NEWAY

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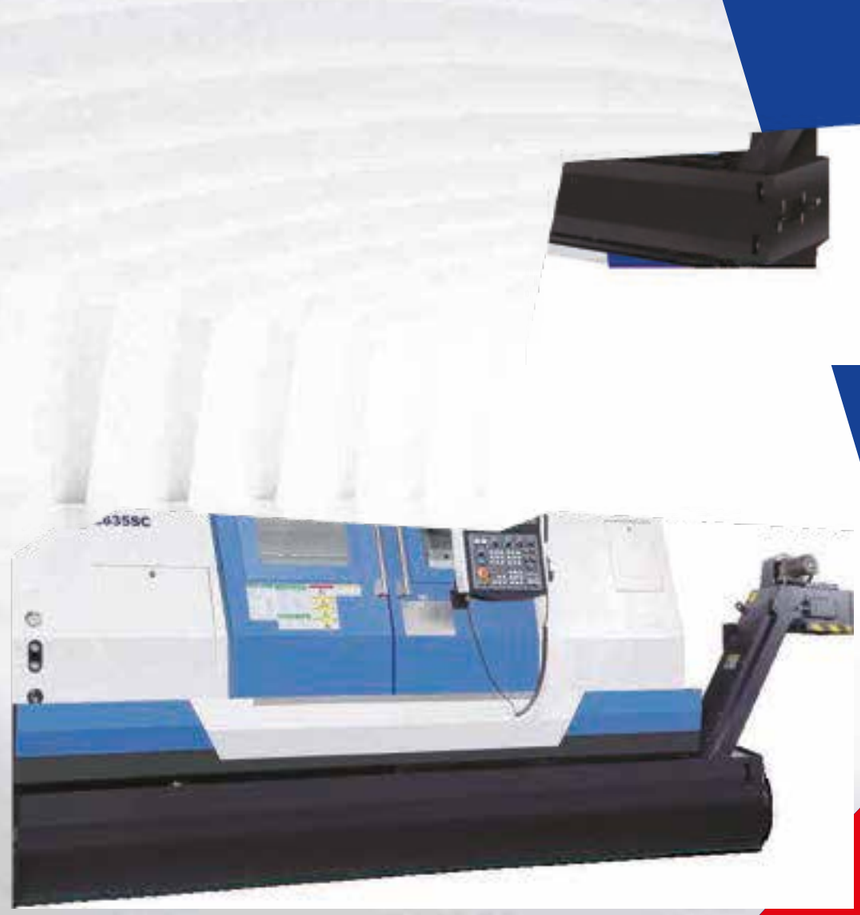
NEWAY

CNC Horizontal Lathe
NL Series



Cat.NO.:E-NL-2022-01

NEWAY CNC Horizontal Lathe

Neway’ s diverse CNC horizontal lathes are designed to meet the high class machining needs of the unique and different industries. The high quality and high precision guaranteed by our zero-defect manufacturing processes have won the trust and praise from many customers of worldwide.

- The well-organized layout of the machine provides easy access to check electrical, hydraulic, and pneumatic, which are all well labeled.
- The 45°slant bed design with compact structure provides high rigidity needed for heavy cutting. Key components are made by special resin sand cast iron,which can effectively improve the machining performance and guarantee better vibration dampening characteristics.
- Each casting is treated with up to 4 aging processes to improve the stability of the machine by the perfect cast iron.
- Through the finite element structure analysis, enhance the machine rigidity, heat dissipation and vibration reduction.
- All main components are machined by World-Class machines to ensure the accuracy of key components. Then, the parts will be measured on the best CMM measuring devices, re-checked and adjusted to ensure tolerance within the specification needed.
- Key components not made by NEWAY CNC utilize readily attainable world-famous brands,which greatly increase the long-term running reliability. The ease of gaining components from multiple sources in local market, makes these machines keep running well in the future.
- The modular design is both flexible and diverse. Many platforms share technology and components. The goal is to efficiently and economically meet customers' special requirements.
- NEWAY CNC lathe with compact structures and small footprints, which can effectively save customer' s space, time and money; and while the fully enclosed protection and inclined structure make continuous chip removal easily.

CONTENTS

01 High-Speed

Independently designed spindle, bed, saddle and tailstock are independently designed. The maximum speed of the machine tool can reach 6000rpm, and the rapid traverse speed can reach 30m/min, which greatly improves the processing efficiency of the machine tool.

Spindle

- Independently designed, the front and rear bearing supports are optimized by the finite element structure to ensure excellent rigidity and precision.
- The spindle bearing mounting surface and the locking nut mounting thread are formed through a single grinding process. This method provides precise coordination between the spindle and the spindle box, which improves the spindle speed and stability.
- All spindle bearings are World Class imported P4-class machine tool bearings. They use permanent grease lubrication, to guarantee the higher precision and excellent longevity.

Max Spindle Speed ▶

NL16/20 6000r/min

Rapid Traverse X/Z ▶

NL16 Rapid Traverse X/Z 30/30m/min

NL20 Rapid Traverse X/Z 24/30m/min

Headstock

- The use of thermal symmetry design combines with the wide range of heat dissipation. Reinforce rib supported structure dramatically resists and reduces the deformation caused by internal heat generation in the machine tool and they can also control thermal growth to improves the machining accuracy.
- The front and rear bores of the spindle box are completed through one-step machining on the World-Class Swiss SIP boring machine. This high level boring process provides micron tolerances and ensures excellent bore alignment and spindle alignment.

