AW MILLER
TECHNICAL SALES, INC.
EAST AURORA, NY 716.652.8282 | HARMONY, PA 724.453.1690 | STE-LAURENT, QC 514.333.9174 | HARLEYSVILLE, PA 215.256.8281

HQR-200/3 NEO
HQR-250/3 NEO

Mazak

[3 turret / 2 spindle CNC turning centers]

HQR-200/3 NEO
HQR-250/3 NEO

3 turret / 2 spindle CNC lathe for process integration and high productivity in machining parts with complex geometries

3 turret / 2 spindle machine construction for faster cycle times

Bar work capacity up to Φ102 mm (Φ4.02") (option)

Automation system for various applications from chuck to shaft workpiece

The CNC system MAZATROL SmoothG^3 for highly efficient machining with 3 turret

High productivity

Mechanical structure and function enhancements reduce cycle time

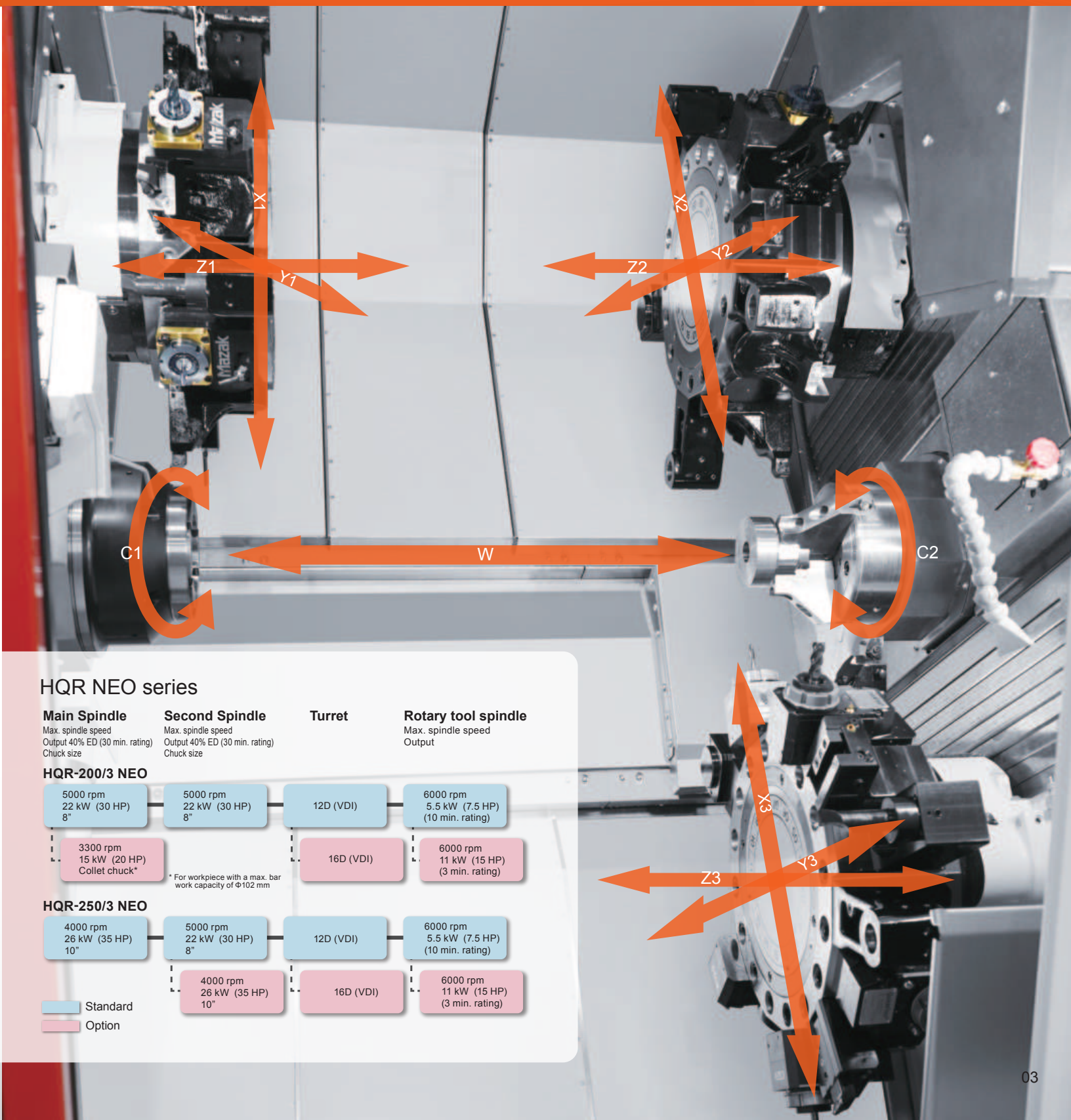
High accuracy

Enhanced heat displacement compensation ensures stable machining accuracy

Environmental performance

Visual tools to manage power consumption and regeneration
Energy-saving control of equipments

