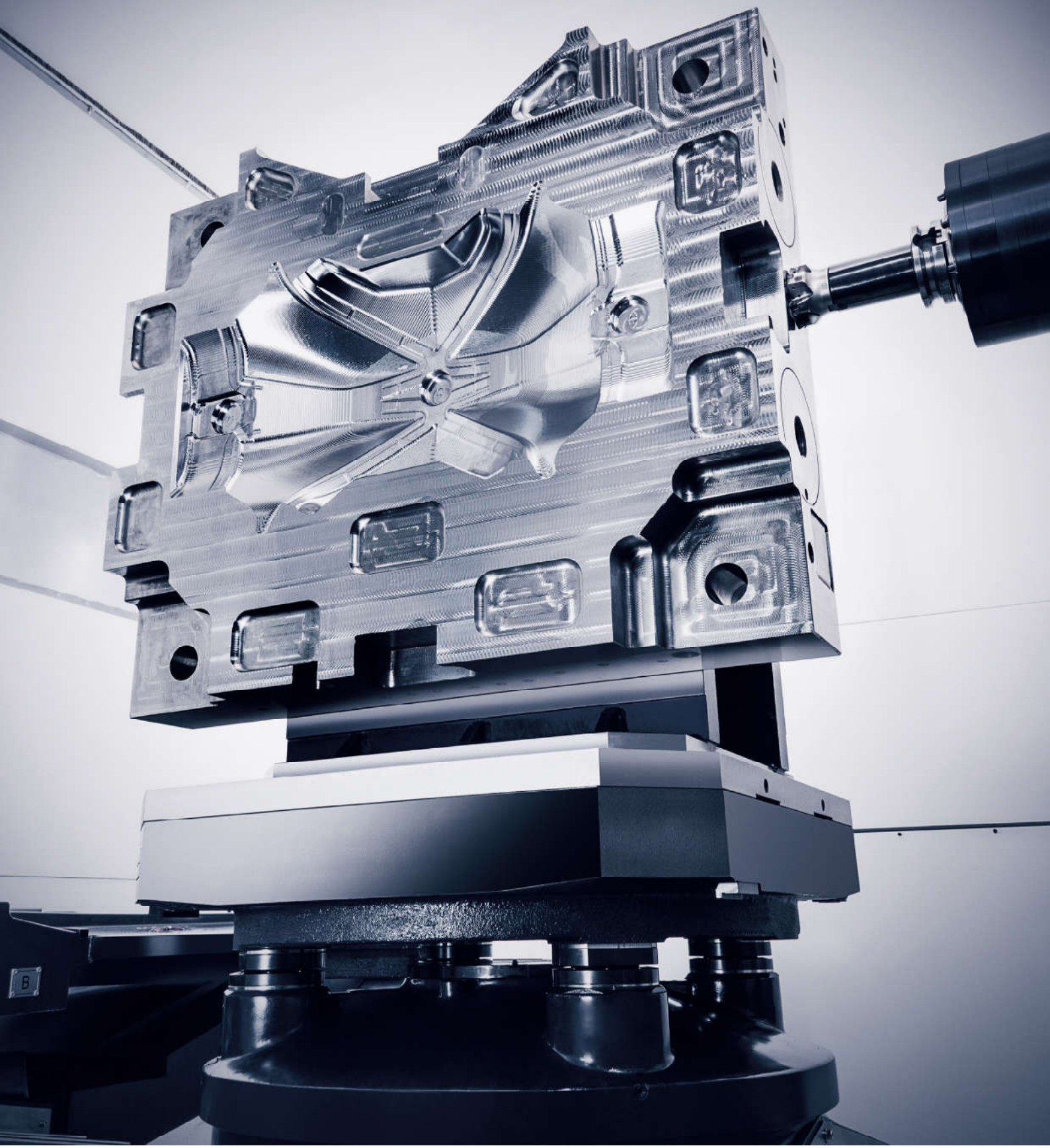
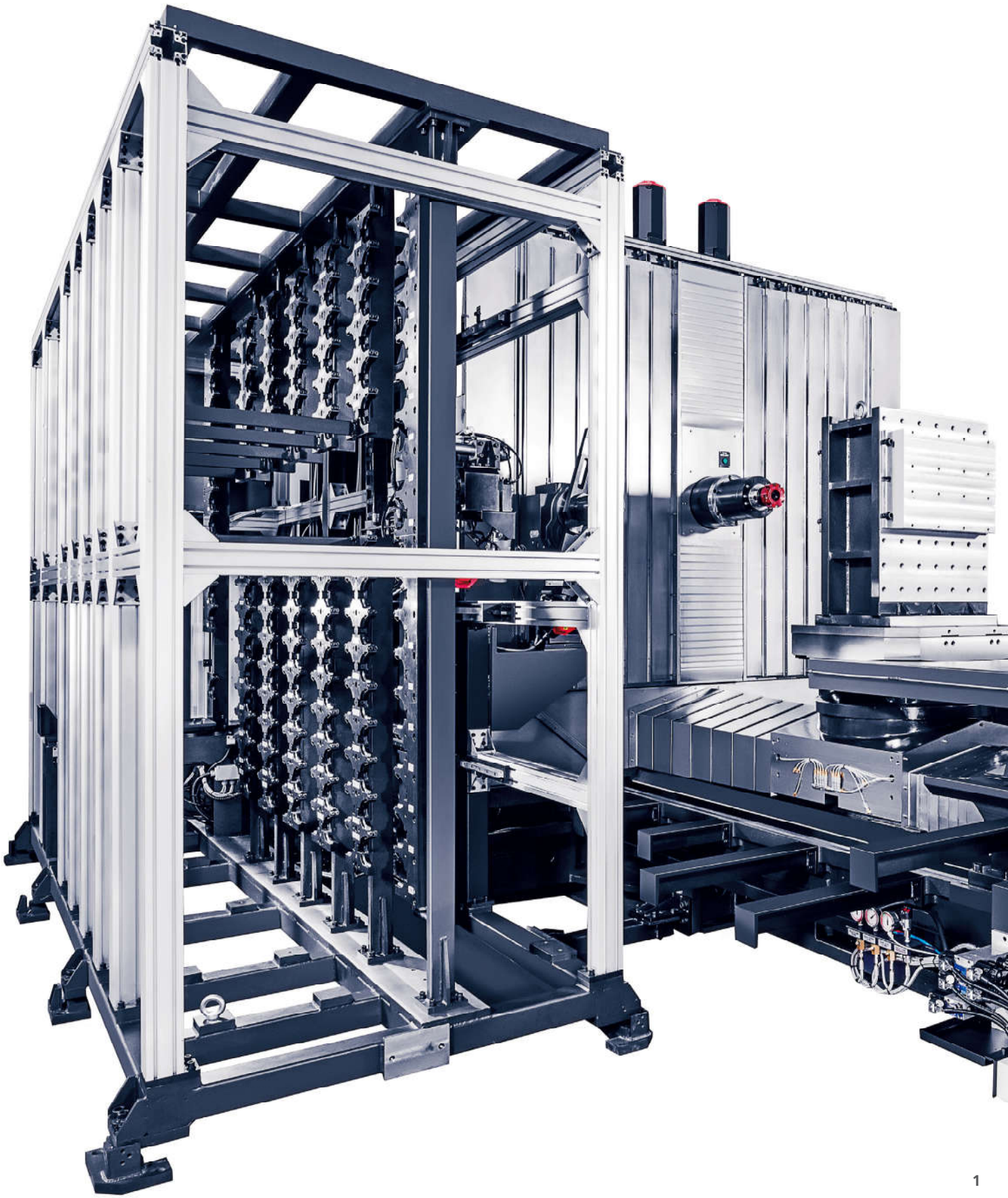