Turret

- Standard 8 station turret with customized thickened tool disc improve turret rigidity, cutting efficiency, positioning accuracy and realize automation of processing. Neway also offers various turrets, such as 10 or 12 station turret as options.
- Reinforced tool holders and keyway positioning stabilizes tool point and minimizes harmonics under heavy load cutting conditions.
- Different turret can be equipped according to customer's requirements.

- Hydraulic turret

- Servo turret

- Electric turret

- VDI Live turret

- BMT Live turret

Each type of turret must will fully demonstrate high speed rotation and high positioning accuracy.

02 High Precision

All structural parts are produced by casting, aging treatment and managed correctly

- Laser interferometer testing to guarantee the all axes' precision.

- The castings are machined for flatness and squareness with one of the World-Class Zayer Five-sided Bridge Milling machines. Smaller parts are manufactured on World Class Starrag- Heckert Athletic Horizontal Machining Centers.
- Swiss Kellenberger cylindrical grinding machine machine the spindles. Huge Favretto Gantry type grinding machine finish the all castings grinding to realize the best castings in the World used on Neway machines.
- All these machines are some of the World' s Finest, which are continuously calibrated to ensure extremely predictably stable high precision.
- The overall bed design has plenty of built-in reinforce ribs, which is optimized through the finite element analysis. This realize high rigidity, better heat dissipation (thermal symmetry) and more accurate machining.

Fine Craftsmanship

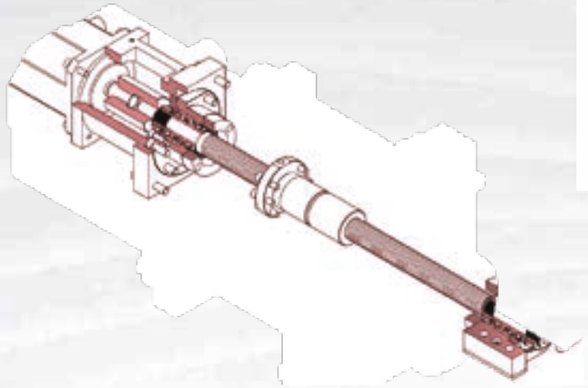
The all contact surfaces, including spindle mounting surface, turret, tailstock,and pedestal base, are meticulously scraped to achieve high assembly accuracy, rigid structure, and balanced load.

Double-nut Ball Screw

High speed, silent ball screw with double nuts, by pre-tensioned to realize no backlash, high precision and rapid travel.

Pre-tensioning

The ball screw adopts the pre-tension process, which effectively reduces the slack in the ball screw and helps reduce the heat transfer and friction. This improves the accuracy and strengthens the rigidity and heat deformation resistance.



Spindle Motor

The motor seat is beside of the machine, eliminates heat transfer and vibration caused by the motor.

03 High Stability

In the critical components assembling, multiple measuring and quantifying assembly process is the key to achieving Neway' s quality goal. Each process has strict quality control to ensure the highest stability of the end-product.

Spindle Performance Testing

a. Performs dynamic balance test on the spindle to guarantee the stability of the high-speed rotation of the spindle.

b. Through 48 hours spindle run-in test, monitoring the temperature changing of the rotating parts, applying corrective actions to eliminate any out of tolerance conditions of the assembly and ensure the stability and reliability in high-speed spindlerotating.

Torque Wrench

All major locking screws are locked by specially calibrated torque wrenches according to process standards to ensure the stability and reliability of the connection.

Tension Test for The Spindle Belt

The all spindle belts' tension is measured by a special sonic tensiometer and adjusted to perfect condition to ensure stable operation of the machine.

Availability of Key Components

Global purchasing of available key parts and selection of first-class brands in the industry have significantly ensured the long-termsustainability of the machine tools through attainability of available parts through World Class suppliers.

Neway' s Casting Multiple Aging Process Produces World Class Castings

Through natural aging and secondary aging, the internal stress is fully released, and the machine tool accuracy can be maintained for a much longer time.

04 R&D

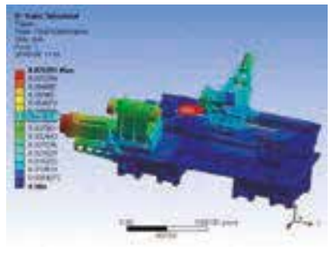
7 R&D departments and 150+ R&D engineers with specific expertise. Neway can develop 20+ new products per year. 10+ continuous improvement projects in fundamental areas, using the PLM full life cycle management system to enhance R&D efficiency.

Ongoing continuously improving quality refining projects:

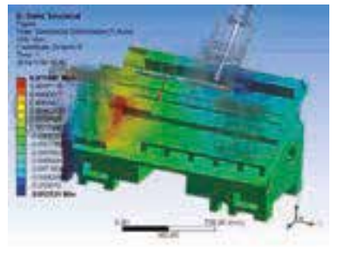
- Static stiffness testing and research of machine tools
- Research on vibration and dynamic stiffness of machine tools
- Research on spectrum analysis of machine tools
- Finite Element Analysis of complete machine and components
- Thermal deformation analysis of entire machine and components
- High-speed ball screw cooling system research and improving
- Research on intelligent development and application of CNC machine tool
- High-pressure chip breaking test and application

Finite Element Analysis

The essential parts are all based on finite element analysis. The layout of the optimized structure is cast from high-quality cast iron materials with high stability and excellent shock absorption.



