

Press Release

June 4, 2012

High-Rigidity Horizontal Machining Center for No. 50 Taper NHX5500

On June 4, Mori Seiki Co., Ltd. started taking orders for the **NHX5500**, a new model in our popular **NHX Series** of high-speed, high-precision horizontal machining centers.

The NHX5500 is an exceptionally high-rigidity, high-speed horizontal machining center designed specifically for a No. 50 taper spindle with a pallet size of 500 x 500 mm. While the previous model adopts the common platform for a No. 40 taper spindle and a No. 50 taper spindle, the NHX5500 is designed exclusively for a No. 50 taper spindle to handle heavy-duty cutting of large workpieces. The NHX5500 features a thick, robust bed, and has 70 mm longer X- and Y-axis strokes than the previous model of the NHX5000, which has the same pallet size but uses a No. 40 taper spindle. Additionally, the NHX5500 achieves a 20% faster rapid traverse rate, offering shorter non-cutting time and greater productivity. For easier operation in the working area beside the operation panel, the way the operation door opens has been improved in order to enhance access to the spindle.

Here, we would like to highlight the features of the NHX5500 from the perspectives of (1) High rigidity, (2) High speed, (3) High precision, (4) Improved reliability, (5) Improved workability, (6) Wide variety of automation options, (7) Energy saving, (8) MAPPS IV + ESPRIT, and (9) Compliance with Safety Standards.

(1) High rigidity

The thick, robust bed designed for a No. 50 taper spindle increased rigidity by up to 38% compared to the previous model to achieve high rigidity required to handle heavy-duty cutting. The machine uses a spindle in which the bolts and the pipes for air, coolant and cooling oil are arranged symmetrically relative to the center of the spindle. The spindle bearing inner diameter has been increased to 120 mm, which is the largest in its class. This stable and robust construction achieves 15% greater spindle rigidity, providing high-precision machining.

(2) High speed

The NHX5500 boasts a rapid traverse rate of 60 m/min on all axes, which is 20% faster than the previous models. For the pallet full indexing specification, the **DDM (Direct Drive Motor)** technology is used. By transmitting the drive power directly to the rotary axes without using gears, DDM provides high-speed indexing, achieving shorter non-cutting time and greater productivity.

(3) High precision

The NHX5500 is equipped with the direct scale feedback on each axis as standard to offer high-precision machining. The machine has achieved positioning accuracy of less than 3.0 µm on all axes, which was made possible by the use of the lightweight column and other moving parts. The distance between the spindle gauge plane and the center of the pallet has been shortened to 70 mm to allow machining with shorter tools. This enables machining without chattering, thereby improving finished surface quality. With a maximum tool length of 550 mm, which is longer than the pallet size, the NHX5500 can perform boring without a 180-degree table rotation, ensuring higher boring accuracy and shorter cutting time.

(4) Improved reliability

For the heavy use of the high-pressure coolant, the NHX5500 spindle has an advanced labyrinth structure that coolant hardly enters inside the spindle unit. The arm of ATC (Auto tool changer) has “no tool drop” structure in case of changing long and heavy tools to meet the requirements for cutting tools that become more difficult from year to year. By minimizing the tool and machine breakage, it achieves high reliability. Additionally, an external chip conveyor –equipped with a drum filter + a cyclone filter, designed in-house and capable of handling any chip in any shape– is available. The cyclone filter allows the conveyor to collect fine sludge*, reducing the frequency of cleaning inside the tank. With excellent chip disposal capability, this conveyor ensures high reliability and productivity.

*Chips in the form of dust are called fine sludge. They absorb moisture and oil from coolant and are difficult to be transferred and discharged.

(5) Improved workability

The height from the floor to the lower end of the operation door has been lowered from 1,250 mm to 870 mm. In addition, the distance between the operation door and the center of the spindle has been almost halved to 260 mm by improving the way the door opens, thus allowing easy access to the spindle.

(6) Wide variety of automation options

The NHX5500 provides three pallet pool systems. Users can choose the ideal specifications for their production requirements. RPP (Round Pallet Pool) is a simple and space-saving system equipped with five pallets, and is the most affordable and productive system among the three pallet pool systems. CPP (Carrier Pallet Pool) is easy to introduce thanks to its predefined packages. Users can select the best specification from eight packages to meet their production needs (up to 4 machines and 29 pallet stations can be installed). LPP (Linear Pallet Pool) equipped with a two-level pallet shelf provides a high level of automation. With LPP, up to eight machines and 99 pallet stations can be installed, and the system construction can be flexibly customized, allowing users to maximize their productivity and operating rate.