H6/H8

High Precision & High Torque Horizontal Machining Center
with Pallet Size of 630/800mm

HWACHEON



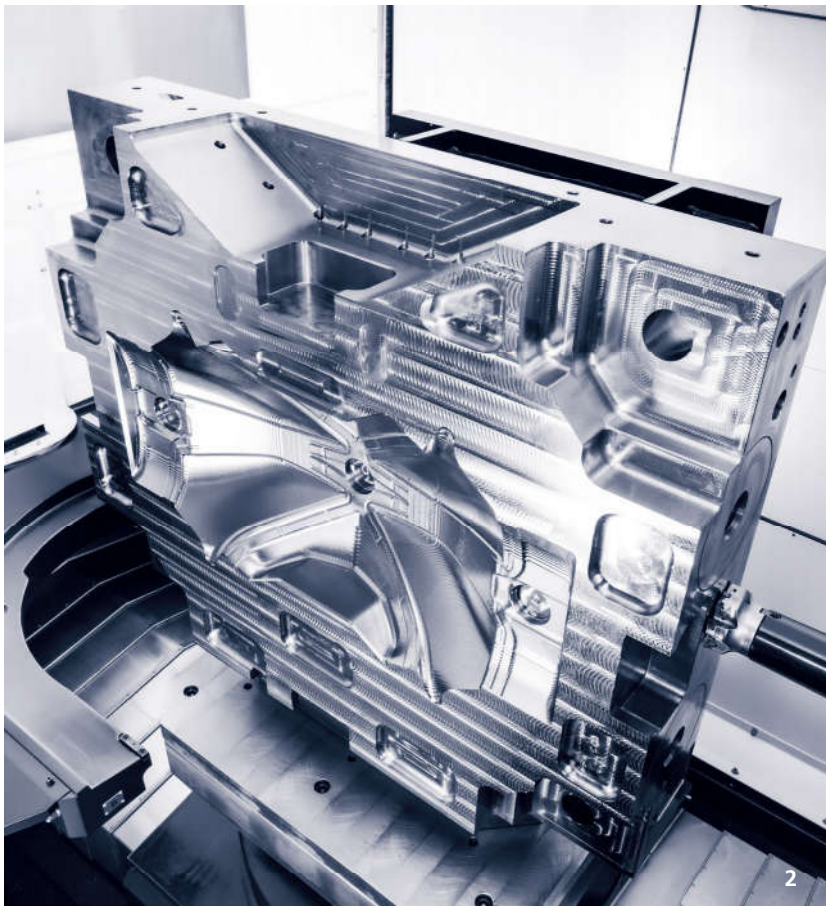
1

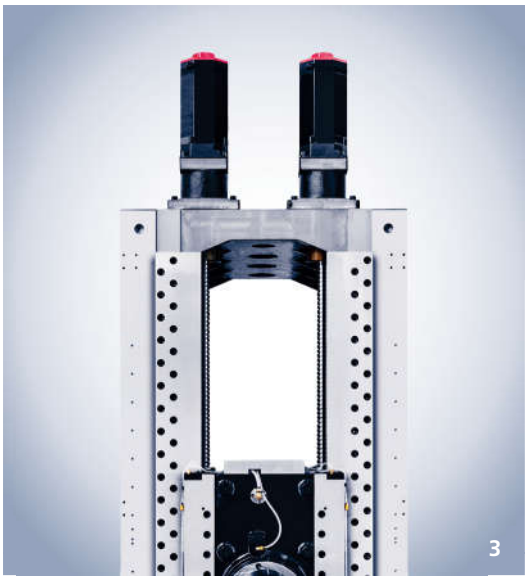
HORIZONTAL MACHINING CENTER WITH HIGH PRECISION & HIGH TORQUE

