### Through-spindle coolant system\*



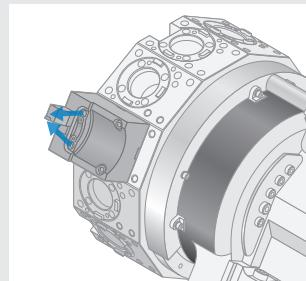
Coolant supplied through the center of the chuck removes chips generated during I.D. machining.

#### Chuck top coolant\*



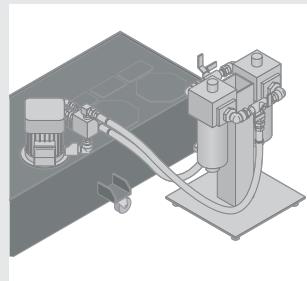
Coolant supplied from above the chuck removes chips and minimizes heat generation in the workpiece.

#### Air blow for tool tip\*



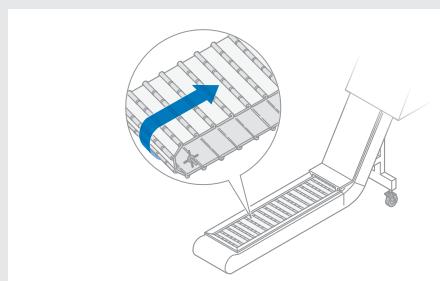
Air is blown toward the tool tip to blow away chips adhering to the tool.

#### Coolant line filter\*



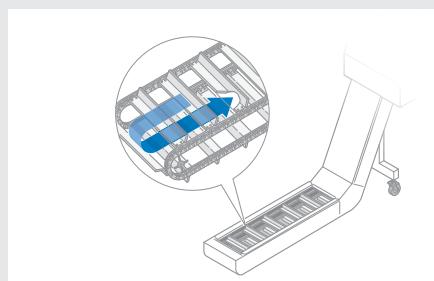
It removes foreign matter in the coolant coming from the coolant pump. The filter clogging detection function is available.

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



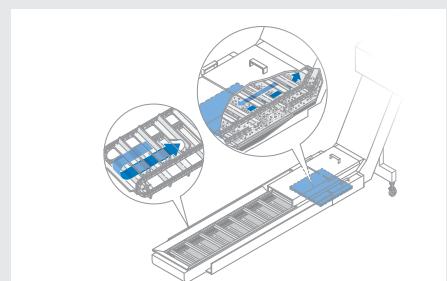
The hinge plate carries and discharges chips to the outside of the machine. Particularly effective for long chips.

#### 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

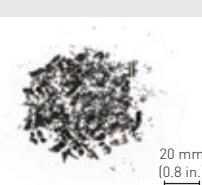


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○

○



Powdery



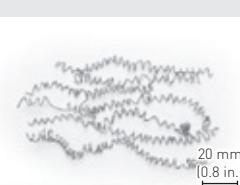
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#### Aluminum / non-ferrous metal



Long



—

—

—

—



Short

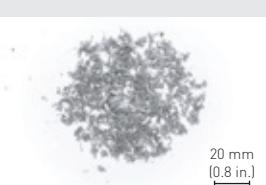


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○

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—



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 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.

NLX 1500 / NLX 2000

# Pursuit of Usability

The NLX 1500 and NLX 2000 are designed with features for ease of maintenance to increase the machine operating rate.

The NLX 1500 and the NLX 2000 achieve 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.

## Interference prevention pocket



- + The chuck cover is provided with a pocket to accommodate tool overhang, preventing interference



## Layout of pneumatic equipment



- + The air equipment is located on the left side of the machine in order to facilitate maintenance

## Chuck pressure gage



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

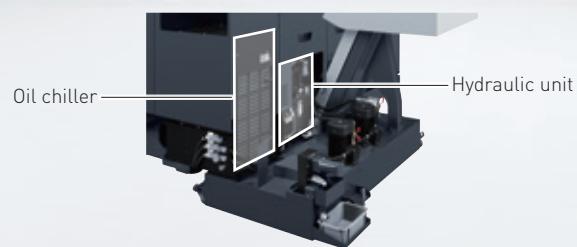
## Improved operability

- + Working efficiency of setups improved with a wide door opening of 675 mm (26.6 in.)
- + Both models employ the touch screen operation panel with the rotating mechanism. The lower touch screen tilts up to 57 degrees, while the whole operation panel horizontally turns up to 80 degrees, which improves operability



## Oil chiller / Hydraulic unit

- + Both the oil chiller and the hydraulic unit are mounted on the back side of the machine for ease of access



## Workpiece unloader storage box (Spindle 2 specification)

- + Finished products are unloaded into the storage box and taken out from the front side

## Lubricating oil (for sliding surfaces) tank

- + The supply hole for the lubricant tank for the slideway is located in the front of the machine for easy refilling



NLX 1500 / NLX 2000

## Solutions Best Matched to Customers' Needs

The NLX 1500 and the NLX 2000 with a compact body enable complete automation from provision of raw materials to ejection of completed workpieces. We provide various systems to reduce non-cutting times, such as the gantry loader system for high-speed mass production, the bar feeder for integrated machining of bar materials and the bar pooler system that automatically ejects machined workpieces from the Spindle 2 side.



NLX 2000

### NLX 1500 / NLX 2000

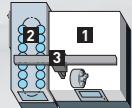
Loader type		GX 5 <machine travel type>	
Gantry-type loader	Max. travel speed X-axis <hand up / down> Z-axis <loader unit left / right>	m/min (fpm) kg (lb.)	180 (590.6) 200 (656.2)
Loader hand	Model	Parallel hands, Back end hands	
	Max. transfer mass	kg (lb.)	5 (11) × 2
	Applicable workpiece diameter	mm (in.)	40–150 (1.6–5.9)
	Applicable workpiece length	mm (in.)	20–120 (0.8–4.7)
Workstocker	Number of pallet tables	14, 20, 26	
	Max. workpiece mass	kg (lb.)	35 (77) / pallet
	Max. workpiece stacked height	mm (in.)	470 (18.5)
	Applicable workpiece diameter	mm (in.)	40–150 (1.6–5.9)

- Depending on the shape of the workpiece, it may not be possible to machine with standard specifications. For details, please consult our sales representative.
- Please consult our sales representative in the case that a workpiece diameter is less than 40 mm (1.6 in.), or a workpiece length is less than 20 mm (0.8 in.).