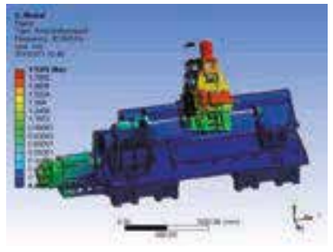
- Machine stiffness analysis deformation map shows where more material needs to be applied



- Y direction analyzes deformation

Dynamic Analysis

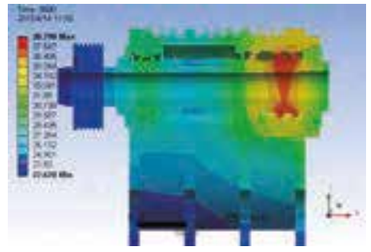
Through dynamic performance balancing analysis, greatly reduce harmonics, improves the natural frequency and vibration resistance of the machine tool.



- Modal dynamic analysis

Thermal Analysis

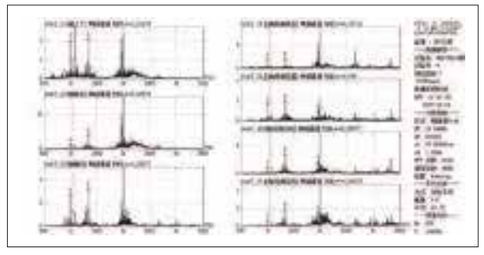
Thermal analysis of the spindle components reduces the thermal deformation of the spindle.



- Thermal analysis of lathe spindle

Vibration and Spectrum Analysis

The vibration spectrum analysis prevents and eliminates the excessive vibration of the machine.



- Gear box spectrum analysis

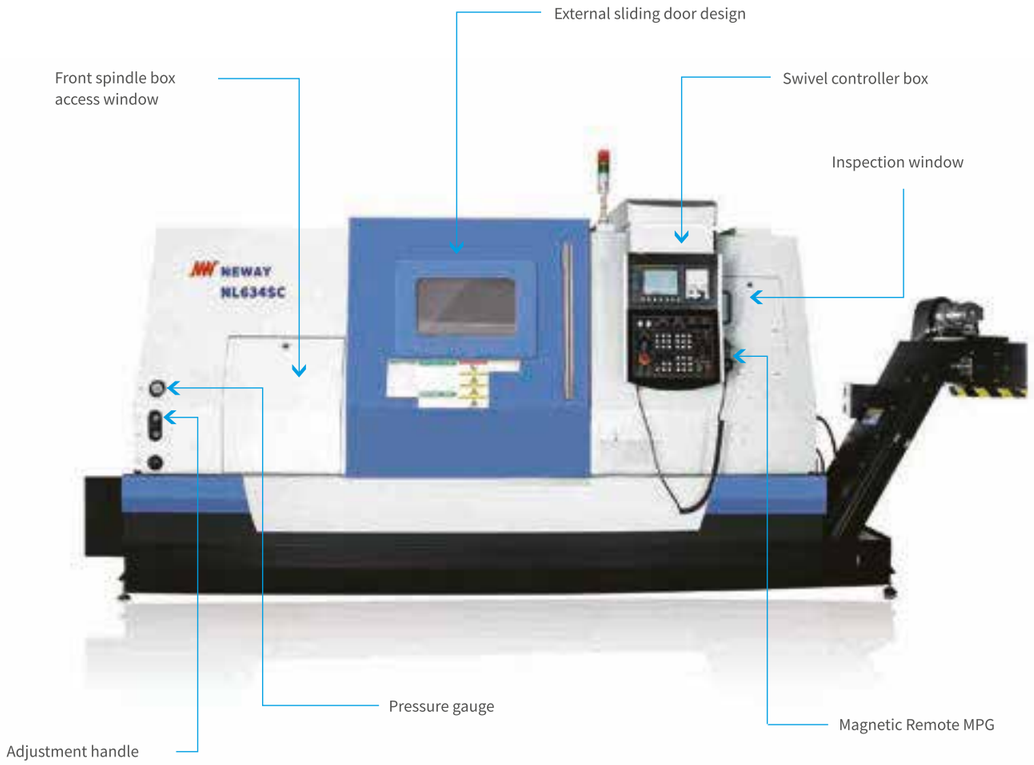
Static and Dynamic Stiffness Studies

By measuring and studying the static and dynamic stiffness properties of the machine, Neway ensures the excellent stiffness performance.

- Dynamic stiffness test

05 Ergonomic Operator Friendly Design

Careful attention to design detail along with, constant optimization, ease of operation, convenient location of keyboard and ease of maintenance make our machines a favorite.



- External sliding door design: easy to clean, no chip buildup
- Swivel controller box: conveniently rotates to the optimal viewing position
- Pressure gauge and adjustment handle: convenient reading and adjustment
- Front spindle box access window: easy to maintenance and repair
- Inspection window: easy to inspect hydraulics and pneumatics.
- MPG with magnetic: attached to any metal surface

06 Case Studies

These machining applications show abundant choices and versatile configurations of Neway CNC lathe. Neway machine tools are widely use in various industries.