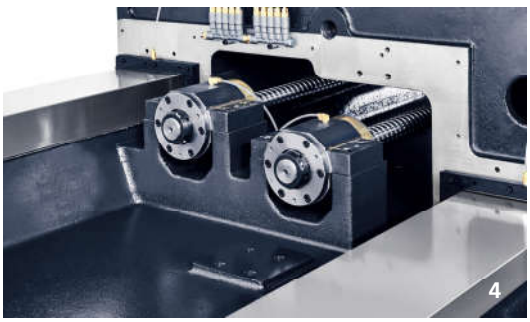
High-precision Horizontal Machining Center with Hard Cutting Capability

H6/H8 has twin drives that can provide powerful and stable machining performance by applying box guide way in all axes.

1 180 Tools Magazine **2** Mold / Taillight / P20 ESR **3** Twin Drive in Y-axis for Precise Movement
4 Twin Drive in X-axis for Precise Movement



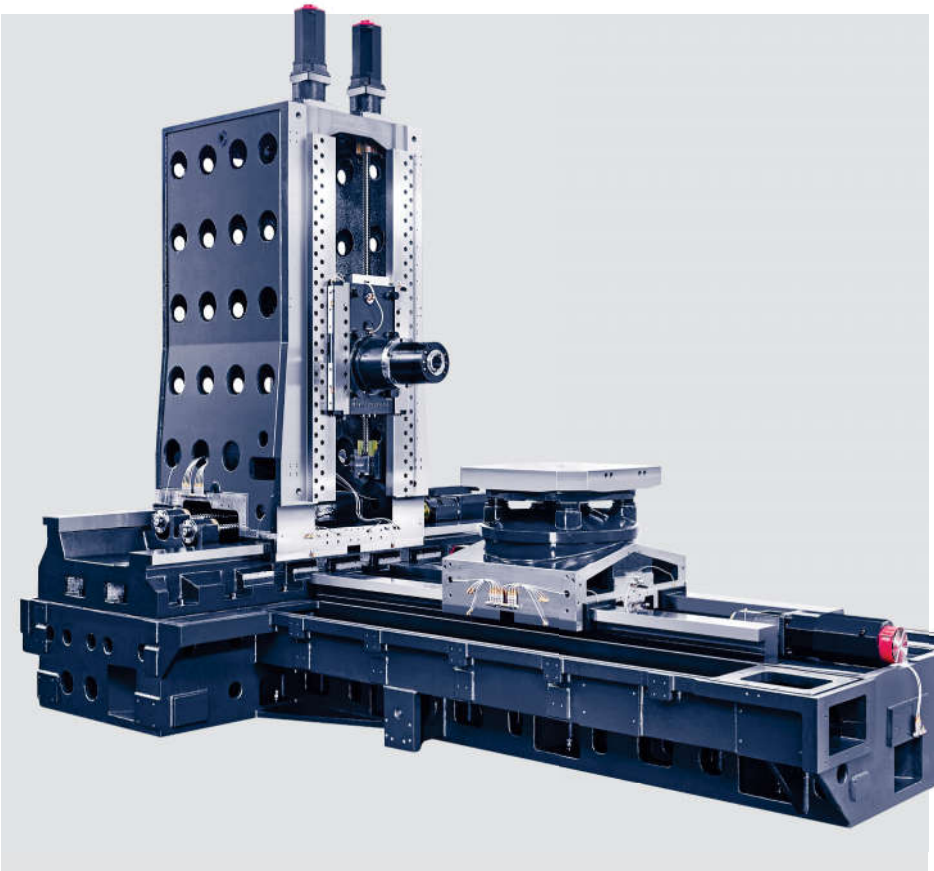




RIGID ROUGHING AND PRECISE FINISHING PERFORMANCE

H6/H8 offer a perfect solution for machining general parts to difficult-to-cut components through high-rigidity, high-precision machining performance.

High-productivity, horizontal machining center with a highly rigid structural design to enable hard cutting and maintain precision during prolonged operation.
The application of highly rigid box-way guides and a twin drive system to the X and Y-axis allows processing of general parts as well as difficult-to-cut components, and servo-operated tool and workpiece changers reduce non-cutting time, increasing productivity and enhancing operational reliability and maintainability. Also, 3D design and FEM analysis secured structural stability, while the Hwacheon-developed machining software increases machining efficiency and precision to provide a faster and safer working environment.