HQR-200/3 NEO
Shown with optional equipment



HQR NEO series

Main Spindle	Second Spindle	Turret	Rotary tool spindle
Max. spindle speed Output 40% ED (30 min. rating) Chuck size	Max. spindle speed Output 40% ED (30 min. rating) Chuck size		Max. spindle speed Output

HQR-200/3 NEO

Main Spindle	Second Spindle	Turret	Rotary tool spindle
5000 rpm 22 kW (30 HP) 8”	5000 rpm 22 kW (30 HP) 8”	12D (VDI)	6000 rpm 5.5 kW (7.5 HP) (10 min. rating)
3300 rpm 15 kW (20 HP) Collet chuck*		16D (VDI)	6000 rpm 11 kW (15 HP) (3 min. rating)

* For workpiece with a max. bar work capacity of Φ102 mm

HQR-250/3 NEO

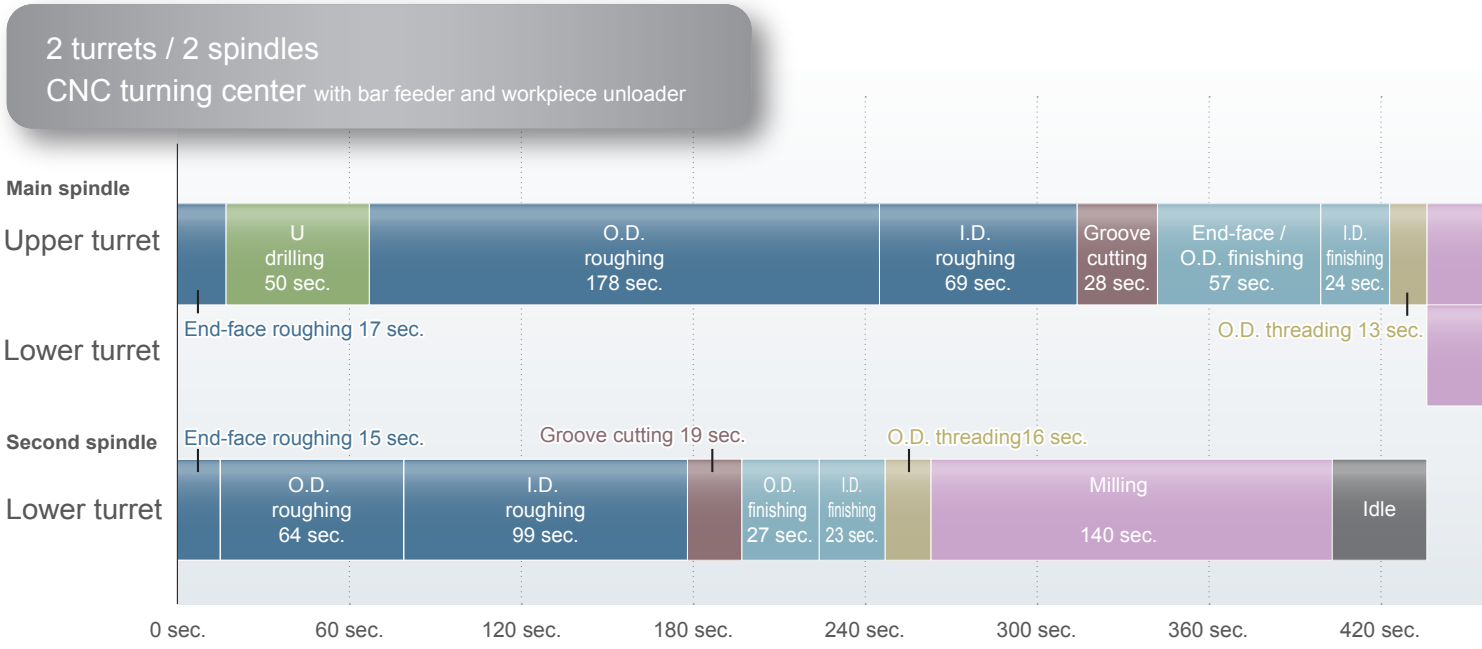
Main Spindle	Second Spindle	Turret	Rotary tool spindle
4000 rpm 26 kW (35 HP) 10”	5000 rpm 22 kW (30 HP) 8”	12D (VDI)	6000 rpm 5.5 kW (7.5 HP) (10 min. rating)
	4000 rpm 26 kW (35 HP) 10”	16D (VDI)	6000 rpm 11 kW (15 HP) (3 min. rating)