Sliding Sleeve

Industry:	Automotive	Cutting speed:	260m/min
Material:	55#	Workpiece size:	90mm
Task:	Thin-walled parts chip breaking processing	Processing time:	128s
		Processing machine:	NL201

Piston

Industry:	Automotive	Cutting speed:	310m/min
Material:	10#	Workpiece size:	37mm
Task:	High efficiency	Processing time:	32s
		Processing machine:	NL161

Cam

Industry:	Automotive	Cutting speed:	180m/min
Material:	HT250	Workpiece size:	30mm
Task:	A slender shaft	Processing time:	250s
		Processing machine:	NL253HA

Input shaft

Industry:	Automotive	Cutting speed:	200min
Material:	45#	Workpiece size:	22mm
Task:	High precision	Processing time:	38s
		Processing machine:	NL201

Plunger

Industry:	Automotive	Cutting speed:	100m/min
Material:	20#, 16MnCr5	Workpiece size:	10mm
Task:	Thin-walled workpiece High efficiency	Processing time:	12-16s
		Processing machine:	NL161

Note: The above data are all from actual use cases. The data listed above may not be reached, when the cutting conditions and environmental conditions are different.

NL Series-
Linear Guideway CNC Horizontal Lathe

- 45° overall slant bed design offers high rigidity for heavier cutting and excellent chip removal.
- FEA structure analysis realize the correct layout of casting ribs to increase rigidity and lessen stress.
- The X/Z axis ball screw is pre-tensioned to reduce influence of temperature increase on the accuracy of the ball screw during machining. Fasten bolts are installed on both sides of the ball screw itself to increase the protection of the ball screw bearing. The servo motor is directly connected with the high speed and silent ball screw.
- X/Z axis utilize linear guideways to guarantee excellent dynamic characteristics, stable machining accuracy, high rapid traverse speeds and high processing efficiency.
- Tailstock adopts rectangular guideway, with excellent rigidity both up and down the layered structure. There are micro-adjustment devices between the upper and lower tiers. The tailstock center can be adjusted. The tailstock body can be moved manually or dragged by the slide board, and the quill is driven by hydraulic.
- Utilizes a high rigidity spindle box with lower noise, higher precision, better heat dissipation and and longer service life.
- World Class functional components, equipped with imported servo drivers and motors to realize reliable performance, excellent controllability, high indexing accuracy.
- The wide range of options: such as bar feeder, part catcher, larger hollow chuck, bigger spindle bore, programmable tailstock, tool measurement, hydraulic steady rest, etc.

The main parameters		NL161E	NL201E	NL251HA	NL253HA	NL322SA/HA	NL324SA/HA	NL402SA/HA
Max. swing on bed	mm	Φ500	Φ450	Φ550	Φ550	Φ570	Φ570	Φ650
Max. cutting dia	mm	Φ320	Φ350	Φ360	Φ360	Φ430	Φ430	Φ510
Max. cutting length	mm	320	445	435	810	565	1000	550
Motor power	kW	5.5/7.5	7.5/11	7.5/11	7.5/11	11/15	11/15	11/15
Spindle speed	r/min	6000	6000	5000	5000	3500(SA) 4000(HA)	3500(SA) 4000(HA)	3000(SA) 4000(HA)

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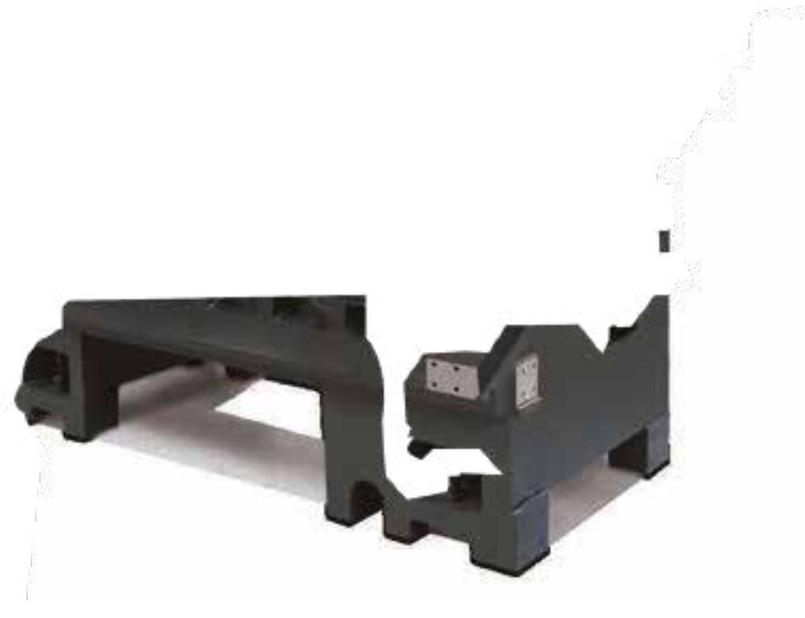
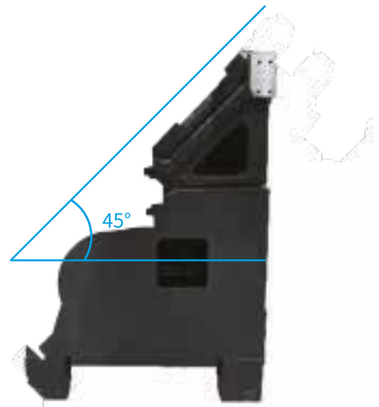


1 Linear Guideway

High-precision linear rolling guide way increase the speed of movement and improve cutting efficiency. The use of imported linear guide way realize high positioning accuracy and low wear. It can maintain accuracy for a long time, fully improve productivity and ensure high processing stability.

2 45° overall slant bed design

45 degree whole slant bed design to realize high stability of the CNC lathe and make chip removing easily and smoothly.