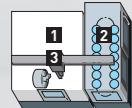
## Gantry-type loader system variations

### Specifications

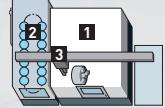
Type A I



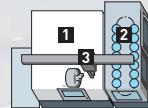
Type A II



Type A III

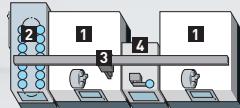


Type A IV



### Other specifications <Consultation is required>

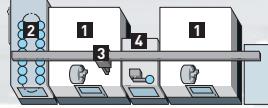
Type C I



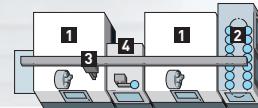
Type C II



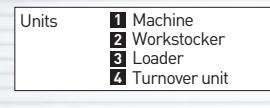
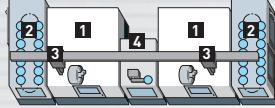
Type C III



Type C IV



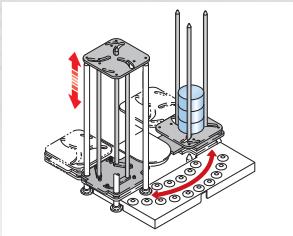
Type E III



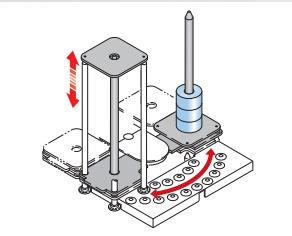
- Separate consultation is required for hollow cylinder specifications.  
(Type A I, Type A III, Type C I, Type C III, Type E III)

## Workstocker <Consultation is required>

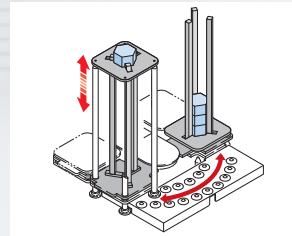
3-guide specification



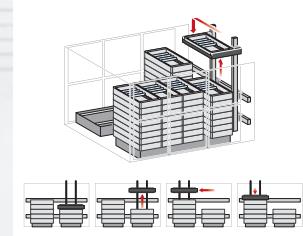
Center-guide specification



Hexagonal bar guide specification



Tray changer

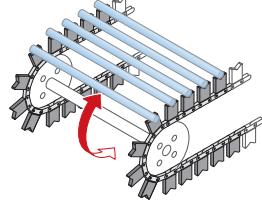


Shaft pitch feed conveyor

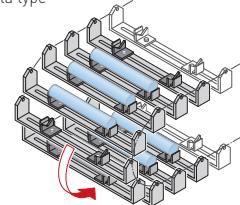
## Loader hand

<Consultation is required>

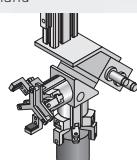
Rotary type



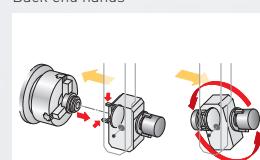
Gondola type



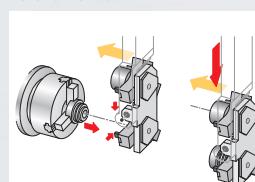
Swivel hand



Back end hands



Parallel hands



Hand for shaft workpieces

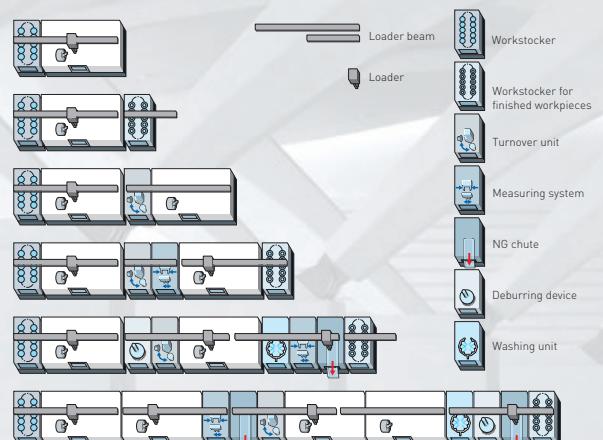


## Modularized peripheral devices

All units (peripherals) that make up the gantry-type loader system, including a transfer unit, workpiece stocker and on-machine measuring system, have been modularized to standardize their sizes. This allows system installation in the shortest time as well as flexible layout change according to changes in production requirements, which used to be difficult to achieve.

### Flexible module system

- + The system units can be freely expanded or changed using combinations of two types of loader beams  
<1 m (3.3 ft) and 2 m (10.8 ft)> available
- + Modular units can be combined flexibly and replaced easily

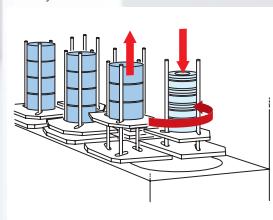


• Please contact us for dimensions.

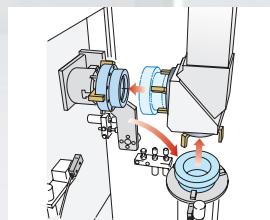
### Various modules are available

- + Standardized peripherals enable flexible system change even after installation

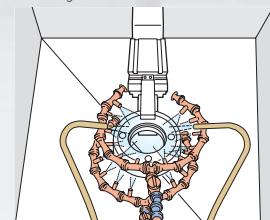
Rotary workstocker



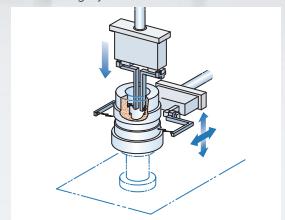
Turnover unit



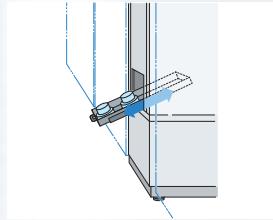
Washing unit



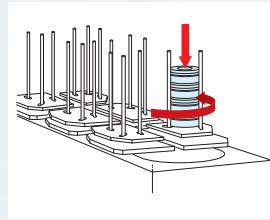
Measuring system



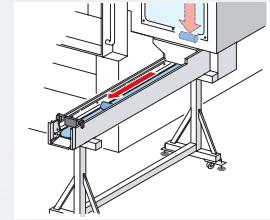
NG chute



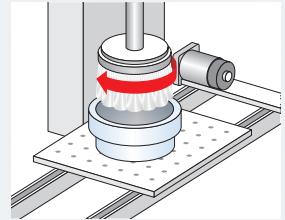
Rotary workstocker for finished workpieces



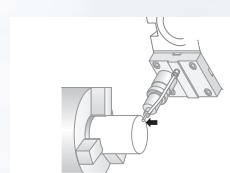
Belt conveyor for finished workpieces



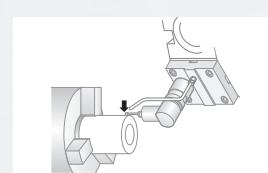
Deburring device



### Functions to support automation



In-machine measuring system  
(when measuring a workpiece length)



In-machine measuring system  
(when measuring a workpiece diameter)



Tool breakage detection  
(automatic in-machine tool presetter)

# Workpiece unloading devices

## 1 Workpiece unloader\* <built-in type> (option)

The evolved parts catcher enables easy adjustment by customers. Both spindles handle workpieces up to double the previous length.

- + Applicable workpiece diameter: 65 mm (2.5 in.)
- + Applicable workpiece length: 200 mm (7.8 in.)
- + Max. transfer mass: 3.0 kg (6.6 lb.)

\* Standard for the Spindle 2 specification. (Not including gantry loader specifications)  
● Not available when the steady rest is selected, because of interference. For standard machines, it is necessary to remove the workpiece unloader when the steady rest specifications are selected.



## 2 Bar feeder (option)

The combination with the workpiece unloader enables automation of machining of bar materials.