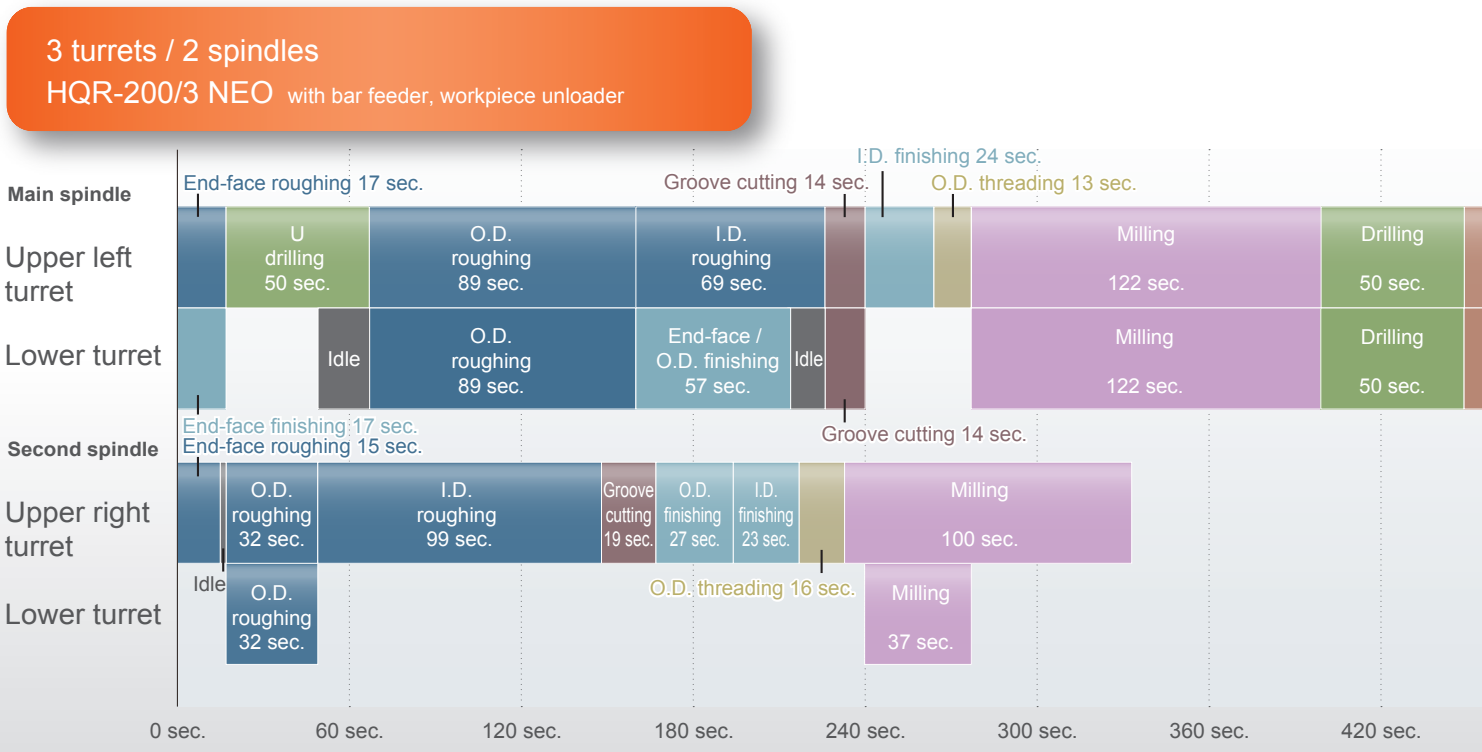
Standard

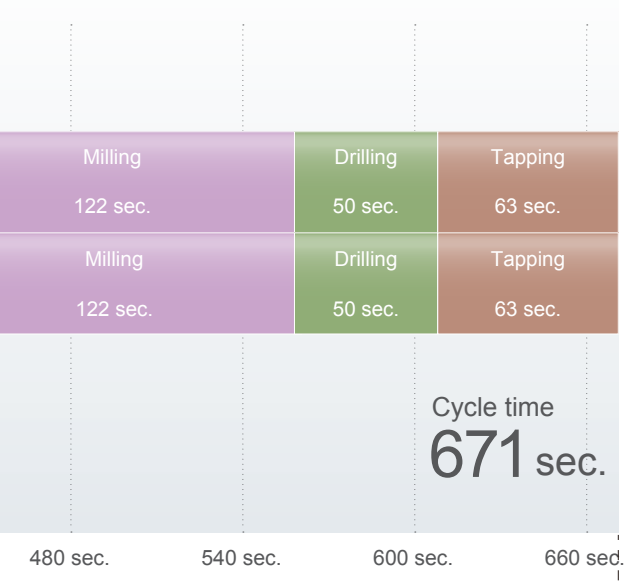
Option

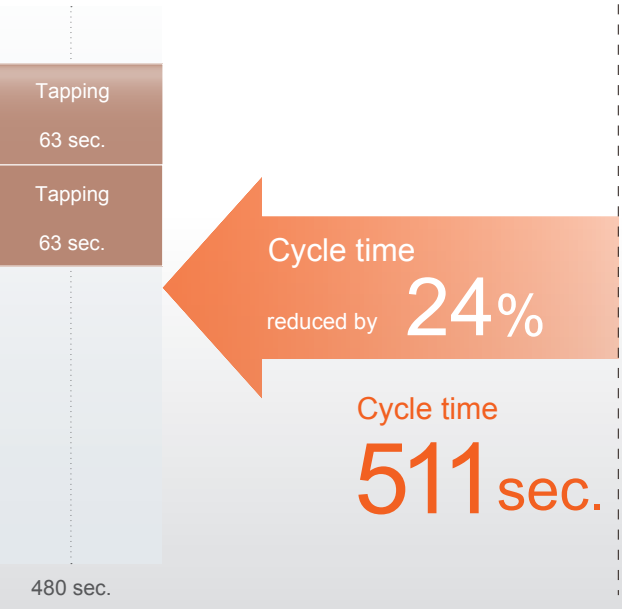
3 turret / 2 spindle machine construction drastically reduces cycle time

The unique 3 turret / 2 spindle machine structure performs simultaneous machining of two workpieces while maintaining balanced cutting using upper and lower turrets.
In workpieces where there is a difference in machining amounts between the first and second operations, our machine achieves significant productivity improvement even compared to 2 turret / 2 spindle CNC turning center.