(7) Energy saving

Power supply for a spindle motor, servo motors and coolant pump can be stopped in the shutdown mode, thereby contributing to reduction in environmental burden and running costs. With a new, low-power-consumption NC and LED lighting, the NHX5500 achieves approximately 50% reduction in power consumption during standby.

8) MAPPS IV + ESPRIT

The machine uses the MAPPS IV high-performance operating system for its operation panel. MAPPS IV is equipped with the conversational automatic programming function as standard, and the ESPRIT CAM software license is available as an optional feature. The combination of ESPRIT and MAPPS IV enables creation of complex machining programs on a PC that is connected to the machine via the network. Other features of MAPPS IV include a 50 MB user memory area for program storage, which is separate from the NC memory, and the USB interface which facilitates easy data transfer between the machine and the PC. The programs stored in MAPPS can be used by transferring them to the NC unit directly.

9) Compliance with Safety Standards

The NHX5500 complies with safety standards all over the world, including IEC Standards, UL Standards and JIS standards.

Mori Seiki will continue to improve our product line-up in order to meet the needs of an even wider range of customers.

※ DDM is a trademark or registered trademark of Mori Seiki Co., Ltd. in Japan, USA and other countries.

Type	High-Precision, High-Speed Horizontal Machining Center
Model name	NHX5500
Market	Automobiles, constructional/agricultural machinery, industrial machinery, etc.
Order Starts	June 4, 2012

■Main specifications

Item		NHX5500
Axis travel(X/Y/Z)	(mm)	800 / 800 / 880
Pallet working surface	(mm)	500 x 500
Max. pallet loading capacity	(kg)	500 [700]
Max. workpiece swing diameter x Max. workpiece height	(mm)	φ800×1,100
Max. tool length	(mm)	550
Max. spindle speed	(min ⁻¹)	8,000 [8,000] ^{*1} [15,000] ^{*2}
Spindle drive motor	(kW)	30/22 (30 min / cont.) [30/25 (30 min / cont.)] ^{*1} [30/25 (30 min / cont.)] ^{*2}
Rapid traverse rate (X/Y/Z)	(m/min)	60 / 60 / 60
Tool storage capacity	(tool)	Ring type: 60 Chain type: [100] [120] Rack type: [180] [240] [330]
Floor space (width x depth)	(mm)	3,366 x 5,397

[] Option

*1 High-torque specification

*2 High-speed specification

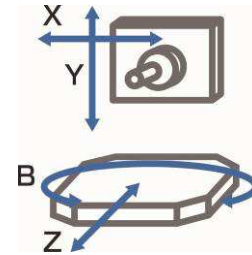


Fig. 1 Exterior



Fig. 2 Heavy-duty cutting with large-diameter face mill

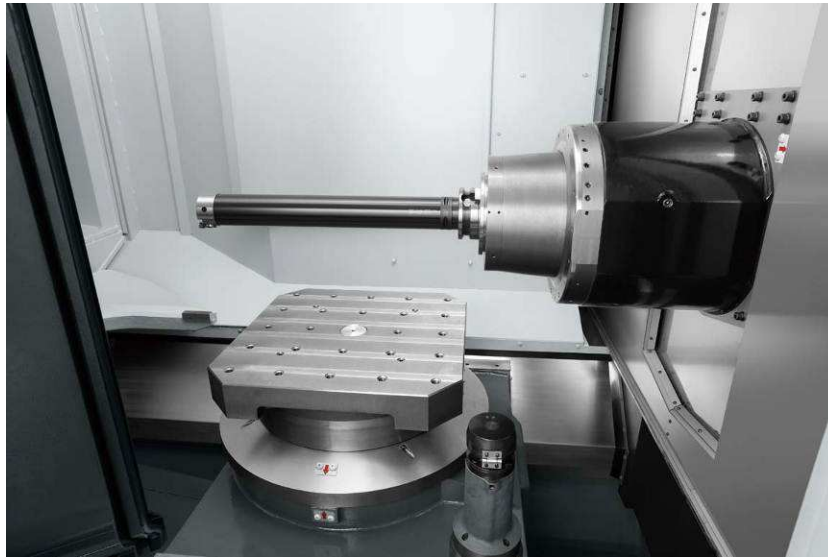


Fig. 3 Boring bar with a maximum tool length of 550 mm



Fig. 4 Working area improved accessibility



Fig. 5 RPP system
(The image shows NHX4000)