NL SERIES

MORI SEIKI

Rigid & Precise

NL SERIES

Rigid and Precise CNC Lathes

NL1500/NL2000/NL2500/NL3000



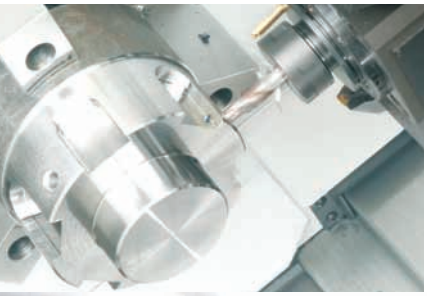
MORI SEIKI

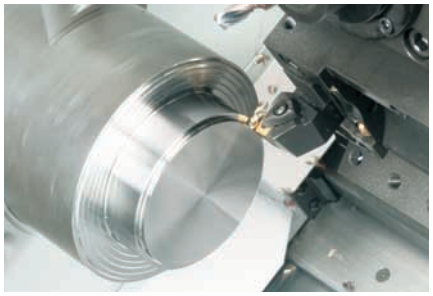
THE MACHINE TOOL COMPANY



Rigid & Precise

We have created a lathe that will change the world.







Ever since our first machine tool rolled off the production line in 1968, we here at Mori Seiki have continued to make CNC lathes that are praised by customers everywhere. Over those 35 years, we have released around 100 models. We can say with confidence that we believe every single one was an improvement on its predecessor. Today, we are on the threshold of a new beginning in the field of CNC lathes, and we are determined once again to create a lathe that will lead the industry in innovation. After reworking our designs, and incorporating data received from confronting heat related problems and thousands of customer comments, we have improved our products even more. Our uncompromising development stance has made it possible to deliver unprecedented rigidity, precision, and reliability. Our efforts have created our newest line, the NL Series. These new machines are high-rigidity, high-precision CNC lathes and set the new standard in "common sense" machining for a new age.

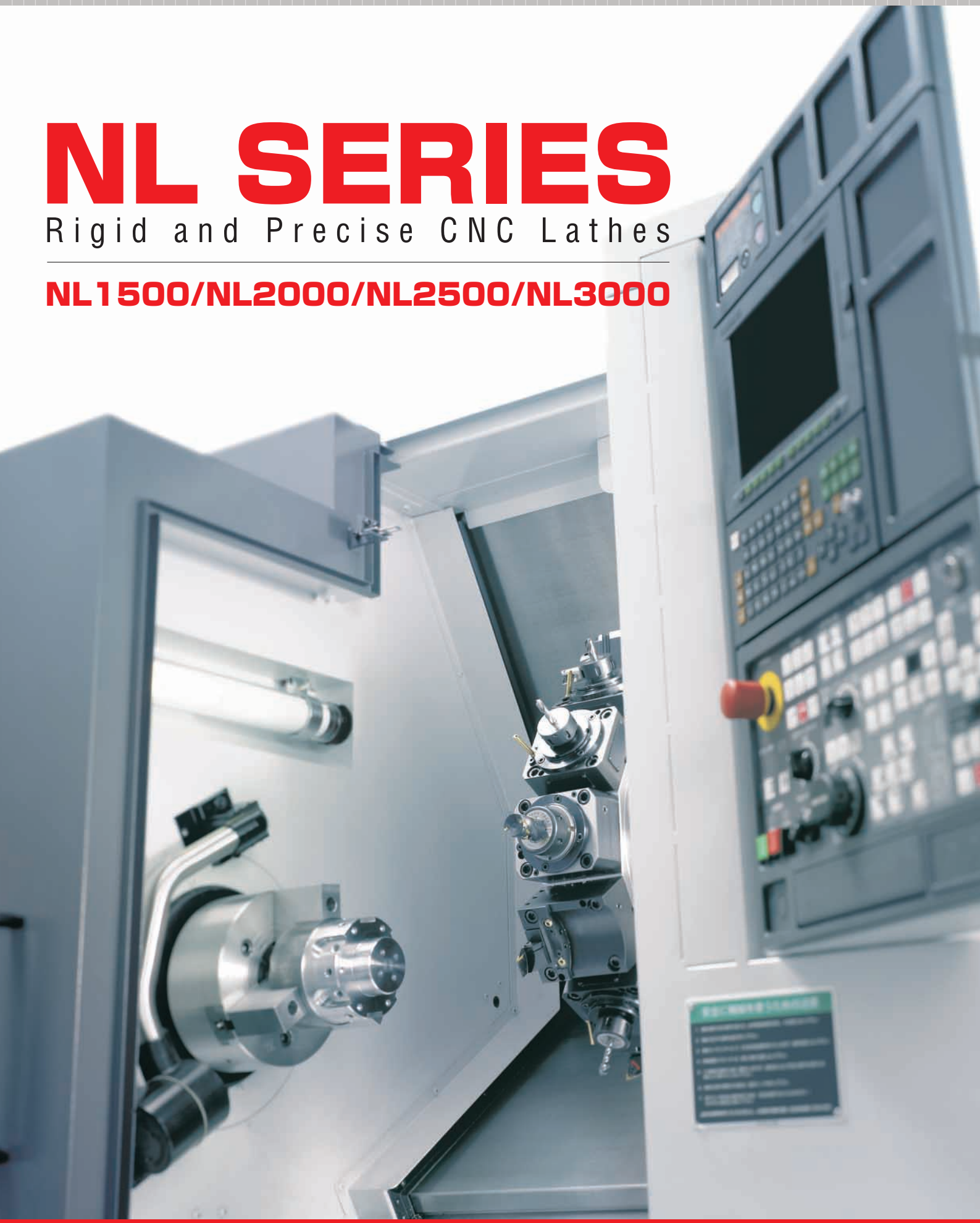
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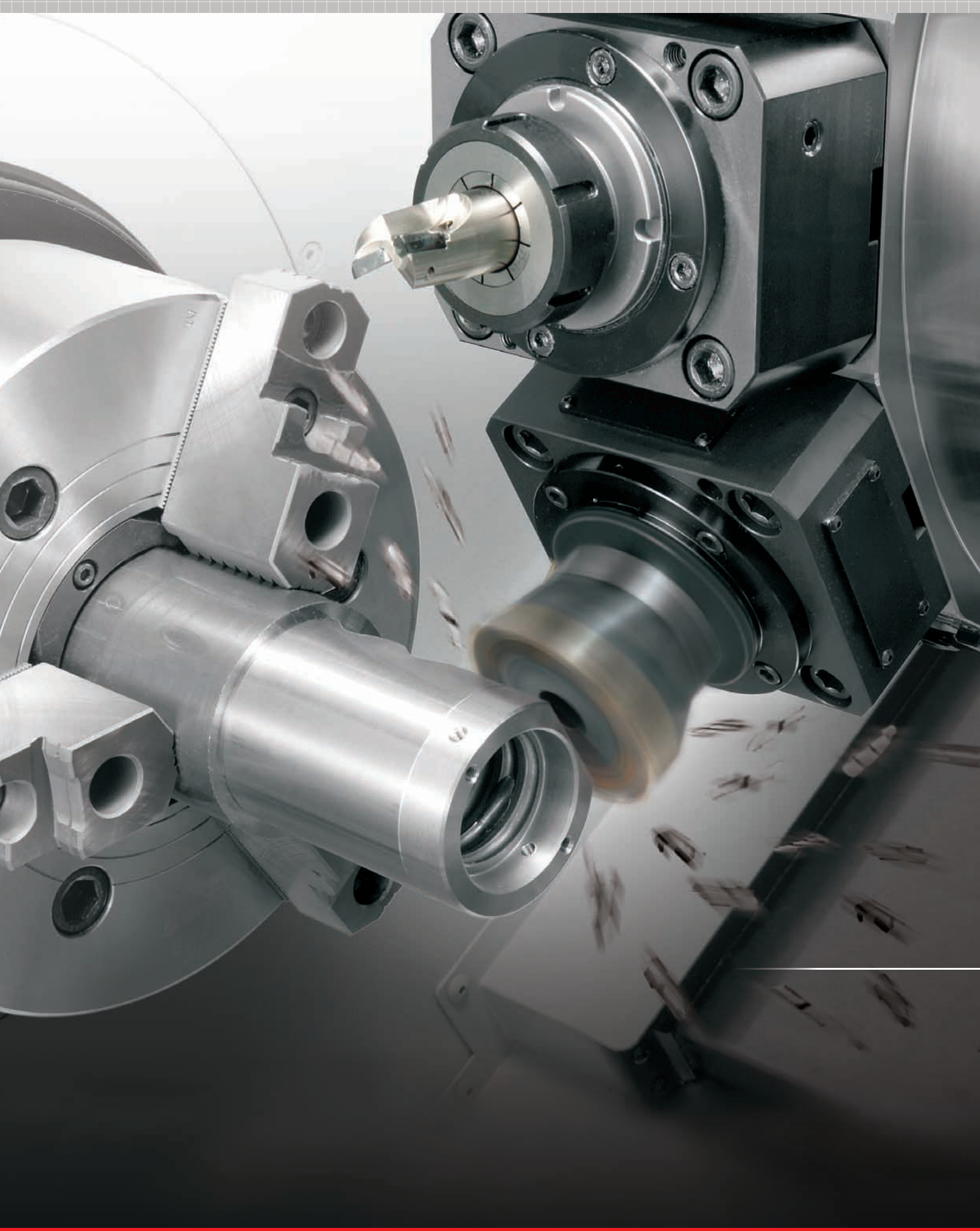
MAPPS: Mori Advanced Programming Production System
● Figures in inches were converted from metric measurements.

NL SERIES

Rigid and Precise CNC Lathes

NL1500/NL2000/NL2500/NL3000

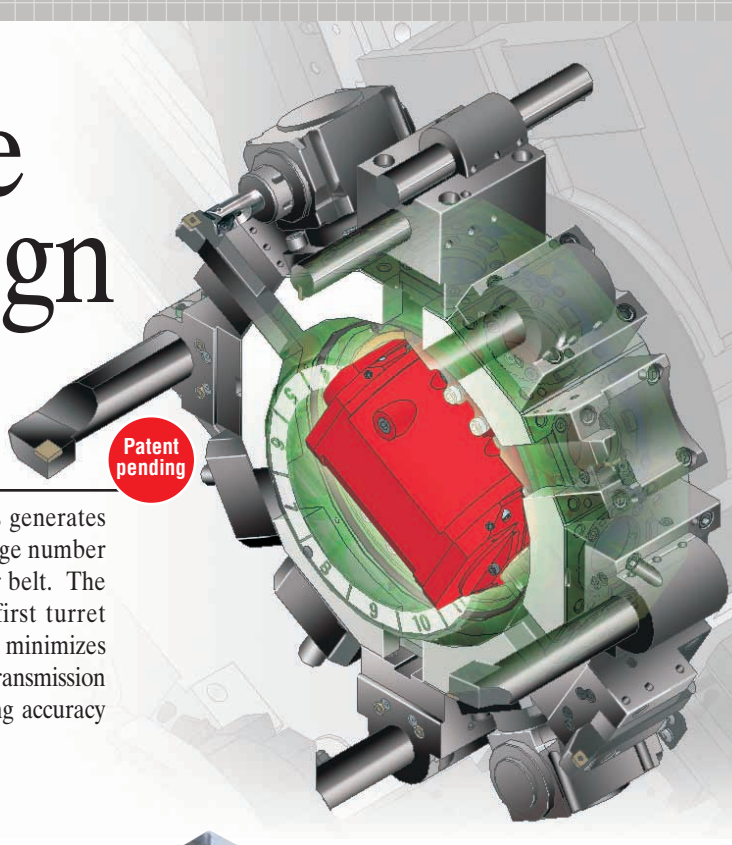




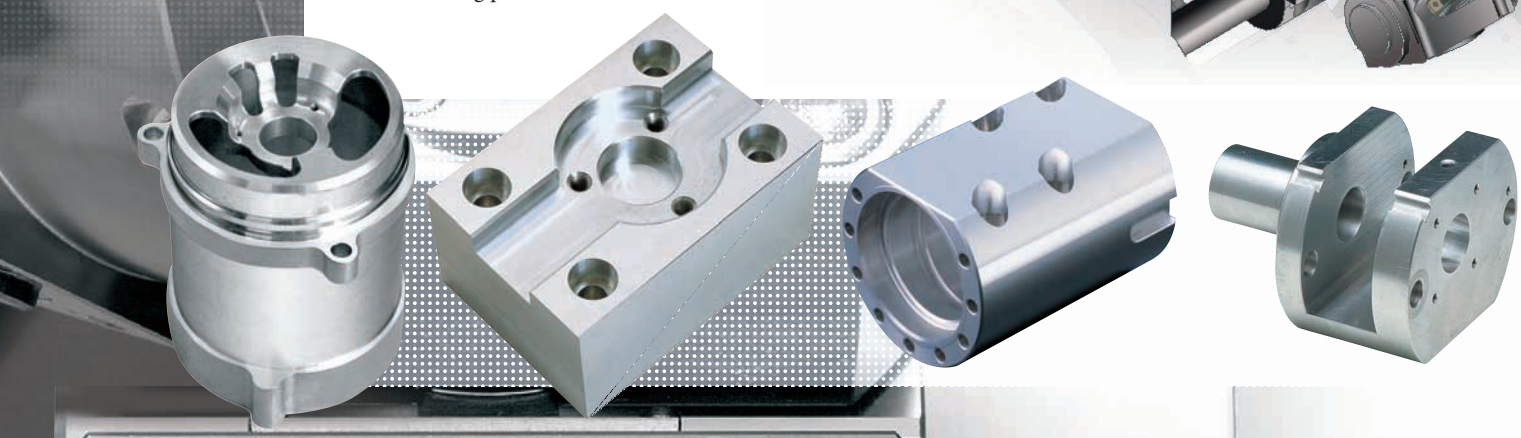
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NL SERIES

Innovative turret design

Turret with a built-in milling motor



The milling mechanism on conventional lathes generates a great deal of heat and vibration due to the large number of parts involved, including the motor and gear belt. The NL Series, however, features the industry's first turret with a built-in motor. This revolutionary design minimizes heat generation and vibration while eliminating transmission losses. The new design increases both machining accuracy and cutting performance.





NL2500

Face mill

ϕ80 mm

(ϕ 3.1 in.)

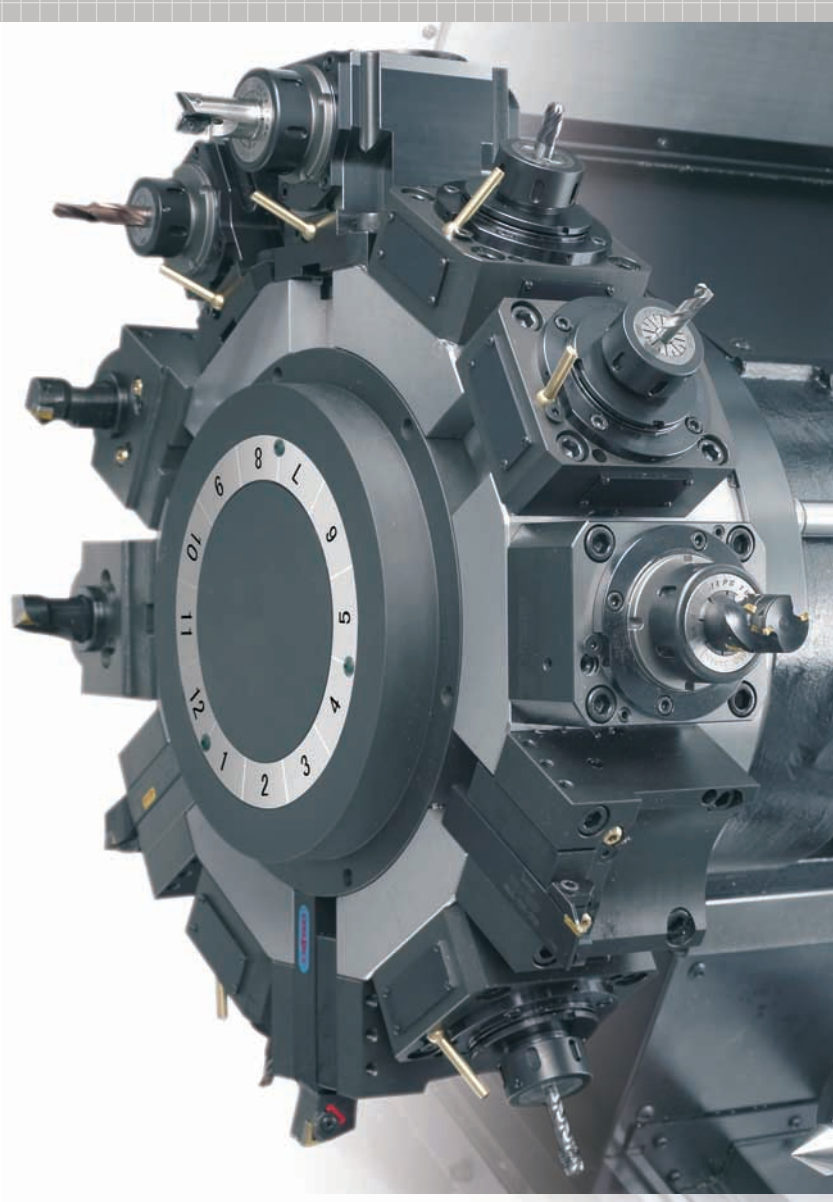
Tapping capacity M20

The NL Series was designed to create a CNC lathe with true milling capability. For example, the NL2500 can accommodate face mills of up to ϕ 80 mm (ϕ 3.1 in). NL Series machines boast milling performance approaching that of No. 40 taper machining centers.

《Actual size》

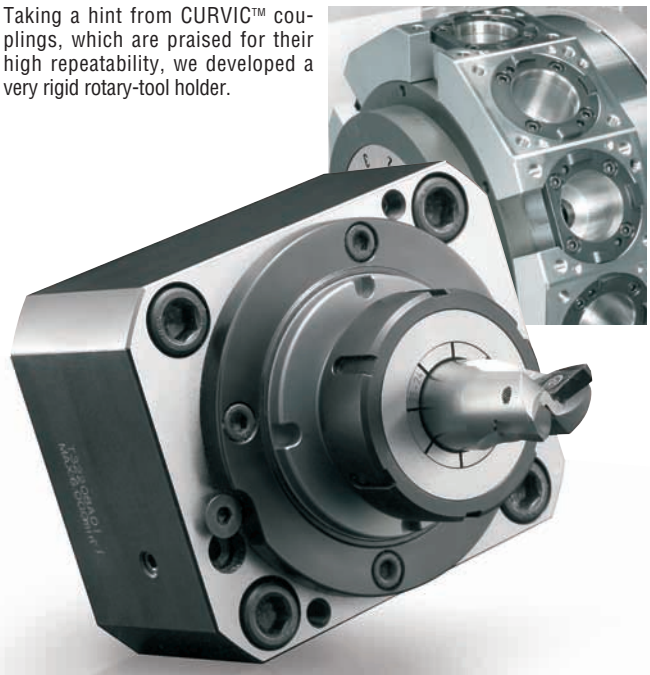
Extremely rigid turret

In order to enhance the milling function, it is essential to increase the rigidity of the rotary-tool holders. The NL Series rotary-tool holders have a broader grip as compared to conventional lathes. By raising attachment precision we have vastly improved rigidity.



Super-rigid rotary-tool holders

Taking a hint from CURVIC™ couplings, which are praised for their high repeatability, we developed a very rigid rotary-tool holder.

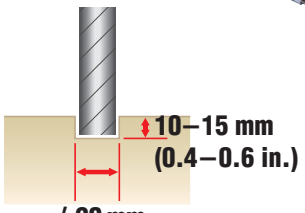


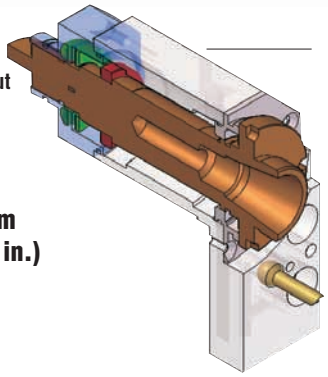
Comparison of rotary-tool holder rigidity

Conventional lathes leave chatter marks when the depth of cut is made deeper, but with the NL Series, it is now possible to cut to a depth equal to the tool diameter. This is attributed to the tool holders that have been designed to be more rigid.

Previous model

Tool diameter and depth of cut

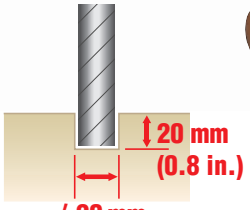


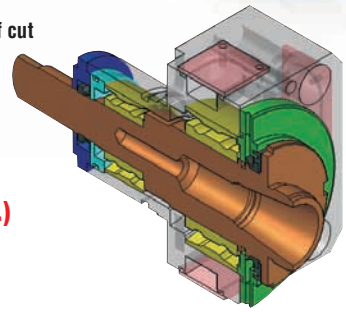


Rotary-tool holder rigidity
180 % Greater

NL2500

Tool diameter and depth of cut

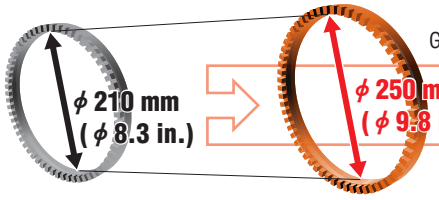




Coupling diameter

Previous model

NL2500



Greater coupling diameter than before.

Coupling diameter
19 % Greater

Tool diameter=Depth of cut

20 mm (0.8 in.)