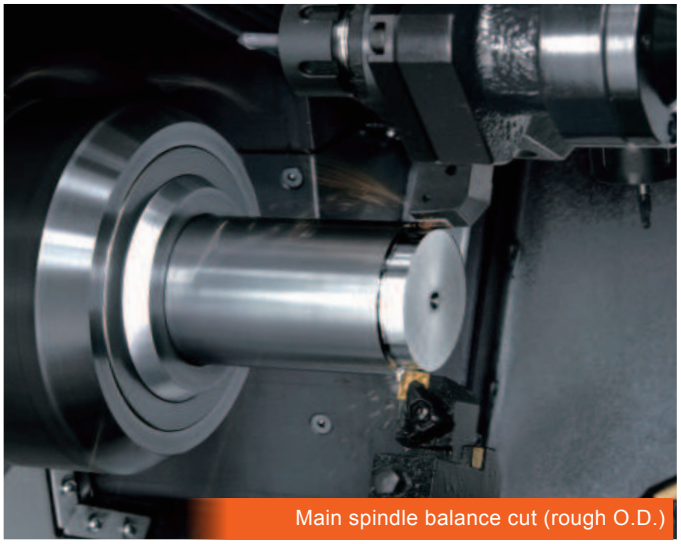


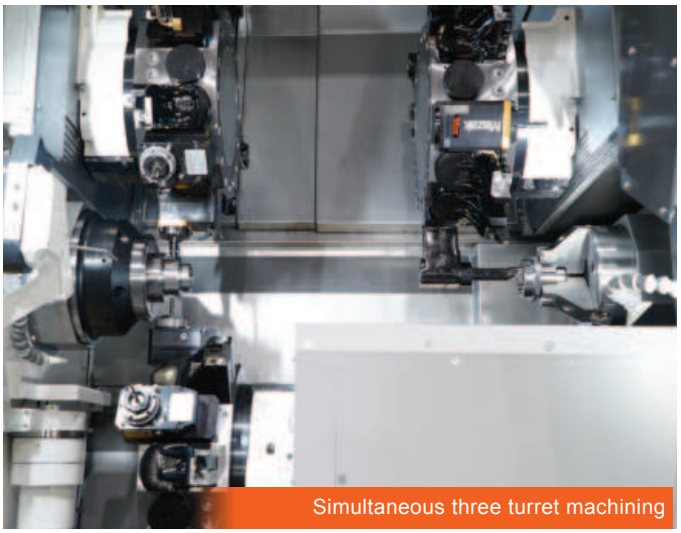


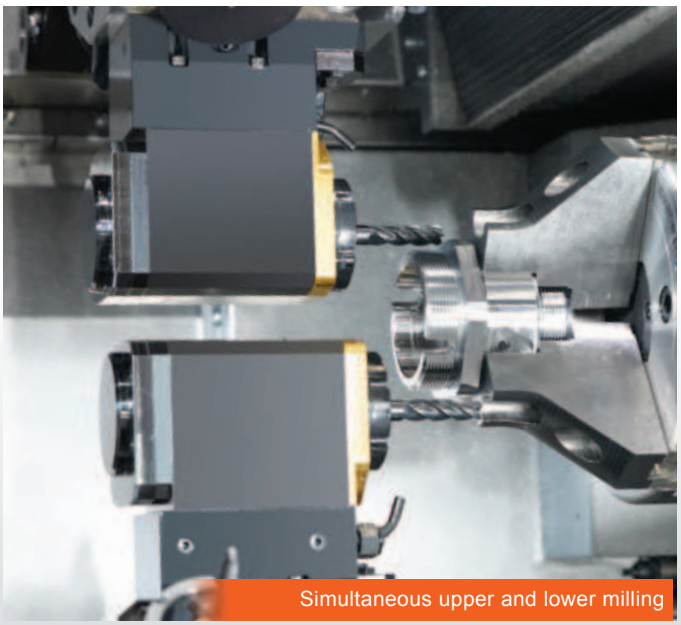


Cycle time
reduced by 24%

Cycle time
511 sec.


Main spindle balance cut (rough O.D.)


Simultaneous three turret machining


Simultaneous upper and lower milling

Higher Productivity

High efficiency integral spindle / motors in both headstocks

Spindle variation for various workpieces.

The spindle C1-axis and C2-axis* can be indexed by 0.0001° increments and can also perform contouring. *0.0001° indexing on C2-axis is optional

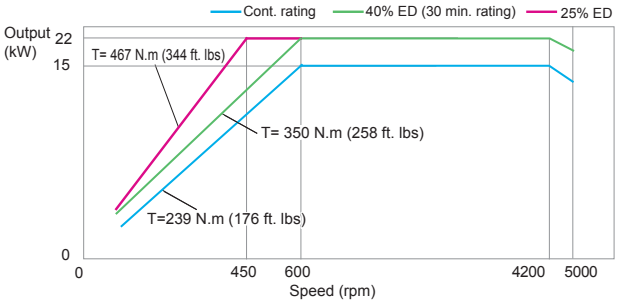
