

Press Release

July 1, 2009

New Compact High-precision, High-efficiency Integrated Mill Turn Center Joins NT Series Lineup

Mori Seiki to start accepting orders for the NT1000

Mori Seiki Co., Ltd. will start accepting orders for the **NT1000** integrated mill turn center from July 1, 2009.

Recently, large machine tools have been drawing attention in the aircraft and energy industries. Meanwhile, in the field of small precision parts manufacturing, including medical equipment, watches and measuring instruments, there is a growing demand for machine tools that are capable of high-precision machining of complex-shaped workpieces. To respond to this demand, Mori Seiki has developed the NT1000, the latest model in our NT Series of high-precision, high-efficiency integrated mill turn centers.

The NT1000 has a maximum turning diameter of ϕ 370 mm and maximum turning length of 400 mm, and employs Mori Seiki's original technologies of DDM (Direct Drive Motor) and ORC (Octagonal Ram Construction). As measures against thermal displacement, the headstock of Spindle 1 has a mechanism in which the center of the spindle always stays the same height, and both Spindle 1 and the tool spindle use a high-accuracy cooling system. By taking advantage of these features, the NT1000 offers **high-precision machining of small precision parts.** It is also equipped with the workpiece ejector as standard. The workpiece ejector, mounted opposite to Spindle 1, can transfer workpieces, enabling the machine to handle **the whole process of bar machining.**

With a compact body, the NT1000 reduces floor space by approximately 40% compared to our previous models, **dramatically increasing productivity per unit area.**

The NT1000 is available in three variations: the NT1000/W (with workpiece ejector), the NT1000/WZ (workpiece ejector + Turret 2), and the NT1000/WZM (workpiece ejector + Turret 2 (with milling function)). The machine with Turret 2 can perform simultaneous machining using both the turret and tool spindle, which leads to improved productivity. There are a variety of other options available, including a loader system for automation, enabling **customers to choose the ideal specifications for their machining needs.**

Mori Seiki will continue to provide a wide range of products, from large machines to compact machines, in order to meet each and every customer's production requirements.

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|--------------|---|
| Type | High-Precision, High-Efficiency Integrated Mill Turn Center |
| Model | NT1000 |
| Market | Precision parts (medical equipment, watches, measuring instruments, etc.) |
| Orders start | July 1, 2009 |
| Production | 30 units/month |

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

■ Features

1. High-precision machining of small precision parts

The NT1000 with a maximum turning diameter of ϕ 370 mm and maximum turning length of 400 mm offers high-precision machining by using our original technologies.

This machine is equipped with DDM drive system as standard to transmit power to the B-axis of the tool spindle without using gears, and offers increased transmission efficiency, zero backlash, and high-speed, high-precision indexing. (Max. indexing speed: 100 min^{-1} , max. indexing increment: 0.0001°) For the Y-axis structure, it uses ORC that offsets thermal displacement. The octagonal ram structure keeps the center of the moving parts always the same position even when the guideways heat up as a result of high-speed travel, allowing high-precision machining with high-speed travel. The headstock of Spindle 1 has a mechanism in which the center of the spindle always stays the same height even when the heat is generated, and a cooling system for higher precision control.

2. Capable of handling the whole machining process from bar stocks to finished workpieces

The workpiece ejector is mounted on the opposite side of Spindle 1 as standard, and transfers workpieces.

The bar stock is first fed through Spindle 1, and machined with the tool spindle. And then, the workpiece ejector holds the machined part of the bar stock, and cutting off is performed. After this, the rear side milling is performed, and the finished workpiece is ejected to the chuter. This machine handles all these processes on one machine, achieving integrated machining.

3. Dramatically improved productivity

This machine has an approximately 40% smaller floor space compared to our previous models, dramatically increasing productivity per unit area.

4. Customers can select suitable machine for their need

Besides the NT1000/W with the workpiece ejector, we have prepared the NT1000/WZ (Workpiece ejector + Turret 2) and the NT1000/WZM (Workpiece ejector + Turret 2 (with milling function)). The use of Turret 2 allows simultaneous machining with the tool spindle, offering even greater productivity.

Automation with a loader is also available as option. As well as a gantry type loader, we have prepared a smart loader (LS-05) that can be mounted on a machine without changing an installation area of a machine with a conveyor. This loader will surely meet the needs of customers who place importance on both space savings and simplified setups.

Spindle speed of $20,000 \text{ min}^{-1}$ or $30,000 \text{ min}^{-1}$ (standard: $12,000 \text{ min}^{-1}$), and tool storage capacity of 76 (standard: 38 tools) are also available as options.

■ Specifications (for NT1000/W)

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| | NT1000/W |
| Max. turning diameter | φ 370 mm |
| Max. turning length | 400 mm |
| Tool spindle travel (X/Y/Z) | 380/210/480 mm |
| Max. spindle speed | 6,000 min ⁻¹ |
| Max. tool spindle speed | 12,000 [20,000] [30,000] min ⁻¹ |
| Tool storage capacity | 38 [76] tools |
| Tool changing time (chip-to-chip) | 5 sec |
| Type of tool shank | Capto C5 [HSK-A50] |
| Rapid traverse rate (X/Y/Z) | 40/40/50 m/min |
| Spindle drive motor | 11/7.5 kW (30 min/cont) |
| Tool spindle drive motor | 9/5.5 kW (25%ED/cont) |
| Floor space (width x depth x height) | 2,425/2,705/2,385 mm |

[] Option



Fig. 1 Exterior (NT1000/W)

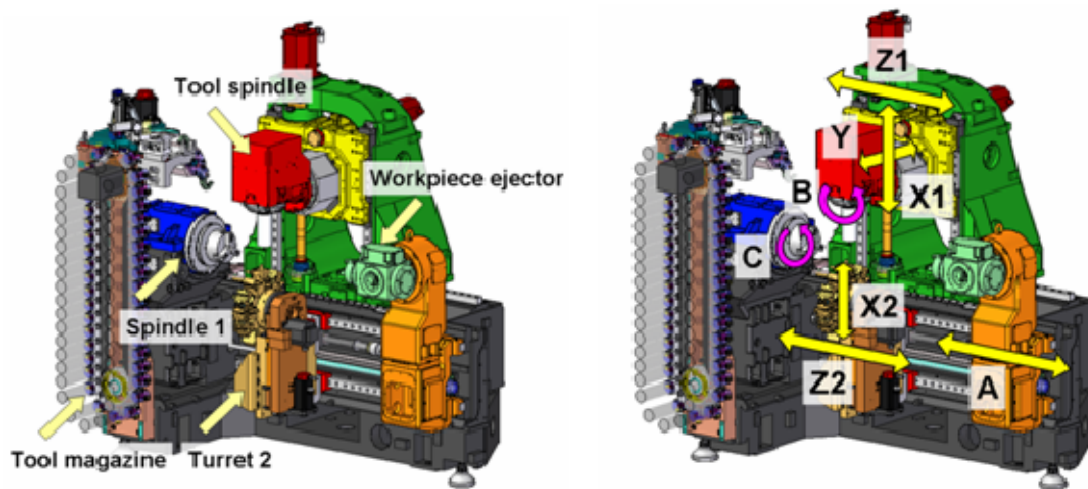


Fig. 2 Machine and axis structure (NT1000/WZM)



Fig. 3 Example of target work piece (artificial bone)