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High-performance 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

Previous model	NL SERIES
4,000 min^{-1}	6,000 min^{-1}

50 % Greater

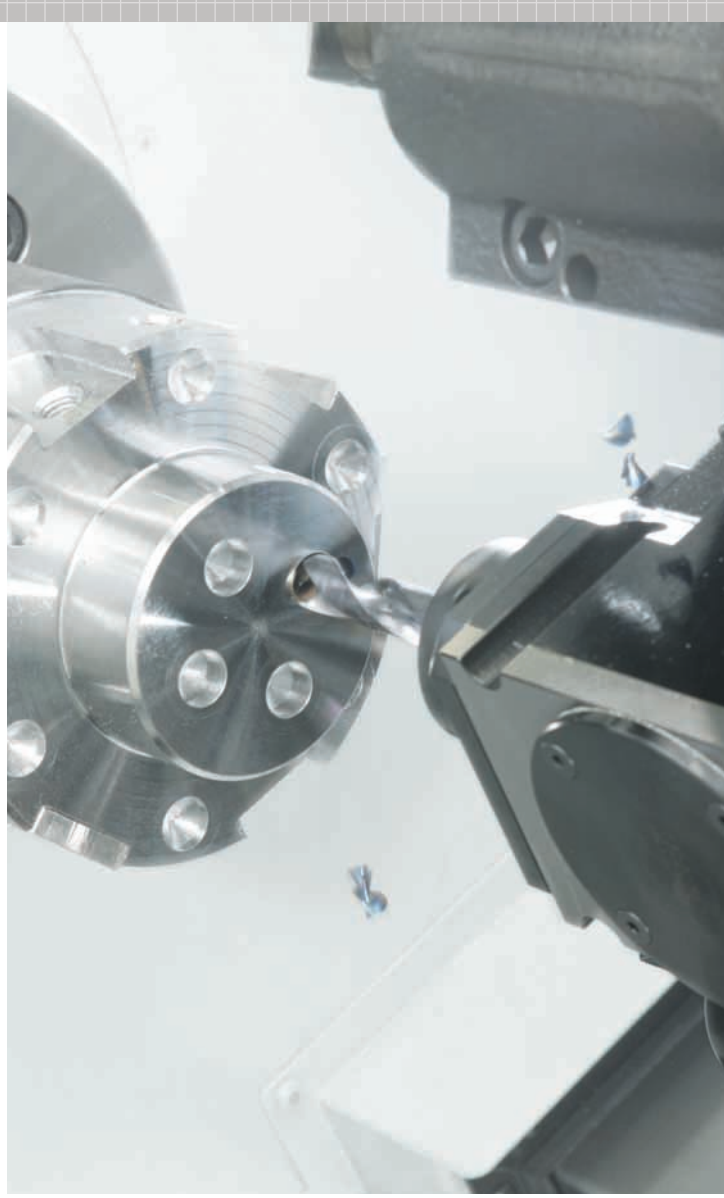
Rotary tool spindle acceleration time

Previous model		NL2500
0→4,000 min^{-1}		0→4,000 min^{-1}
0.35 sec.	Reduced approximately 70 %	0.11 sec.

0→6,000 min^{-1}
0.23 sec.

Maximum rotary tool spindle torque

NL1500	24 N·m (17.7 ft·lbf) <3 min>
NL2000	29 N·m (21.4 ft·lbf) <3 min>
NL2500 NL3000	40 N·m (29.5 ft·lbf) <3 min>



DDS: Direct Drive Spindle

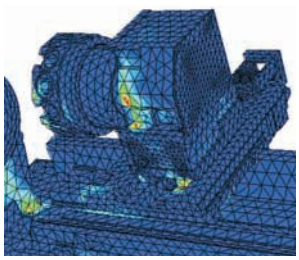




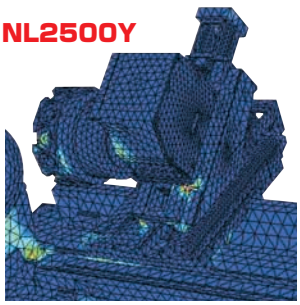
Y-axis specification construction

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

NL2500



NL2500Y



A solid construction that can hold its own with the NL Series two-axis models.

Y-axis travel (Y-type)

NL1500/NL2000/NL2500	NL3000
±50 mm (±2.0 in.)	±60 mm (±2.4 in.)

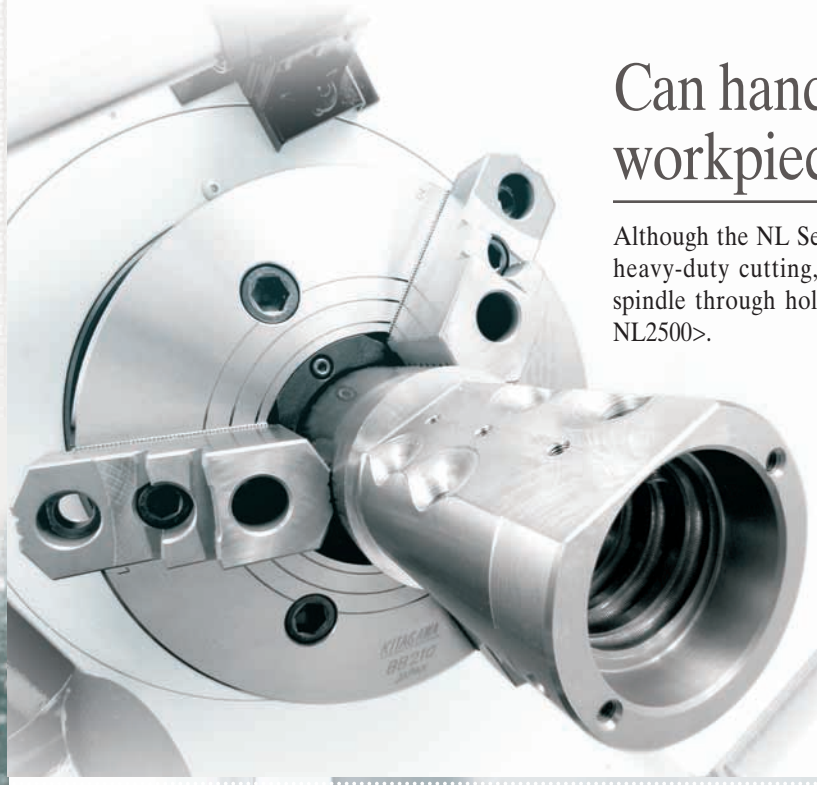


The ultimate in turning

Improved tool tip rigidity

Our goal was to minimize tool tip vibration, thus reducing the need to grind after cutting as well as extending tool life. The NL Series achieves this with its increased rigidity between the spindle and tool tip.

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NL SERIES



Can handle large-diameter workpieces

Although the NL Series machines remain rock solid during heavy-duty cutting, their design incorporates the largest spindle through hole in its class <ϕ 91 mm (ϕ 3.6 in.) for NL2500>.

Through spindle hole diameter (headstock 1 spindle)

NL1500 61 mm (2.4 in.)	**NL2500** 91 mm (3.6 in.)
NL2000 73 mm (2.9 in.)	**NL3000** 105 mm (4.1 in.)

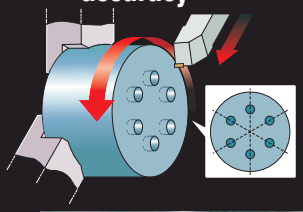
NL2500
Through spindle hole diameter **91 mm (3.6 in.)**

● See Automatic Operation Support (p23) for details on bar work capacity.

Thanks to high rigidity, machining no longer requires additional grinding.

Increasing the rigidity between the spindle and the tool tip has made it possible to achieve high quality machined surfaces through turning alone.

End face finishing accuracy



Conventional machines create a pattern on material due to the amount of vibration the tool tip generates. With the NL Series, there is no pattern on the material, thus eliminating the need for grinding.

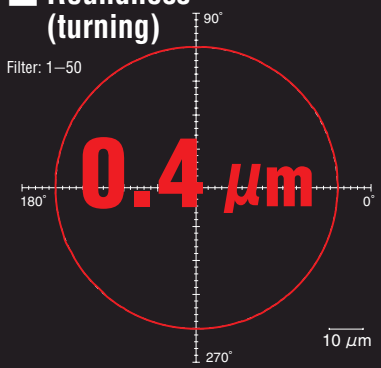
Tool	WTKNR2525M-16N
Inserts	TNMG160408-PF (4015)
Material <JIS>	S45C*<ϕ 150×150 mm (ϕ 5.9×5.9 in.)>
Cutting speed	380 m/min (1,246.8 fpm)
Feedrate	0.12 mm/rev (0.005 ipr)
Depth of cut	0.1 mm (0.004 in.)





* Carbon steel
JIS: Japanese Industrial Standard

Roundness (turning)

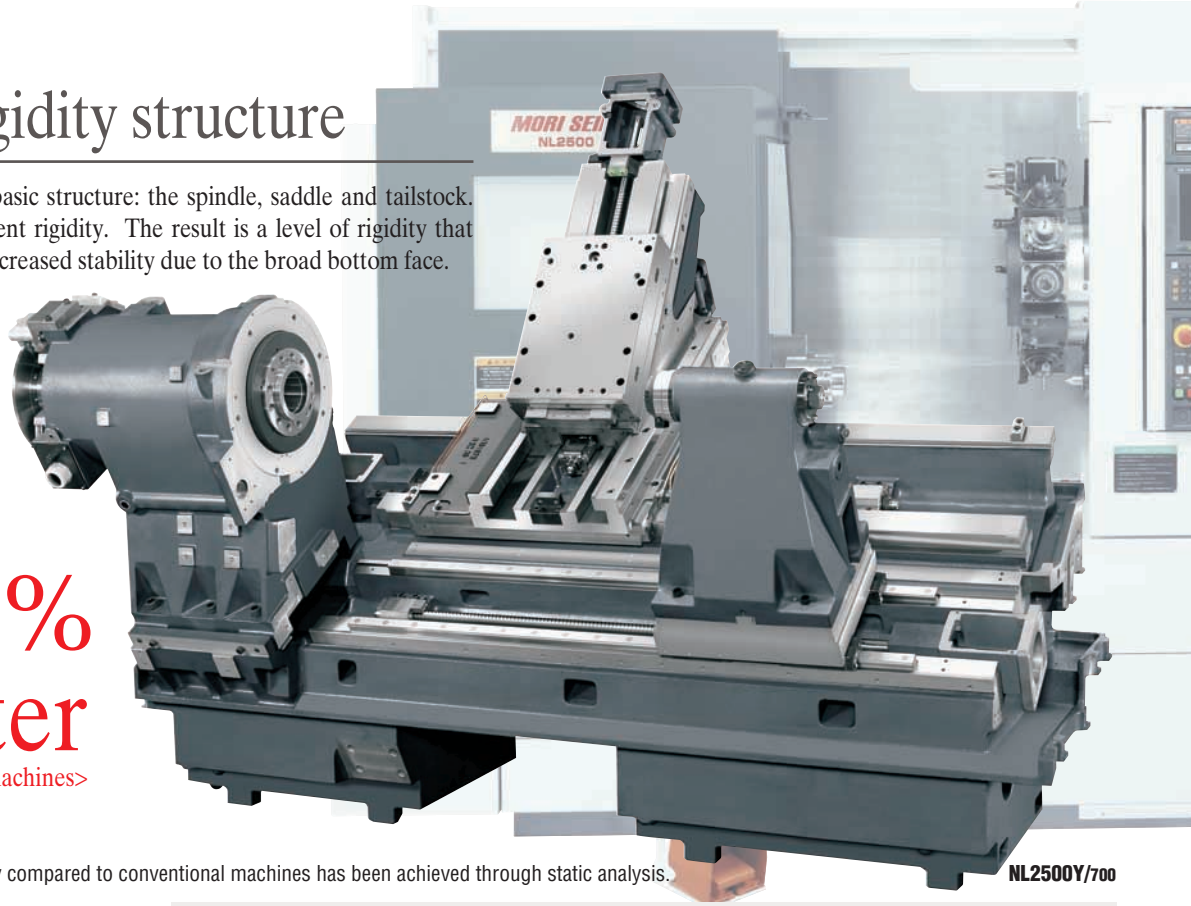


Machine type	NL2500MC/700
Tool	Diamond tool <Nose radius 0.5 mm (0.020 in.)>
Material	Brass
Outer diameter	40 mm (1.6 in.)
Spindle speed	4,000 min^{-1}
Feedrate	0.05 mm/rev (0.0020 ipr)

● The cutting test results indicated in this catalog are provides as an example. The results indicated in this catalog may not be obtained due to differences in cutting conditions and environmental conditions during measurement.

Ultra-high rigidity structure

We have a new design for the basic structure: the spindle, saddle and tailstock. This new design ensures consistent rigidity. The result is a level of rigidity that has not been seen before, with increased stability due to the broad bottom face.



NL2500Y/700

Torsionally rigid

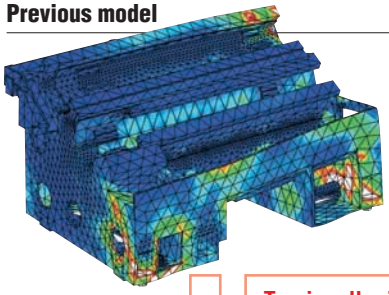
100 % Greater

<comparison to conventional machines>

Bed torsion rigidity

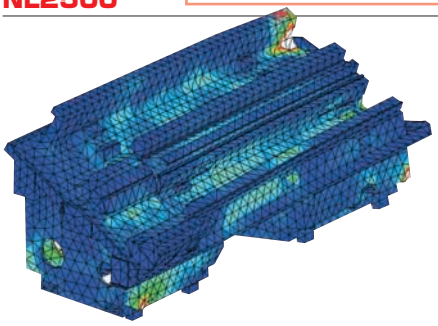
Dramatically better bed torsion rigidity compared to conventional machines has been achieved through static analysis.

Previous model

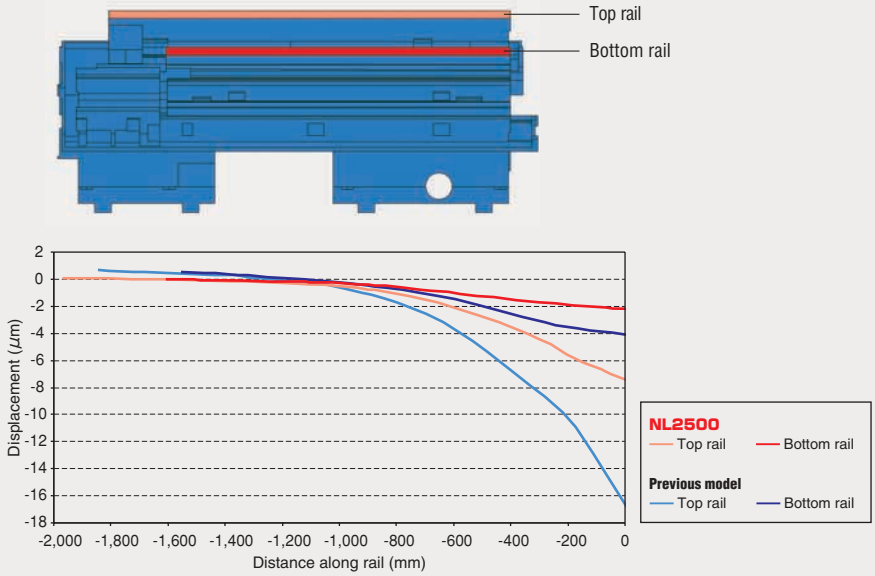


Torsionally rigid
100 % Greater

NL2500

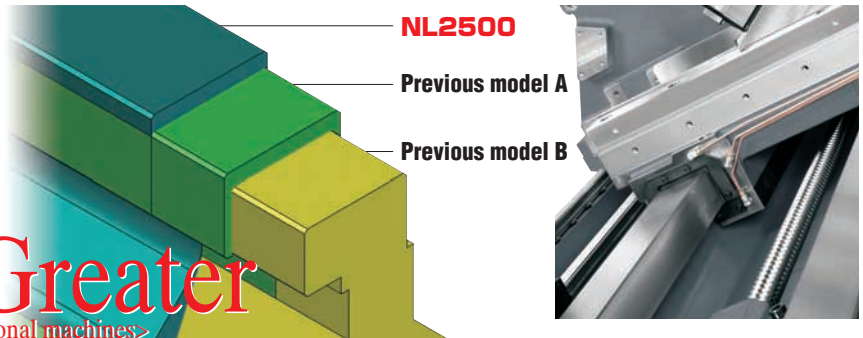


Torsion displacement graph



Broader guideways

The slideways are 30 % wider than those of conventional machines and are the largest in the class. We have achieved an unknown level of stability not only in turning work but also in milling work.



Guideway width

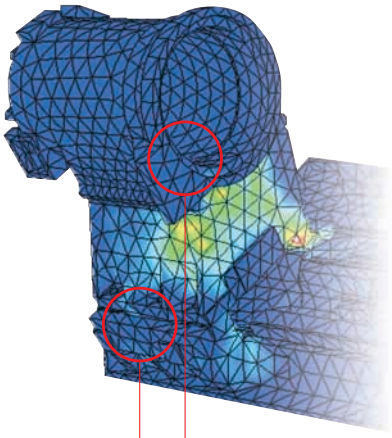
30 % Greater

<comparison to conventional machines>

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Highly rigid spindle

The axis rigidity of the headstock and its mounting have been improved by changing the shape of the headstock and increasing the thickness of its parts. The diameter of the bearings has been increased. This allows better spindle rigidity while enlarging the through-hole diameter.



Axis rigidity **20 % Greater**

Headstock attachment rigidity
30 % Greater

Rigidity of the spindle itself **50 % Greater**
<comparison to conventional machines>



Improved acceleration/deceleration time and torque specs

Raising the rigidity has endowed the NL Series with performance equal to that of spindle motors one class above.

Acceleration/deceleration time*

Previous model

Spindle acceleration time (0→4,000 min⁻¹)
4.9 sec.

Reduced approximately 31 %

NL2500

Spindle acceleration time (0→4,000 min⁻¹)
3.4 sec.

Spindle deceleration time (4,000→0 min⁻¹)
4.2 sec.

Reduced approximately 14 %

Spindle deceleration time (4,000→0 min⁻¹)
3.6 sec.

Maximum spindle torque (standard)

NL1500	200 N·m (147.5 ft·lbf) <50 %ED>
NL2000	349 N·m (257.4 ft·lbf) <50 %ED>
NL2500	599 N·m (441.8 ft·lbf) <25 %ED>
NL3000	1,025 N·m (756.0 ft·lbf) <30 min>

* When mounted with chuck

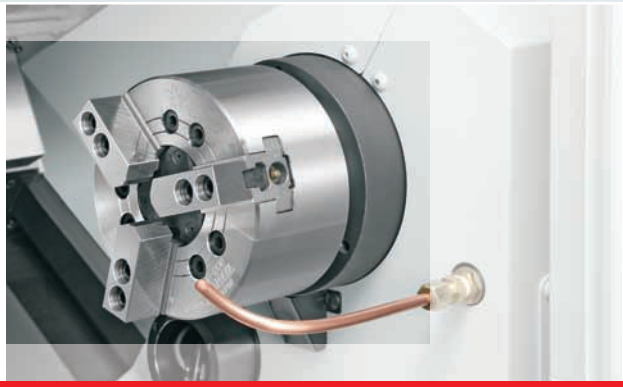
Headstock 2 spindle (S-, SMC-, SY-types)

The No. 2 spindle also delivers powerful turning.

Maximum headstock 2 spindle torque

NL SERIES

77.8 N·m
(57.4 ft·lbf) <25 %ED>



Thermal isolation

Designed to eliminate all heat

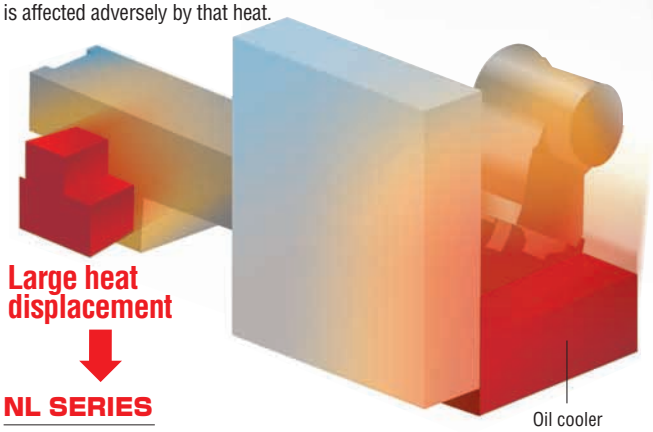
The most prominent feature of the NL Series is said to be the elimination of the adverse effects of heat. In order to raise the continuous machining precision of lathes, 95 % of which is said to be taken up by cutting time, we at Mori Seiki have come up with the concept of total heat elimination.



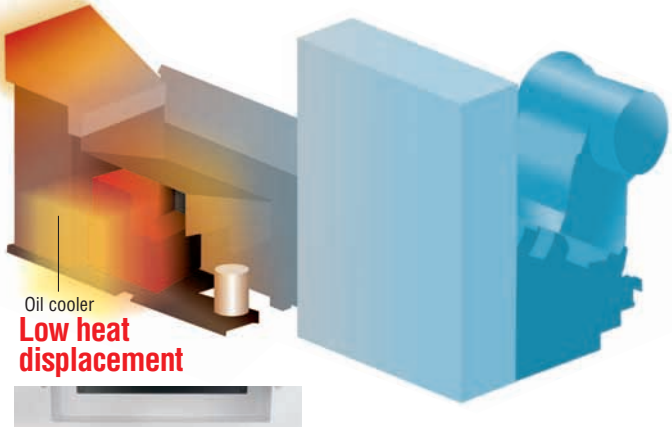
Heat elimination layout

Previous model

It is common to find the oil cooler – a major source of heat – located right next to the spindle in conventional machines. As a result, the headstock is affected adversely by that heat.



Placing the oil cooler behind the machine removes that heat source from the headstock. The machine is designed so that the exhaust from the oil cooler doesn't come in direct contact with the machine.