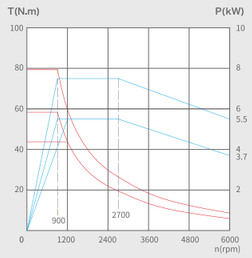


Spindle Power Torque Diagram

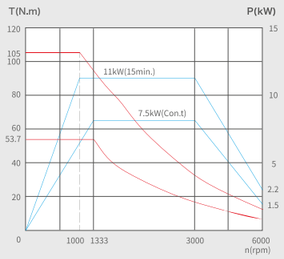
Tool Interference Diagram

(Unit: mm)

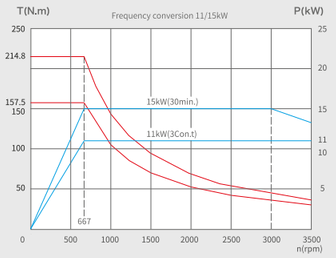
NL161E



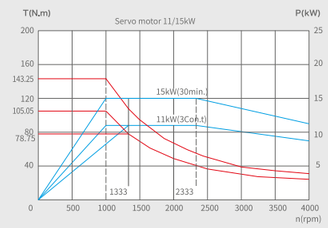
NL201E、NL251HA、NL253HA



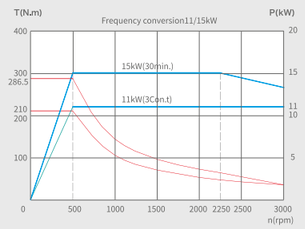
NL322SA、NL324SA



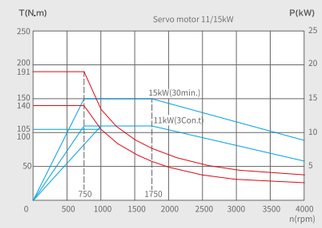
NL322HA、NL324HA



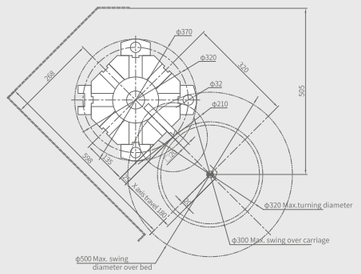
NL402SA、NL404SA



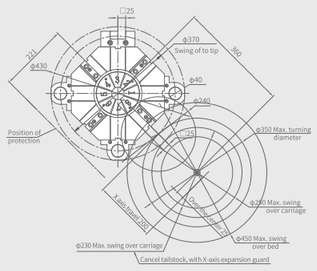
NL402HA、NL404HA



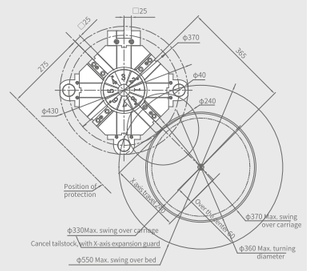
NL161E



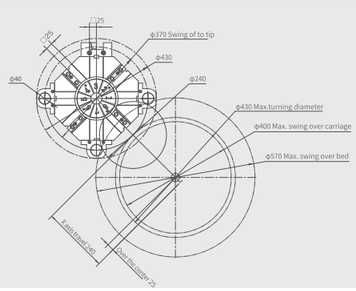
NL201E



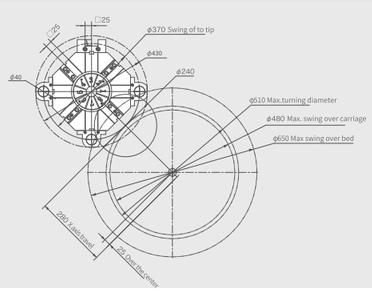
NL251HA、NL253HA



NL322HA、NL324SA/HA



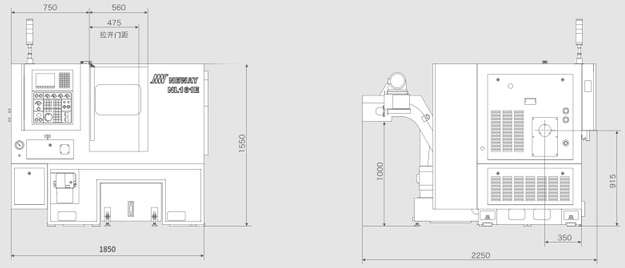
NL402SA/HA、NL404SA/HA



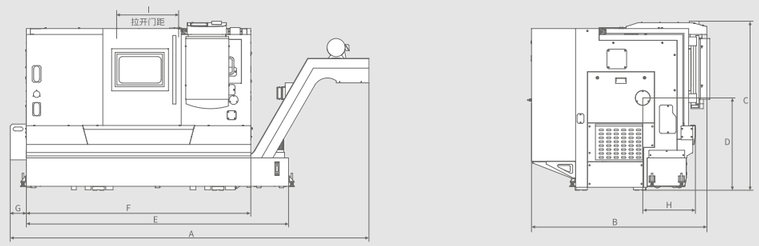
External Dimensions

(Unit: mm)