Strong and stable frame structure

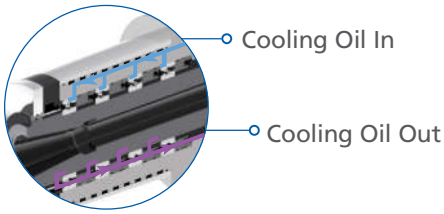
Integrated bed frame provides stable support for the feed system, and the thermally stable rectangular frame structure maintains geometrical precision during prolonged operation.

High-precision twin drive

The twin-drive system applied to the X and Y-axis minimizes vibration during feeding to ensure precise machining performance.

High-rigidity wide box-way

High-rigidity box-ways applied to all axes absorb vibration and alleviate impact during hard cutting operation.

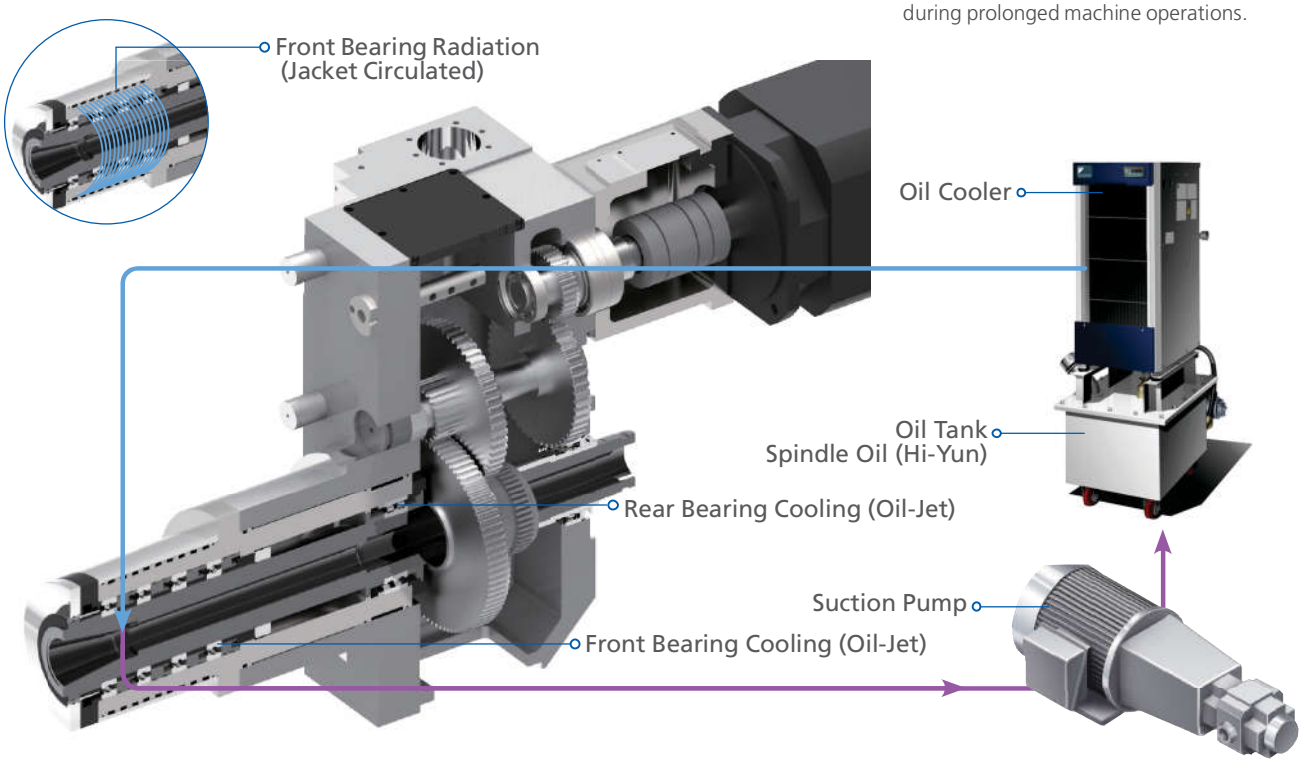


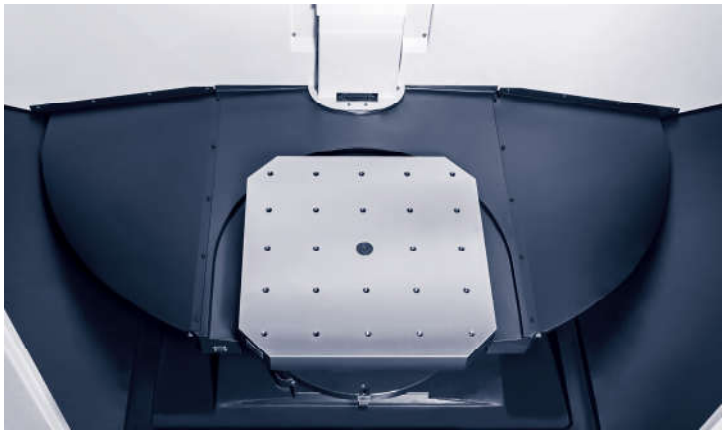
Gear Driven Spindle

The 2-speed auto-shifting gear spindle delivers high torque cutting performance at extra low speeds; while providing excellent performance at high speeds.

Oil-Jet Cooling

The Oil-Jet cooling and the Jacket Cooling designs have been perfected by Hwacheon's experience and know how in building high quality spindles. Highly effective cooling systems minimize the thermal displacement during prolonged machine operations.





Automatic Pallet Changer (APC) (top)
Servo-operated APC delivers reliability and high productivity through fast and accurate changes. At the same time, it provides space for convenient mounting and dismounting of workpieces.