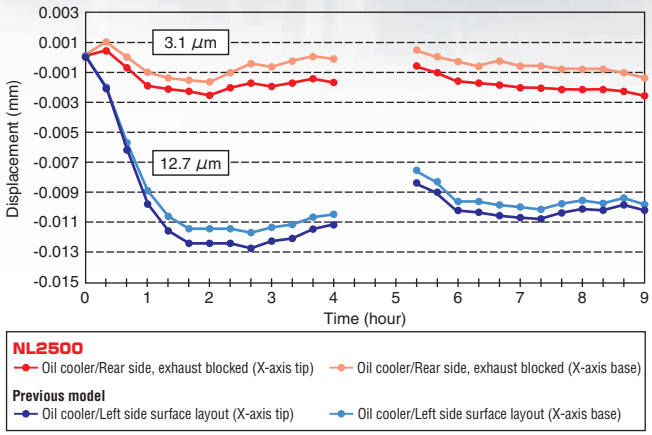




Oil cooler exhaust vent

The oil cooler's exhaust heat is blown out of the cover in the direction of the machine's side.

Spindle thermal displacement



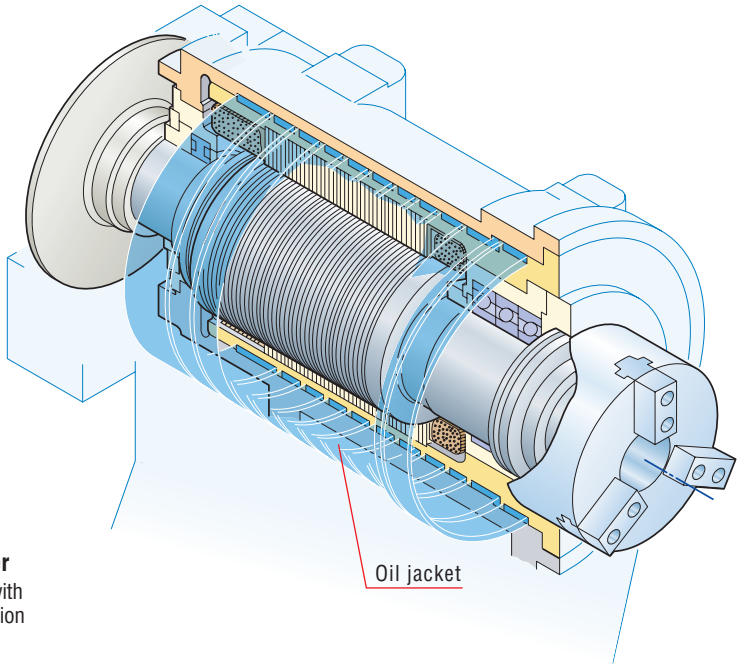
Fully-covered bed

Covering the bed with a cover makes it difficult for the heat from chips to be transmitted to the bed.



Spindle Cooling

We have redesigned the spindle, which is the greatest source of heat, to employ a uniform-heat construction that maintains an equal temperature all around the spindle. The main spindle unit is protected from rises in temperature by the spiraling oil jacket located all the way to the back side.

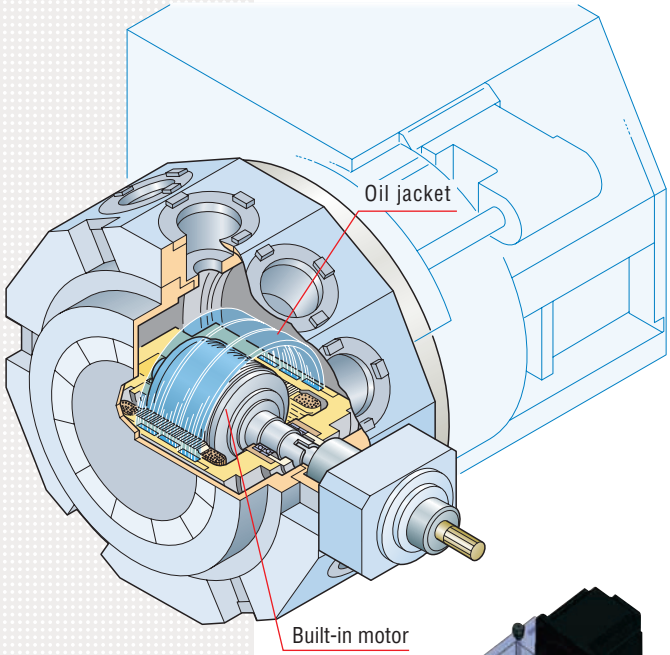




Inverter-controlled oil cooler
An inverter-controlled oil cooler with very accurate temperature regulation has been used.

Milling turret with a heat-suppressing design

NL SERIES
Internal design of the turret



The industry's first turret with a built-in milling motor minimizes heat.

Previous model

Motor
+
Timing belt 1
+
Timing belt 2
+
Involuted spline
+
Bevel gear
+
Keyed shaft

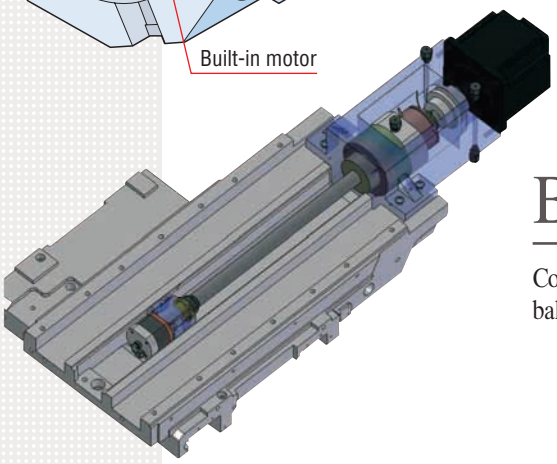
The transmission with all its gear, belts, and more, generates a substantial amount of heat and can adversely affect machining precision.

NL SERIES

Built-in motor
+
Keyed shaft

The built-in motor design has eliminated the transmission mechanism. Therefore, sources of heat are eliminated and jacket cooling is performed. This is only achieved with a built-in motor.

Rising turret temperatures **1/10** or less



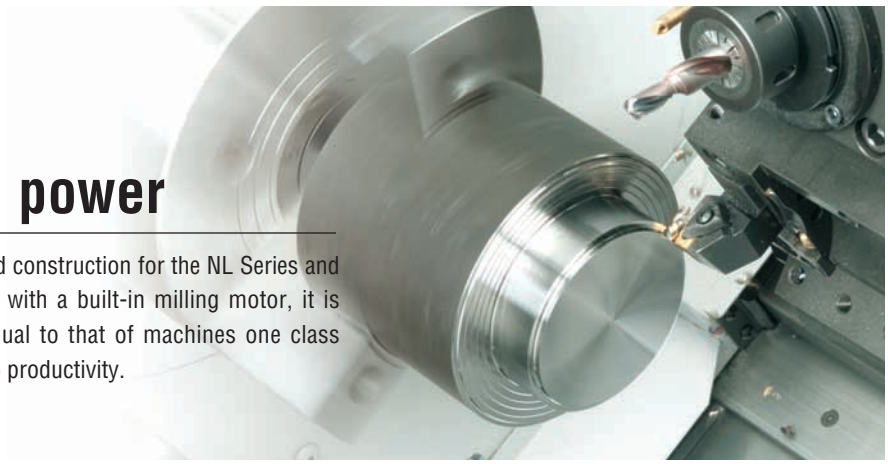
Ball screw shaft cooling*(option)

Cooling oil that flows throughout all the support bearings and ball screw controls heat in the ball screws.

* X-axis only.

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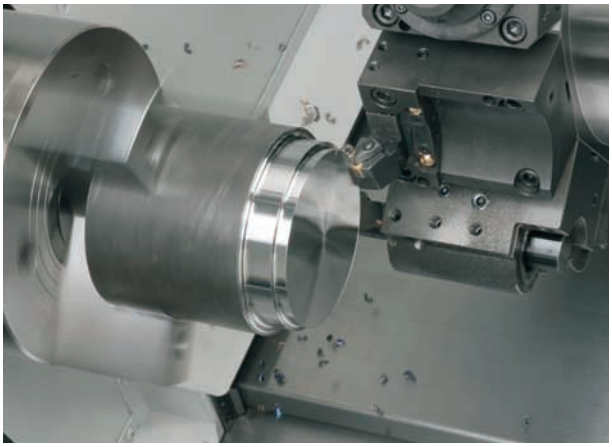
Machining power



By employing a super-rigid construction for the NL Series and equipping it with a turret with a built-in milling motor, it is able to deliver cutting equal to that of machines one class above. This contributes to productivity.

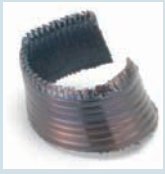
Turning performance

Heavy-duty cutting <O.D.>



Machine type	NL2500MC/700
Material <JIS>	S45C* ϕ 118×100 mm (ϕ 4.6×3.9 in.)
Spindle speed	764 min^{-1}
Depth of cut	10 mm (0.4 in.)
Cutting speed	120 m/min (393.7 fpm)
Feedrate	0.4 mm/rev (0.016 ipr)

As you can see, wide cutting can be done in outer diameter heavy cutting.



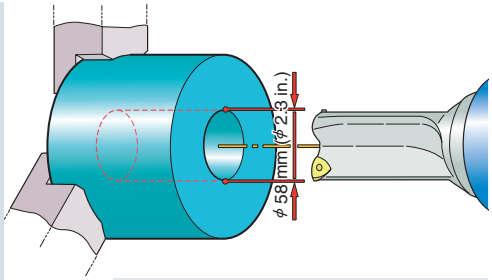
《Actual size》



Machining rate per minute

576.0 mL/min (35.1 in^3./min)

Throw-away drill



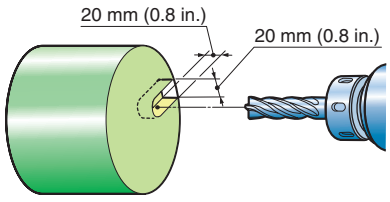
Machining rate per minute

435.2 mL/min (26.5 in^3./min)

Machine type	NL2500MC/700
Material <JIS>	S45C* ϕ 118×50 mm (ϕ 4.6×2.0 in.)
Spindle speed	549 min^{-1}
Drill diameter	58 mm (2.3 in.)
Cutting speed	100 m/min (328.1 fpm)
Feedrate	0.3 mm/rev (0.012 in.)

Milling capacity (material <JIS>: S45C*)

End mill <ϕ 20 mm (ϕ 0.8 in.) High speed steel>

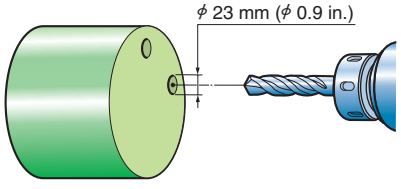


Machining rate per minute

25.6 mL/min (1.6 in^3./min)

Machine type	NL2500MC/700
Rotary tool spindle speed	320 min^{-1}
Depth of cut	20 mm (0.8 in.)
Cutting speed	20 m/min (65.6 fpm)
Feedrate	0.2 mm/rev (0.008 ipr)

Drill <ϕ 23 mm (ϕ 0.9 in.) High speed steel>

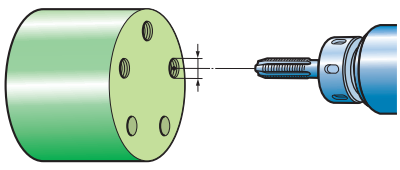


Machining rate per minute

43.0 mL/min (2.6 in^3./min)

Machine type	NL2500MC/700
Rotary tool spindle speed	345 min^{-1}
Cutting speed	25 m/min (82.0 fpm)
Feedrate	0.3 mm/rev (0.012 ipr)

Tap



Tool

M20×P2.5

Machine type	NL2500MC/700
Rotary tool spindle speed	160 min^{-1}
Cutting speed	10 m/min (32.8 fpm)
Feedrate	2.5 mm/rev (0.10 ipr)

JIS: Japanese Industrial Standard ＊Carbon steel
● The cutting test results indicated in this catalog are provides as an example. The results indicated in this catalog may not be obtained due to differences in cutting conditions and environmental conditions during measurement.

Comparison of milling power (material <JIS>: S45C*1)

End mill <ϕ 20 mm (ϕ 0.8 in.) High speed steel>



Machine type	
Previous model	NL2500MC/700
Depth of cut	
15 mm (0.6 in.)	20 mm (0.8 in.)
Spindle load	
100 %	55 % <40 %>
Machining rate per minute	
12.5 mL/min (0.8 in³./min)	25.6 mL/min (1.6 in³./min) <19.2 mL/min (1.2 in³./min)>

< > Parentheses indicate a cutting depth of 15 mm (0.6 in.).

Machining power Approx. 4 times*2

Drill <ϕ 20 mm (ϕ 0.8 in.) High speed steel>



Machine type	
Previous model	NL2500MC/700
Feedrate	
0.1 mm/rev (0.004 ipr)	0.3 mm/rev (0.012 ipr)
Spindle load	
115 %	82 % <54 %>
Machining rate per minute	
12.6 mL/min (0.8 in³./min)	37.7 mL/min (2.3 in³./min) <25.1 mL/min (1.5 in³./min)>

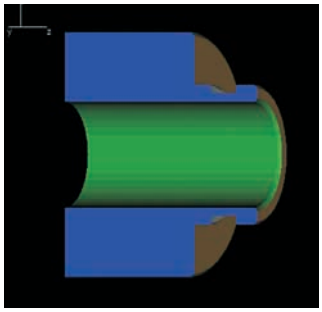
< > Parentheses indicate a feedrate of 0.2 mm/rev (0.008 ipr).

Machining power Approx. 4 times*2

*1 Carbon steel
*2 Calculated using the same ratio for the spindle load.
JIS: Japanese Industrial Standard

● The cutting test results indicated in this catalog are provides as an example. The results indicated in this catalog may not be obtained due to differences in cutting conditions and environmental conditions during measurement.

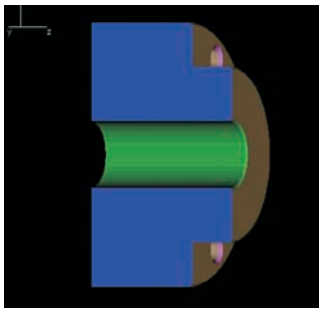
Comparison of cutting time



6-inch chuck machine

		Previous model A	Previous model B	NL1500
Cutting time	<sec.>	149	149	124
Non-cutting time	<sec.>	26	25	21
Total time	<sec.>	175	174	145

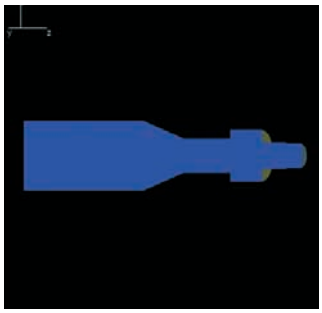
Compared against previous model A
Total time
Reduced by 17.1 % <30 sec.>
Compared against previous model B
Total time
Reduced by 16.7 % <29 sec.>



8-inch chuck machine

		Previous model C	Previous model D	NL2000
Cutting time	<sec.>	263	264	219
Milling time	<sec.>	168	168	149
Non-cutting time	<sec.>	42	45	40
Total time	<sec.>	473	477	408

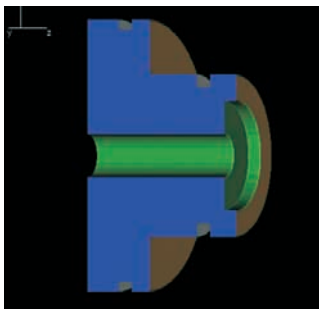
Compared against previous model C
Total time
Reduced by 13.7 % <65 sec.>
Compared against previous model D
Total time
Reduced by 14.5 % <69 sec.>



10-inch chuck machine

		Previous model E	Previous model F	NL2500
Cutting time	<sec.>	392	390	366
Non-cutting time	<sec.>	28	32	24
Total time	<sec.>	420	422	390

Compared against previous model E
Total time
Reduced by 7.1 % <30 sec.>
Compared against previous model F
Total time
Reduced by 7.6 % <32 sec.>



12-inch chuck machine

		Previous model G	NL3000
Cutting time	<sec.>	847	810
Non-cutting time	<sec.>	40	31
Total time	<sec.>	887	841

Compared against previous model G
Total time
Reduced by 5.2 % <46 sec.>

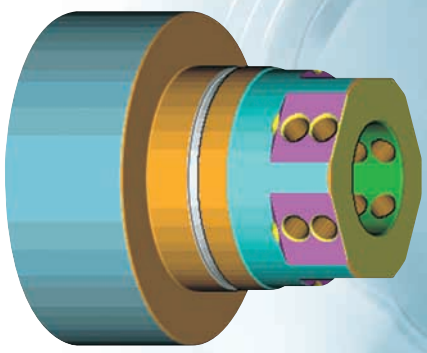
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Productivity



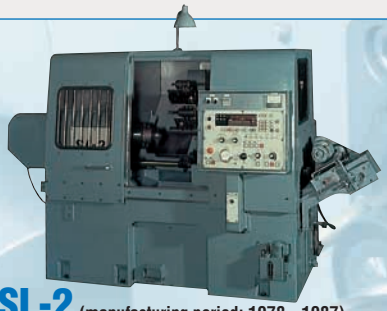
What are the differences in machining time, production volume, and sales between previous models and the NL Series? We have included a machining simulation comparing the NL Series to previous models, so take a look at the outstanding productivity of the innovative NL Series for yourself.

Workpiece



Material <JIS> : A7075 (Aluminum)
Size : ϕ 150 mm×150 mm (ϕ 5.9 in.×5.9 in.)

Previous model



SL-2 (manufacturing period: 1978–1987)

+



MV-40

Previous model

SL-25MC
(manufacturing period: 1987–2000)



NL SERIES

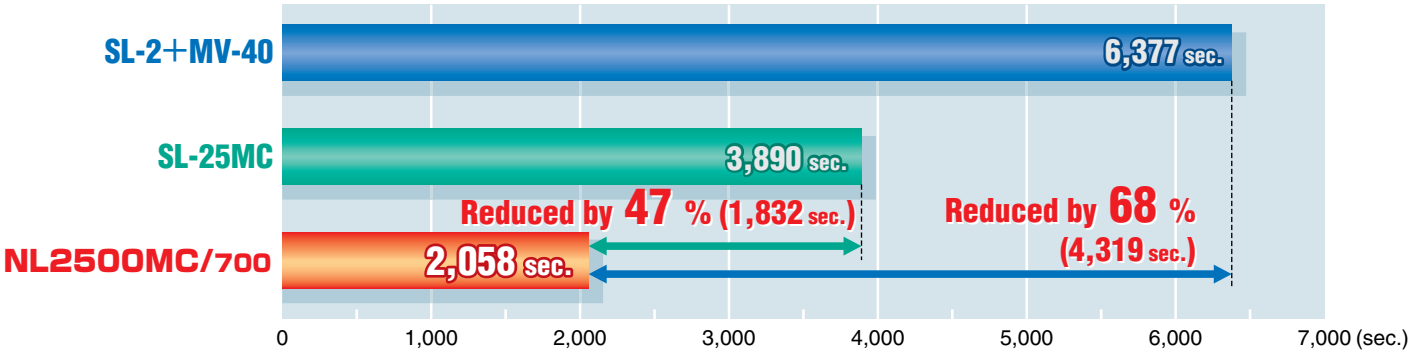
NL2500MC/700



JIS: Japanese Industrial Standard

Cycle time comparison

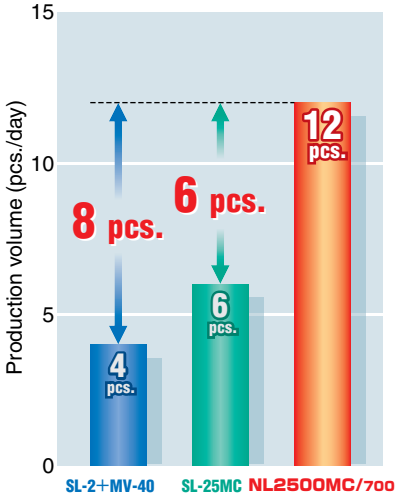
	Process	Cutting time <sec.>		
		SL-2+MV-40	SL-25MC	NL2500MC/700
1	I.D. bottom drilling	253	222	131
2	End face & O.D. rough cutting	805	523	366
3	Rough boring	114	69	46
4	End face & O.D. finishing	189	161	95
5	I.D. finishing	49	39	26
6	O.D. grooving	67	53	32
7	O.D. threading	207	106	60
8	Workpiece transfer	1,800	0	0
9	Face groove roughing	801	785	436
10	Face groove finishing	698	684	380
11	M12×P1.75 tap pre-drilling	202	198	66
12	M12×P1.75 tap bottom drilling	611	598	239
13	M12×P1.75 tapping	581	452	181
	Total cutting time <sec.>	6,377	3,890	2,058



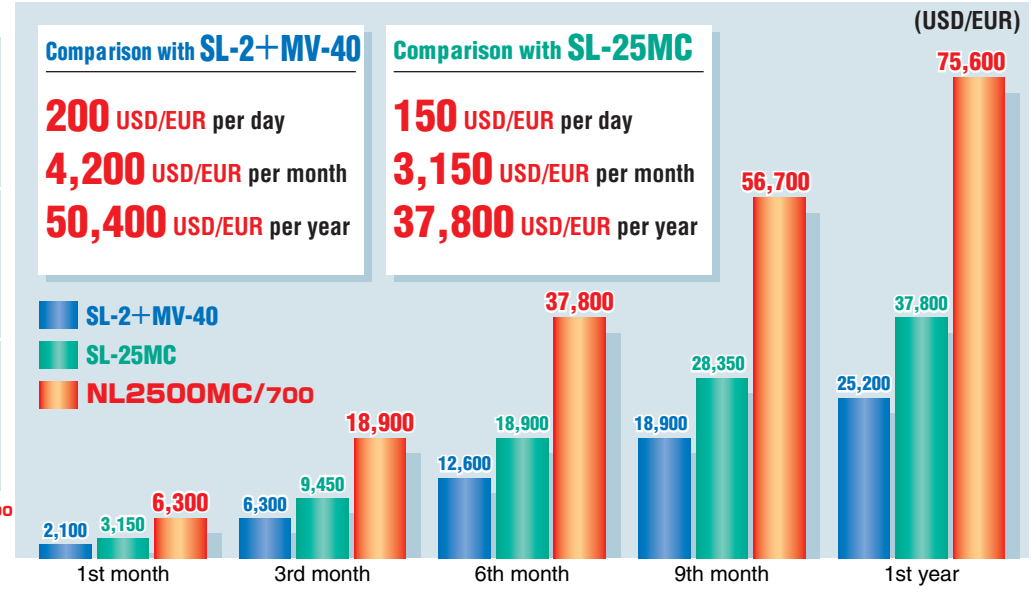
Comparison of production volume and sales (25 USD/EUR per workpiece)

Running time (one day) : 8 hours×85 %=3,600 sec.×8×0.85=24,480 sec.
Number of days operating in 1 year : 21 days×12 months=252 days
Production volume per day (pcs./day) : 24,480 sec.÷Cycle time (sec.)