- + Bar work capacity:  
NLX 1500 Ø 52 mm (Ø 2.0 in.)\*  
NLX 2000 Ø 65 mm (Ø 2.5 in.)\*

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

### Recommended accessories for bar feeder specification

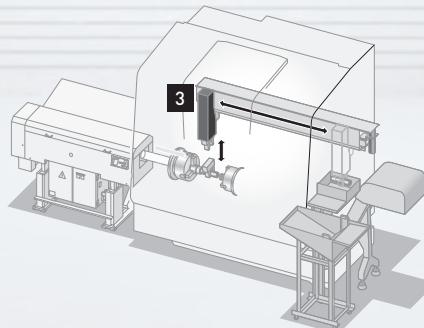
- Bar feeder
- Multiple counter
- Signal lamp
- Guide bush
- Work stopper



NLX 2000

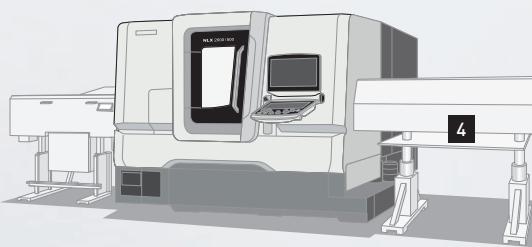
## 3 In-machine traveling workpiece unloader system (option)

Operate unmanned when equipped with the workpiece conveyor. The Spindle 2 specification is able to receive a workpiece with both Spindle 1 and Spindle 2.



## 4 Bar puller system (option) <Consultation is required>

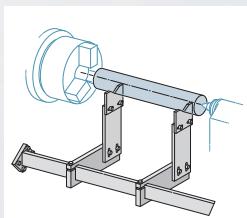
Automatically discharge the machined piece from the No. 2 spindle, making it easier to automate machining of bar workpieces and making this system ideal for long workpieces that cannot be handled by a workpiece unloader.



## 5 Workpiece rest (option)

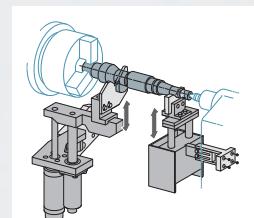
### Fixed type

This temporary workpiece rest helps reliably carry out workpiece chucking in a short period.



### Withdrawal type <Consultation is required>

Interference and accumulation of chips during machining is prevented by withdrawing the workpiece retainer.



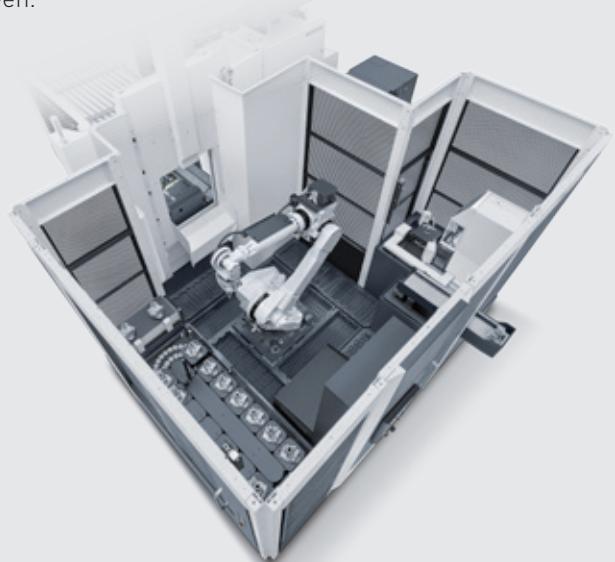
NLX 1500 / NLX 2000

# No Programming Required! New Robot System MATRIS

DMG MORI has developed an all-new robot system MATRIS that requires no special knowledge for its operation based on the wealth of experience and expertise DMG MORI has cultivated over the years. With modularized peripherals, a robot and MAPPSconnected, a dedicated system to connect peripherals and machines, MATRIS eliminates complex program editing and achieves easy system setups on a simple operation screen.

## Advantages of MATRIS

- + Typical systems available as pre-defined packages
- + Standardized peripherals ensure easy customization to meet your specific needs
- + Flexibly accommodate system changes even after installation
- + Simple and easy programming with MAPPSconnected



## Structure of robot system

### MAPPSconnected



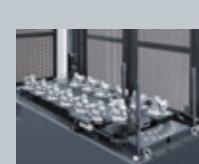
- + A system controller that offers integrated control of the whole automation system, including a robot, each module and machine
- + Monitoring, schedule management and operation control of the whole automation system possible



Robot



Modules



Modules



Machine



NLX 1500 / NLX 2000

## Standard Package

MATRIS offers the two most popular packages.

If the prepared packages are not suitable for your shop floor due to space restrictions, or if you wish to customize the package, it is possible to change system layout or add new peripherals to meet your needs.

31

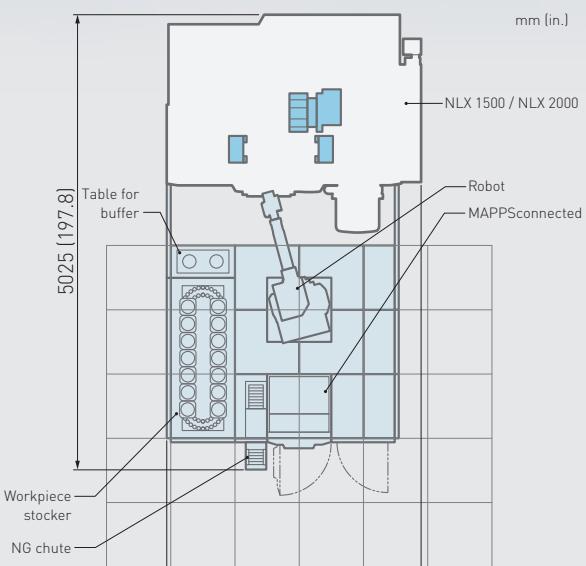
## 01 Handling package

- + A 14-station rotary stocker compatible with flange workpieces is equipped as standard
- + Various stockers can also be used, including 20-station and 26-station stockers, tray changer, IN / OUT conveyor

## 02 Measuring package

- + High-accuracy measurement and acceptance / rejection judgment of workpieces with an external measuring system
- + Measuring results to be fed back to a machine
- + Set multiple measuring points at different levels on a cylindrical workpiece
- + It enables various measurements such as outer and inner diameter measurement and three-dimensional measurement

Example of layout



Example: Handling package

- Custom design is available according to workpiece shapes.  
For details, please consult our sales representative.
- For details, please refer to the MATRIS catalog.

NLX 1500 / NLX 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.

standards in quality, performance and maintainability. DMG MORI collaborates with our partners in the world and provides customers with peripherals required for their machining.