NL161E

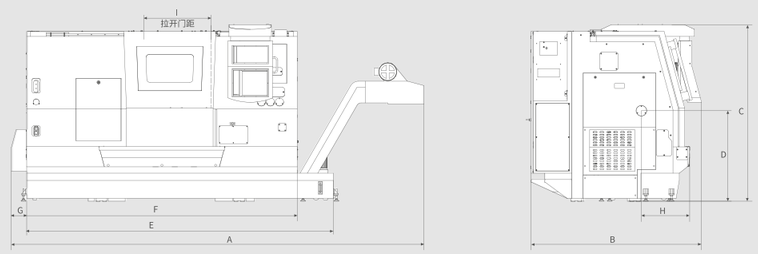


NL201E、NL251HA、NL253HA



Modles	A	B	C	D	E	F	G	H	I
NL201E	3660	1790	1720	940	2675	2290	165	537	610
NL251HA	3660	1790	1820	1000	2675	2290	165	523	600
NL253HA	4160	1820	1820	1000	3395	3010	0	540	765

NL322SA/HA、NL324SA/HA、NL402SA/HA、NL404SA/HA

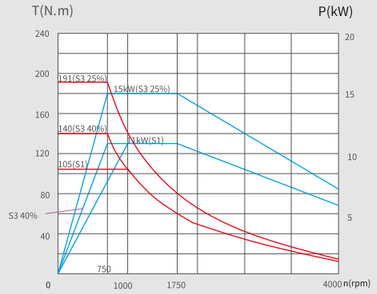


Modles	A	B	C	D	E	F	G	H	I
NL322SA/HA	4570	1845	1955	1000	3395	2995	170	535	740
NL324SA/HA	5070	1845	1955	1000	3895	3495	170	535	890
NL402SA/HA	4570	1885	1955	1000	3395	2995	170	535	740
NL404SA/HA	5070	1885	1955	1000	3895	3495	170	535	890

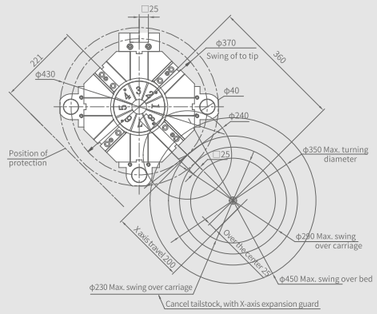
Spindle Power Torque Diagram | Tool Interference Diagram | External Dimensions

(Unit: mm)

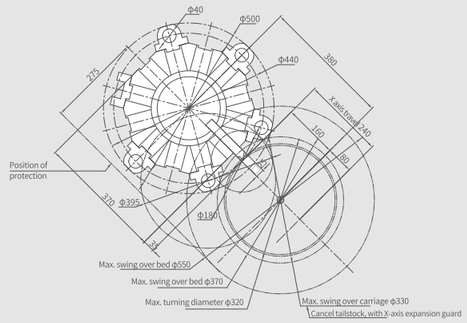
NL201EP、NL251HP、NL253HP



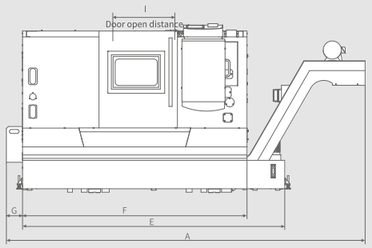
NL201EP

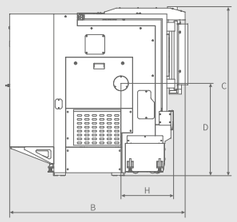


NL251HP、NL253HP



NL201EP、NL251HP、NL253HP

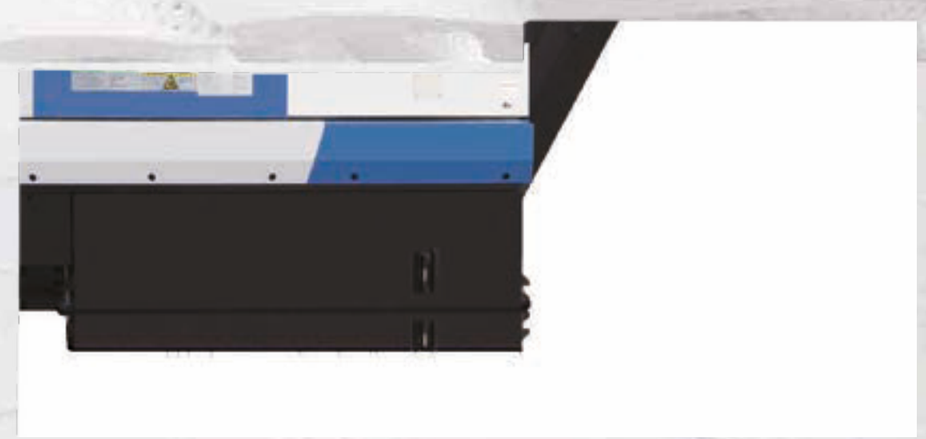




Models	A	B	C	D	E	F	G	H	I
NL201EP	3660	1790	1720	940	2675	2290	165	537	610
NL251HP	3660	1790	1820	1000	2675	2290	165	523	600
NL253HP	4105	1820	1820	1000	3295	2910	45	540	765