Spindle output / torque diagram

HQR-200/3 NEO

5000 rpm, 22 kW (30 HP) spindle

Main spindle / second spindle

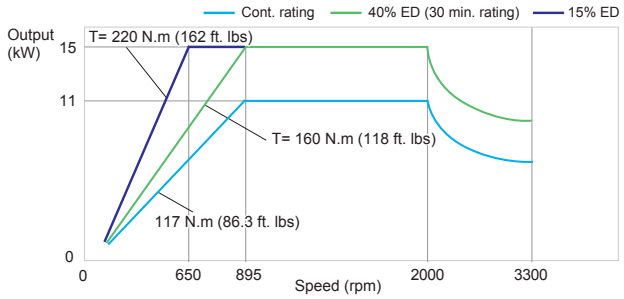
Output (40% ED (30 min. rating) / cont. rating)	22 kW / 15 kW
Torque (25% ED)	467 N.m (344 ft. lbs)
Spindle bore	Φ76 mm (Φ3")



3300 rpm, 15 kW (20 HP) spindle

Main spindle (option)

Output (40% ED (30 min. rating / cont. rating)	15 kW / 11 kW
Torque (15% ED)	220 N.m (162 ft. lbs)
Spindle bore	Φ112 mm (Φ4.41")

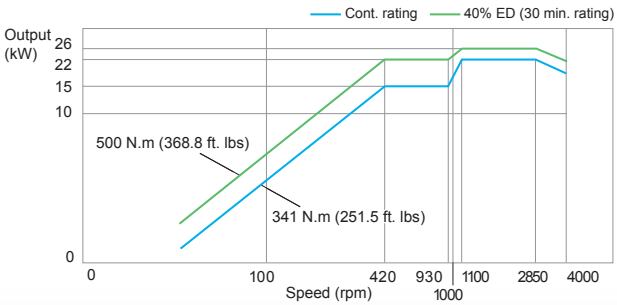


HQR-250/3 NEO

4000 rpm, 26 kW (35 HP) spindle

Main spindle
Second spindle (option)