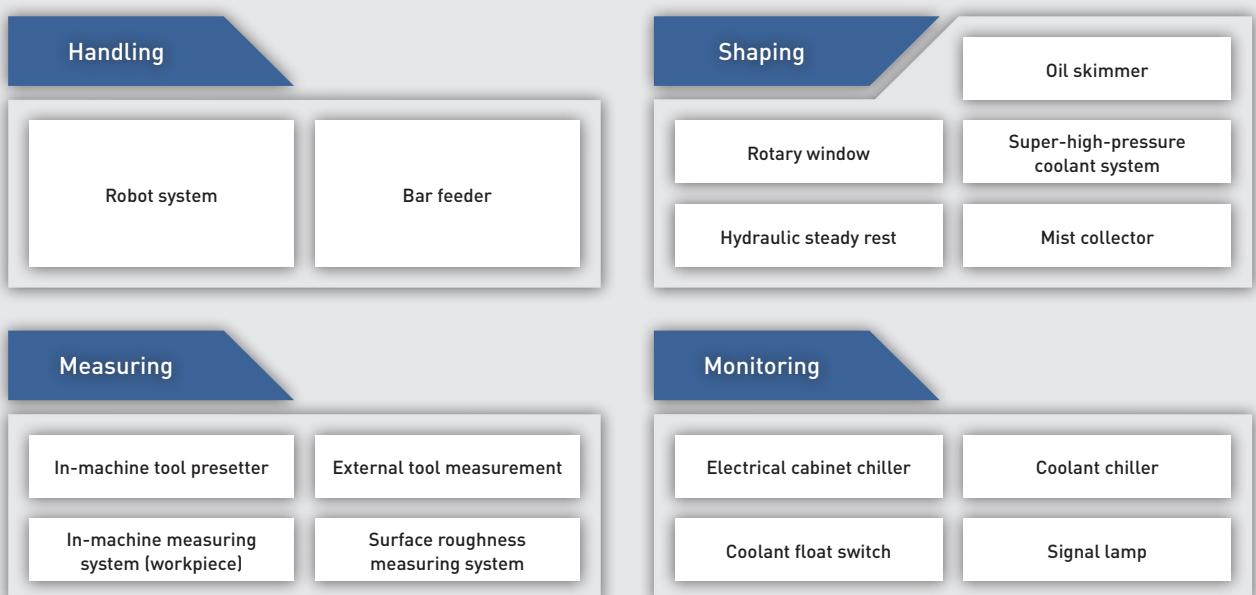
We take care of the arrangement from selection to installation to support best-quality machining.

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



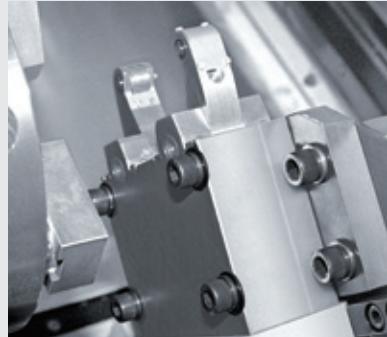
- The options above are examples. For details, please consult our sales representative.

DMQP: DMG MORI Qualified Products

Bar feeder



Hydraulic steady rest



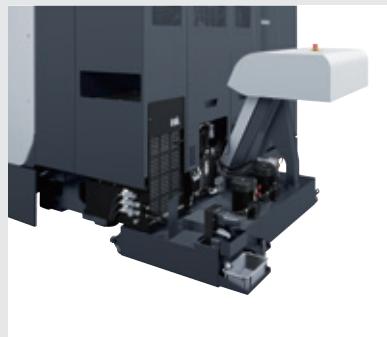
Mist collector



Super-high-pressure coolant system



External chip conveyor



Coolant chiller



Air dryer



Air compressor



Tool cabinet



Robot system



Coolant flow switch



Oil skimmer



NLX 1500 / NLX 2000

## DMG MORI Technology Cycles

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

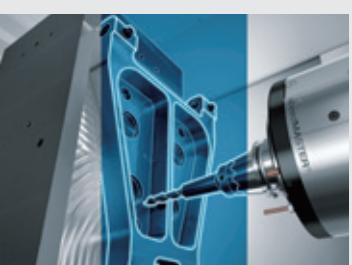
Shaping



Measuring



Monitoring



Handling



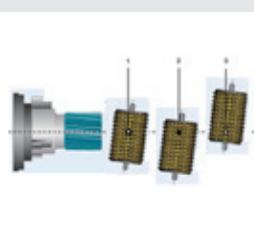
- The availability of the functions differ depending on the machine. For details, please consult our sales representative.
- The above is an image picture.

## Respond to Various Technology Cycles

### Shaping

#### Gear hobbing

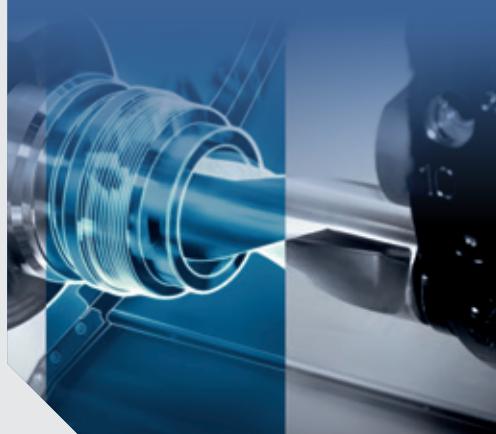


Issue (before introduction)	Results (after introduction)
 * 	 <ul style="list-style-type: none"><li>+ Hobbing program can be easily created by conversational input</li></ul>  <ul style="list-style-type: none"><li>+ Hob cutter's machining position can be changed, maximizing the tool life</li></ul>  <ul style="list-style-type: none"><li>+ Consolidation of machining operations into the general-purpose machine reduces setup time and enhances accuracy such as concentricity due to no setup change</li></ul>

## 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

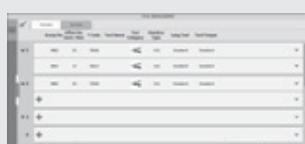


#### Issue (before introduction)

- + 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



Triangle



Square



Trapezoidal



Round



Buttress



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## Shaping

### Excentric machining

#### Easy programming of excentric machining



Efficient High-precision

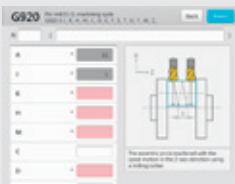


#### Issue (before introduction)

- + 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



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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## Handling

### Counter spindle tip



Mounting tailstock center on Spindle 2

- + Simple operation for teaching positions of thrust, approach, and retraction
- + Simultaneous operation of the tailstock center on Spindle 2 supports long workpieces

## 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 general-purpose machines

NLX 1500 / NLX 2000

## From the Idea to the Finished Product

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

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



### JOB MANAGER

Systematic planning, administration and preparation of work orders

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



### JOB ASSISTANT

Process-defined orders

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



### CAD-CAM VIEW

Visualize workpieces and improve program data

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



# CELOS |

**APP menu:**  
Central access to all available applications



*ERGOline* operation panel with 21.5-inch multi-touch screen and NC unit from Mitsubishi Electric

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#### STANDARD

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

#### CONSISTENT

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

#### COMPATIBLE

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

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

NLX 1500 / NLX 2000

# 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 solutions

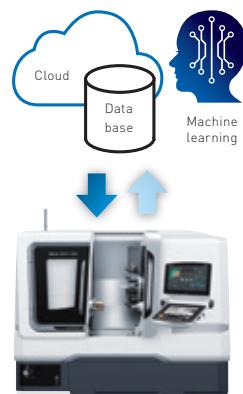
### AI-based thermal displacement compensation (Ultra Thermal Precision)

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

### Machine status monitoring

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



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.