■ Comparison of production volume



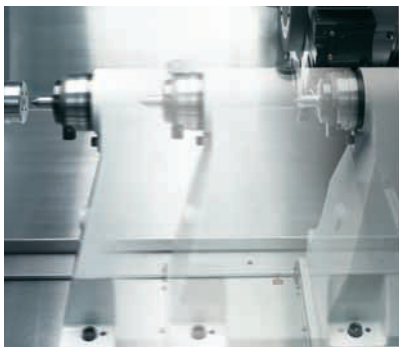
■ 1-year sales simulation



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NL SERIES

Convenience

Easier and faster. The NL Series was designed to deliver the convenience and setup performance of a machine one class above.





Setup time
Reduced by over 50 %

Tailstock spindle operating time
Reduced by over 20 %



Machining using the tailstock drill

Digital tailstock

The NL Series comes standard with a new feature – a highly rigid digital tailstock driven by a servomotor. This drastically reduces set-up time. (New standard feature does not apply to S-, SMC- and SY-types.)



■ Fewer steps requiring operation of the tailstock

The operator is freed from the hassle of having to lock the tailstock when changing to a workpiece of a different length, connecting it to the turret, etc.

■ Operating time reduced

With the conventional hydraulic system, changing the tailstock spindle settings was inconvenient, so there was a limit to how much operating time could be reduced. A digital tailstock with variable feed speed control allows separate speeds to be set for approach and engagement, reducing the operating time of the tailstock spindle by over 20 %.

■ Variable pressure control using program instructions

With a hydraulic tailstock spindle, thrust is controlled indirectly using a hydraulic pressure meter, so if you use different machine models, you will get different thrusts even if the same pressure is set. With a digital tailstock, however, the thrust is measured directly, so the workpiece engagement is done accurately, raising machining precision.

■ Simple operation using MAPPS Ⅱ

Approach position, retract position, re-chucking, and more can be done simply and easily from the MAPPS Ⅱ screen. Besides being able to handle a variety of different workpiece types, it can also work with M-code thrust selection as a standard feature.



Tailstock control screen

■ More applications

The digital tailstock, which has outstanding functionality as a tailstock, uses a servomotor drive that allows it to be used as a third spindle.

Functions and accessories for raising versatility

The NL Series has been designed with the operator first and foremost in mind, with innovations included throughout the machines to increase convenience.



OP option



Automatic door

OP

Equipped with automatic doors to enhance automation not only during normal operation but also when using a robot.



Broader field of vision

The new design includes a vertical front door and a window closer to the operator. The broader field of vision allows the operator to view the machine interior without having to stoop down. The distance between the operating panel and the machine interior has been shortened, thus reducing eye strain.



Adjustable operating panel

The easy-to-use operating panel swivels 90°. Improved visibility during operation.

NL Series operating panel

We have changed the layout of the buttons on the operating panel to improve setup. We've also used rotary buttons for those with most frequent use.



Previous model



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● The photo shown may differ from actual machine.

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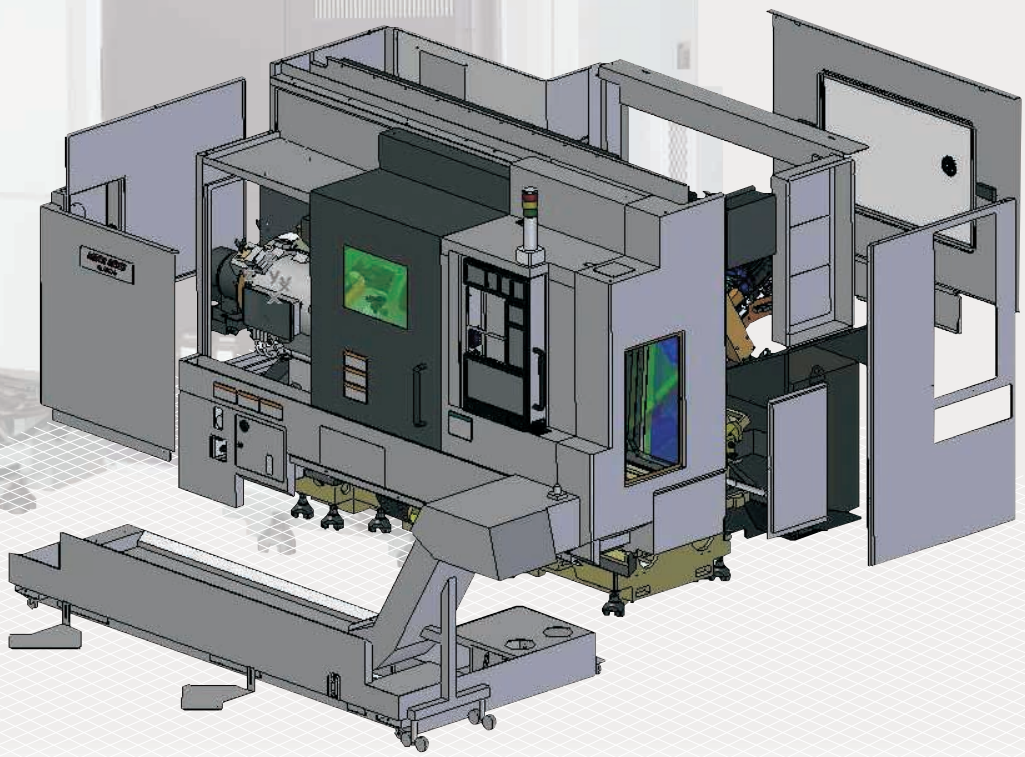
Maintenance

Minimizing machine down time. In our constant effort to become the most trusted machine tool company in the industry, we design Mori Seiki machines with maintenance and reliability in mind.



Machine cover design

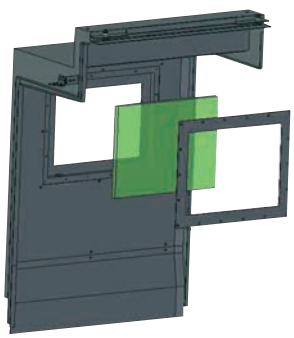
We designed the machine covers so that maintenance locations are easily seen when they are removed, and the openings have been made wider to allow easier access.





■ See-through design (machine rear)

We have used a see-through material for the rear cover, making maintenance even easier.

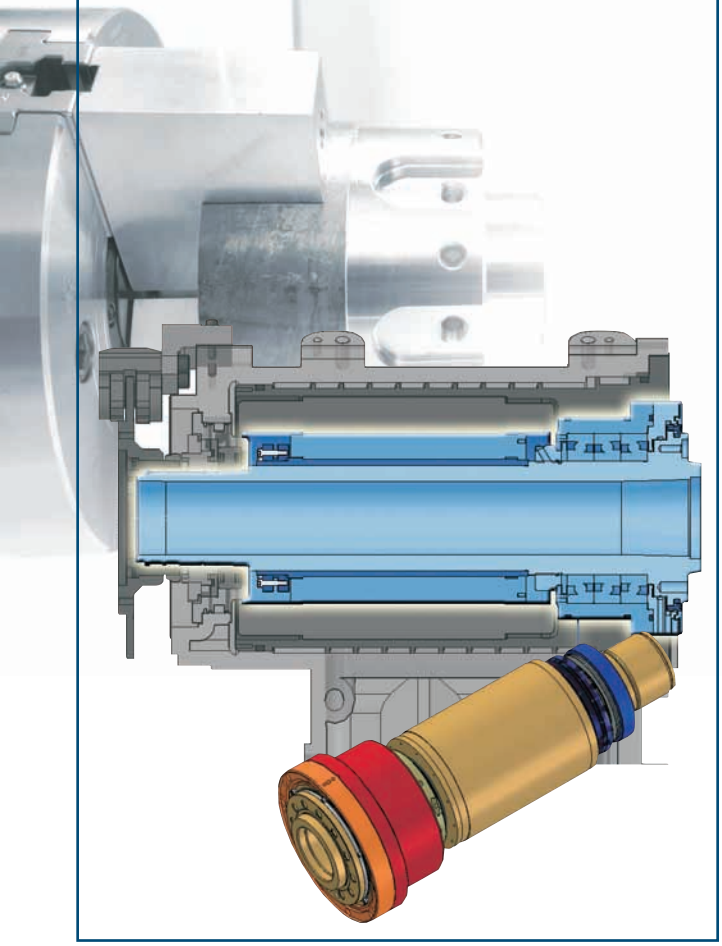


■ Replacing windows

Machine downtime is further reduced by using a door design that enables window replacement without having to remove the door.

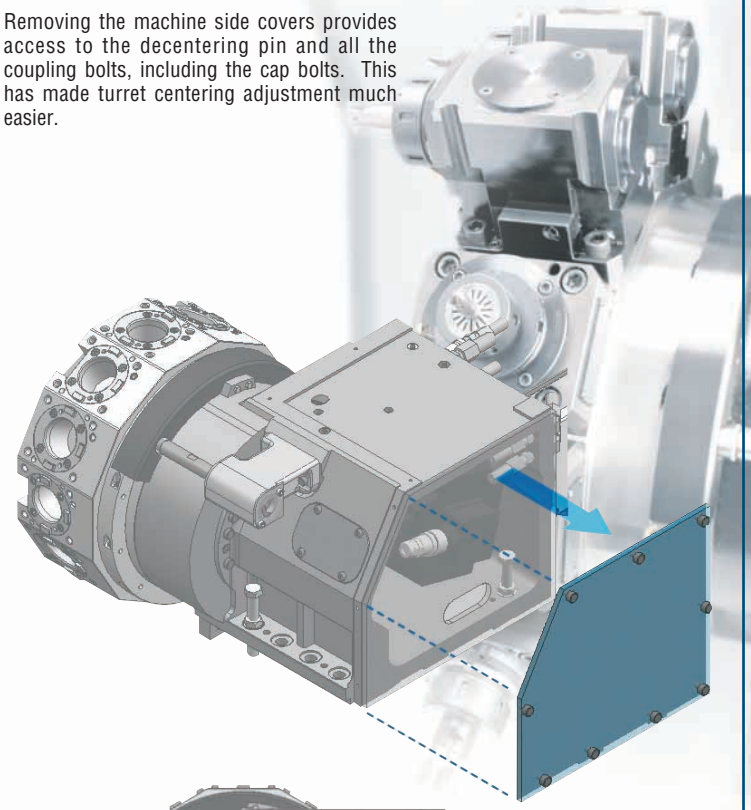
Spindle unit replacement

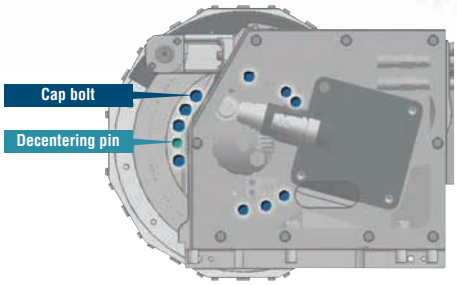
A spindle design with a separate rear bearing housing makes it possible to replace the spindle unit without having to remove the motor wiring. The time it takes to replace the spindle is dramatically shorter when compared with previous models.



Turret centering adjustment

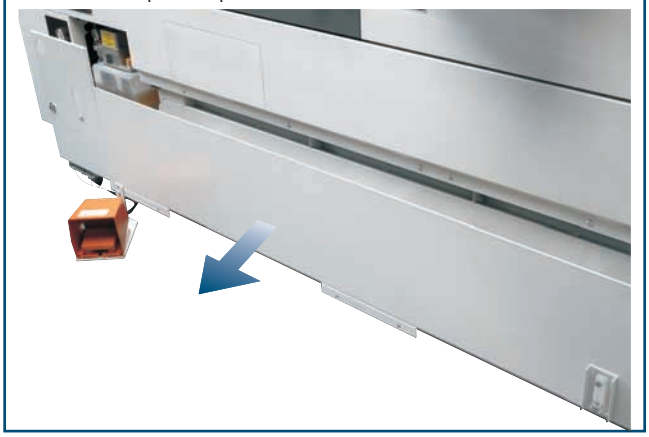
Removing the machine side covers provides access to the decentering pin and all the coupling bolts, including the cap bolts. This has made turret centering adjustment much easier.





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.



Maintenance devices

Easily perform regular maintenance thanks to the device layout, which was designed from the point of view of the operator.



■ Central location of air equipment

The air equipment is located on the right side panel in order to facilitate maintenance.



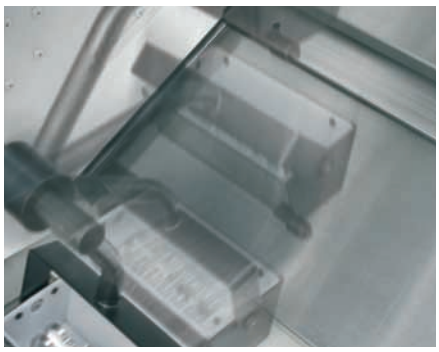
■ Lubricating oil (for sliding surfaces) tank

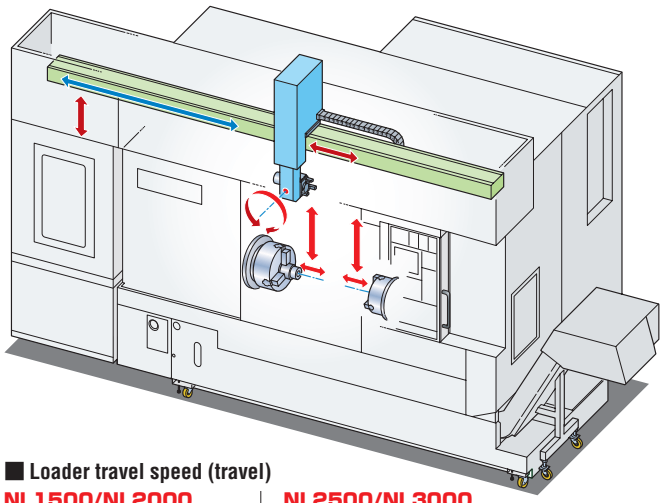
The supply hole for the lubricant tank for the slideways is located in the front of the machine for easy refilling.

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Automatic operation support (option)

What customers expect from automated devices has expanded from the automation and unmanned operation needs of the past to include greater reliability, reduced non-cutting time, and quieter operation. Mori Seiki has poured more resources into design in order to develop automated devices that raise productivity.



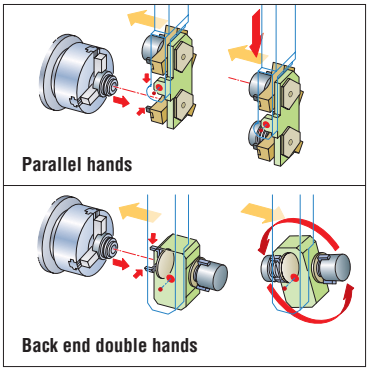


Gantry-type loader system

We have achieved completely automated start-to-finish machining using only one machine, from material supply to discharging the completed workpiece.
This is a high-speed mass production system that reduces non-cutting time.

■ Loader hand

Switch workpiece by swiveling the hand.
The completed object is positioned upside down, preventing chips from entering the machine.



■ Workstocker



A ball caster wheel conveyor is used because it does not cause many chip problems.

■ Loader travel speed (travel)

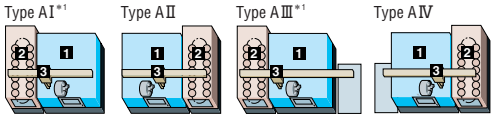
NL1500/NL2000
200 m/min (656.2 fpm)

NL2500/NL3000
120 m/min (393.7 fpm)

■ System variations

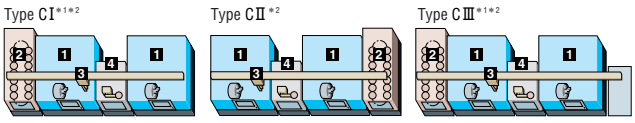
Specifications

Type AⅠ*1 Type AⅡ Type AⅢ*1 Type AⅣ

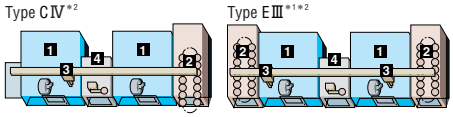


Order system

Type CⅠ*1*2 Type CⅡ*2 Type CⅢ*1*2



Type CⅣ*2 Type EⅢ*1*2



Units
1 Machine
2 Workstocker
3 Loader
4 Turnover unit

■ Standard features

- Work counter (PC counter)
- 14-station rotary workstocker (LG-05)/ 10-station rotary workstocker (LG-10)
- Hand air-blow
- Chuck air-blow
- Automatic power off system
- Spindle orientation
- Low air pressure detecting switch

■ Optional features

- Gantry-type loader for shaft work
- Chip conveyor (right disposal*3/rear disposal)
- Turret-mounted workpiece-pusher
- 20-station rotary workstocker/ 26-station rotary workstocker (LG-05)
- Number of pallet guides: 4
- Double hand for φ200 mm (φ7.9 in.) workpiece*3
- Workpiece holding detector
- Oil mist collector
- External emergency stop button
- Signal tower
- Quality check chute
- Center-guide specification (workpiece pallet)
- Hexagonal material specification (workpiece pallet)

*1 Not applicable for hollow cylinder specifications. *2 Please contact Mori Seiki.
*3 For details contact Mori Seiki.

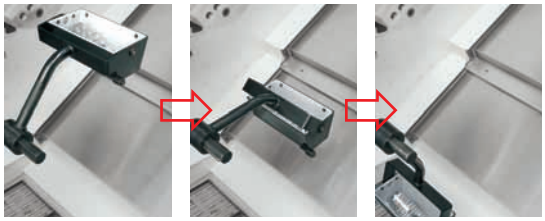
Item			NL1500/NL2000	NL2500	NL3000
Loader type			LG-05 <machine travel type>	LG-10 <machine travel type>	
Gantry-type loader	Max. travel speed	X-axis <hand up/down>	180 m/min (590.6 fpm)	90 m/min (295.3 fpm)	
		Z-axis <loader unit left/right>	200 m/min (656.2 fpm)	120 m/min (393.7 fpm)	
Loader hand	Model		Parallel hands/Back end double hands(3-jaw)		Parallel hands
	Max. transfer weight		5 kg (11 lb.)×2	10 kg (22 lb.)×2	
	Applicable workpiece diameter		150 mm (5.9 in.)	200 mm (7.9 in.)	
	Applicable workpiece length		120 mm (4.7 in.)	150 mm (5.9 in.)	
Workstocker	Number of pallet tables		14 [20] [26]	10 [20]	
	Max. workpiece weight		35 kg (77 lb.)/pallet	75 kg (165 lb.)/pallet	
	Max. workpiece stacked height		470 mm (18.5 in.)		
	Applicable workpiece diameter		20—150 mm (0.8—5.9 in.)	200 mm (7.9 in.)	

[ ] Option



Workpiece unloader* (built-in type)

We have further developed the previous parts catcher so that it can now be customized more easily by the end user. Both spindles handle workpieces up to double the previous length.





■ **Workpiece bucket**

The capacity of the bucket has been doubled for more convenient automation.

■ **Applicable workpiece diameter**

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80 mm (3.1 in.)

■ **Applicable workpiece length**

NL SERIES

200 mm (7.8 in.)

■ **Max. transfer weight**

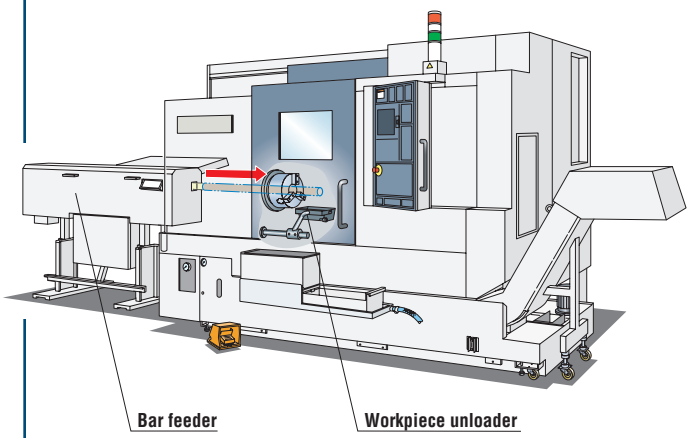
NL1500/NL2000/ NL2500

3.0 kg (6.6 lb.)

NL3000

4.0 kg (8.8 lb.)

* Standard for S-, SMC-, SY-types.



Bar feeder system

Complete bar machining is possible on a single machine when coupled with a workpiece unloader. You won't need a work loader/unloader or turnover unit.

Bar work capacity*

NL1500	NL2000	NL2500	NL3000
ϕ 52 mm (ϕ 2.0 in.)	ϕ 65 mm (ϕ 2.5 in.)	ϕ 80 mm (ϕ 3.1 in.)	ϕ 90 mm (ϕ 3.5 in.)

