MORI SEIKI
THE MACHINE TOOL COMPANY

Mori Seiki Co., Ltd.
Head Office: 2-35-16 Meieki, Nakamura-ku,
Nagoya City 450-0002, Japan
TEL:+81(0)52-587-1811 FAX:+81(0)52-587-1818

Press Release

October 29, 2007

Machines Large Aircraft Parts and Difficult-to-Cut Workpieces in One Chucking
We Start Accepting Orders for the NMH10000 DCG High-Precision 5-Axis Control Horizontal Machining Center

With large-diameter DDM™ for the rotary axes, 4 times as fast, 5 times as accurate

Mori Seiki Co., Ltd. will start accepting orders for the **NMH10000 DCG**, the latest model in our NMH Series of High-Precision 5-Axis Control Horizontal Machining Centers, from October 29.

The NMH Series is a high-precision 5-axis control horizontal machining center with a tilting table, which achieves process integration and high-speed, high-precision machining for parts and dies and molds, thanks to our original technologies, **DCG® (Driven at the Center of Gravity)** and **DDM™ (Direct Drive Motor)**. Now we have developed the NMH10000 DCG with a 1,000 mm square pallet, to go with our earlier NMH6300 DCG with a 630 mm square pallet. With a wider work envelope and excellent machining ability, it is perfect for machining large workpieces, especially **large aircraft parts**, construction machinery and so on. Moreover, with 5-axis control machining it can machine every surface in one chucking, except for the chucked surface itself, offering shorter setup time and high-precision machining.

Its key feature is its ideal structure, with DCG® for the three linear axes and a total of three DDM™ for the two rotary axes. This configuration allows outstanding acceleration on the linear axes and high-speed rotation and high-precision indexing on the rotary axes, achieving speed and precision far surpassing those of conventional 5-axis control machines. And since it is equipped with a high-output spindle, it offers highly efficient machining of difficult-to-cut materials such as titanium and inconel, which have been widely used for aircraft parts in recent years.

Mori Seiki will continue to pursue the best possible machine structures by developing new technologies, and to provide an even richer line-up of new models for all our customers' varied types of machining.

Type	High-precision 5-axis control horizontal machining center
Model	NMH10000 DCG
Market	Aircraft parts, construction machinery parts, large dies and molds, etc.
Orders start	October 29, 2007
Production	1 unit/month

【Contact】 Marketing Strategy Department users@moriseiki.co.jp

■ Features

1. Uses DCG® and DDM™

DCG® controls vibration, which is the greatest factor preventing high speed and precision, by pushing moving structural parts at their center of gravity using two ball screws. By using this structure for the three linear axes, we have improved surface quality and achieved excellent acceleration.

Since DDM™ transmits the drive power directly without using gears, it achieves zero backlash. We have used this DDM™ on the two rotary axes for high-precision indexing and a high-efficiency drive. In particular, the two DDM™ on the A-axis offer extremely stable performance during machining of large parts.

2. Achieves high-precision machining

By using our original technologies, we have dramatically improved machining accuracy, not only for simultaneous 2-axis control machining but for simultaneous 5-axis control machining as well. We achieved roundness of 2.6 μm on the X-Y plane, and 8.0 μm for NAS Standards. (NAS Standards: These are standards for machining accuracy for simultaneous 5-axis machining, and the normal values are 20~30μm.)

3. Has a large stroke in a small space

Conventional 5-axis control horizontal machining centers are wide because the rotary axis structure moves in the X-axis direction, but the NMH Series is designed to keep the machine's width to the minimum, by moving the rotary axis structure in the Z-axis direction. Even though it has large axis travels (X: 1,550 mm, Y: 1,600 mm, Z: 1,300 mm), the installation area is only 43 m^2 (4,660 x 9,250 mm) (60-tool specifications).

■ Major Specifications

Travel	X, Y, Z axes: 1,550, 1,600, 1,300 mm A, B axes: 150° (+30 ~ -120°), 360°
Table working surface	1,000 x 1,000 mm
Table loading capacity	2,500 kg
Max. workpiece swing diameter x height	φ1,500 x 1,300 mm
Max. spindle speed	10,000 [15,000] [8,000] min^{-1}
Type of spindle taper hole	No. 50
Rapid traverse rate	X, Y, Z axes: 42,000, 42,000, 36,000 mm/min A, B axes: 10, 50 min^{-1}
Type of tool shank	BT50
Tool storage capacity (rack-type)	60 [140] [180] [240] [330] tools
Max. tool diameter	With adjacent tools (60 [140] [180] tool specifications): φ110 mm Without adjacent tools (60 [140] [180] tool specifications): φ320 mm
Max. tool length	800 mm
Max. tool mass	30 kg
Spindle drive motor (30 min./cont.)	30/25 [37/30] kW
Machine height	4,290 (4,750 with APC shutter open)
Floor space	4,660W x 9,250D (60-tool specifications)
Mass of machine	53,500 kg

[ ] Option

Fig. 1 Exterior

Fig. 2 Interior

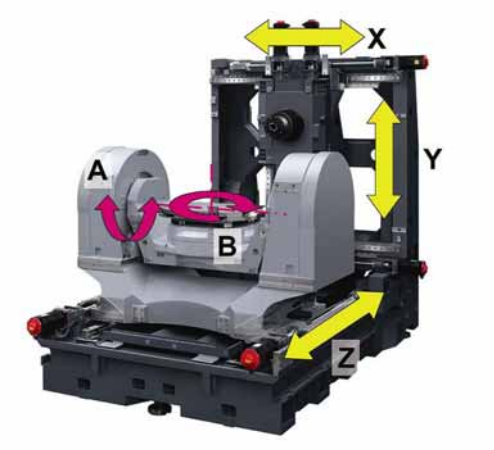

Fig. 3 Axis structure

Fig. 4 Aircraft part machining example