

Press Release

August 25, 2011

Maximum workpieces size ϕ 2 m, High-speed Large Horizontal Machining Center "NHX10000" Launched!

Mori Seiki Co., Ltd. has started taking orders for the **NHX10000** high-precision horizontal machining center from August 25, 2011. This machine is the latest and largest model in the **NHX Series**, the X-class horizontal machining centers.

With a maximum workpiece size of ϕ 2,000 mm x 1,600 mm and a maximum loading capacity of 5,000 kg, the NHX10000 is an ideal solution for machining large workpieces and difficult-to-cut materials, which are in great demand in the aircraft, construction machinery and energy industries. We will introduce the NHX10000 with features including: (1) Original technologies for high-speed and high-precision, (2) Reliability, (3) Outstanding operability, (4) Single pallet specifications, (5) Extensive options, (6) MAPPS IV + ESPRIT and (7) Compliance with safety standards.

(1) Original technologies for high-speed and high-precision

Inheriting the structural concept of previous NH Series models, the NHX10000 employs the Box-in-Box Construction that supports the saddle at both sides. The symmetrical structure with respect to the spindle minimizes thermal displacement. Additionally, Mori Seiki's **DCG (Driven at the Center of Gravity)** technology is used for the X- and Z-axis drive. DCG controls vibration, the main factor preventing high-speed, high-precision machining, by driving moving parts at their center of gravity using two ball screws. As a result, machining accuracy is improved, machining time is reduced and tool life is extended. The NHX10000 has achieved roundness of 2.1 μ m (when equipped with a scale), as well as 2.5 times faster rapid traverse rate (50 m/min.) and more than two times faster acceleration than the previous model. The excellent vibration control also contributes to improved surface quality.

For the B-axis drive, a full indexing table equipped with **DDM (Direct Drive Motor)** is available as an option. By transmitting the drive power directly to the rotary axis, DDM eliminates backlash and provides outstanding transmission efficiency and high-speed feed. The 90-degree indexing time for a workpiece weighing 5,000 kg is shortened to 2.0 seconds, one-fifth the speed of the previous machine.

* DCG and DDM are trademarks or registered trademarks of Mori Seiki Co., Ltd. in Japan, USA and other countries.

(2) Reliability

For the heavy use of the high-pressure coolant, the NHX10000 spindle has an advanced labyrinth structure that coolant hardly enters inside the spindle unit. Universal type chip conveyor outside machine is available on your choice. All types of chips, such as short chips and long chips, are reliably discharged outside of the machine. This is a highly reliable chip conveyor that reduces various troubles caused by chips.

(3) Outstanding operability

The height difference between inside and outside of the machine has been eliminated by installing work platforms. With a wide door opening (2,300 mm) for the setup station, the machine allows easy loading and unloading of workpieces up to 2,000 mm in diameter. Additionally, the machine is equipped with three spiral conveyors to offer excellent chip disposal. These conveyors, two of which extend to the setup station, collect chips from the setup station and transfer them to the external conveyor.

(4) Single pallet specifications

In response to many requests from customers, single pallet specifications are available for the NHX10000. The machine's simple and space saving design was made possible by the elimination of the two-pallet turn-type APC. The machine with a single pallet offers a large working area, which facilitates setups. The single pallet specifications are best suited for machining one-off parts, such as prototype workpieces.

(5) Extensive options

The optional long-tool magazine is capable of storing tools up to 1,000 mm, the same size as the pallet. The use of long tools enables deep hole boring and gun drilling of large workpieces that require highly accurate coaxiality without a 180-degree turn on the B-axis, achieving reduced cutting time and high-precision machining. For customers who require further high-precision machining, "High-precision multi-path oil controller" is available as option. Ideal control for thermal displacement is achieved by separately circulating the optimum temperature cooling oil in the multiple heat-generating components.

With a maximum loading capacity of 5,000 kg (option), which is the largest among Mori Seiki horizontal machining centers, the NHX10000 has the optional automatic indexing setup station that allows automatic rotation of heavy workpieces. Customers can choose the ideal options for their machining needs.

(6) MAPPS IV + ESPRIT

The NHX10000 uses the MAPPS IV high-performance operating system for its operation panel. Since a license for ESPRIT CAM software is included as standard in addition to the automatic conversational programming function, the machine allows users to create highly complex machining programs on a PC connected to the machine through a network. Additionally, the machine is equipped with MORI-NET that provides remote maintenance and operating status monitoring, as standard.

(7) Compliance with safety standards

The NHX10000 complies with safety standards all over the world, including IEC Standards, UL Standards and JIS Standards.

The NHX10000 will be exhibited at **EMO Hannover 2011** Machine Tool World Exhibition to be held from September 19 to 24 in Hannover, Germany. We are looking forward to seeing you at our booth.

Mori Seiki will continue to provide a wide range of products from small to large machines in order to suit each and every customer need.

Type	High-precision High-speed horizontal machining center
Model	NHX10000
Market	The construction machinery, aircraft, printing machinery, industrial machinery, energy-related industries, etc
Order start	August 25, 2011
Production	5 units/month

■Major Specifications

Axis travel (X/Y/Z) (mm)	1,700/1,400/1,510
Pallet working surface (mm)	1,000 x 1,000
Max. pallet loading capacity (kg)	3,000 [5,000]
Max. workpiece swing diameter x Max. workpiece height (mm)	φ 2,000 x 1,600
Max. spindle speed (min ⁻¹)	10,000 [15,000] ^{*1} [6,000] ^{*2}
Type of spindle taper hole	No.50 [HSK A-100]
Spindle torque (Nm)	525 [600] ^{*3} [512] ^{*1} [1,309] ^{*2}
Spindle drive motor (kW)	40/30/25 (15%ED/30min./cont.) [30/25 (30min./cont.)] ^{*1*3} [55/45/37 (25%ED/30min./cont.)] ^{*2}
Rapid traverse rate (X/Y/Z) (mm/min ⁻¹)	50,000/50,000/50,000 [50,000/40,000/50,000] ^{*2}
Max. table rotational speed (min ⁻¹)	23 [20] ^{*4}
Tool storage capacity (tool)	Chain type: 60 [80] [100] [120] Rack type: [180] [240] [330]
Floor space (width x depth) (mm)	5,770 x 9,055

[] Option

*1: High-speed specifications

*2: High-torque specifications

*3: High-output specifications

*4: Full indexing table specifications



Fig. 1 Machine exterior



Fig. 2 Machine interior