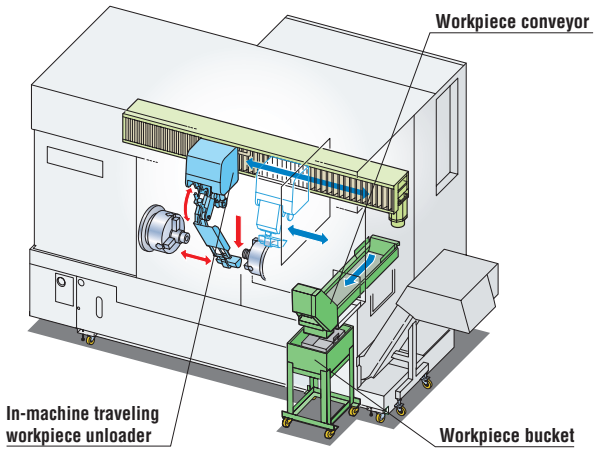
■ **Recommended accessories for bar feeder specification**

● Bar feeder ● Multi counter ● Signal tower ● Guide bushing ● Work stopper

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

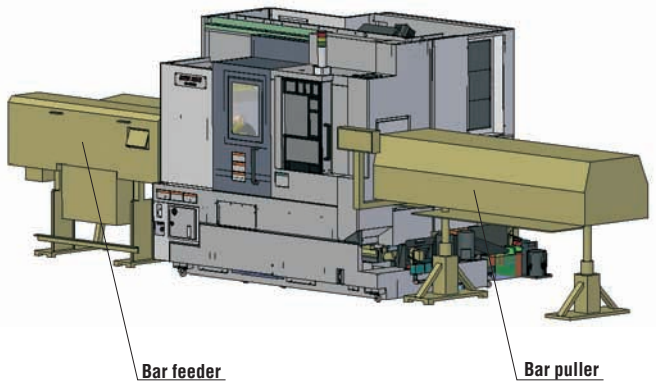
In-machine traveling workpiece unloader system

Operate unmanned when equipped with the workpiece conveyor.
With the S-type, receive workpieces from either the No. 1 or No. 2 spindles.



Bar puller system

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.



Rigid & Precise
NL SERIES

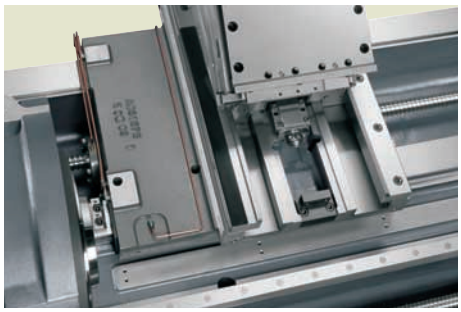
Eco-friendly design

Reducing the strain on the environment has become an important task facing companies today. NL Series have been designed with environmentally friendly functions to make this task easier. The new functions focus on reducing lubricant and electricity consumption. This focus fills customer needs at reduced costs.



Energy savings — Reduced consumption of lubricant





The amount of lubricant needed by the box way has been reduced, contributing to energy savings.

■ Comparison of amounts of lubricant needed

Less 50 %

Power savings — Reduction in electricity consumption



■ Application of an energy-saving hydraulic unit and inverter-controlled oil cooler

We intend to save energy with a pump which applied the inverter technology.

■ Automatic machine light function

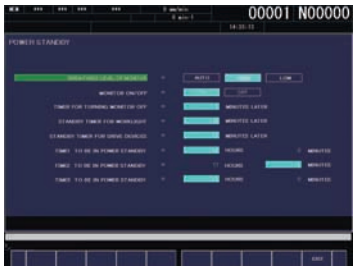
If the operating panel is not touched for a certain amount of time, the interior light turns off. This saves energy and lengthens the life of the machine lights.

■ Automatic power-off function

If the keyboard is not touched after a certain amount of time and NC operation is not being performed, power is cut off to the servomotor, the spindle, the coolant pump, and the chip conveyor, thereby saving energy.

■ Function to reduce power consumption during standby

The amount of electricity consumed in standby mode has been reduced.



Energy-saving settings screen







OP Option

Rigid & Precise
NL SERIES

Peripheral equipment

Chip disposal mechanisms are responsible for raising machine operating rates. Measuring devices that contribute to improved setup…
Mori Seiki has a whole lineup of very reliable peripheral devices ideal for whatever kind of machining you do.

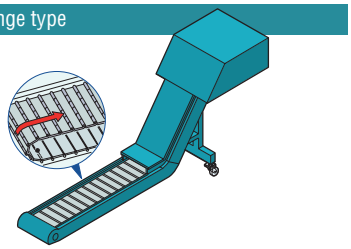


Chip disposal OP

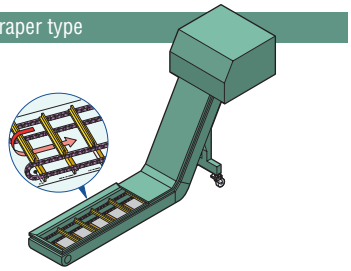
■ Chip conveyor*

A chip conveyor that efficiently disposes of chips. Choose the specifications right for you.

Hinge type



Scraper type





■ Other devices

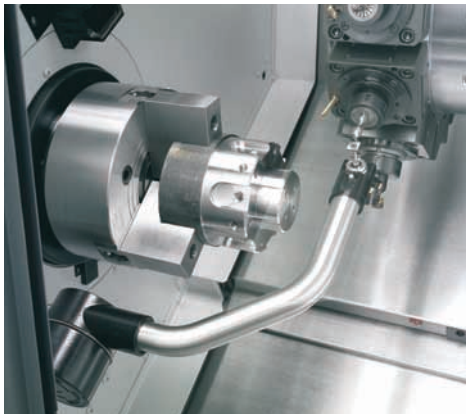
Oil mist collector



Chuck air blow

* Chip conveyors are available in various types for handling chips of different shape and material.
● For details contact Mori Seiki.

Measurement



■ Manual type in-machine tool presetter

Perform tool measurement more efficiently, thereby improving setup.

Others OP



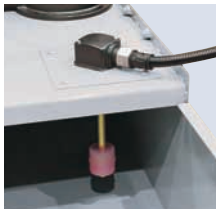
Signal tower



Collet chuck



Hydraulic steady rest



Coolant float switch



Oil skimmer



Work counter



Semi-dry unit



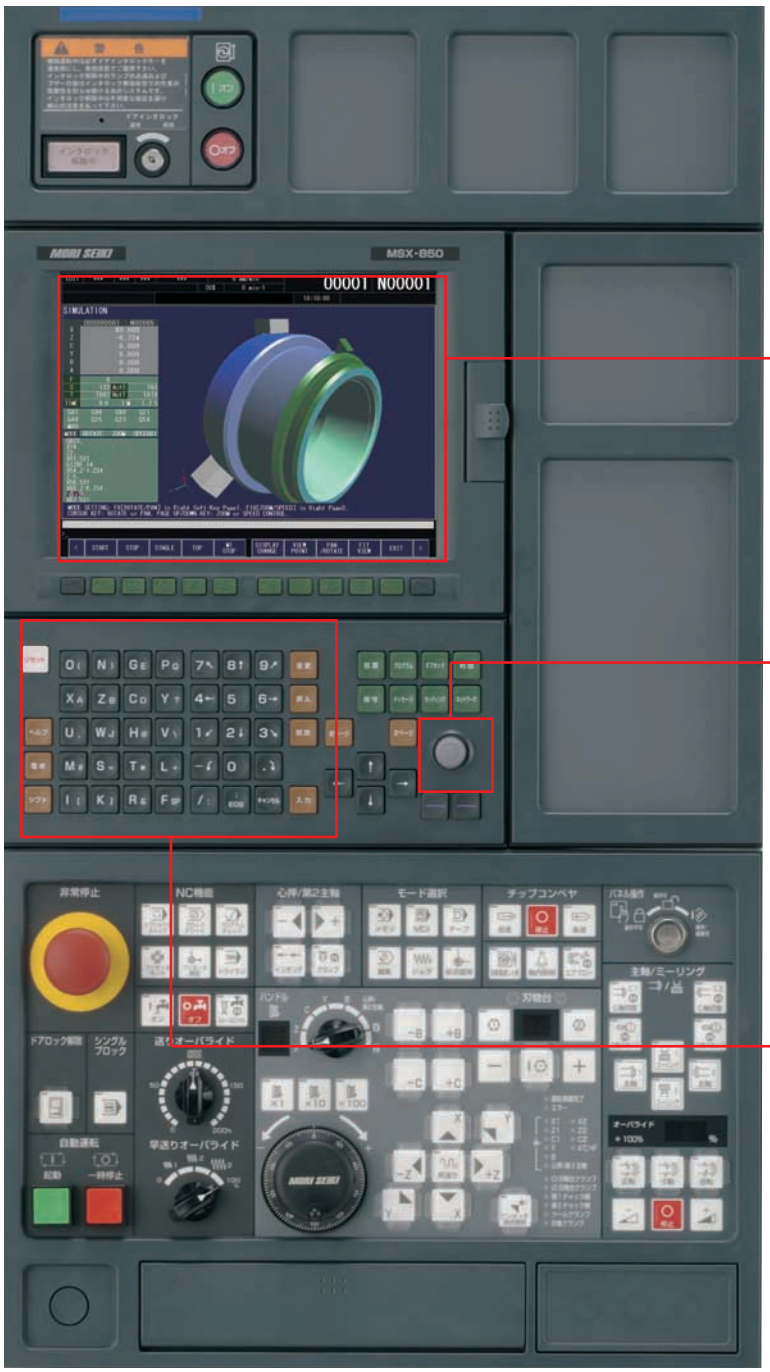
High-pressure coolant system

Rigid & Precise
NL SERIES

MAPPS Ⅱ
for CNC Lathe



A new high-performance operating system



■ Equipped with large memory as a standard feature

- User memory area

Standard **50** MB
<Tape memory length equivalent to 127,000 m (416,687 ft)>

Option **500** MB



- **3**× better CPU performance than previous models, with **8**× larger main memory

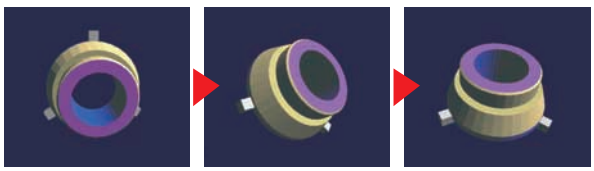
■ Equipped with an LCD display that has a very wide angle of view

- The NL Series is equipped with a wide-angle 10.4-inch TFT LCD display.

■ Equipped with a pointing device



The pointing device enables accurate and smooth turning during 3-D cutting simulations.



■ Keyboard layout



Easy-to-use keyboard with a perfect balance between operation and compactness.

■ Improved setup

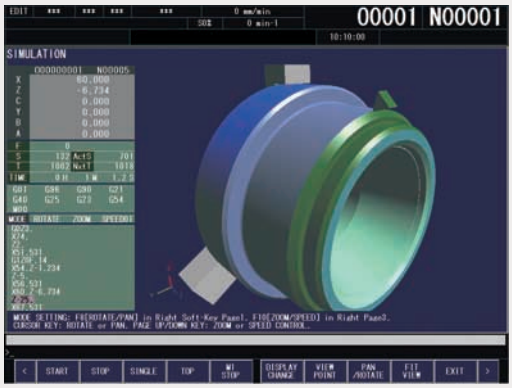
Equipped with our unique Mori Seiki-developed 3-D cutting simulation

- Programming time is cut by 30 % due to the enhanced G-code editing function.
- A function for registering tool names has been added to the tool offset and work-piece offset screens.

MAPPS: Mori Advanced Programming Production System
- The photo shown may differ from actual machine.

Equipped with new functions to make programming faster and more efficient.

■ 3-D cutting simulation



● It is possible to zoom and to rotate while simulating it.
The display of the tool path is possible.

■ A bigger milling menu



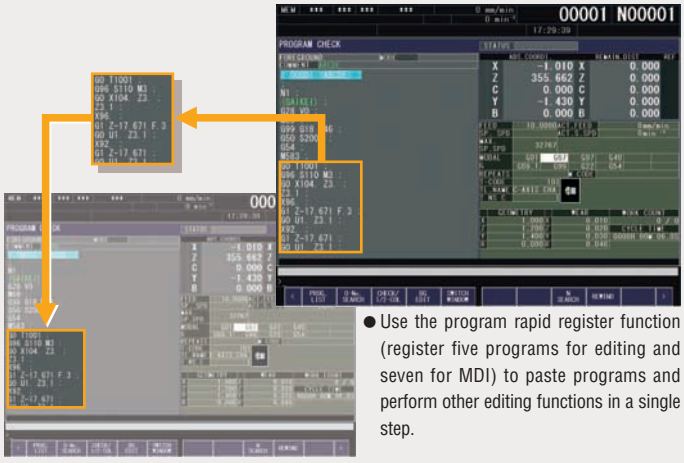
● An abundant list of machining options has been included.

■ Reduction of setup time (tool offset screen)



● Display and enter the shape and wear offsets in the same screen.
Set tool types and guidance drawings for clearer display.

■ Faster creation of programs



● Use the program rapid register function (register five programs for editing and seven for MDI) to paste programs and perform other editing functions in a single step.

■ Program management function



Sorting

Sort data according to different criteria.

- By number
- By size
- By date
- By comment

Custom display

Information you need can be selected and displayed.

- Date
- Comment
- Size
- Display/hide group

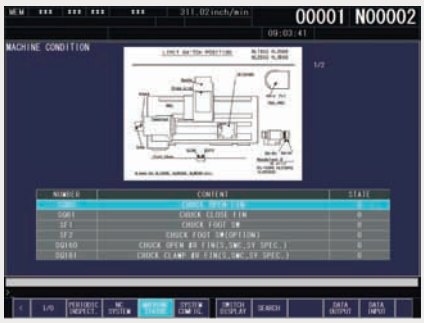
Group management

Manage programs in groups for easier searching.

Status display

The status of the program – No Editing, Foreground, and Background – is displayed.

■ Maintenance functions



● Equipped with handy new functions for maintenance and upkeep.

Limit switch guidance function

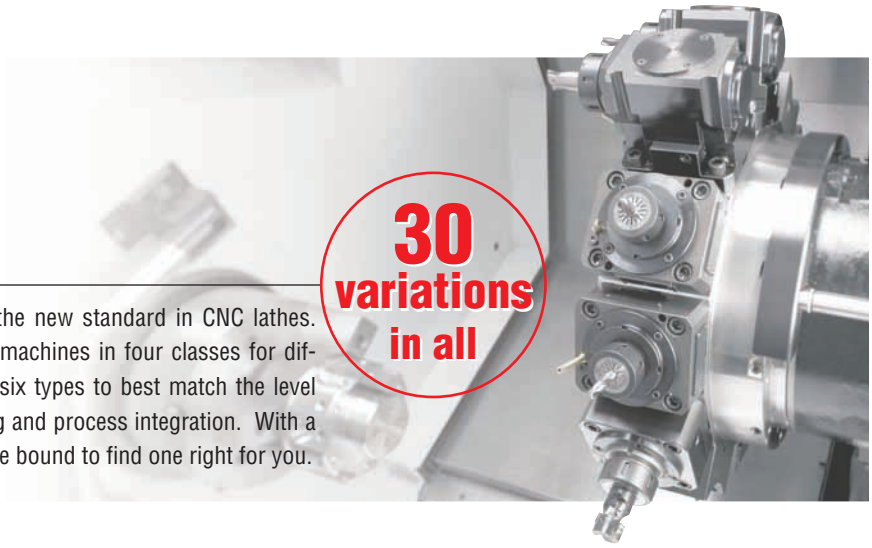
Regular maintenance function

Rigid & Precise
NL SERIES

Variations

We want everyone to use the new standard in CNC lathes. Mori Seiki's NL Series has machines in four classes for different workpiece sizes and six types to best match the level of the customer's machining and process integration. With a total of 30 variations, you are bound to find one right for you.

30 variations in all





NL1500MC/500

NL1500

2-axis turning	MC	Y	S	SMC	SY
Center variations	500				
Standard chuck size <headstock 1 spindle/ headstock 2 spindle>	6-inch / 6-inch				
Bar work capacity*	52 mm (2.0 in.)				
Number of tool stations	12 tools				
Travel <X-/Z-axis>	260/590 mm (10.2/23.2 in.)				
Travel <Y-axis>	100 <±50> mm (3.9 <±2.0> in.)				



NL2000SMC/500

NL2000

2-axis turning	MC	Y	S	SMC	SY
Center variations	500				
Standard chuck size <headstock 1 spindle/ headstock 2 spindle>	8-inch / 6-inch				
Bar work capacity*	65 mm (2.5 in.)				
Number of tool stations	12 [10] tools				
Travel <X-/Z-axis>	260/590 mm (10.2/23.2 in.)				
Travel <Y-axis>	100 <±50> mm (3.9 <±2.0> in.)				

[ ] Option

* Depending on the chuck/cylinder used and its restrictions, it may not be possible to reach full bar work capacity.
● The photo shows the machine equipped with options.

MC Turret with milling function



While milling with the spindle rotating, multi-axis turning is made possible by simultaneously controlling three axes, including the C-axis. This flexibly meets processing needs even when involving drilling processes or complex shapes.

Y Turret with Y-axis control



Controls tool center height in both the direction of the workpiece diameter (X-axis) and the direction of the axis (Z-axis). Achieves high-accuracy machining even with processes such as offset key grooving or drilling off-center holes, which are difficult for conventional turning centers.

S Headstock 2 spindle



A sub-spindle is mounted in the machine. When the first process completes, you can immediately transfer the workpiece to the sub-spindle, achieving continuous machining with both high speed and high precision.

NL2500



NL2500MC/700

2-axis turning	MC	Y	S	SMC	SY
Center variations	700			1250	
Standard chuck size <headstock 1 spindle/ headstock 2 spindle>	10-inch / 6-inch				
Bar work capacity*1	80 mm (3.1 in.)				
Number of tool stations	12 [10] tools				
Travel <X-/Z-axis>	260/795*2, 1,345*3 mm (10.2/31.3*2, 53.0*3 in.)				
Travel <Y-axis>	100 <±50> mm (3.9 <±2.0> in.)				

[ ] Option

NL3000



NL3000Y/1250

2-axis turning	MC	Y
Center variations	700	1250
Standard chuck size	12-inch	
Bar work capacity*1	90 mm (3.5 in.)	
Number of tool stations	10 [12] tools	
Travel <X-/Z-axis>	280/750*2, 1,300*3 mm (11.0/29.5*2, 51.2*3 in.)	
Travel <Y-axis>	120 <±60> mm (4.7 <±2.4> in.)	

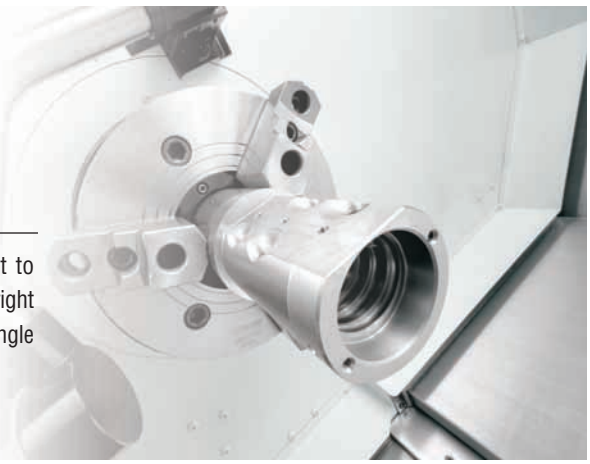
[ ] Option

*1 Depending on the chuck/cylinder used and its restrictions, it may not be possible to reach full bar work capacity. *2 Distance between centers 700 type *3 Distance between centers 1250 type
● The photo shows the machine equipped with options.

Rigid & Precise
NL SERIES

Package

Mori Seiki has packages with various options already set to match your production type, making it easy to choose the right combination of features. Select multiple packages for a single machine.



Bar Material Package

This package improves automation and efficiency when machining bar materials.

Package 1

- Bar feeder I/F
- +
- Workpiece unloader
- +
- Workpiece positioning holder (turret-mounted type)
- +
- Cut-off holder
- +
- Guide bushing

Package 2 Available on machines shipped since January 2005

- Bar feeder I/F
- +
- Cut-off holder
- +
- 8-inch chuck specifications (headstock 2 spindle)
- +
- Guide bushing

● NL2000, NL2500 only.

Setup Support Package

This package includes features effective in reducing setup time.

Package 3

- Automatic door (with tape switch)
- +
- Signal tower (3-stage)

Package 4

- Workpiece rest
- +
- Tailstock air blow

Super High-Pressure Coolant Package

This package efficiently disposes of chips.

Package 5

- High-pressure coolant system <7 MPa (1,015 psi)>
- +
- Coolant cooling unit
- +
- Oil mist collector I/F

Aluminum Machining Package

This package raises productivity when machining aluminum workpieces.

Package 6

- Chip conveyor with chip catcher
- +
- Shower coolant

Long Workpiece Package

This package is for working with long workpieces.

Package 7

- SMW Brace Anchor I/F (one)
- +
- Tailstock air blow

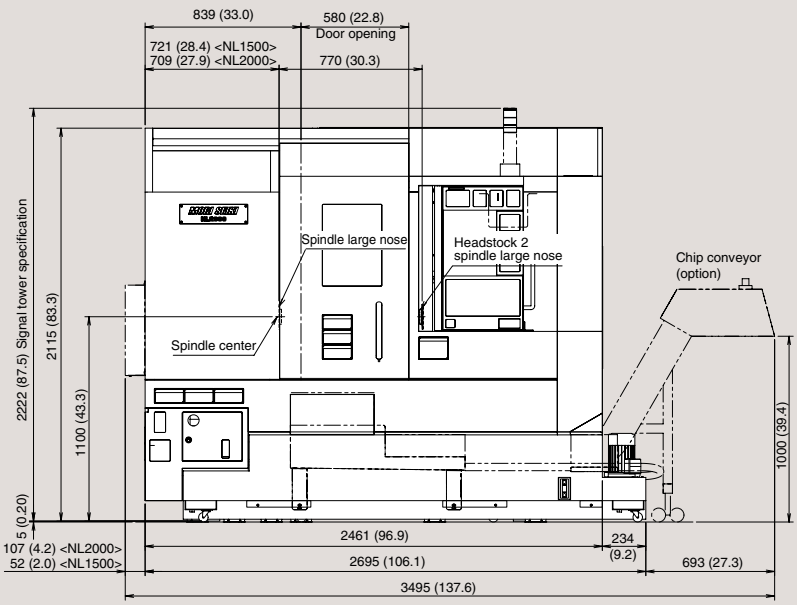
Package 8

- SMW Brace Anchor I/F (one)
- +
- Workpiece rest
- +
- Tailstock air blow

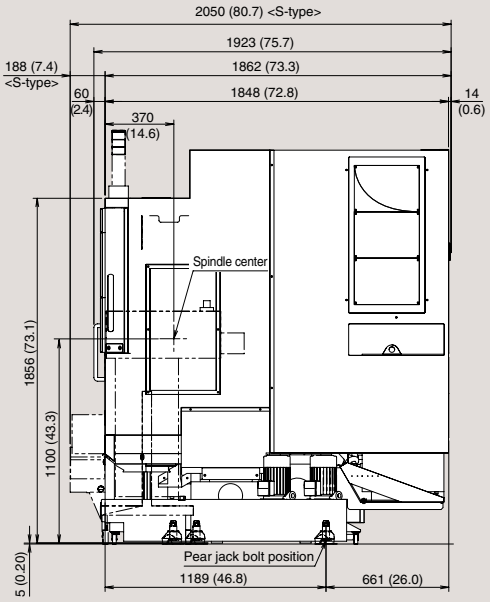
Installation drawing (NL1500, NL2000)

mm (in.)

