

Press Release

October 21, 2013

Tianjin Plant-Produced Machining Center “NHC Series”

DMG MORI SEIKI, CO., LTD. will begin taking orders for the NHC4000 and NHC5000, high-accuracy, high-speed horizontal machining centers of the NHC series in China on October 21, 2013. They are produced at the Tianjin Factory, China which started operation in September 2013.

The NHC series models able to achieve high-rigidity and high-speed machining are the first horizontal machining centers that are produced at the Tianjin Plant. The machines ensure high rigidity required for heavy-duty cutting by employing a column with different levels of guideways on the X-axis, and a spindle bearing with the largest diameter in its class of 80 mm. Besides, they enable superior acceleration thanks to lighter moving parts. Except for the scope of the linear axis repeatability control stipulated by the Foreign Exchange and Foreign Trade Act of Japan, the NHC series models achieve the highest level of accuracy.

As the models can flexibly work in combination with automation systems such as a pallet pool system and a workpiece transfer robot according to customers' machining needs, they can contribute to improving the shop floor productivity. We offer two types of packages of the series for customers in the interest of saving their time for choosing options.

We would like to highlight some of the main features of the NHC series from perspectives of (1) High rigidity, (2) High speed, (3) High accuracy, (4) Enhanced reliability, (5) Energy saving, (6) MAPPS IV + ESPRIT®, (7) Package, (8) Varieties of peripherals (DMSQP), and (9) Safety.

(1) High rigidity

The linear guideways on the X- and Z-axis are placed on the thick and high-rigidity bed, and a large spindle bearing with a diameter of 80 mm is employed. What's more, the Z-axis stroke is extended by 30 mm compared with the existing model to improve access from the spindle to the center of pallet. This allows the use of short tools, thus ensuring high-rigidity machining.

(2) High speed

The NHC series is capable of achieving high-speed feed with a rapid traverse rate of 60 m/min on all axes. The DDM (Direct Drive Motor) technology is used for the optional pallet full indexing specification. With the DDM, the drive power is directly transmitted to the rotary axes without using gears to achieve higher-speed indexing and shorter non-cutting time, contributing to improvement of customers' productivity.

(3) High accuracy

The NHC series models use a spindle in which air and cooling oil pipes are arranged symmetrically relative to the center of the spindle, minimizing thermal displacement in the spindle. They achieve a repeatability^{*1} of 3.9 µm or less on each axis. With a maximum tool length longer than the pallet size, the models can perform boring without a 180-degree table rotation and ensure a higher boring accuracy and shorter cutting time.

*1: Measurement in compliance with ISO230-2_1997

*2: 450 mm for NHC4000 and 550 mm for NHC5000

(4) Enhanced reliability

In order to sustain the high reliability for a long time, the labyrinth structure of the spindle was improved, considering a heavy use of coolant. The structure prevents coolant from entering the inside of spindle. The ATC (Automatic Tool Changer) arms employ a new mechanism, which enables them to firmly grip long and heavy tools and ensures stable tool changes.

(5) Energy saving

When the machines are in a stop state, the main power such as spindle and servo motor power is shut off to reduce the environmental burden and running costs. The machines use an effective drive unit which makes it possible that energy stored at a time of deceleration is used as a power source when they are in operation mode. LED lights are attached inside the machine to help reduce the power consumption and ensure a longer lighting life. The hydraulic unit is equipped with an accumulator, so no power is needed to maintain hydraulic pressure.

(6) MAPPSIV + ESPRIT[®]

The NHC series uses the high-performance operating system MAPPS IV, which was designed in pursuit of usability such as a freely customizable main screen and an easy-to-see button arrangement. The automatic conversational programming function drastically simplifies programming and allows operators to easily create machining programs. What's more, the ESPRIT[®], an optional CAM software, allows programming for machining of complex-shaped workpieces on PCs which are network-connected with machines.

(7) Package

We offer two types of packages for customers so that they can choose necessary options quickly and effectively: the Basic package (shown below) for customers' basic needs and the Advanced package for complex, high-accuracy machining.

<Basic package>

- Tool storage capacity: 40 tools (center through)
- Signal tower: three colors (red, yellow, green), LED type
- Through-spindle coolant unit on the coolant tank (center through, 1.5 MPa)
- Coolant flow switch (for through-spindle coolant)
- Coolant gun (setup station side)
- Manual pulse handle (separate type)
- In-machine workpiece measuring system (spindle): optical type touch sensor
- Pallet edge locator (two pieces)

(8) Varieties of peripherals (DMSQP)

We strictly selected eleven items including peripheral equipment and systems, such as a spindle coolant unit, a mist collector and a pallet pool, as DMSQP (DMG MORI SEIKI Quality Products). They are certified as superior products in terms of quality, performance and maintainability by DMG MORI SEIKI CO., LTD. As we provide reliable, productivity-enhancing DMSQP with the same support service as machines, customers are able to make their best choice from a wide variety of DMSQP and purchase all they need all at once.

(9) Safety

The NHC series complies with international safety standards, including ISO and IEC Standards.

DMG MORI SEIKI CO., LTD. will continue to release products with a higher functionality that are reliable and worthy of investment in the market in an effort to respond to a variety of customers' needs.

Type	High-precision, high-speed horizontal machining center
Model	NHC4000, NHC5000
Market	Automotive, construction machinery, agricultural machinery, general parts machining industries
Price	CNY 1,520,000* (NHC4000) CNY 1,700,000* (NHC5000)
Order start	October 21, 2013
Sales Area	China

*Price of the basic package is included.

■Main specifications

Item		NHC4000	NHC5000
Axis travel (X/Y/Z)	(mm)	560/560/660	730/730/880
Pallet working surface	(mm)	400 × 400	500 × 500
Max. pallet loading capacity	(kg)	400	500 [700]
Max. workpiece swing diameter x Max. workpiece height	(mm)	φ630 × 900	φ800 × 1,000
Max. tool length	(mm)	450	550
Max. spindle speed	(min ⁻¹)	12,000 [12,000 ^{*1}][20,000 ^{*2}]	12,000 [12,000 ^{*1}][20,000 ^{*2}]
Spindle drive motor	(kW)	15/11(10%ED/cont.) [30/18.5(15%ED/cont.) ^{*1}] [18.5/15/11 (10 min./30 min./cont.) ^{*2}]	15/11(10%ED/cont.) [30/18.5(15%ED/cont.) ^{*1}] [18.5/15/11 (10 min./30 min./cont.) ^{*2}]
Rapid traverse rate (X/Y/Z)	(m/min)	60/60/60	
Tool storage capacity	(tool)	Ring type: 40 [60] Chain type: [120] Rack type: [180][240]	
Floor space (width x depth)	(mm)	2,720 × 4,214	3,098 × 4,854

[] Option

*1: High-output specification

*2: High-speed specification (High Speed Cutting)



Photo 1. Exterior (NHC4000)



Photo 2. Exterior (NHC5000)



Photo 3. Inside the machine (NHC4000)