Accessibility and visibility (right)
As the spindle moves towards the operator, it is easy to check tool wear or install measuring devices. Steps have been built inside the machine to facilitate checking the shape or making measurements after processing a large workpiece. Operators can work safely without slipping after using cutting oil.

40-tool magazine (left)
180-tool magazine (bottom) (optional)
The magazine can hold from 40 to 180 tools, which enables even more complex machining operations. Automatic tool changing minimizes tool setting time, providing a faster and more convenient machining environment.

MACHINING SOFTWARE

The Hwacheon Machining Software Components

The Hwacheon's developed machining software monitors different variables related to the work environment and machining conditions and makes adjustments for best quality results and optimum work efficiency.

RELIABILITY

HTLD
Hwacheon Tool Load Detect System

HTLD constantly monitors the tool wear to prevent accidents, which may occur from a damaged tool and help to stop tool wear from deteriorating the workpiece.
(The load is measured every 8 msec to ensure accuracy)

HTDC (HSDC + HFDC)
Hwacheon Thermal Displacement Control System (HSDC + HFDC)

HTDC integrates the Hwacheon Spindle Displacement Control system and the Frame Displacement Control System.

HFDC
Hwacheon Frame Displacement Control System

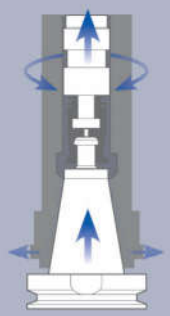
HFDC is equipped with highly sensitive thermal sensors in the casting region where thermal activity is suspected; monitoring and correcting displacement.

HSDC
Hwacheon Spindle Displacement Control System

When the spindle rotates at high speed, the centrifugal force drives the taper to expand, causing errors in Z axis. HSDC constantly monitors the temperature at each spindle region and makes optimal prediction for thermal displacement. The system then makes necessary adjustments and effectively minimizing thermal displacement.

Static displacement compensation

The HSDC system corrects the Z-axis error occuring from the taper expansion during the spindle's high speed rotation.



PRECISION +

HRGC

Hwacheon Real-time Geometric Compensation System

HRGC calibrates the feed orthogonality of machine tools in real time, which changes due to temperature variations and thermal impact of machining. Orthogonal variation is most prominent in Y-Z direction for horizontal machining centers, and calibrating it minimizes the orthogonal error caused by changes in the machining position.

HECC

Hwacheon High-Efficiency Contour Control System

HECC offers an easy-to-use programming interface for different work-pieces and different processing modes. The system provides a precise, custom contour control for the selected workpiece, while prolonging the life of the machine and decreasing process time. The customizable display provides real-time monitoring and quick access.

- Program offers different options for different cutting speed and accuracy for roughness and shapes.
- The customizable display provides real-time monitoring and quick, easy access.
- The program is executable on an existing NC DATA system and works with the G Code system.

OPTIMA

Cutting Feed Optimization System

OPTIMA utilizes an adaptive control method to regulate the feed rate in real time, to sustain the cutting load during a machining process. As a result the tools are less prone to damage and the machining time is reduced.

SPEED +

USER FRIENDLY DESIGN, A WIDE RANGE OF OPTIONAL FEATURES

User convenience, a variety of extra features

With a user-centric architecture, H6/H8 offer a user-friendly design and a variety of extra features.
Focusing on actual operators, implementation of various special, highly-utilizable functions helps operators concentrate fully on machining operations and work more safely and efficiently.

Coolant Shower
Plenty of coolant from 18 nozzles in the working envolope will perfectly flush all chips away on the machine and work piece area.

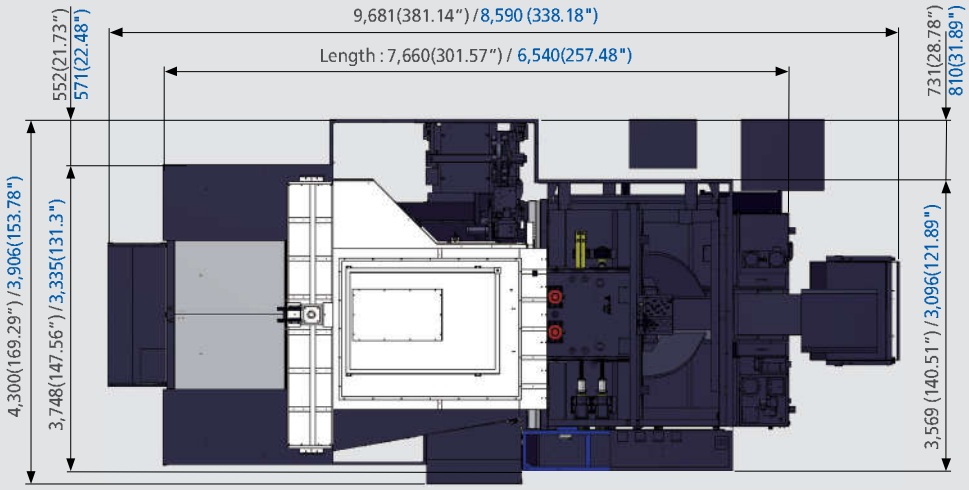
Coolant Through Spindle (Option)
High pressure spindle through coolant will help to evacuate chips from hole drilling, tapping and other cavity operations.