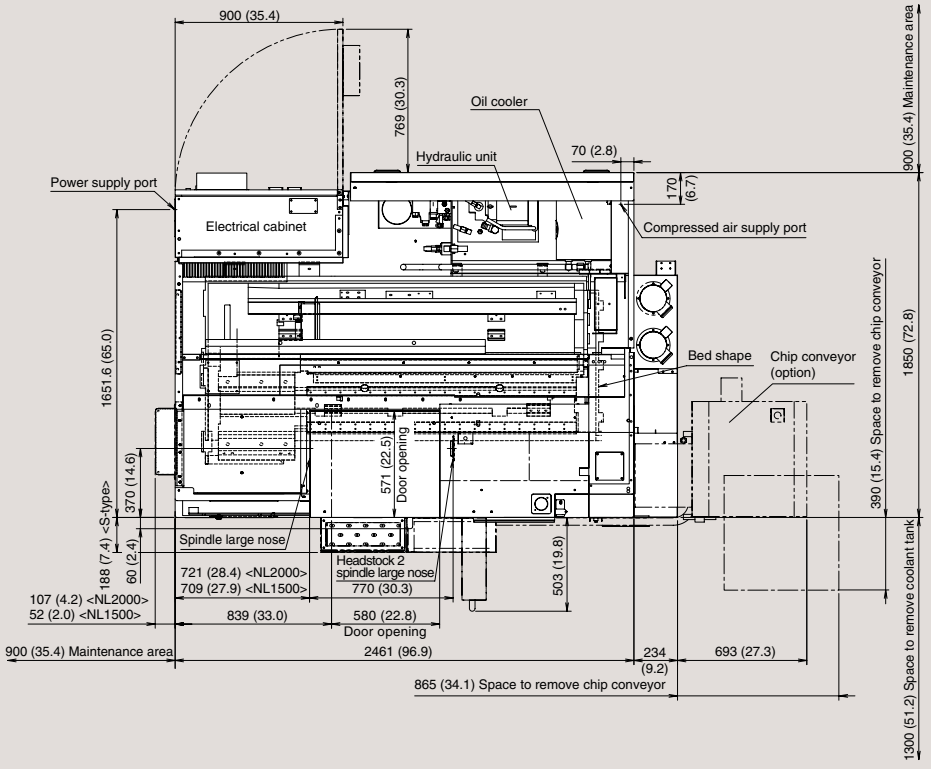
Front view



Side view



Plan view

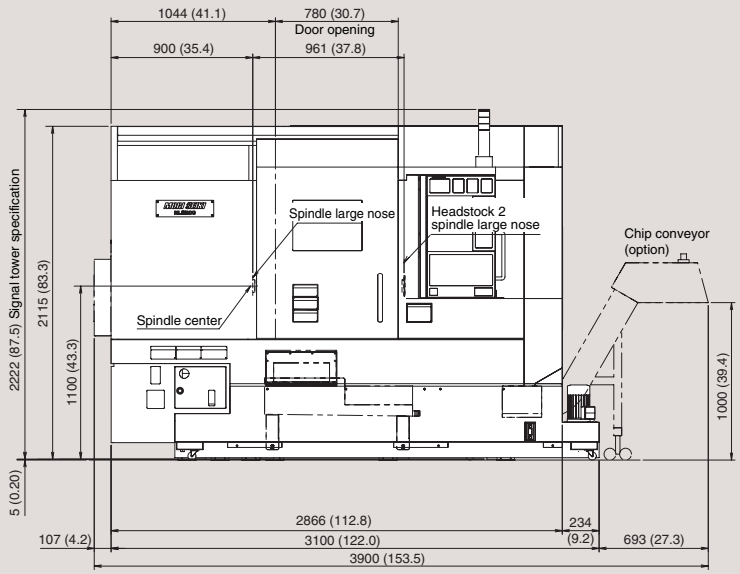


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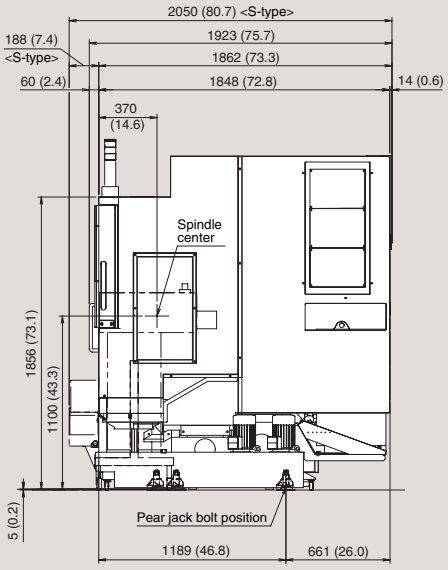
Installation drawing (NL2500/700)

mm (in.)

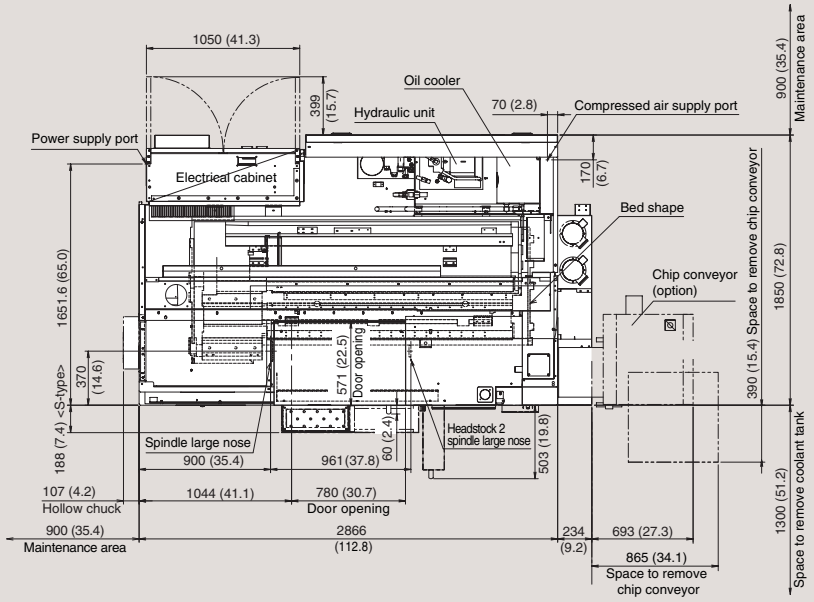
Front view



Side view



Plan view

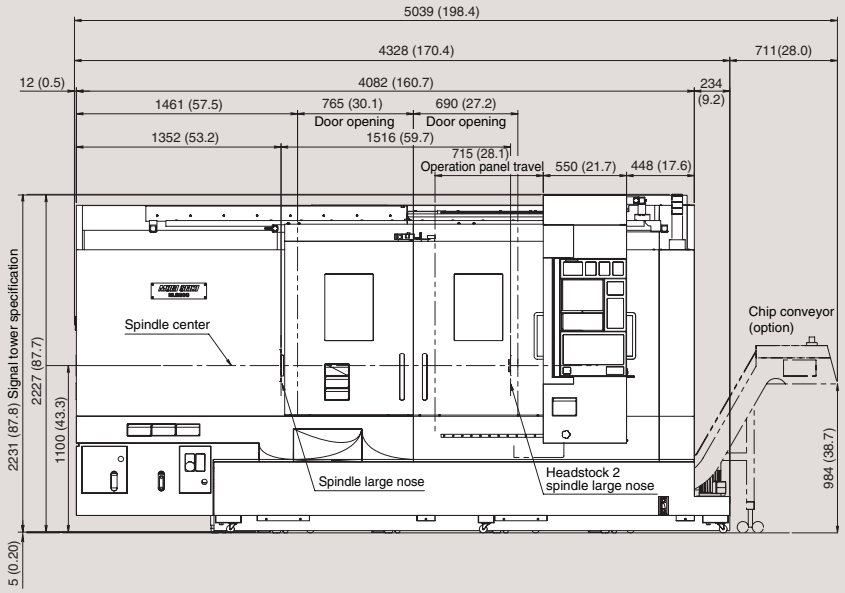


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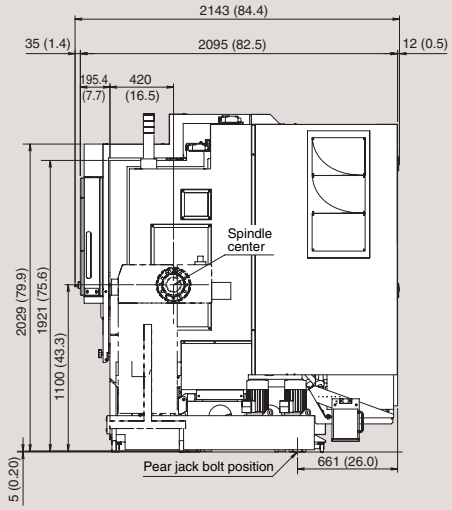
Installation drawing (NL2500/1250)

mm (in.)

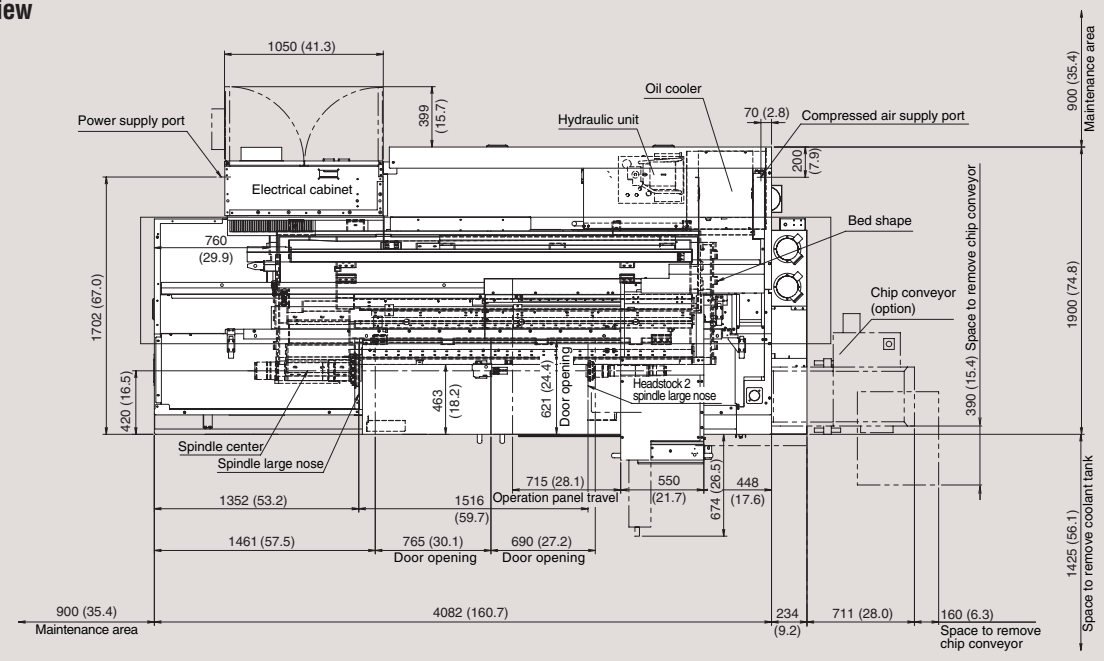
Front view



Side view



Plan view

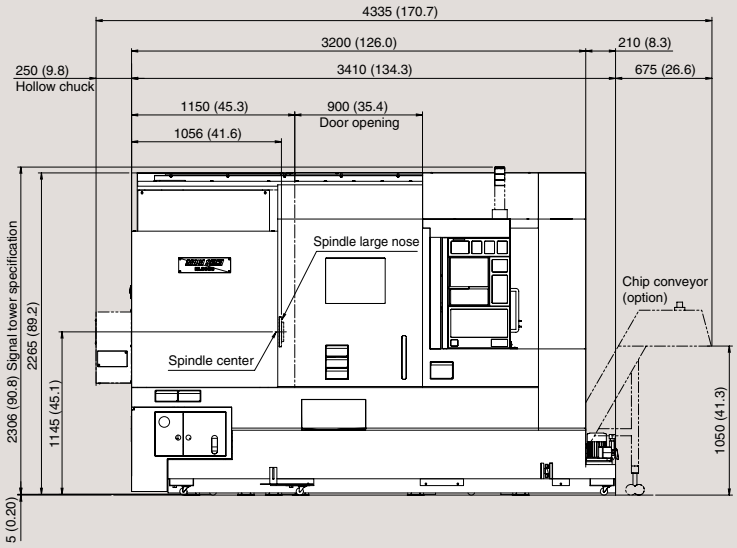


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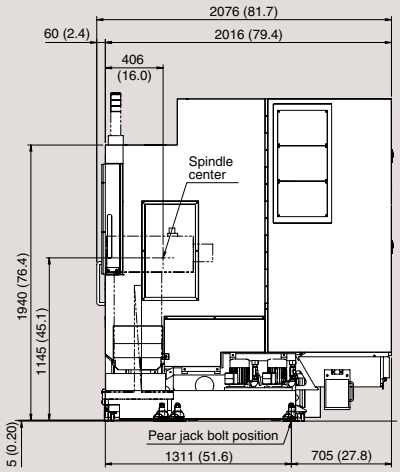
Installation drawing (NL3000/700)

mm (in.)

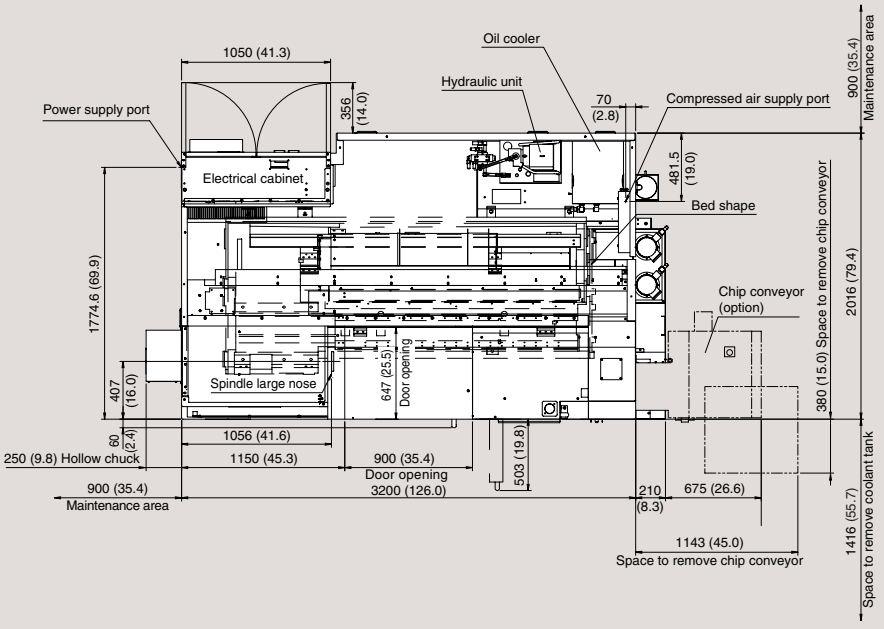
Front view



Side view



Plan view

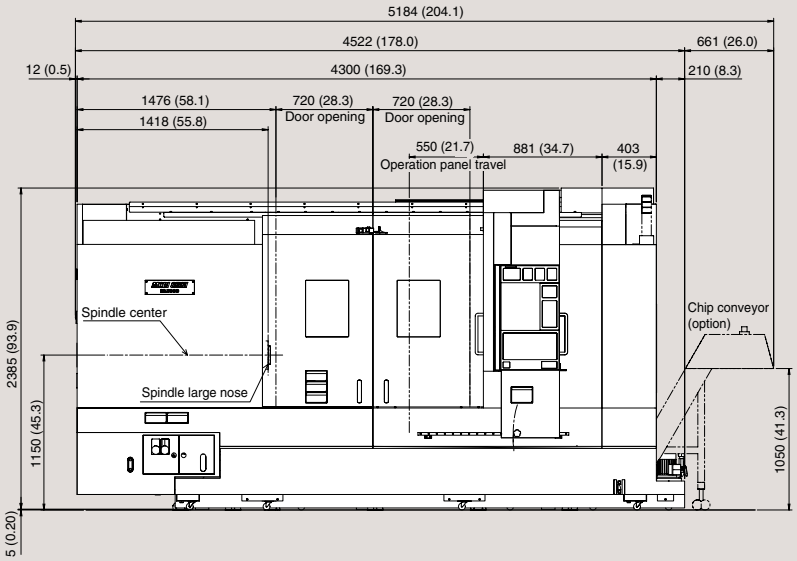


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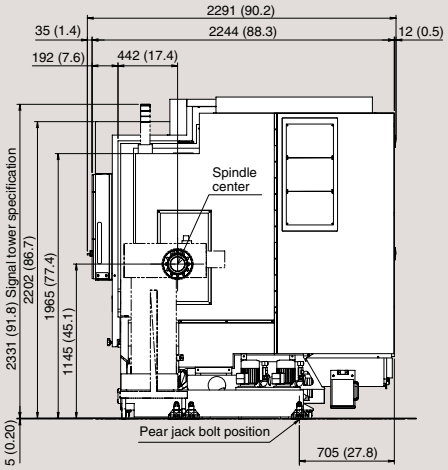
Installation drawing (NL3000/1250)

mm (in.)