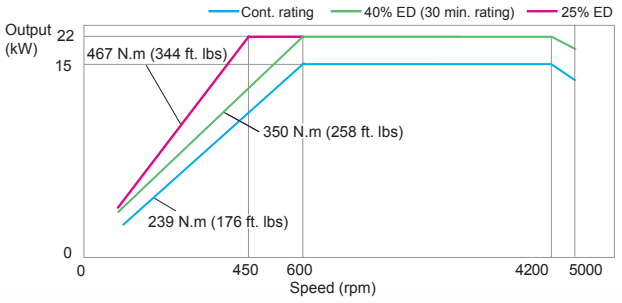
Output (40% ED (30 min. rating) / cont. rating)	26 kW / 22 kW
Torque (40% ED (30 min. rating))	500 N.m (368.8 ft. lbs)
Spindle bore	Φ91 mm (Φ3.58")



5000 rpm, 22 kW (30 HP) spindle

Second spindle

Output (40% ED (30 min. rating / cont. rating)	22 kW / 15 kW
Torque (25% ED)	467 N.m (344 ft. lbs)
Spindle bore	Φ76 mm (Φ3")



Y-axis long stroke

The rotary tool spindles of the three turrets, along with the Y-axis long stroke of 100 mm (±50 mm) (4" [±2"]), enable the use of multiple tandem tool holders, allowing for the machining of workpieces with various shapes.

Turrets

The upper and lower 12 position drum turrets can mount either turning or milling tools on each of the 12 positions for convenient setup. The VDI turret allows for easy and secure tool attachment and detachment with just one fixed bolt. 16 position drum turret is optionally available.

Turning tool shank	25 mm × 25 mm (1" × 1")
Boring bar shank diameter	Φ40 mm (Φ1 - 1/2")

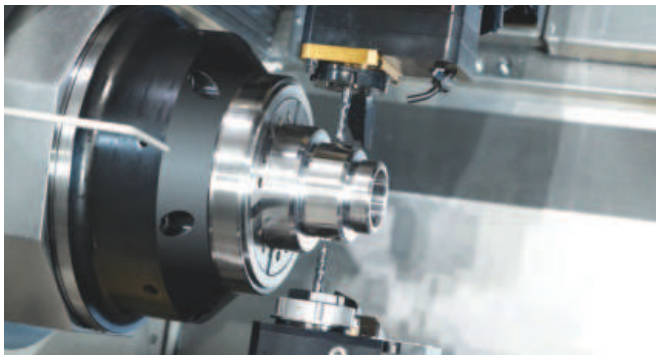
Bar work capacity

Since both the main spindle and second spindle have large spindle bores, a wide range of bars can be machined.

Machine(s)	Main spindle	Second spindle
HQR-200/3 NEO	Φ65 mm (Φ2.56")	Φ65 mm (Φ2.56")
	Φ102 mm (Φ4.02") OPTION	
HQR-250/3 NEO	Φ80 mm (Φ3.15")	Φ65 mm (Φ2.56")
		Φ80 mm (Φ3.15") OPTION

Rotary tool spindle

Milling spindle provides performance comparable to a small machining center from powerful face milling to high speed drilling.