Auto Measurement System (Option)

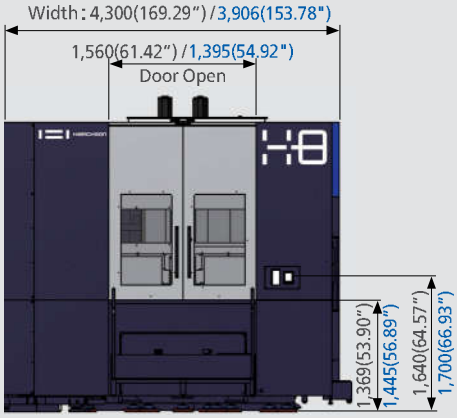
Product Data

■ H8 ■ H6

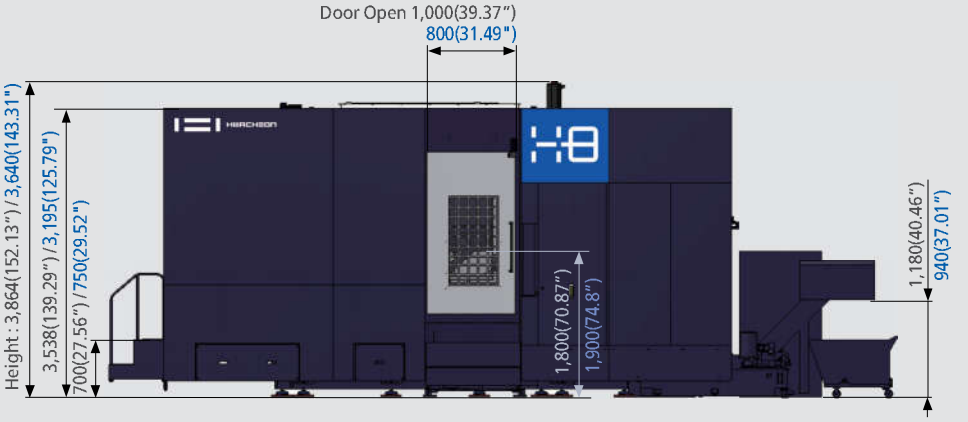
* Unit: mm(inch)



Top



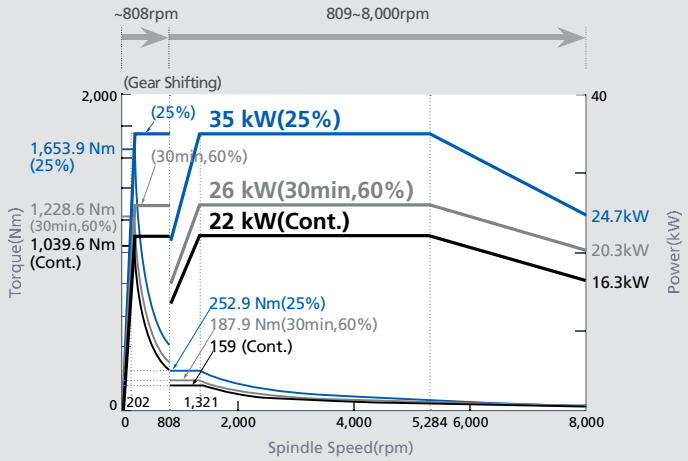
Left side



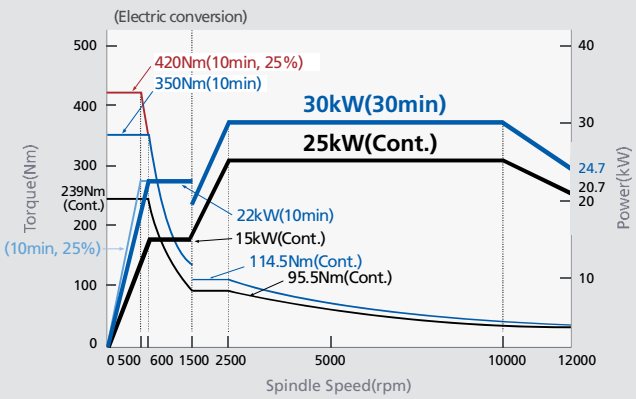
Front

Spindle Power – Torque Diagram

Std. **(8,000rpm)**

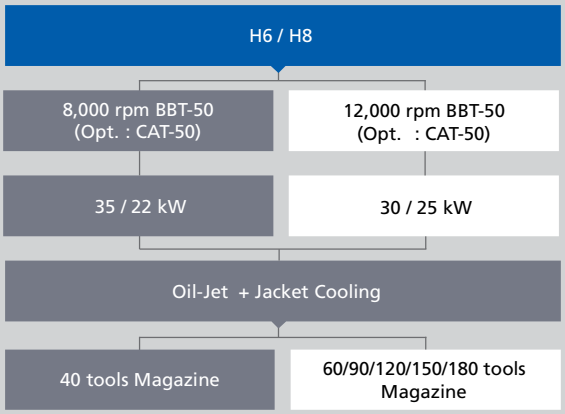


Opt. **(12,000rpm)**



Product Configuration

Each product can be configured to fit your application.