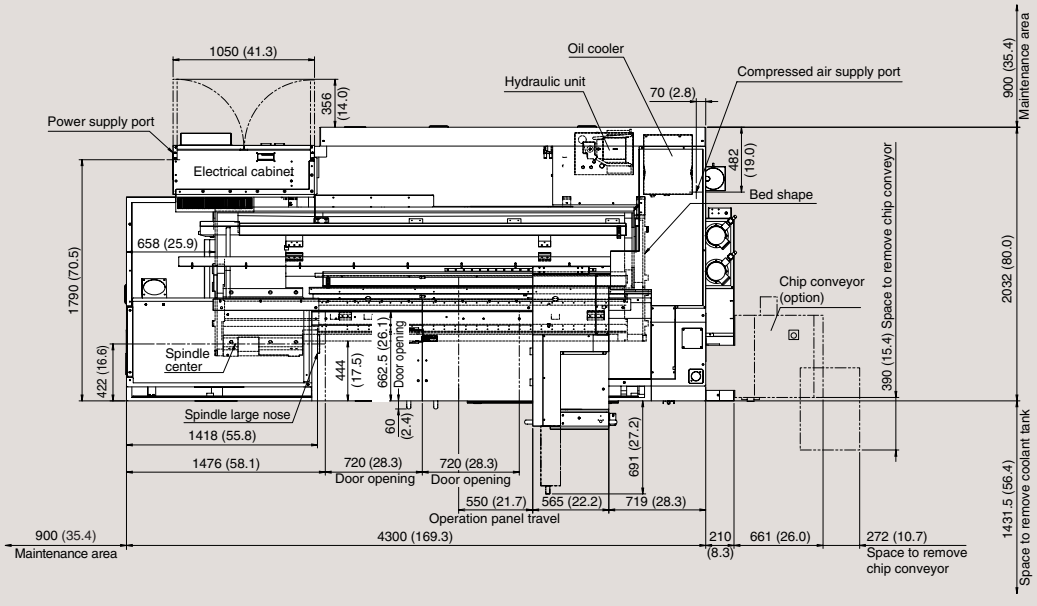
Front view



Side view



Plan view



Q50633A01

Standard & optional features

		NL1500		NL2000		NL2500		NL3000
Spindle		2-axis turning, MC, Y	S, SMC, SY	2-axis turning, MC, Y	S, SMC, SY	2-axis turning, MC, Y	S, SMC, SY	2-axis turning, MC, Y
Max. spindle speed (headstock 1)	6,000 min^{-1}<11/11/7.5 kW (15/15/10 HP)>*1	●	●	×	×	×	×	×
	6,000 min^{-1}<15/15/11 kW (20/20/15 HP)>*1	○	○	×	×	×	×	×
	5,000 min^{-1}<15/15/11 kW (20/20/15 HP)>*1	×	×	●	●	×	×	×
	5,000 min^{-1} <18.5/18.5/18.5/15 kW (24.7/24.7/24.7/20 HP)>*2	×	×	○	○	×	×	×
	4,000 min^{-1} <18.5/18.5/15 kW (24.7/24.7/20 HP)>*3	×	×	×	×	●	●	×
	4,000 min^{-1} <26/26/22 kW (34.7/34.7/30 HP)>*4	×	×	×	×	○	○	×
	3,000 min^{-1}<22/18.5 kW (30/24.7 HP)>*5	×	×	×	×	×	×	●
	3,000 min^{-1}<30/25 kW (40/33.3 HP)>*5	×	×	×	×	×	×	○
Max. spindle speed (headstock 2)	6,000 min^{-1}<11/7.5 kW (15/10 HP)>*6	×	●	×	●	×	●	×
Inverter-controlled oil cooler		●	●	●	●	●	●	●
Spindle orientation (headstock 1)	Without lock function	●	●	●	●	●	●	●
	With lock function	○	○	○	○	○	○	○
Spindle orientation (headstock 2)	Without lock function	×	●	×	●	×	●	×
	With lock function	×	○	×	○	×	○	×
Turret								
Bolt-tightened turret head	12-station	●	●	●	●	●	●	○
	10-station	×	×	○	○	○	○	●
	16-station	☆	☆	×	×	×	×	×
	12-station (SL compatible)	○	○	○	○	○	○	○
	10-station (SL compatible)	×	×	○	○	○	○	○
	16-station (SL compatible)	☆	☆	×	×	×	×	×
Quick-change type turret head	12-station	☆	☆	☆	☆	☆	☆	☆
	10-station	×	×	☆	☆	☆	☆	☆
	VDI	☆*7	×	☆*7	×	☆*7	×	☆*7
	CAPTO	☆*8	☆*8	☆*8	☆*8	☆*8	☆*8	☆*8
Max. rotary tool spindle speed	6,000 min^{-1} <5.5/5.5/3.7 kW (7.5/7.5/5 HP)>*9	●*8	●*8	●*8	●*8	●*8	●*8	●*8
Tool holders		●	●	●	●	●	●	●
Rotary-tool holders		○*8	○*8	○*8	○*8	○*8	○*8	○*8
Polygon option		○	○	○	○	○	○	○
Workpiece holding device								
Hydraulic chuck (headstock 1)	6-inch	○	○	×	×	×	×	×
	8-inch	☆	☆	○	○	×	×	×
	10-inch	×	×	☆	☆	○	○	×
	12-inch	×	×	×	×	☆	☆	○
	15-inch	×	×	×	×	×	×	☆
Hydraulic chuck (headstock 2)	6-inch	×	○	×	○	×	○	×
Hydraulic steady rest	Automatic centering type (SLU-1Z)	○	☆	○	☆	○	☆	×
	Automatic centering type (SLU-2Z)	○	☆	○	☆	○	☆	×
	Automatic centering type (SLUBZ-3)	×	×	×	×	○*10	☆*10	×
	Automatic centering type (SLU3.1)	×	×	×	×	×	×	○
	Interface	○	☆	○	☆	○	☆	○
Tailstock/tailstock spindle								
Tailstock spindle	Live center type (MT4)	●	×	●	×	×	×	×
	Built-in center type (MT3)	○	×	○	×	○*11	×	×
	Live center type (MT5)	×	×	×	×	●	×	●
	Built-in center type (MT4)	×	×	×	×	○*10	×	○
Measurement								
Manual type in-machine tool presetter (headstock 1)	Built-in	●	●	●	●	●	●	●
Manual type in-machine tool presetter (headstock 2)	Removable	×	●	×	●	×	●	×
Automatic in-machine tool presetter	Headstock 1	○	○	○	○	○	○	○
In-machine workpiece measuring system*12	Inner and outer diameter measurement	○	○	○	○	○	○	○
Coolant								
Coolant system	325/520 W (50/60 Hz)	●	●	●	●	●	●	●
	635/1,040 W (50/60 Hz)	○	○	○	○	○	○	○
High-pressure coolant system		○	○	○	○	○	○	○
	Interface	○	○	○	○	○	○	○
Semi-dry unit		☆	☆	☆	☆	☆	☆	☆
Oil skimmer		○	○	○	○	○	○	○
Coolant cooling unit		○	○	○	○	○	○	○
Coolant float switch		○	○	○	○	○	○	○
Coolant flow switch		○	○	○	○	○	○	○
Through-spindle coolant system	Headstock 1	○	○	○	○	○	○	○
	Headstock 2	×	☆	×	☆	×	☆	×

●: Standard features ○: Options ☆: Please contact Mori Seiki ×: Not available

		NL1500		NL2000		NL2500		NL3000
		2-axis turning, MC, Y	S, SMC, SY	2-axis turning, MC, Y	S, SMC, SY	2-axis turning, MC, Y	S, SMC, SY	2-axis turning, MC, Y
Chip disposal								
Chip conveyor (outside machine)	Hinge type (right)	○	○	○	○	○	○	○
	Hinge type (rear)	○	○	○	○	○*11	○	○*11
	Scraper type (right)	○	○	○	○	○	○	○
	Scraper type (rear)	○	○	○	○	○*11	○	○*11
	Spiral type (right)	☆	☆	☆	☆	☆	☆	☆
	Spiral type (rear)	☆	☆	☆	☆	☆*11	☆	☆*11
	Scraper type with drum filter (right)	☆	☆	☆	☆	☆	☆	☆
	Scraper type with drum filter (rear)	☆	☆	☆	☆	☆*11	☆	☆*11
	Chip conveyor with chip catcher (right)	○	○	○	○	○	○	○
	Chip conveyor with chip catcher (rear)	☆	☆	☆	☆	☆*11	☆	☆*11
	Interface	○	○	○	○	○	○	○
Air blow system	Tool tip	○	○	○	○	○	○	○
	Chuck (headstock 1)	○	○	○	○	○	○	○
	Chuck (headstock 2)	×	●	×	●	×	●	×
	Tailstock spindle	○	×	○	×	○	×	○
Through-spindle air blow system	Headstock 1	○	○	○	○	○	○	○
	Headstock 2	×	●	×	●	×	●	×
Chuck top coolant		○	○	○	○	○	○	○
Coolant gun		○	○	○	○	○	○	○
Chip bucket		○	○	○	○	○	○	○
Oil mist collector		○	○	○	○	○	○	○
Automatic operation support								
Gantry-type loader	LG-05	○	○	○	○	×	×	×
	LG-10	×	×	×	×	○	○	○
Workstocker	10-station	×	×	×	×	○	○	○
	14-station	○	○	○	○	×	×	×
	20-station	○	○	○	○	○	○	○
	26-station	○	○	○	○	×	×	×
Workpiece unloader		○	●	○	●	○	●	○
In-machine traveling workpiece unloader		☆	☆	☆	☆	☆	☆	☆
Workpiece conveyor		○	○	○	○	○	○	○
Workpiece push-out equipment		×	●	×	●	×	●	×
	Cylinder type	×	○	×	○	×	○	×
Safety features								
Low air pressure detecting switch		×	●	×	●	×	●	×

Common items to all models

Workpiece holding device

Collet chuck		○
Index chuck	Interface	☆
Soft jaws		○
Chuck high/low pressure system		○
Steady rest	Bolt-tightening	○
Work stopper (in spindle)		○
Workpiece holding detector		☆

Improved accuracy

Direct scale feedback	X-axis	○
	Y-axis	○
	Z-axis	○
Ball screw center cooling device	X-axis	○

Operation support device/function

Total counter	○
Multi counter	○
Work counter	○
Automatic door	○
Automatic power off system	●

Automatic operation support

Loader	Interface	○
Robot	Interface	☆
Bar feeder	Interface	○
Workpiece rest		○
Pull-out finger		○
Turret-mounted workpiece-pusher	φ53 mm (φ2.1 in.)	○
Guide bushing		○
External M-code output	5	○
	10	○
External work number search		○

Others

Signal tower	1-stage	○
	3-stage	○
Chuck foot switch	1 foot switch	●
	2 foot switches	○
Built-in worklight		●
Hand tools		●
Two-layer slide seal		○

Safety features

Full cover		●
Impact resistant viewing window		●
Door interlock system (incl. mechanical lock)		●
Chuck jaw stroke end check*13		●
Cylinder check valve*13		●
Low hydraulic pressure detecting switch		●
Footswitch with lock device		●
Earth leakage breaker		○
Overtravel	Software	●
Danger sensing device interface*14		○

*1 50 %ED/30 min/cont
*2 25 %ED/50 %ED/30 min/cont
*3 25 %ED/50 %ED/cont
*4 10 min/30 min/cont
*5 30 min/cont
*6 25 %ED/cont
*7 2-axis turning only.
*8 For MC-, SMC-, Y- and SY-types only.
*9 3 min/5 min/cont
*10 Distance between centers 1250 type only.
*11 Distance between centers 700 type only.
*12 Certain workpiece shapes cannot be measured.
*13 Featured only when optional chuck/cylinder is selected.
*14 Recommended when oil-based coolant is used or during unmanned operation.

- The details given above and the specifications are subject to change without notice.
- Specifications, accessories, safety device, and function are available upon request.
- Some options are not available in particular regions. For details contact Mori Seiki.

NC unit specifications (MSX-850)

Standard

Controlled axes

Controlled axes	X, Z, C*1, Y*2, B, 4*3, 5*4, 6*2
Simultaneously controllable axes	X, Z, C*1, Y*2
Cs contouring control *1	
Inclined axis control for arbitrary axis*2	Y-axis
Least input increment	0.001 mm (0.0001 in.)
Least command increment	0.001 mm (0.0001 in.)
Max. command value	±99,999.999 mm (±9,999.9999 in.)
SHG control	
Inch/metric conversion	G20/G21
Interlock*5	
Machine lock	
Emergency stop	
Stored stroke check 1	Stroke limit Ⅰ
Stored stroke check 3	Prohibited area to enter: Inside of set area (stroke limit ⅠB)
Chuck and tailstock barrier*6	
Follow-up	
Servo-off	
Chamfering ON/OFF	
Backlash compensation	±9,999 pulses
Rapid traverse/cutting feed backlash compensation	
Stored pitch error compensation	
Inclined angle offset	Memorized relative position compensation
Straightness offset	
Cutting feedrate	

Operation

Automatic operation (memory)	
MDI operation	
Search function	Work number search, Sequence number search
Sequence number collation and stop	
Buffer register	Pre-read 1 block
Dry run	
Single block	
Jog feedrate	0—5,000 mm/min (0—197 ipm) <20 steps>
Manual zero return	
Zero point setting without dog	
Manual pulse handle feed	1unit per control system: ×1, ×10, ×100

Interpolation functions

Positioning	G00 (linear interpolation type positioning is possible)
Linear interpolation	G01
Circular interpolation	G02/G03
Dwell	G04
Polar coordinate interpolation*1	G12.1, G13.1
Cylindrical interpolation*1	G7.1
Helical interpolation*7	Circular interpolation+ Linear interpolation (max. 2 axes)
Thread cutting/Synchronous feed	
Multi-start thread cutting	
Retract during thread cutting cycle	
Continuous thread cutting	
Variable lead thread cutting	G34
Skip	G31
High-speed skip/Multi-skip	
Zero return	G28
Zero return check	G27
2nd zero return	G30
3rd and 4th zero return	

Feed functions

Rapid traverse rate override	F0 (fine feed), 5/10/25/100 %
Feed per minute	
Feed per revolution	
Constant tangential velocity control	Interpolation in cutting feed
Cutting feedrate clamp	
Automatic acceleration/deceleration	Linear type (rapid traverse)/ Exponential function type (cutting feed)
Feedrate override	0—200 % (10 % increments)
Jog feedrate override	0—5,000 mm/min (0—197 ipm)
Override cancel	M48, M49

Program input

Tape code	EIA RS244/ISO 840 code automatic recognition
Optional block skip	1 block
Max. command value	± 8 digits
Program number	4-digit O code/8-digit O code
Sequence number	5-digit N code
Absolute (incremental) programming	X (U), Z (W), C (H)*1, Y (V)*2, B*8
Decimal point programming/ Electrical calculator type decimal point programming	Electrical calculator type decimal point programming is changeable using parameter.
Diameter/radius programming (X-axis)	Standard: Diameter
Plane selection	G17, G18, G19
Rotary axis designation	
Rotary axis roll-over	
Coordinate system setting	G50
Automatic coordinate system setting	
Coordinate system shift	
Direct input of coordinate system shift	
Work coordinate system	G52, G53, G54—G59
Manual absolute on/off	PC parameter
Drawing dimension direct input	
Chamfer, corner R	
Programmable data input	G10
Sub-program call	Up to 8 nestings
Custom macro	200 sets (# 100 to # 199, # 500 to # 599)
Interruption type custom macro	
Single repetitive cycle	
Multiple repetitive cycle	
Multiple repetitive cycle Ⅱ	Pocket cutting, zigzag thread cutting
Hole machining canned cycle	
Circular arc radius command	
F15 format	
Command angles of straight lines	

Miscellaneous function/Spindle speed function

Miscellaneous function	4-digit M code
Auxiliary function lock	
High-speed M/S/T/B interface	High-speed FIN function
Multiple miscellaneous function commands*9	3 commands
Spindle speed functions	5-digit S code
Spindle serial output	
Spindle serial output (3 units)*10	
Constant surface speed control	
Spindle speed override	50—150 % (10 % increments)
Spindle 1 orientation	
Spindle 1 output switching*11	Winding switchover
Spindle 2 orientation*12	
Spindle 3 orientation*10	
Spindle synchronized control*8	
Multiple-spindle control*12	
Synchronized tapping*1	With rotary tool spindle
Load monitoring function	

Tool function/Tool offset function

Tool functions	4-digit T code
Number of tool offsets	80 sets
Tool position offset	
Y-axis offset*2	
Tool nose radius offset	G40—G42
Automatic decision of tool nose radius offset direction	
Tool geometry offset/Tool wear offset	
Tool life management	
7-digit tool offset data*13	
Tool offset measurement direct data input	
Tool offset measurement direct data input B	Used by in-machine tool presetter

Editing

Part program storage	320 m (1,050 ft) <4 kB≒10 m (33 ft) in tape length>
Number of stored programs	200 programs
Tape editing	
Program protect	
Background editing	
Expanded tape editing	

Setting and display

Status display	
Clock function	
Actual position display	
Program display	Program name: 18 characters
Parameter setting display	
Self-diagnosis function	
Alarm display	
Alarm history display	
Operator's message history display	
Operation history display	
Running time display/No. of parts display	
Actual feedrate display	
Display of actual spindle speed and T code	
Operation panel: Display section	10.4-incph TFT color LCD
Servo adjustment screen	
Spindle adjustment screen	
Hardware/software system configuration display	
Regular interval maintenance screen	
Maintenance information display screen	
Data protection key	It is possible to set by MAPPS parameter
Screen clear	It is possible to set on the screen of saving electricity power

Data input/output

I/O interface	RS-232-C/PCMCIA (type Ⅰ, Ⅱ)
External message	

Option

Additional part program storage capacity (in total)	600/1,280/2,560/5,120 m (1,969/4,200/8,400/16,799 ft)
Additional number of stored programs (in total)	400*14/1,000*15programs

☐ Programming resolution 1/10 <0.0001 mm (0.00001 in.)>
☐ Stored stroke check 2 (stroke limit Ⅱ, ⅡB) ☐ Program restart
☐ Manual handle feed interruption ☐ Circular thread cutting
☐ Polygon cutting between spindles*1
☐ Addition of optional block skip (9 blocks)
☐ Additional custom macro common variables (300 sets: #100 to #199, #500 to #699, 600 sets: #100 to #199, #500 to #999)
☐ Synchronized tapping (spindle center)*16
☐ Additional number of tools to be controlled by the tool life management function (80 sets)
☐ External data input (external program number search, external tool offset, and external work coordinate system shift)
☐ External work number search (workpiece number: 1—15)

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*1 MC-, SMC-, Y-, SY-types only. *2 Y-, SY-types only.
*3 2-axis turning, S-types only. *4 MC-, SMC-types only.
*5 External-input controlled axis interlock is optional. Interlock is not possible for user-selected axis.
*6 Only works in automatic operation.
*7 Standard for Y- and SY-types. Available as option for MC-, SMC-types only.
*8 S-, SMC-, SY-types only.
*9 This function is standard for the specified M codes.
*10 SMC-, SY-types only.
*11 Function depends on spindle motor specifications.
*12 MC-, SMC-, S-, Y-, SY-types only.
*13 Distance between centers 1250 type only.
*14 Min. 600 m (1,969 ft) tape recording length required for 400 workpieces.
*15 Min. 1,280 m (4,200 ft) tape recording length required for 1,000 workpieces.
*16 For MC-, SMC-, Y- and SY-types, synchronized tapping of rotary tool spindle is standard.

Machine specifications (NL1500)

Item			NL1500/500	NL1500MC/500	NL1500Y/500	NL1500S/500	NL1500SMC/500	NL1500SY/500
Capacity	Swing over bed	mm (in.)	923.8 (36.4) <interference with front cover 579.8 (22.8)>					
	Swing over cross slide	mm (in.)	755 (29.7)					
	Max. turning diameter	mm (in.)	356 (14.0)					
	Standard turning diameter	mm (in.)	260 (10.2)					
	Max. turning length	mm (in.)	515 (20.2)					
	Bar work capacity*1	mm (in.)	52 (2.0)					
Travel	X-axis travel	mm (in.)	260 (10.2)					
	Z-axis travel	mm (in.)	590 (23.2)					
	Y-axis travel	mm (in.)	—		100 <±50> (3.9 <±2.0>)	—		100 <±50> (3.9 <±2.0>)
	Headstock 2 travel <B-axis>	mm (in.)	—			534 (21.0)		
Spindle	Max. spindle speed*2	min^{-1}	6,000			Headstock 1, 2: 6,000		
	Type of spindle nose		JIS A_2-5			Headstock 1, 2: JIS A_2-5		
	Through spindle hole diameter	mm (in.)	61 (2.4)			Headstock 1: 61 (2.4) Headstock 2: 43 (1.7)		
	Min. spindle indexing angle		—	0.001°		—	0.001°	
	Spindle bearing inner diameter	mm (in.)	100 (3.9)			Headstock 1: 100 (3.9) Headstock 2: 85 (3.3)		
Turret	Number of tool stations		12					
	Shank height for square tool	mm (in.)	20 ($^3/_4$)					
	Shank diameter for boring bar	mm (in.)	Max. 40 ($1^1/_2$) [32 ($1^1/_4$)*3]			Headstock 1: Max. 40 ($1^1/_2$) [32 ($1^1/_4$)*3], Headstock 2: Max. 32 ($1^1/_4$)		
	Tool shank diameter for rotary tool	mm (in.)	—	20 ($^3/_4$)		—	20 ($^3/_4$)	
	Turret indexing time	s	0.2	0.25		0.2	0.25	
	Max. rotary tool spindle speed*2	min^{-1}	—	6,000		—	6,000	
Feedrate	Rapid traverse rate	mm/min (ipm)	X, Z: 30,000 (1,181.1) Tailstock: 7,000 (275.6)	X, Z: 30,000 (1,181.1) Tailstock: 7,000 (275.6) C: 400 min^{-1}	X, Z: 30,000 (1,181.1) Y: 10,000 (393.7) Tailstock: 7,000 (275.6) C: 400 min^{-1}	X, Z, B: 30,000 (1,181.1)	X, Z, B: 30,000 (1,181.1) C: 400 min^{-1}	X, Z, B: 30,000 (1,181.1) Y: 10,000 (393.7) C: 400 min^{-1}
Tailstock	Tailstock travel	mm (in.)	564 (22.2)			—		
	Tailstock spindle diameter	mm (in.)	80 (3.1)			—		
	Taper hole of tailstock spindle		Live center <MT4> [Built-in center <MT3>]			—		
Motor	Spindle drive motor <50 %ED/30 min/cont>	kW (HP)	11/11/7.5 (15/15/10) [15/15/11 (20/20/15)]			Headstock 1: 11/11/7.5 (15/15/10) [15/15/11 (20/20/15)] Headstock 2: 11/7.5 (15/10)*4		
	Rotary tool spindle drive motor <3 min/5 min/cont>	kW (HP)	—	5.5/5.5/3.7 (7.5/7.5/5)		—	5.5/5.5/3.7 (7.5/7.5/5)	
	Feed motor	kW (HP)	X: 2.0 (2.7) Z: 3.5 (4.7)		X, Y: 2.0 (2.7) Z: 3.5 (4.7)	X, B: 2.0 (2.7) Z: 3.5 (4.7)		X, Y, B: 2.0 (2.7) Z: 3.5 (4.7)
Power sources	Electrical power supply*5	kVA	18.6 [22.8*6]	23.1 [26.8*6]	27.0 [31.0*6]	27.1 [31.1*6]	27.0 [31.1*6]	31.4 [35.5*6]
	Compressed air supply	MPa (psi), L/min (gpm)	—			0.5 (72.5), 100 (26.4) <ANR*7>		
Tank capacity	Coolant tank capacity	L (gal.)	254 (67.1)					
Machine size	Machine height <from floor>	mm (in.)	2,120 (83.5)					
	Floor space <chip conveyor not included>	mm (in.)	2,695×1,923 (106.1×75.7)			2,695×2,050 (106.1×80.7)		
	Mass of machine	kg (lb.)	5,300 (11,660)	5,400 (11,880)	5,600 (12,320)	5,400 (11,880)	5,500 (12,100)	5,700 (12,540)

[ ] Option JIS: Japanese Industrial Standard

I94028A02

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

*2 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.

*3 When mounted with double boring holder.

*4 25 %ED/cont

*5 5+4 kVA for loader specification

*6 High output

*7 ANR refers to a standard atmospheric state; i. e., temperature at 20 ℃ (68 °F); absolute pressure at 101.3 kPa (14.7 psi); and relative humidity at 65 %.