## CELOS Machine Extremely easy-to-use machine

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

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



## CELOS Manufacturing Connected production processes

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

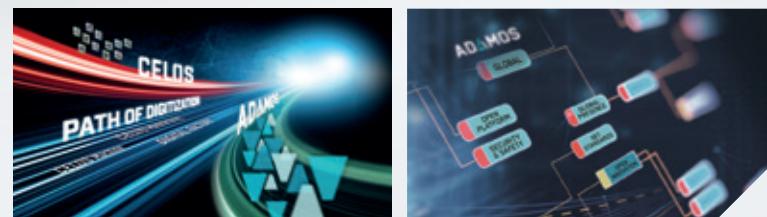
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## Digital Factory Digitization accelerates connected plants

- + 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: Control Efficiency Lead Operation System



## CELOS Club



### Continuously supporting your productivity improvements

- + Latest functions always available through version upgrades
- + Centralized machine management and streamlined programming
- Japan only.

MAPPS: Mori Advanced Programming Production System

## WERKBLIQ



### Productivity improvements through cutting-edge machine maintenance services

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

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

NLX 1500 / NLX 2000

# High-Performance Operation System MAPPS V

MAPPS V 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

- + The 6-window display provides access to a variety of information at the same time
- + The screen combinations can be freely customized

- 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 machine model view.

NLX 1500 / NLX 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

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 CO<sub>2</sub> emission amount

**GREENmode**

**GREEN monitoring**

- + Visualize power consumption and CO<sub>2</sub> emission amount on the CELOS operation screen



**GREEN device**

- + High-brightness LED light
- + Inverter-equipped hydraulic pump

**GREEN idle reduction**

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

**GREEN control**

- + Quicken standard M codes
- + Inverter-controlled coolant supply

CELOS: Control Efficiency Lead Operation System



NLX 1500 / NLX 2000

## Machine Size

mm (in.)						
NLX 1500 / NLX 2000 Chip conveyor (right discharge)						
Front view	A			Side view		
	B	C	G	D	E	F
	1,105 [43.5]	1,005 [39.6]	1,105 [43.5]	2,082 [82.0]	2,408 [94.8]	2,336 [92.0]
Machine type	Machine only	Including chip conveyor	Including chip conveyor <EN>	Machine only	Machine only <with operation panel swiveled>	Including space to remove coolant tank
	A	B	C	D	E	F
NLX 1500 / NLX 2000	2,820 [111.0]	3,562 [140.2]	3,794 [149.4]	2,082 [82.0]	2,408 [94.8]	2,336 [92.0]
EN: European Norm (European Standards)						

mm (in.)						
NLX 1500 / NLX 2000 Chip conveyor (rear discharge)						
Front view	A			Side view		
	B	C	F	D	E	G
	1,105 [43.5]	1,014 [39.9]	1,105 [43.5]	2,082 [82.0]	2,497 [177.0]	2,145 [84.4]
Machine type	Machine only	Machine only	Machine only <with operation panel swiveled>	Including chip conveyor	Including space to remove coolant tank	Machine only
	A	B	C	D	E	F
NLX 1500 / NLX 2000	2,591 [102.0]	2,082 [82.0]	2,408 [94.8]	2,964 [116.7]	4,497 [177.0]	2,145 [84.4]

NLX 1500 / NLX 2000

# Machine Specifications

NLX 1500   500					
Basic specification		S1 T MCTS	S2*1	Y(S2)*1	
<b>Optional specifications</b>	—	Y	S2*1	Y(S2)*1	
<b>Capacity</b>					
Swing over bed	mm (in.)	923.8 [36.4] <interference with front cover 636 [25.0]>			
Swing over cross slide	mm (in.)	755 [29.7]			
Max. turning diameter	mm (in.)	386 [15.1]*2, 366 [14.4]*3, 278 [10.9] <20-station turret head>			
Max. turning length	mm (in.)	515 [20.2]			
Bar work capacity	mm (in.)	ø 52 [ø 2.0]*4, ø 34 [ø 1.3] <8,000 min <sup>-1</sup> *4			
<b>Travel</b>					
X-axis travel	mm (in.)	260 [10.2]			
Z-axis travel	mm (in.)	590 [23.2], 580 [22.8] <20-station turret head>			
Y-axis travel	mm (in.)	—	100 <±50> [3.9 <±2.0>]	—	
<b>Spindle</b>					
Max. spindle speed	min <sup>-1</sup>	6,000 6,000 <high output>, 8,000 <high speed>	Spindle 1: 6,000, 6,000 <high output>, 8,000 <high speed> Spindle 2: 6,000, 8,000 <high speed>		
Type of spindle nose		JIS A2-5	Spindle 1, 2: JIS A2-5		
<b>Turret</b>					
Number of tool stations		12, 16, 20			
Shank height for square tool	mm (in.)	20 (3/4) / 25 (1)			
Max. rotary tool spindle speed	min <sup>-1</sup>	10,000, 10,000 <high torque>			
<b>Feedrate</b>					
Rapid traverse rate	mm/min (ipm)	X, Z: 30,000 (1,181.1) Tailstock <forward / backward>: 7,000 / 20,000 (275.6 / 787.4) C: 400 min <sup>-1</sup>	X, Z: 30,000 (1,181.1) Y: 10,000 (393.7) Tailstock <forward / backward>: 7,000 / 20,000 (275.6 / 787.4) C: 400 min <sup>-1</sup>	X, Z, B: 30,000 (1,181.1) C: 400 min <sup>-1</sup>	X, Z, B: 30,000 (1,181.1) Y: 10,000 (393.7) C: 400 min <sup>-1</sup>
<b>Tailstock</b>					
Tailstock travel	mm (in.)	564 [22.2]	—	—	
Taper hole of tailstock spindle		Live center <MT4>, Built-in center <MT3>	—	—	
<b>Motor</b>					
Spindle drive motor	6,000 min <sup>-1</sup> kW (HP) <50%ED / 30 min / cont>	11 / 11 / 7.5 (15 / 15 / 10) 15 / 15 / 11 (20 / 20 / 15)	Spindle 1: 11 / 11 / 7.5 (15 / 15 / 10) 15 / 15 / 11 (20 / 20 / 15) Spindle 2: 11 / 7.5 (15 / 10) <<25%ED / cont>		
	8,000 min <sup>-1</sup> kW (HP)	11 / 7.5 (15 / 10) <25%ED / cont>	Spindle 1, 2: 11 / 7.5 (15 / 10) <25%ED / cont>		
Rotary tool spindle drive motor	kW (HP)	5.5 / 5.5 / 3.7 (7.5 / 7.5 / 5)*5 <3 min / 5 min / cont>	5.5 / 5.5 / 3.7 (7.5 / 7.5 / 5)*6 <3 min / 5 min / cont>	5.5 / 5.5 / 3.7 (7.5 / 7.5 / 5)*5 <3 min / 5 min / cont>	
		10.7 / 6.1 (14.3 / 8.1)*7 <15%ED / 100%ED>	10.7 / 6.1 (14.3 / 8.1)*7 <15%ED / 100%ED>	10.7 / 6.1 (14.3 / 8.1)*7 <15%ED / 100%ED>	
<b>Machine size</b>					
Machine height <from floor>	mm (in.)	2,145 [84.4]			
Floor space <width × depth>	mm (in.)	Right discharge: 2,820 × 2,082 (111.0 × 82.0), 3,562 × 2,082 (140.2 × 82.0) <including chip conveyor> Rear discharge: 2,591 × 2,082 (102.0 × 82.0), 2,591 × 2,964 (102.0 × 116.7) <including chip conveyor>			
Mass of machine	kg (lb.)	4,900 (10,780)	5,000 (11,000)	5,300 (11,660)	
<b>Control unit</b>		M730UM			
Mitsubishi Electric					

JIS: Japanese Industrial Standard

\*1 The Spindle 2 specification (S2) is not equipped with a tailstock (S).