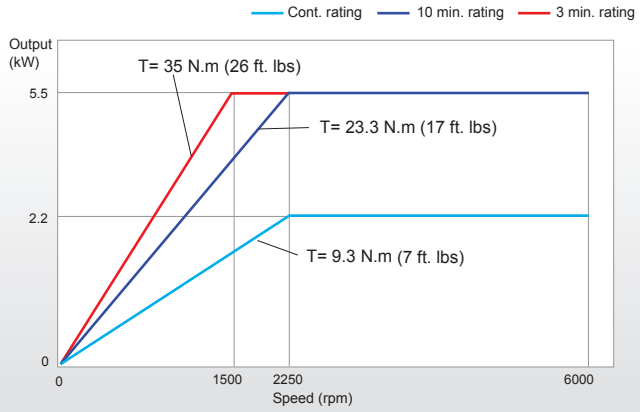


Milling capacity

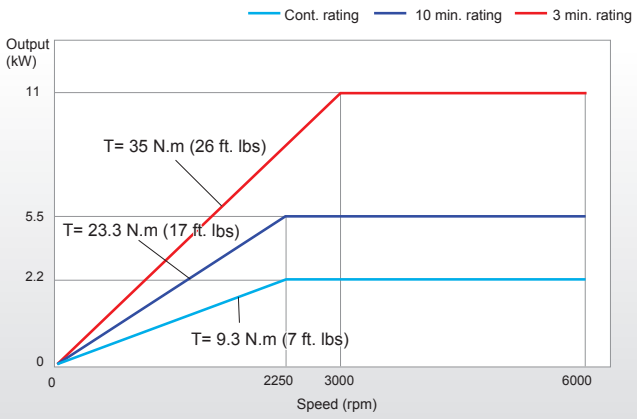
12 position drum turret	Drill	Φ20 mm (Φ0.75")
	Endmill	Φ20 mm (Φ0.75")
	Tap	M20 (3/4 UNC) × 2.5
16 position drum turret	Drill	Φ16 mm (Φ0.63")
	Endmill	Φ16 mm (Φ0.63")
	Tap	M16 (5/8 UNC) × 2.0

Rotary tool spindle diagram

6000 rpm, 5.5 kW (7.5 HP)



6000 rpm, 11 kW (15 HP) OPTION



Higher Accuracy

Ai Thermal Shield

Based on spindle speed and temperature of the machine, Ai Thermal Shield suppresses changes in the cutting edge position. It stabilizes continuous machining accuracy through meticulous machine control that takes into account temperature changes, machine position, coolant ON/OFF, and other factors. New algorithms have improved the accuracy of compensation. Furthermore, by accumulating and analyzing data from subsequent measurements, thermal displacement compensation can be optimized for each machining environment.

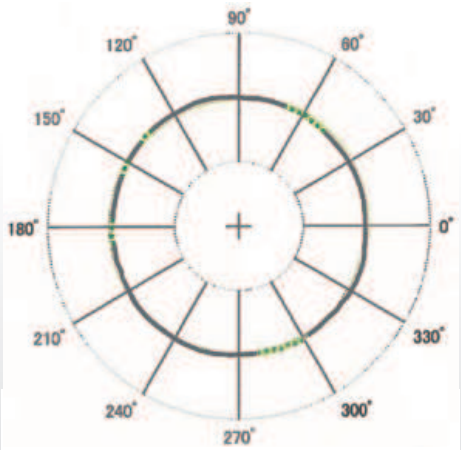
Roundness

HQR-200/3 NEO test results

The inspection is conducted according to ISO-230 on a recommended foundation with room temperature controlled to 22°C±1°C (71.6°F±1.8°F) after machine has reached operation temperature.

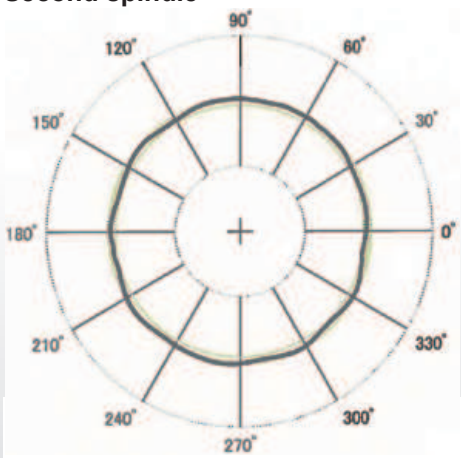
Material	Brass JIS C3604
Spindle speed	5000 rpm
Machining conditions	Feedrate 0.03 mm/rev (0.0011811”/rev) D.O.C 0.02 mm (0.000787402”)
Tool	Diamond tool (DA2200) Nose R 0.4 mm (0.015748”)

Main spindle



Results 0.27 µm (0.0000106”)

Second spindle



Results 0.45 µm (0.0000117”)