Machine Specifications

ITEM		H6	H8
Travel			
Stroke (X/Y/Z)	mm(inch)	1,050 (41.34") / 900 (35.43") / 1,000 (39.37")	1,400 (55.12") / 1,150 (45.28") / 1,250 (49.21")
B-axis Rotation Angle	°(deg)	360°	360°
Distance from Table Center to Spindle Gauge Plane	mm(inch)	70 ~ 1,070 (2.76" ~ 42.13")	100 ~ 1,350 (3.94" ~ 53.15")
Distance from Table Surface to Spindle Center	mm(inch)	70 ~ 970 (2.76" ~ 38.19")	100 ~ 1,250 (3.94" ~ 49.21")
Table			
Working Surface	mm(inch)	630 (24.80") x 630 (24.80")	800 (31.50") x 800 (31.50")
Table Loading Capacity	$kg_f(lb_f)$	1,600 (3,527)	2,200 (4,850)
Min. Indexing Angle	°(deg)	0.001° (Opt. : 1°)	1° (Opt. : 0.001°)
Max. Workpiece Size	mm(inch)	Ø1,050 (41.34") / 1,300 (51.18")	Ø1,450 (57.09") / 1,450 (57.09")
Spindle			
Max. Spindle Speed	rpm	8,000 (Opt. : 12,000)	
Spindle Motor	kW(HP)	35 / 22 (47 / 30)	
Type of Spindle Taper Hole	-	ISO#50, 7/24 Tapper (BBT-50)	
Spindle Bearing Inner Diameter	mm(inch)	Ø100 (Ø3.94")	
Method of Spindle Lubrication & Cooling	-	Oil-Jet Lub. + Jacket Cooling	
Feedrate			
Rapid Speed (X/Y/Z)	m/min(ipm)	48 / 48 / 40 (1,890 / 1,890 / 1,575)	36 / 36 / 36 (1,417.3 / 1,417.3 / 1,417.3)
Rotating Time for 90° (B)	sec	1.2	2.5
Motor			
Feed motor (X1 / X2 / Y1 / Y2 / Z / B)	kW(HP)	6 / 6 / 7 / 7 / 9 / 5.5 (8 / 8 / 9.3 / 9.3 / 12 / 7.3)	
Coolant Motor (Spindle / Shower Coolant)	kW(HP)	0.75 / 1.8 (1.0 / 2.4)	
Spindle Cooler (50 / 60Hz)	kW(HP)	5.0 / 5.6 (6.7 / 7.5)	
ATC			
Type of Tool Shank / Type of Pull Stud	-	BBT-50 (Opt.: CAT-50) / 90° Type	
Tool Storage Capacity	ea	40 (Opt. : 60 / 90 / 120 / 150 / 180)	
Max. Tool Diameter (With Adjacent Tools / Without)	mm(inch)	Ø125 (4.92") / Ø300 (11.81")	
Max. Tool Length	mm(inch)	550 (21.65")	600 (23.62")
Max. Tool Weight	$kg_f(lb_f)$	30 (66.1)	
Method of Tool Selection	-	Fixed Address	
Method of Operation (Magazine / Swing Arm)	-	Servo Motor / Servo Motor	
APC			
Number of pallets	ea	2	
Pallet change method	-	Rotary Type	
Operation method	-	Servo Motor	
Pallet change time (180°)	sec	12	16
Power Source			
Electric Power Supply	kVA	100	
Compressed Air Supply (Pressure x Consumption)	-	0.5 ~ 0.7MPa x 1,870N ℓ/min	
Tank Capacity			
Spindle Cooling / Lubrication / Coolant	ℓ (gal)	60 / 12 / 1,200 (15.85 / 3.17 / 317)	
Machine Size			
Height / Floor Space (Length × Width)	mm(inch)	3,640 (143.31") / 6,540 x 3,906 (257.48" x 153.78")	3,864 (152.13") / 7,660 x 4,300 (301.57" x 169.29")
Weight	$kg_f(lb_f)$	26,500 (58,422)	33,000 (72,752)
NC Controller		Fanuc 31i-B	

Standard and optional product components

Standard Accessories		Optional Accessories	
• Adjust Bolt, Block & Plate	• Spindle Cooler	• Air Gun	• Spindle Through Coolant, (30 / 70 bar)
• Air Blower	• Tool Box	• Auto Door	• Tool Life Management
• Air Dryer	• Workpiece Coordinate Pair 48ea	• Ball Screw Nut Cooling	• Tool Measuring System-Renishaw / Blum
• Automatic Pallet Changer	• Work Light	• Coolant Gun	(Touch Type, Laser Type)
• Base Around Splash Guard	• 10.4" Color LCD	• Data Server (256 / 1,024MB)	• Transformer
• Coil Conveyor (2ea)	• Hwacheon Efficient Contour	• Data Server Interface	• Workpiece Measuring System
• Coolant System	Control system (HECC)	• Lift up Chip Conveyor	-Renishaw / Blum (Touch type)
• Door Interlock	• Hwacheon Tool Load Detect System (HTLD)	(Hinge Type, Scraper Type)	• 800 x 1,000 Size Pallet (H8)
• Lubrication system	• Hwacheon Thermal Displacement	• Linear Scale (X / Y / Z)	• Hwacheon Artificial Intelligence
• MPG Handle (1ea)	Control System (HTDC)	• Manual Guide i	Control System (HAI) : 600 / 1,000 block
• Operation Manual & Parts List	• Hwacheon Artificial Intelligence	• Mist Collector	
• Pneumatics System	Control System (HAI) : 200 Block	• Oil Mist (Semi Dry Cutting System)	
• Part Program Storage Length 640m (256kB)	• Cutting Feed Optimization System (OPTIMA)	• Oil Skimmer	
• Rigid Tapping	• Hwacheon Real-time Geometric	• Signal Lamp (R / G / Y, 3Colors)	
• Signal Lamp (R, G)	Compensation System (HRGC)		