\*2 When the shank height for a square tool is 20 mm (3/4 in.) and the tool overhang is 30 mm (1.2 in.).

\*3 When the shank height for a square tool is 25 mm (1 in.) and the tool overhang is 35 mm (1.4 in.).

\*4 Depending on the chuck / cylinder used and its restrictions, it may not be possible to reach full bar work capacity.

\*5 12-station turret head, 16-station VDI quick-change turret, 20-station turret head, 12-station turret head (high torque)

\*6 12-station turret head, 16-station VDI quick-change turret, 20-station turret head, 10-station turret head (high torque), 12-station turret head (high torque)

\*7 12-station VDI quick-change turret (Sauter Trifix)

● 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 October 2018.

<b>S1</b> : Spindle 1	<b>T</b> : Turret
<b>MC</b> : Milling	<b>TS</b> : Tailstock
<b>Y</b> : Y-axis (option)	<b>S2</b> : Spindle 2 (option)
The basic model is equipped with <b>S1</b> , <b>T</b> , <b>MC</b> and <b>TS</b> .	

### NLX 2000 | 500

Basic specification		<b>S1 T MC TS</b>			
Optional specifications		—	[Y]	[S2] <sup>*1</sup>	[Y][S2] <sup>*1</sup>
<b>Capacity</b>					
Swing over bed	mm (in.)		923.8 [36.4] <interference with front cover 636 [25.0]>		
Swing over cross slide	mm (in.)			755 [29.7]	
Max. turning diameter	mm (in.)		366 [14.4] <sup>*2</sup> , 356 [14.0] <sup>*3</sup> , 278 [10.9] <20-station turret head>		
Max. turning length	mm (in.)			510 [20.0]	
Bar work capacity	mm (in.)			ø 65 (ø 2.5) <sup>*4</sup>	
<b>Travel</b>					
X-axis travel	mm (in.)			260 [10.2]	
Z-axis travel	mm (in.)		590 [23.2], 580 [22.8] <20-station turret head>		
Y-axis travel	mm (in.)	—	100 <±50> [3.9 <±2.0>]	—	100 <±50> [3.9 <±2.0>]
<b>Spindle</b>					
Max. spindle speed	min <sup>-1</sup>		5,000 5,000 <high output>	Spindle 1: 5,000, 5,000 <high output> Spindle 2: 6,000 5,000 <through-spindle hole diameter: 73 mm (2.9 in.)>	
Type of spindle nose			JIS A <sub>2</sub> -6	Spindle 1: JIS A <sub>2</sub> -6 Spindle 2: JIS A <sub>2</sub> -5, JIS A <sub>2</sub> -6 <through-spindle hole diameter: 73 mm (2.9 in.)>	
<b>Turret</b>					
Number of tool stations			12, 10, 16, 20		
Shank height for square tool	mm (in.)		25 [1], 20 [3/4] <20-station turret head>		
Max. rotary tool spindle speed	min <sup>-1</sup>			10,000, 10,000 <high torque>	
<b>Feedrate</b>					
Rapid traverse rate	mm/min (ipm)	X, Z: 30,000 (1,181.1) Tailstock <forward / backward>: 7,000 / 20,000 (275.6 / 787.4) C: 400 min <sup>-1</sup>	X, Z: 30,000 (1,181.1) Y: 10,000 (393.7) Tailstock <forward / backward>: 7,000 / 20,000 (275.6 / 787.4) C: 400 min <sup>-1</sup>	X, Z, B: 30,000 (1,181.1) C: 400 min <sup>-1</sup>	X, Z, B: 30,000 (1,181.1) Y: 10,000 (393.7) C: 400 min <sup>-1</sup>
Tailstock					
Tailstock travel	mm (in.)	564 [22.2]		—	
Taper hole of tailstock spindle		Live center <MT4>, Built-in center <MT3>		—	
<b>Motor</b>					
Spindle drive motor <15%ED / 30 min / cont>	kW (HP)	15 / 15 / 11 (20 / 20 / 15) 22 / 22 / 15 (30 / 30 / 20)		Spindle 1: 15 / 15 / 11 (20 / 20 / 15) 22 / 22 / 15 (30 / 30 / 20) Spindle 2: 11 / 7.5 (15 / 10) <25%ED / cont>	
Rotary tool spindle drive motor	kW (HP)	5.5 / 5.5 / 3.7 (7.5 / 7.5 / 5) <sup>*5</sup> <3 min / 5 min / cont>	5.5 / 5.5 / 3.7 (7.5 / 7.5 / 5) <sup>*6</sup> <3 min / 5 min / cont>	5.5 / 5.5 / 3.7 (7.5 / 7.5 / 5) <sup>*5</sup> <3 min / 5 min / cont>	5.5 / 5.5 / 3.7 (7.5 / 7.5 / 5) <sup>*6</sup> <3 min / 5 min / cont>
		10.7 / 6.1 (14.3 / 8.1) <sup>*7</sup> <15%ED / 100%ED>	10.7 / 6.1 (14.3 / 8.1) <sup>*7</sup> <15%ED / 100%ED>	10.7 / 6.1 (14.3 / 8.1) <sup>*7</sup> <15%ED / 100%ED>	10.7 / 6.1 (14.3 / 8.1) <sup>*7</sup> <15%ED / 100%ED>
<b>Machine size</b>					
Machine height <from floor>	mm (in.)		2,145 [84.4]		
Floor space <width × depth>	mm (in.)	Right discharge: 2,820 × 2,082 (111.0 × 82.0), 3,562 × 2,082 (140.2 × 82.0) <including chip conveyor> Rear discharge: 2,591 × 2,082 (102.0 × 82.0), 2,591 × 2,964 (102.0 × 116.7) <including chip conveyor>			
Mass of machine	kg (lb.)	5,000 (11,000)	5,100 (11,220)	5,400 (11,880)	5,500 (12,100)
<b>Control unit</b>					
Mitsubishi Electric		M730UM			

JIS: Japanese Industrial Standard

\*1 The Spindle 2 specification **S2** is not equipped with a tailstock **TS**.