NL series-
Gang tooling type CNC slant bed lathe

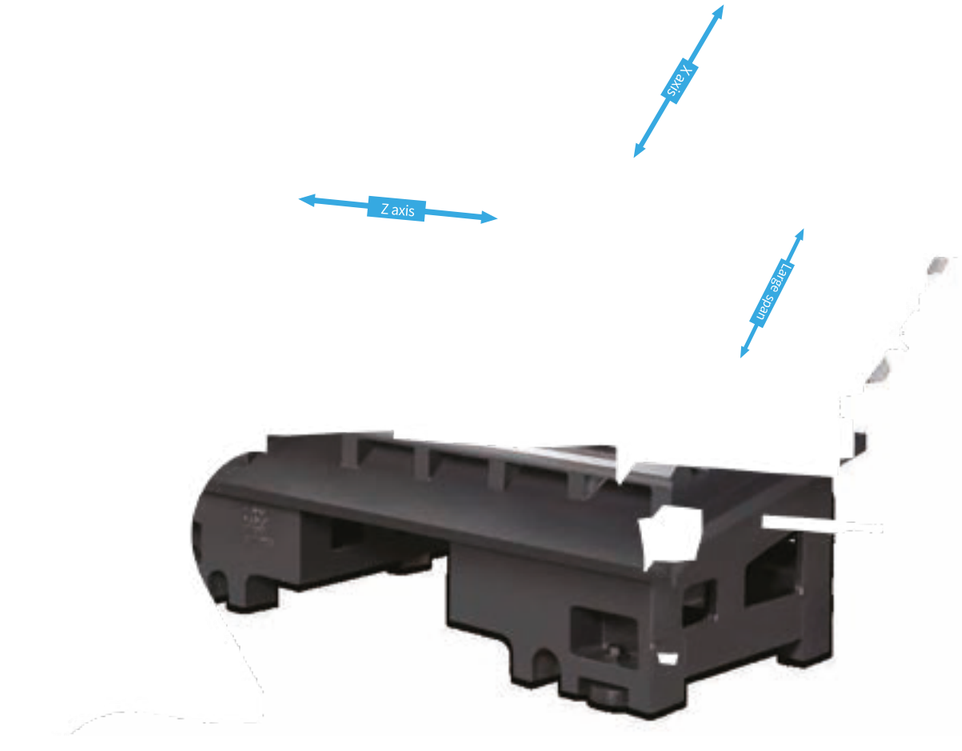
- 60° overall slant bed design, with high rigidity and smooth chip removal
- FEA structure analysis realize the correct layout of casting ribs to increase rigidity and lessen stress.
- The X/Z axis ball screw is pre-tensioned to reduce influence of temperature increase on the accuracy of the ball screw during machining. The servo motor is directly connected with the high speed and silent ball screw.
- Utilizes a high rigidity spindle box with lower noise, higher precision and longer service life.
- World Class functional components, equipped with imported servo drivers and motors to realize reliable performance, excellent controllability, high indexing accuracy.
- The wide range of options: such as bar feeder, parts catcher, larger hollow chuck, bigger spindle bore, tool measurement, etc.



NL Series-
Box Way Guideway CNC Horizontal Lathe

- 45° overall slant bed design offers high rigidity for heavier cutting and excellent chip removal. The X/Z axis ball screw is pre-tensioned to reduce influence of temperature increase on the accuracy of the ball screw during machining. Fasten bolts are installed on both sides of the ball screw itself to increase the protection of the ball screw bearing. The servo motor is directly connected to drive the high speed and silent ball screw.
- X/Z axis is box-way design with HRC48 hardness surface through heat treatment, bigger guideway span, higher rigidity, better torsional and shock resistance, stable machining accuracy. The box ways are equipped with imported wear resistant turcite to realize lower friction, smooth movement and good dynamic characteristics.
- Tailstock adopts rectangular guideway, with excellent rigidity both up and down the layered structure. There are micro-adjustment devices between the upper and lower tiers. The tailstock center height can be adjusted. The tailstock body can be moved manually or dragged by the slide board, and the quill is driven by hydraulic.
- Utilizes a high rigidity spindle box with lower noise, higher precision, better heat dissipation and and longer service life.
- The wide range of options: such as bar feeder, parts catcher, larger hollow chuck, bigger spindle bore, programmable tailstock, tool measurement, hydraulic steady rest, etc.

The main parameters		NL502SC/H	NL504SC/H	NL634SC/SCZ	NL635SC/SCZ	NL636SC/SCZ	NL638SC
Max. swing over bed	mm	Φ600	Φ600	Φ650	Φ650	Φ650	Φ650
Max. cutting dia	mm	Φ500	Φ500	Φ630	Φ630	Φ630	Φ630
Max. cutting length	mm	500	1000	1000	1500	2000	3000
Motor power	kW	11/15	11/15	15/18.5	15/18.5	15/18.5	18.5/22
Spindle speed	rpm	3000	3000	2000/1000	2000/1000	2000/1000	2000



1 Box-way

Box-ways are used to provide a large contact area and large-span layout to realize excellent rigidity. The X-axis and Z-axis of this type of machine are all rectangular-shaped box-way, all of which are carefully scraped by experienced expert technicians. Special attention is paid to the surface matching and finishing. After final quality acceptance, Neway machines achieve high precision level.

2 Tailstock

The tailstock is center structure. Tailstock quill is driven through hydraulic and controlled by CNC controller. The tailstock adopts a rectangular guideway bed saddle. The tail stock body is dragged by the slide board (drag pin on the tailstock seat connect the tailstock body and the slide board), which has excellent accuracy and precise movement.

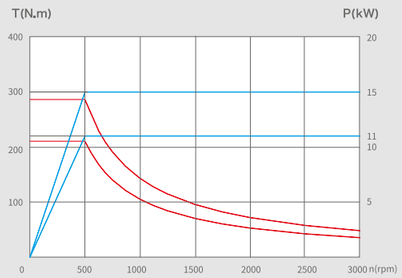
3 X/Z axis Bed Layout Design

The bed are made from world class Meehanite castings. The heat treatment make the hardness reach HRC48. This treatment offers the full span with enhanced rigidity, longer life, good vibration absorption and higher deflection resistance.