NC사양 [Fanuc 31i-B]

※ — : Not available S : Standard O : Option

ITEM	SPECIFICATION	H6	H8
Controlled axis			
Controlled axis (Cs axis)	4 - Axes	S	S
Controlled axis (Cs axis)	5 - Axes(Max.)	O	O
Simultaneously controlled axes	3 - Axes	S	S
Simultaneously controlled axes	4 - Axes(Max.)	S	O
Least input increment	0.001mm, 0.001deg, 0.0001inch	S	S
Least input increment 1 / 10	0.0001mm, 0.0001deg, 0.00001inch	O	O
inch/metric conversion	G20, G21	S	S
Store Stroke Check 1 / 2		S	S
Mirror Image		S	S
Operation			
Automatic & MDI operation		S	S
DNC operation by memory card	PCMCIA card is required	S	S
Dry Run, Single Block		S	S
Manual handle feed / feed rate	1Unit / x1, x10, x100	S	S
Interpolation function			
Positioning / Linear interpolation / Circular interpolation / Dwell (per seconds)	G00 / G01 / G02,G03 / G04	S	S
Cylindrical interpolation		O	O
Helical interpolation	Circular interpolation plus max.2axes linear interpolation	S	S
Nano smoothing interpolation		O	O
Reference position return check / return	G27 / G28, G29	S	S
2nd reference position return	G30	S	S
Skip	G31	S	S
NURBS interpolation		O	O
Feed function			
Rapid traverse override	F0, F25, F50, F100	S	S
Feedrate (mm/min)		S	S
Feedrate override	0 ~ 150%	S	S
Jog feed override	0 ~ 4,000mm/min	S	S
Override cancel	M48, M49	S	S
Program input			
Optional block skip	1ea	S	S
Program number	O4 - Digits	S	S
Sequence number	N8 - Digits	S	S
Decimal point programming		S	S
Coordinate system setting	G92	S	S
Workpiece coordinate system / system preset	G54 - G59 / -	O	O
Additional workpiece coordinate pairs	48ea	S	S
Additional workpiece coordinate pairs	300ea	O	O
Manual absolute on and off		S	S
Chamfering / corner R		S	S
Programmable data input	G10	S	S
Sub program call	10 folds nested	S	S
Custom Macro B		S	S
Addition of Custom Macro Common Variables	#100 - #199, #500 - #999	O	O
Canned Cycles for Drilling		S	S
Small-hole peck drilling cycle		O	O
Polar Coordinate System		O	O
Program Restart		O	O

ITEM	SPECIFICATION	H6	H8
Automatic corner override		O	O
Feedrate clamp based on arc radius		S	S
Scaling		O	O
Coordinate system rotation		S	S
Programmable Mirror Image		O	O
Tape format for Fanuc series 15		O	O
Manual Guide i		O	O
Spindle speed function			
Spindle override	50 - 120%	S	S
Spindle orientation		S	S
Rigid tapping		S	S
Tool function / compensation			
Tool function	T4 Digits	S	S
Tool offset pairs	±6 Digits 200ea	S	S
Tool offset pairs	±6 Digits 400ea, 999ea	O	O
Tool offset memory C		S	S
Tool length compensation		S	S
Cutter compensation C		S	S
Tool life management		O	O
Tool length measurement		S	S
Editing operation			
Part program storage length /Number of register able programs	256kB / 500ea	S	S
Part program storage length /Number of register able programs	512kB / 1,000ea 1MB / 1,000ea, 2MB / 1,000ea	O	O
Background editing		S	S
Extended part program editing		S	S
Play Back		O	O
Setting and display			
Display unit	10.4" Color LCD	S	S
Clock function		S	S
Self-diagnosis function / Alarm history display		S	S
Help function / Graphic function		S	S
Run hour and parts count display		S	S
Dynamic graphic display		O	O
Multi-language display	English, German, French, Italian, Chinese, Spanish, Korean, Portuguese, Polish, Hungarian, Swedish, Russian	S	S
Data input / output			
Reader / Puncher interface CH1	RS232C	S	S
Data server	256MB	O	O
Data server	1,024MB	O	O
Ethernet Interface		S	S
Memory card / USB interface		S	S
Auto data backup	SRAM + Part Program	S	S
HWACHEON Machining Software			
Hwacheon Artificial Intelligence Control System (HAI) : 200 Block		S	S
Hwacheon Artificial Intelligence Control System (HAI) : 600/1000 block		O	O
HTDC (Hwacheon Thermal Displacement System)		S	S
HTLD (Hwacheon Tool Load Detect)		S	S
OPTIMA (Cutting Feed Optimization System)		S	S
HECC (Hwacheon Efficient Contour Control System)		S	S
HRGC(Hwacheon Real-time Geometric Compensation System)		S	S

Hwacheon Global Network

Hwacheon Headquarters Hwacheon Europe Hwacheon Asia Hwacheon America

Please call us for product inquiries.

www.hwacheon.com

The product design and specifications may change without prior notice.
Read the operation manual carefully and thoroughly before operating the product,
and always follow the safety instructions and warnings labels attached on the surfaces of the machines.

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