\*2 For O.D. cutting tool with an overhang of 35 mm (1.4 in.). \*3 For O.D. cutting tool with an overhang of 40 mm (1.6 in.).

\*4 Depending on the chuck / cylinder used and its restrictions, it may not be possible to reach full bar work capacity.

\*5 12-station turret head, 16-station VDI quick-change turret, 20-station turret head, 12-station turret head (high torque)

\*6 12-station turret head, 10-station turret head, 16-station VDI quick-change turret, 20-station turret head, 10-station turret head (high torque), 12-station turret head (high torque)

\*7 12-station VDI quick-change turret (Sauter Trifix)

● 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 October 2018.

NLX 1500 / NLX 2000

# Standard & Optional Features

●: Standard features ○: Options ◇: Select one  
 ☆: Consultation is required —: Not applicable

	NLX 1500   500				NLX 2000   500			
	S1 T MC TS				S1 T MC TS			
	—	○	○	○	—	○	○	○
<b>Basic specification</b>								
<b>Optional specifications</b>								
<b>Spindle</b>								
Spindle 1	6,000 min <sup>-1</sup> : 11 / 11 / 7.5 kW {15 / 15 / 10 HP} <50%ED / 30 min / cont> {standard}	●	●	●	●	—	—	—
	6,000 min <sup>-1</sup> : 15 / 15 / 11 kW {20 / 20 / 15 HP} <50%ED / 30 min / cont> {high output}	○	○	○	○	—	—	—
	8,000 min <sup>-1</sup> : 11 / 7.5 kW {15 / 10 HP} <25%ED / cont> <sup>*2</sup> {high speed}	○	○	○	○	—	—	—
	5,000 min <sup>-1</sup> : 15 / 15 / 11 kW {20 / 20 / 15 HP} <15%ED / 30 min / cont> {standard}	—	—	—	—	●	●	●
	5,000 min <sup>-1</sup> : 22 / 22 / 15 kW {30 / 30 / 20 HP} <15%ED / 30 min / cont> {high output}	—	—	—	—	○	○	○
Spindle 2	6,000 min <sup>-1</sup> : 11 / 7.5 kW {15 / 10 HP} <25%ED / cont> {standard}	—	—	◇	◇	—	—	◇
	8,000 min <sup>-1</sup> : 11 / 7.5 kW {15 / 10 HP} <25%ED / cont> {high speed} {spindle 1 side is also 8,000 min <sup>-1</sup> }	—	—	◇	◇	—	—	—
	5,000 min <sup>-1</sup> : 11 / 7.5 kW {15 / 10 HP} <25%ED / cont> {spindle 2 through-spindle hole dia. 73 mm [2.9 in.] specification}	—	—	—	—	—	—	◇
								◇
<b>Turret</b>								
Workpiece pusher	12-station bolt-tightened turret for NL holders	●	●	●	●	●	●	●
	12-station bolt-tightened turret for NL holders (without milling / C-axis functions)	○	—	○	—	○	—	○
	10-station bolt-tightened turret for NL holders	—	—	—	—	○	○	○
	20-station bolt-tightened turret for NL holders	○	○	○	○	○	○	○
	Workpiece pusher Ø 53 mm (Ø 2.1 in.)	○	○	○	○	○	○	○
Rotary tool spindle: 10,000 min <sup>-1</sup>	5.5 / 5.5 / 3.7 kW {7.5 / 7.5 / 5 HP} <3 min / 5 min / cont> {29 N·m (21.4 ft·lbf)} 12-station bolt-tightened turret	●	●	●	●	●	●	●
	5.5 / 5.5 / 3.7 kW {7.5 / 7.5 / 5 HP} <3 min / 5 min / cont> {29 N·m (21.4 ft·lbf)} 10-station bolt-tightened turret	—	—	—	—	○	○	○
	5.5 / 5.5 / 3.7 kW {7.5 / 7.5 / 5 HP} <3 min / 5 min / cont> {29 N·m (21.4 ft·lbf)} 16-station VDI quick-change turret	○	○	○	○	○	○	○
	5.5 / 5.5 / 3.7 kW {7.5 / 7.5 / 5 HP} <3 min / 5 min / cont> {24 N·m (17.7 ft·lbf)} 20-station bolt-tightened turret	○	○	○	○	○	○	○
	5.5 / 5.5 / 3.7 kW {7.5 / 7.5 / 5 HP} <3 min / 5 min / cont> {40 N·m (29.5 ft·lbf)} 10-station bolt-tightened turret	—	—	—	—	○	○	○
12-station bolt-tightened turret	5.5 / 5.5 / 3.7 kW {7.5 / 7.5 / 5 HP} <3 min / 5 min / cont> {40 N·m (29.5 ft·lbf)} 12-station bolt-tightened turret	○	○	○	○	○	○	○
	10.7 / 8.5 / 6.1 kW {14.3 / 11.3 / 8.1 HP} <15%ED / 30%ED / 100%ED> {34 N·m (25.1 ft·lbf)}	—	○	—	○	—	○	—
	12-station VDI quick-change turret {Sauter Trifix}							○

<b>S1</b> : Spindle 1	<b>T</b> : Turret
<b>MC</b> : Milling	<b>TS</b> : Tailstock
<b>Y</b> : Y-axis (option)	<b>S2</b> : Spindle 2 (option)
The basic model is equipped with <b>S1</b> , <b>T</b> , <b>MC</b> and <b>TS</b> .	

●: Standard features ○: Options ◇: Select one  
☆: Consultation is required —: Not applicable

	NLX 1500   500				NLX 2000   500			
	<b>S1</b>	<b>T</b>	<b>MC</b>	<b>TS</b>	<b>S1</b>	<b>T</b>	<b>MC</b>	<b>TS</b>
<b>Basic specification</b>								
Optional specifications	—	○	—	—	—	○	—	—
<b>Tailstock</b>								
Tailstock spindle live center <sup>*3</sup> MT4	●	●	—	—	●	●	—	—
Without tailstock	○	○	—	—	○	○	—	—
Tailstock spindle built-in center <sup>*4</sup> MT3	○	○	—	—	○	○	—	—
Tailstock with the hydraulic quill	○	○	—	—	○	○	—	—
<b>Fixture / Steady rest</b>								
Fixed steady rest <sup>*5</sup> Ø 20—Ø 200 mm (Ø 0.8—Ø 7.9 in.)	○	○	—	—	○	○	—	—
<b>Coolant</b>								
Coolant system	0.20 / 0.30 MPa [29 / 43.5 psi] <sup>*6</sup> , 350 / 550 W <50 / 60 Hz>	●	●	●	●	●	●	●
High-pressure coolant system	0.45 / 0.65 MPa [65.3 / 94.3 psi] <sup>*6</sup> , 800 / 1,100 W <50 / 60 Hz> 1 / 1.5 MPa [145 / 217.5 psi], 1.1 / 2.2 kW [1.5 / 3 HP] <50 / 60 Hz>	○	○	○	○	○	○	○
Super-high-pressure coolant system (separate type) <sup>*8</sup>	3.5 MPa [507.5 psi] 7 MPa [1,015 psi]	○ <sup>*7</sup>						
Interface		○	○	○	○	○	○	○
<b>Chip disposal</b>								
Chip conveyor	Right discharge, hinge type Right discharge, hinge type (aluminum) Right discharge, scraper type Right discharge, magnet scraper type Right discharge, hinge type + drum filter type Rear discharge, hinge type Rear discharge, scraper type Rear discharge, magnet scraper type Rear discharge, hinge type (aluminum)	○	○	○	○	○	○	○
Air purge	Spindle	●	●	●	●	●	●	●

\*1 The Spindle 2 specification **S2** is not equipped with a tailstock **TS**.