Spindle Power Torque Diagram

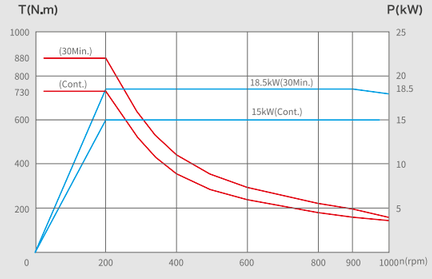
(Unit：mm)

NL502SC、NL504SC



NL634SC、NL635SC、NL636SC

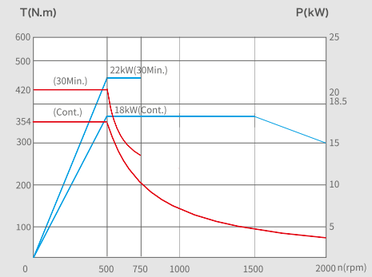
NL634SCZ、NL635SCZ、NL636SCZ



Spindle Power Torque Diagram　Tool Interference Diagram

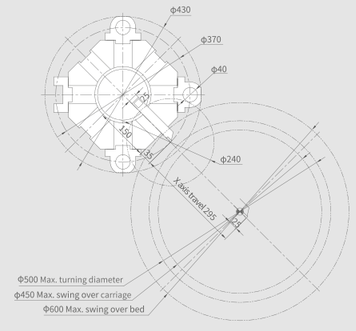
(Unit：mm)

NL638SC

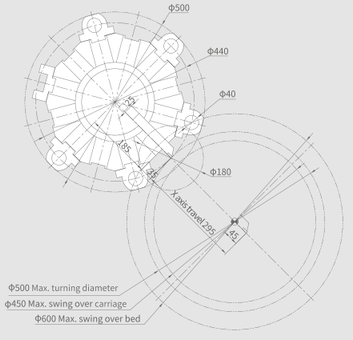


NL63SCZ

NL502SC、NL504SC Standard 8 pos turret



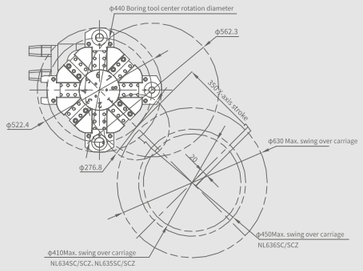
NL502SC、NL504SC Option 12 pos turret



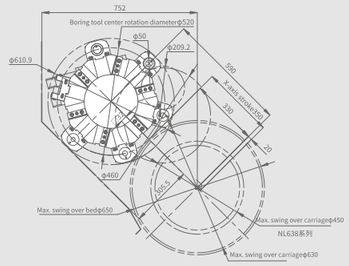
Tool Interference Diagram

（Unit：mm）

NL634SC/SCZ、NL635SC/SCZ、NL636SC/SCZ



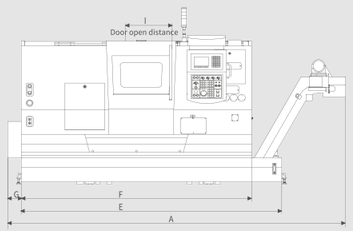
NL638SC/SCZ 选配12工位

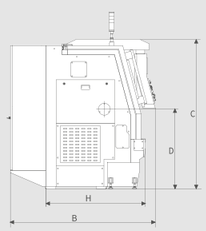


External Dimensions

（Unit：mm）

NL502SC/H、NL504SC/H



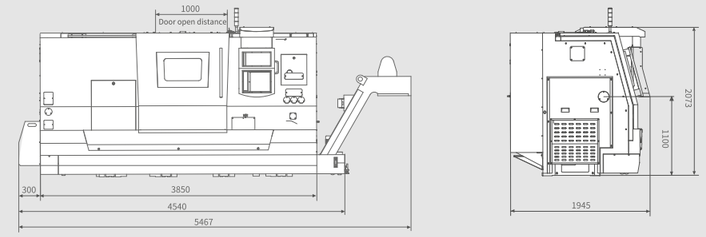


Models	A	B	C	D	E	F	G	H	I
NL502SC/H	4250	1880	1875	1000	3280	2900	170	1245	620
NL504SC/H	4750	1880	1875	1000	3780	3400	170	1245	920

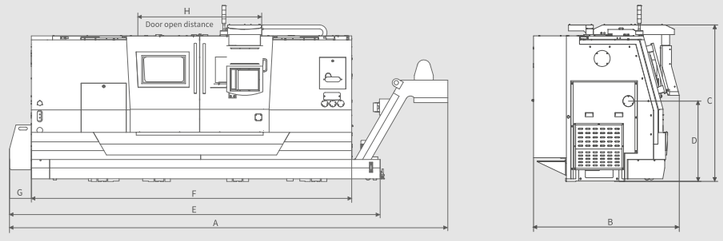
External Dimensions

（Unit：mm）

NL634SC/SCZ



NL635SC/SCZ、636SC/SCZ



Models	A	B	C	D	E	F	G	H
NL635SC/SCZ	6007	1997	2145	1100	5080	4390	300	1500
NL636SC/SCZ	6890	2045	2140	1100	5780	4990	400	2000

NL638SC/SCZ