Automation

Bar feeder and workpiece unloader

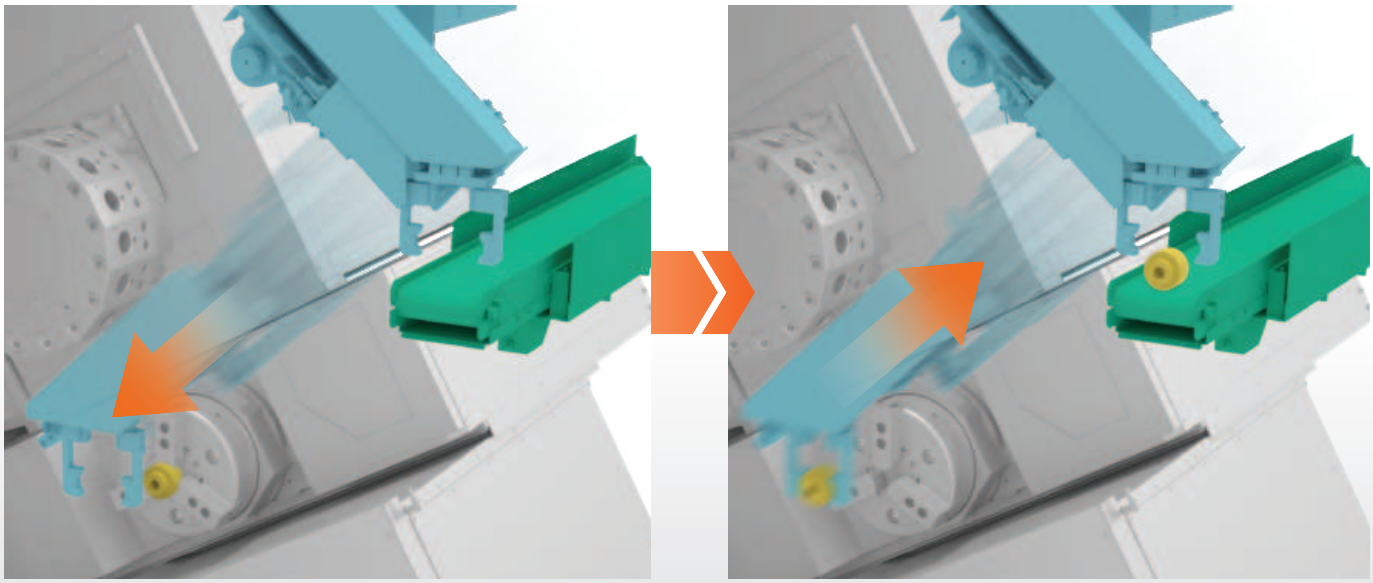
Effective operation from bar material to finished workpiece.
The unloader hand is designed to prevent any marring of the finished workpiece surface.

Workpiece unloader

Workpiece unloader

The work unloader removes the workpiece from the chuck and transfers it outside of the machine without damaging the machined surfaces.

Max. workpiece diameter	Φ102 mm (Φ4.02")
Max. workpiece length	180 mm (7.09")
Max. workpiece weight	5 kg (11 lbs)



Simultaneous 4-axis CNC

MAZATROL SMOOTH G³

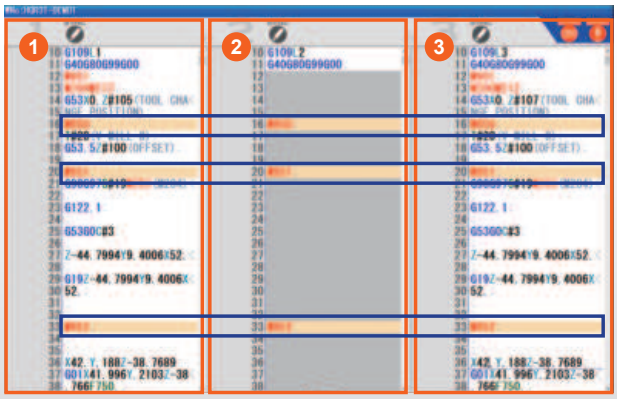
- **Screen design that takes advantage of touch operation speeds up task such as programming and editing. The dedicated 3 turret screen supports the complex machining.**
- **Complex movements of the three turrets are supported by various interference check functions to ensure safe operation.**

Interface for improved usability

Large touch screen for intuitive operation

Highly efficient machining with 3 turret dedicated display and support functions

The display divided into three columns makes it easy to confirm the operation of each turret. The EIA/ISO programming screen displays the waiting command positions side by side, enabling intuitive and easy program editing.

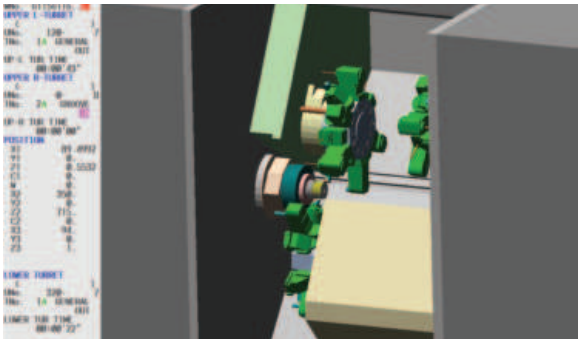


3 split display EIA / ISO programming screen

Various program check functions

Virtual Machining

Accurate simulation under the same operating environment as the machine enables us to check the machining shape and interference in advance. This enables highly productive operations from the first production piece.



Safety Shield

Even when axes are moved manually during setup work, the 3D model on the NC screen checks for interference and alerts the operator to prevent machine interference.