\*2 Through-spindle hole dia.: 43 mm (1.7 in.).

\*3 The center is optional.

\*4 The center is standard.

\*5 Not available when the workpiece unloader is selected.

\*6 In the case that the discharge rate is 30 L/min (7.9 gpm). The values may vary depending on the shape of a tool to be used.

\*7 DMQP (DMG MORI Qualified Products)

\*8 When super-high-pressure coolant system is used, a coolant chiller is recommended. For details, please consult our sales representative.

● DMQP: Please see Page 32 for details.

● For details, please check the Detailed Specifications.

● 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.**

**S1** : Spindle 1**T** : Turret**MC** : Milling**TS** : Tailstock**Y** : Y-axis (option)**S2** : Spindle 2 (option)The basic model is equipped with **S1**, **T**, **MC** and **TS**.

NLX 1500 / NLX 2000

# Standard & Optional Features

● : Standard features ○ : Options

— : Not applicable

	NLX 1500   500				NLX 2000   500			
	<b>S1</b>	<b>T</b>	<b>MC</b>	<b>TS</b>	<b>S1</b>	<b>T</b>	<b>MC</b>	<b>TS</b>
<b>Basic specification</b>								
<b>Optional specifications</b>								
<b>Measurement</b>								
Manual in-machine tool presetter (spindle 1)	Pivoting type	●	●	●	●	●	●	●
	Removable type	○	○	○	○	○	○	○
Automatic in-machine tool presetter (spindle 1)	Pivoting type	○	○	○	○	○	○	○
Manual in-machine tool presetter (spindle 2)	Removable type	—	—	●	●	—	—	●
In-machine workpiece measuring system* <sup>9</sup>	Spindle 1, Spindle 2	—	—	○	○	—	—	○
<touch sensor (optical signal transmission type)>	Spindle 1	○	○	○	○	○	○	○
<b>Improved accuracy</b>								
Oil chiller		●	●	●	●	●	●	●
Full closed loop control (Scale feedback)	X-axis	○	○	○	○	○	○	○
	Y-axis	—	○	—	○	—	○	—
	Z-axis	○	○	○	○	○	○	○
<b>Automation</b>								
Auto power off		●	●	●	●	●	●	●
Workpiece unloader* <sup>10</sup>	Built-in type	○	○	●* <sup>11</sup>	●* <sup>11</sup>	○	○	●* <sup>11</sup>
	In-machine traveling type	○	○	○	○	○	○	○
Spindle 2 workpiece ejector		—	—	●* <sup>12</sup>	●* <sup>12</sup>	—	—	●* <sup>12</sup>
	Cylinder type	—	—	○	○	—	—	○
<b>Loader</b>								
Gantry loader	GX 5	○	○	○	○	○	○	○
<b>Other</b>								
Built-in worklight (LED)		●	●	●	●	●	●	●
Signal lamp	4 colors (LED type: red, yellow, green, blue)	○	○	○	○	○	○	○
Signal lamp buzzer		○	○	○	○	○	○	○
Chuck foot switch	Single	●	●	●	●	●	●	●
Foot switch for tailstock		○	○	—	—	○	—	—
Manual pulse generator (separate type)		○	○	○	○	○	○	○

\*1 The Spindle 2 specification **S2** is not equipped with a tailstock **TS**.

\*9 Certain workpiece shapes cannot be measured.

\*10 Not available when the steady rest is selected. For standard machines, it is necessary to remove the workpiece unloader when the steady rest is selected.

\*11 Not including gantry loader specifications.

\*12 When a hollow cylinder is mounted or a chuck body is not required, the workpiece ejector, through-spindle air blow, and pneumatic units and piping for them are not provided with the machine. For machines equipped with a hollow cylinder, the cylinder-type workpiece ejector is available. The NLX 1500 with the Spindle 2 (8,000 min<sup>-1</sup>) cannot be equipped with a work ejector.

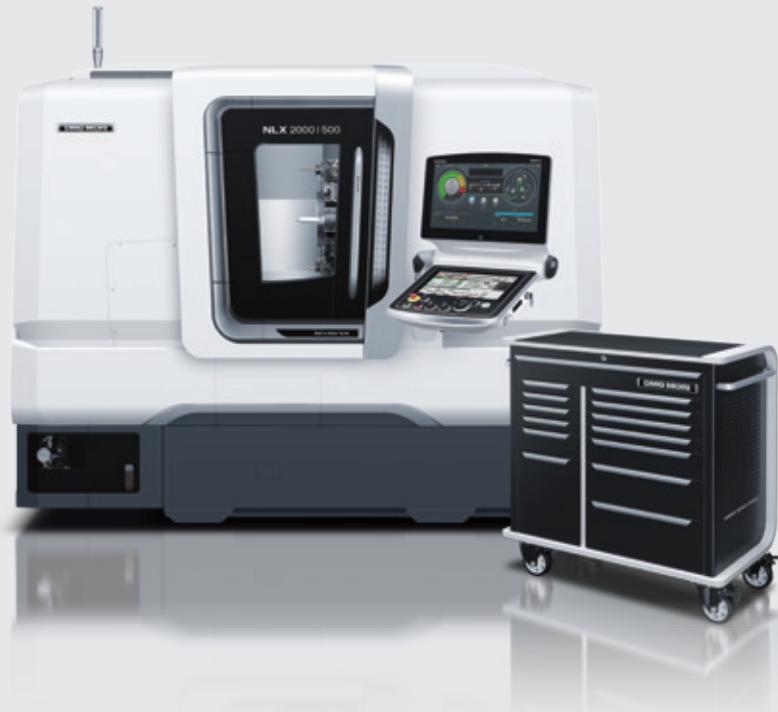
● For details, please check the Detailed Specifications.

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

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

DMQP: Please see Page 32 for details.  
DMQP: DMG MORI Qualified Products

## Rigid and Precise Turning Center NLX 1500 / NLX2000

### 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 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.

#### **DMG MORI CO., LTD.**

Nagoya Head Office ☐ 2-35-16 Meieki, Nakamura-ku, Nagoya City, Aichi 450-0002, Japan Phone: +81-52-587-1811  
Tokyo Global Headquarters ☐ 2-3-23, Shiom, Koto-ku, Tokyo 135-0052, Japan Phone: +81-3-6758-5900

Iga Campus ☐ 201 Midai, Iga City, Mie 519-1414, Japan Phone: +81-595-45-4151  
Nara Campus ☐ 362 Idono-cho, Yamato-Koriyama City, Nara 639-1183, Japan Phone: +81-743-53-1121