Machine specifications (NL2000)

Item			NL2000/500	NL2000MC/500	NL2000Y/500	NL2000S/500	NL2000SMC/500	NL2000SY/500
Capacity	Swing over bed	mm (in.)	923.8 (36.4) <interference with front cover 579.8 (22.8)>					
	Swing over cross slide	mm (in.)	755 (29.7)					
	Max. turning diameter	mm (in.)	356 (14.0)					
	Standard turning diameter	mm (in.)	275 (10.8)					
	Max. turning length	mm (in.)	510 (20.0)					
	Bar work capacity*1	mm (in.)	65 (2.5)					
Travel	X-axis travel	mm (in.)	260 (10.2)					
	Z-axis travel	mm (in.)	590 (23.2)					
	Y-axis travel	mm (in.)	—		100 <±50> (3.9 <±2.0>)	—		100 <±50> (3.9 <±2.0>)
	Headstock 2 travel <B-axis>	mm (in.)	—			534 (21.0)		
Spindle	Max. spindle speed*2	min^{-1}	5,000			Headstock 1: 5,000 Headstock 2: 6,000		
	Type of spindle nose		JIS A_2-6			Headstock 1: JIS A_2-6 Headstock 2: JIS A_2-5		
	Through spindle hole diameter	mm (in.)	73 (2.9)			Headstock 1: 73 (2.9) Headstock 2: 43 (1.7)		
	Min. spindle indexing angle		—	0.001°		—	0.001°	
	Spindle bearing inner diameter	mm (in.)	120 (4.7)			Headstock 1: 120 (4.7) Headstock 2: 85 (3.3)		
Turret	Number of tool stations		12 [10]					
	Shank height for square tool	mm (in.)	25 (1)					
	Shank diameter for boring bar	mm (in.)	Max. 50 (2) [32 ($1^1/_4$)*3]			Headstock 1: Max. 50 (2) [32 ($1^1/_4$)*3]	Headstock 2: Max. 32 ($1^1/_4$)	
	Tool shank diameter for rotary tool	mm (in.)	—	20 ($^3/_4$)		—	20 ($^3/_4$)	
	Turret indexing time	s	0.2	0.25		0.2	0.25	
	Max. rotary tool spindle speed*2	min^{-1}	—	6,000		—	6,000	
Feedrate	Rapid traverse rate	mm/min (ipm)	X, Z: 30,000 (1,181.1) Tailstock: 7,000 (275.6)	X, Z: 30,000 (1,181.1) Tailstock: 7,000 (275.6) C: 400 min^{-1}	X, Z: 30,000 (1,181.1) Y: 10,000 (393.7) Tailstock: 7,000 (275.6) C: 400 min^{-1}	X, Z, B: 30,000 (1,181.1)	X, Z, B: 30,000 (1,181.1) C: 400 min^{-1}	X, Z, B: 30,000 (1,181.1) Y: 10,000 (393.7) C: 400 min^{-1}
Tailstock	Tailstock travel	mm (in.)	564 (22.2)			—		
	Tailstock spindle diameter	mm (in.)	80 (3.1)			—		
	Taper hole of tailstock spindle		Live center <MT4> [Built-in center <MT3>]			—		
Motor	Spindle drive motor <50 %ED/30 min/cont>	kW (HP)	15/15/11 (20/20/15) [18.5/18.5/18.5/15 (24.7/24.7/24.7/20)*4]			Headstock 1: 15/15/11 (20/20/15) [18.5/18.5/18.5/15 (24.7/24.7/24.7/20)*4] Headstock 2: 11/7.5 (15/10)*5		
	Rotary tool spindle drive motor <3 min/5 min/cont>	kW (HP)	—	5.5/5.5/3.7 (7.5/7.5/5)		—	5.5/5.5/3.7 (7.5/7.5/5)	
	Feed motor	kW (HP)	X: 2.0 (2.7) Z: 3.5 (4.7)		X, Y: 2.0 (2.7) Z: 3.5 (4.7)	X, B: 2.0 (2.7) Z: 3.5 (4.7)		X, Y, B: 2.0 (2.7) Z: 3.5 (4.7)
Power sources	Electrical power supply*6	kVA	20.0 [24.1*7]	23.8 [31.3*7]	31.0 [35.7*7]	31.1 [35.8*7]		35.5 [40.2*7]
	Compressed air supply MPa (psi), L/min (gpm)		—			0.5 (72.5), 100 (26.4) <ANR*8>		
Tank capacity	Coolant tank capacity	L (gal.)	254 (67.1)					
Machine size	Machine height <from floor>	mm (in.)	2,120 (83.5)					
	Floor space <chip conveyor not included>	mm (in.)	2,695×1,923 (106.1×75.7)			2,695×2,050 (106.1×80.7)		
	Mass of machine	kg (lb.)	5,400 (11,880)	5,500 (12,100)	5,700 (12,540)	5,500 (12,100)	5,600 (12,320)	5,800 (12,760)

[ ] Option JIS: Japanese Industrial Standard

I94029A02

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

*2 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.

*3 When mounted with double boring holder.

*4 25 %ED/50 %ED/30 min/cont

*5 25 %ED/cont

*6 +4 kVA for loader specification

*7 High output

*8 ANR refers to a standard atmospheric state; i. e., temperature at 20 ℃ (68 °F); absolute pressure at 101.3 kPa (14.7 psi); and relative humidity at 65 %.

Machine specifications (NL2500/700)

Item			NL2500/700	NL2500MC/700	NL2500Y/700	NL2500S/700	NL2500SMC/700	NL2500SY/700
Capacity	Swing over bed	mm (in.)	923.8 (36.4) <interference with front cover 579.8 (22.8)>					
	Swing over cross slide	mm (in.)	755 (29.7)					
	Max. turning diameter	mm (in.)	356 (14.0)					
	Standard turning diameter	mm (in.)	275 (10.8)					
	Max. turning length	mm (in.)	705 (27.7)					
	Bar work capacity*1	mm (in.)	80 (3.1)					
Travel	X-axis travel	mm (in.)	260 (10.2)					
	Z-axis travel	mm (in.)	795 (31.3)					
	Y-axis travel	mm (in.)	—		100 <±50> (3.9 <±2.0>)	—		100 <±50> (3.9 <±2.0>)
	Headstock 2 travel <B-axis>	mm (in.)	—			734 (28.9)		
Spindle	Max. spindle speed*2	min^{-1}	4,000			Headstock 1: 4,000 Headstock 2: 6,000		
	Type of spindle nose		JIS A_2-8			Headstock 1: JIS A_2-8 Headstock 2: JIS A_2-5		
	Through spindle hole diameter	mm (in.)	91 (3.6)			Headstock 1: 91 (3.6) Headstock 2: 43 (1.7)		
	Min. spindle indexing angle		—	0.001°		—	0.001°	
	Spindle bearing inner diameter	mm (in.)	140 (5.5)			Headstock 1: 140 (5.5) Headstock 2: 85 (3.3)		
Turret	Number of tool stations		12 [10]					
	Shank height for square tool	mm (in.)	25 (1)					
	Shank diameter for boring bar	mm (in.)	Max. 50 (2) [32 ($1^1/_4$)*3]			Headstock 1: Max. 50 (2) [32 ($1^1/_4$)*3]	Headstock 2: Max. 32 ($1^1/_4$)	
	Tool shank diameter for rotary tool	mm (in.)	—	26 (1.0)		—	26 (1.0)	
	Turret indexing time	s	0.2	0.25		0.2	0.25	
	Max. rotary tool spindle speed*2	min^{-1}	—	6,000		—	6,000	
Feedrate	Rapid traverse rate	mm/min (ipm)	X, Z: 30,000 (1,181.1) Tailstock: 7,000 (275.6)	X, Z: 30,000 (1,181.1) Tailstock: 7,000 (275.6) C: 400 min^{-1}	X, Z: 30,000 (1,181.1) Y: 10,000 (393.7) Tailstock: 7,000 (275.6) C: 400 min^{-1}	X, Z, B: 30,000 (1,181.1)	X, Z, B: 30,000 (1,181.1) C: 400 min^{-1}	X, Z, B: 30,000 (1,181.1) Y: 10,000 (393.7) C: 400 min^{-1}
Tailstock	Tailstock travel	mm (in.)	734 (28.9)			—		
	Tailstock spindle diameter	mm (in.)	80 (3.1)			—		
	Taper hole of tailstock spindle		Live center <MT5> [Built-in center <MT3>]			—		
Motor	Spindle drive motor <25 %ED/50 %ED/cont>	kW (HP)	18.5/18.5/15 (24.7/24.7/20) [26/26/22 (34.7/34.7/30)*4]			Headstock 1: 18.5/18.5/15 (24.7/24.7/20) [26/26/22 (34.7/34.7/30)*4] Headstock 2: 11/7.5 (15/10)*5		
	Rotary tool spindle drive motor <3 min/5 min/cont>	kW (HP)	—	5.5/5.5/3.7 (7.5/7.5/5)		—	5.5/5.5/3.7 (7.5/7.5/5)	
	Feed motor	kW (HP)	X, Z: 3.5 (4.7)		X, Z, Y: 3.5 (4.7)	X, Z: 3.5 (4.7) B: 2.0 (2.7)		X, Z, Y: 3.5 (4.7) B: 2.0 (2.7)
Power sources	Electrical power supply*6	kVA	27.6 [35.8*7]	31.8 [40.0*7]	36.2 [42.7*7]	36.2 [42.8*7]		39.2 [47.0*7]
	Compressed air supply	MPa (psi), L/min (gpm)	—			0.5 (72.5), 100 (26.4) <ANR*8>		
Tank capacity	Coolant tank capacity	L (gal.)	265 (70.0)					
Machine size	Machine height <from floor>	mm (in.)	2,120 (83.5)					
	Floor space <chip conveyor not included>	mm (in.)	3,100×1,923 (122.0×75.7)			3,100×2,050 (122.0×80.7)		
	Mass of machine	kg (lb.)	5,800 (12,760)	5,900 (12,980)	6,100 (13,420)	5,900 (12,980)	6,000 (13,200)	6,200 (13,640)

[ ] Option JIS: Japanese Industrial Standard

I94030A02

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

*2 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.

*3 When mounted with double boring holder.

*4 10 min/30 min/cont

*5 25 %ED/cont

*6 +4 kVA for loader specification

*7 High output

*8 ANR refers to a standard atmospheric state; i. e., temperature at 20 ℃ (68 °F); absolute pressure at 101.3 kPa (14.7 psi); and relative humidity at 65 %.

Machine specifications (NL2500/1250)

Item			NL2500/1250	NL2500MC/1250	NL2500Y/1250	NL2500S/1250	NL2500SMC/1250	NL2500SY/1250
Capacity	Swing over bed	mm (in.)	923.8 (36.4) <interference with front cover 679.8 (26.8)>					
	Swing over cross slide	mm (in.)	755 (29.7)					
	Max. turning diameter	mm (in.)	356 (14.0)					
	Standard turning diameter	mm (in.)	275 (10.8)					
	Max. turning length	mm (in.)	1,298 (51.1)					
	Bar work capacity*1	mm (in.)	80 (3.1)					
Travel	X-axis travel	mm (in.)	260 (10.2)					
	Z-axis travel	mm (in.)	1,345 (53.0)					
	Y-axis travel	mm (in.)	—		100 <±50> (3.9 <±2.0>)	—		100 <±50> (3.9 <±2.0>)
	Headstock 2 travel <B-axis>	mm (in.)	—			670 (26.4)		
Spindle	Max. spindle speed*2	min^{-1}	4,000			Headstock 1: 4,000 Headstock 2: 6,000		
	Type of spindle nose		JIS A_2-8			Headstock 1: JIS A_2-8 Headstock 2: JIS A_2-5		
	Through spindle hole diameter	mm (in.)	91 (3.6)			Headstock 1: 91 (3.6) Headstock 2: 43 (1.7)		
	Min. spindle indexing angle		—	0.001°		—	0.001°	
	Spindle bearing inner diameter	mm (in.)	140 (5.5)			Headstock 1: 140 (5.5) Headstock 2: 85 (3.3)		
Turret	Number of tool stations		12 [10]					
	Shank height for square tool	mm (in.)	25 (1)					
	Shank diameter for boring bar	mm (in.)	Max. 50 (2) [32 ($1^1/_4$)*3]			Headstock 1: Max. 50 (2) [32 ($1^1/_4$)*3]	Headstock 2: Max. 32 ($1^1/_4$)	
	Tool shank diameter for rotary tool	mm (in.)	—	26 (1.0)		—	26 (1.0)	
	Turret indexing time	s	0.2	0.25		0.2	0.25	
	Max. rotary tool spindle speed*2	min^{-1}	—	6,000		—	6,000	
Feedrate	Rapid traverse rate	mm/min (ipm)	X, Z: 30,000 (1,181.1) Tailstock: 7,000 (275.6)	X, Z: 30,000 (1,181.1) Tailstock: 7,000 (275.6) C: 400 min^{-1}	X, Z: 30,000 (1,181.1) Y: 10,000 (393.7) Tailstock: 7,000 (275.6) C: 400 min^{-1}	X, Z: 30,000 (1,181.1) B: 20,000 (787.4)	X, Z: 30,000 (1,181.1) B: 20,000 (787.4) C: 400 min^{-1}	X, Z: 30,000 (1,181.1) B: 20,000 (787.4) Y: 10,000 (393.7) C: 400 min^{-1}
Tailstock	Tailstock travel	mm (in.)	1,284 (50.6)			—		
	Tailstock spindle diameter	mm (in.)	110 (4.3)			—		
	Taper hole of tailstock spindle		Live center <MT5> [Built-in center <MT4>]			—		
Motor	Spindle drive motor <25 %ED/50 %ED/cont>	kW (HP)	18.5/18.5/15 (24.7/24.7/20) [26/26/22 (34.7/34.7/30)*4]			Headstock 1: 18.5/18.5/15 (24.7/24.7/20) [26/26/22 (34.7/34.7/30)*4] Headstock 2: 11/7.5 (15/10)*5		
	Rotary tool spindle drive motor <3 min/5 min/cont>	kW (HP)	—	5.5/5.5/3.7 (7.5/7.5/5)		—	5.5/5.5/3.7 (7.5/7.5/5)	
	Feed motor	kW (HP)	X, Z: 3.5 (4.7)		X, Z, Y: 3.5 (4.7)	X, Z: 3.5 (4.7) B: 2.0 (2.7)		X, Z: 3.5 (4.7) Y, B: 2.0 (2.7)
Power sources	Electrical power supply*6	kVA	28.3 [36.5*7]	32.7 [40.8*7]	37.0 [43.6*7]	37.1 [43.6*7]		40.0 [47.8*7]
	Compressed air supply MPa (psi), L/min (gpm)		—			0.5 (72.5), 100 (26.4) <ANR*8>		
Tank capacity	Coolant tank capacity	L (gal.)	380 (100.3)					
Machine size	Machine height <from floor>	mm (in.)	2,232 (87.9)					
	Floor space <chip conveyor not included>	mm (in.)	4,328×2,143 (170.4×84.4)					
	Mass of machine	kg (lb.)	7,200 (15,840)	7,300 (16,060)	7,500 (16,500)	7,300 (16,060)	7,400 (16,280)	7,600 (16,720)

[ ] Option JIS: Japanese Industrial Standard

I94030A02

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

*2 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.

*3 When mounted with double boring holder.

*4 10 min/30 min/cont

*5 25 %ED/cont

*6 +4 kVA for loader specification

*7 High output

*8 ANR refers to a standard atmospheric state; i. e., temperature at 20 ℃ (68 °F); absolute pressure at 101.3 kPa (14.7 psi); and relative humidity at 65 %.

Machine specifications (NL3000)

Item			NL3000/700	NL3000MC/700	NL3000Y/700	NL3000/1250	NL3000MC/1250	NL3000Y/1250
Capacity	Swing over bed	mm (in.)	995 (39.2) <interference with front cover 670 (26.4)>			995 (39.2) <interference with front cover 700 (27.6)>		
	Swing over cross slide	mm (in.)	825 (32.5)					
	Max. turning diameter	mm (in.)	420 (16.5)					
	Standard turning diameter	mm (in.)	310 (12.2)					
	Max. turning length	mm (in.)	713 (28.0)			1,260 (49.6)		
	Bar work capacity*1	mm (in.)	90 (3.5)					
Travel	X-axis travel	mm (in.)	280 (11.0) <210+70 (8.3+2.8)>					
	Z-axis travel	mm (in.)	750 (29.5)			1,300 (51.2)		
	Y-axis travel	mm (in.)	—		120 <±60> (4.7 <±2.4>)	—		120 <±60> (4.7 <±2.4>)
Spindle	Max. spindle speed*2	min-1	3,000					
	Type of spindle nose		JIS A2-8					
	Through spindle hole diameter	mm (in.)	105 (4.1)					
	Min. spindle indexing angle		—	0.001°		—	0.001°	
	Spindle bearing inner diameter	mm (in.)	160 (6.3)					
Turret	Number of tool stations		10 [12]					
	Shank height for square tool	mm (in.)	25 (1)					
	Shank diameter for boring bar	mm (in.)	Max. 50 (2)					
	Tool shank diameter for rotary tool	mm (in.)	—	26 (1.0)		—	26 (1.0)	
	Turret indexing time	s	0.3					
	Max. rotary tool spindle speed*2	min-1	—	6,000		—	6,000	
Feedrate	Rapid traverse rate	mm/min (ipm)	X, Z: 30,000 (1,181.1) Tailstock: 7,000 (275.6)	X, Z: 30,000 (1,181.1) Tailstock: 7,000 (275.6) C: 300 min-1	X, Z: 30,000 (1,181.1) Y: 10,000 (393.7) Tailstock: 7,000 (275.6) C: 300 min-1	X, Z: 30,000 (1,181.1) Tailstock: 7,000 (275.6)	X, Z: 30,000 (1,181.1) Tailstock: 7,000 (275.6) C: 300 min-1	X, Z: 30,000 (1,181.1) Y: 10,000 (393.7) Tailstock: 7,000 (275.6) C: 300 min-1
Tailstock	Tailstock travel	mm (in.)	734 (28.9)			1,284 (50.6)		
	Tailstock spindle diameter	mm (in.)	110 (4.3)					
	Taper hole of tailstock spindle		Live center <MT5> [Built-in center <MT4>]					
Motor	Spindle drive motor <30 min/cont>	kW (HP)	22/18.5 (30/24.7) [30/25 (40/33.3)]					
	Rotary tool spindle drive motor <3 min/5 min/cont>	kW (HP)	—	5.5/5.5/3.7 (7.5/7.5/5)		—	5.5/5.5/3.7 (7.5/7.5/5)	
	Feed motor	kW (HP)	X, Z: 3.5 (4.7)		X, Z, Y: 3.5 (4.7)	X, Z: 3.5 (4.7)		X, Z, Y: 3.5 (4.7)
Power sources	Electrical power supply*3	kVA	32.4 [40.0*4]	38.1 [44.0*4]	39.7 [46.9*4]	32.4 [40.0*4]	38.1 [44.0*4]	39.7 [46.9*4]
Tank capacity	Coolant tank capacity	L (gal.)	300 (79.2)			370 (97.7)		
Machine size	Machine height <from floor>	mm (in.)	2,270 (89.4)			2,390 (94.1)		
	Floor space <chip conveyor not included>	mm (in.)	3,410×2,076 (134.3×81.7)			4,522×2,291 (178.0×90.2)		
	Mass of machine	kg (lb.)	6,000 (13,200)		6,500 (14,300)	7,600 (16,720)		8,100 (17,820)

[ ] Option JIS: Japanese Industrial Standard

I94031A02

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

*2 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.

*3 3+4 kVA for loader specification

*4 High output

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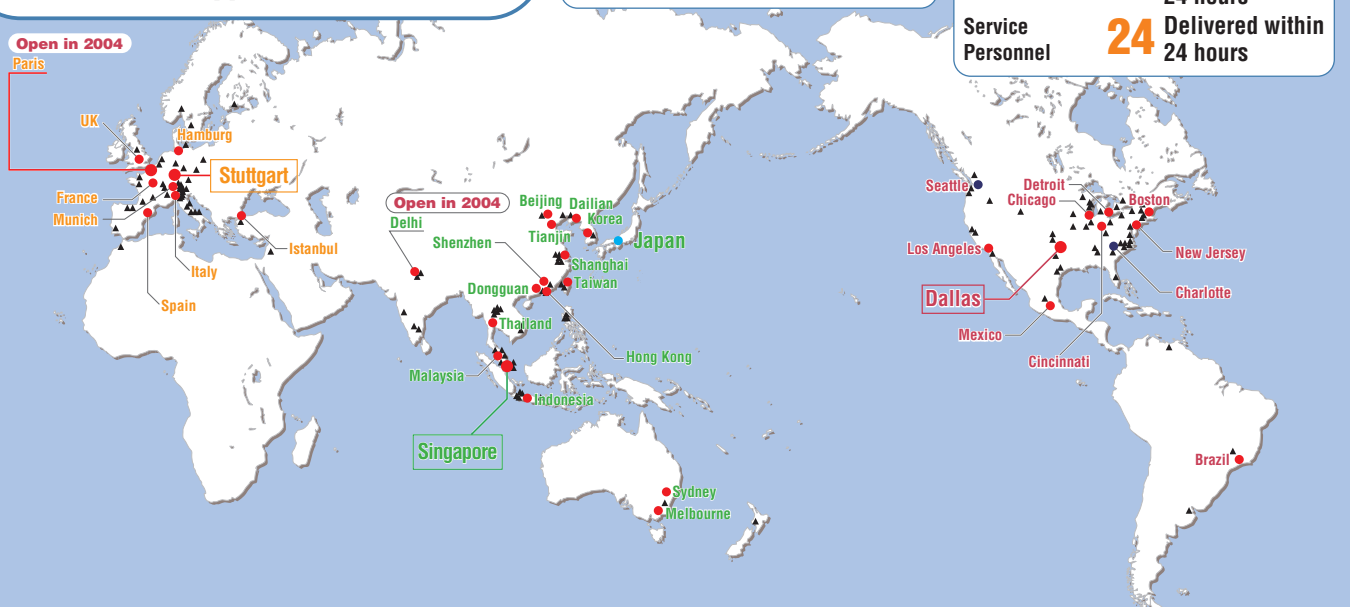
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4 Suppliers

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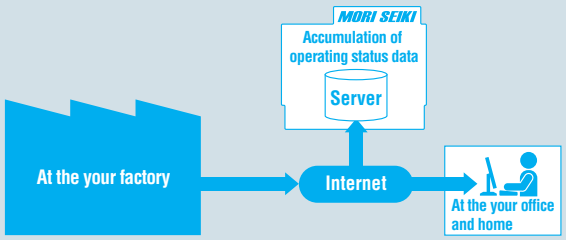
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