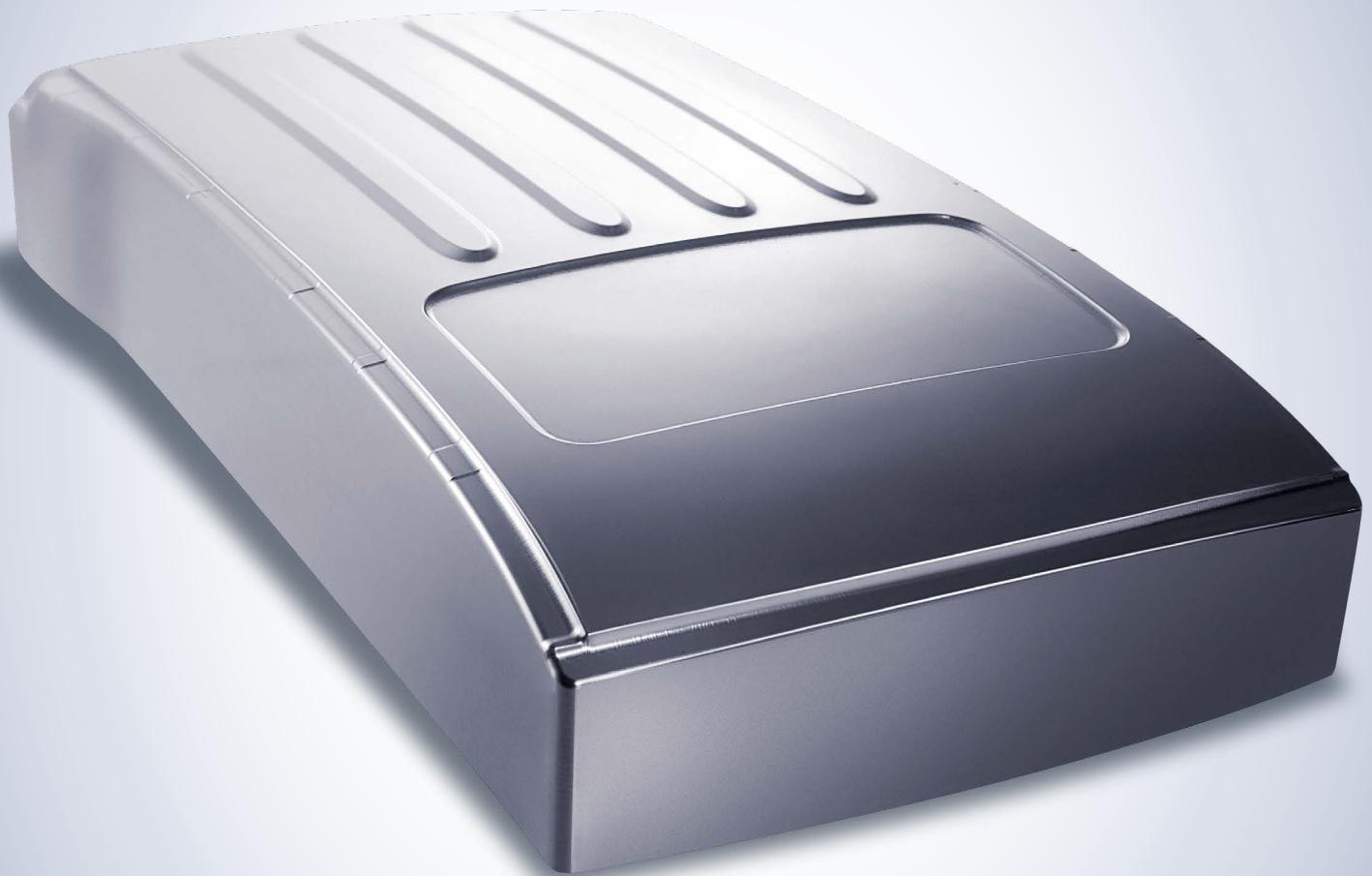


# SIRIUS-1250/1750/2500

Large-Size Vertical Machining Center in Bridge Type Design



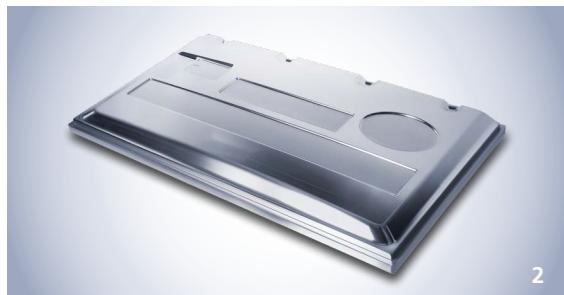
# LARGE-SIZE VERTICAL MACHINING CENTER IN BRIDGE TYPE DESIGN

## SIRIUS-1250/1750/2500 with Bridge Type Design

SIRIUS-1250/1750/2500 are large bridge-type vertical machining centers with precision feed drive and high-performance spindle. These machining centers provide a total solution from tool selection to product completion-making them ideal for your extra-size mold applications where quality is essential.

1 Auto Mobile Top Cover / Auto Driving / GC-250 2 63" LCD TV Back Cover / Home Appliances / KP4M

3 Auto Mobile Bumper Part / Auto Driving / KP4M 4 Auto Mobile Back Door Cover / Auto Driving / KP4M



2



3



4

# HIGH-QUALITY MACHINING FOR EXTRA-SIZE MOLD APPLICATIONS

## Large-Size Mold Machining

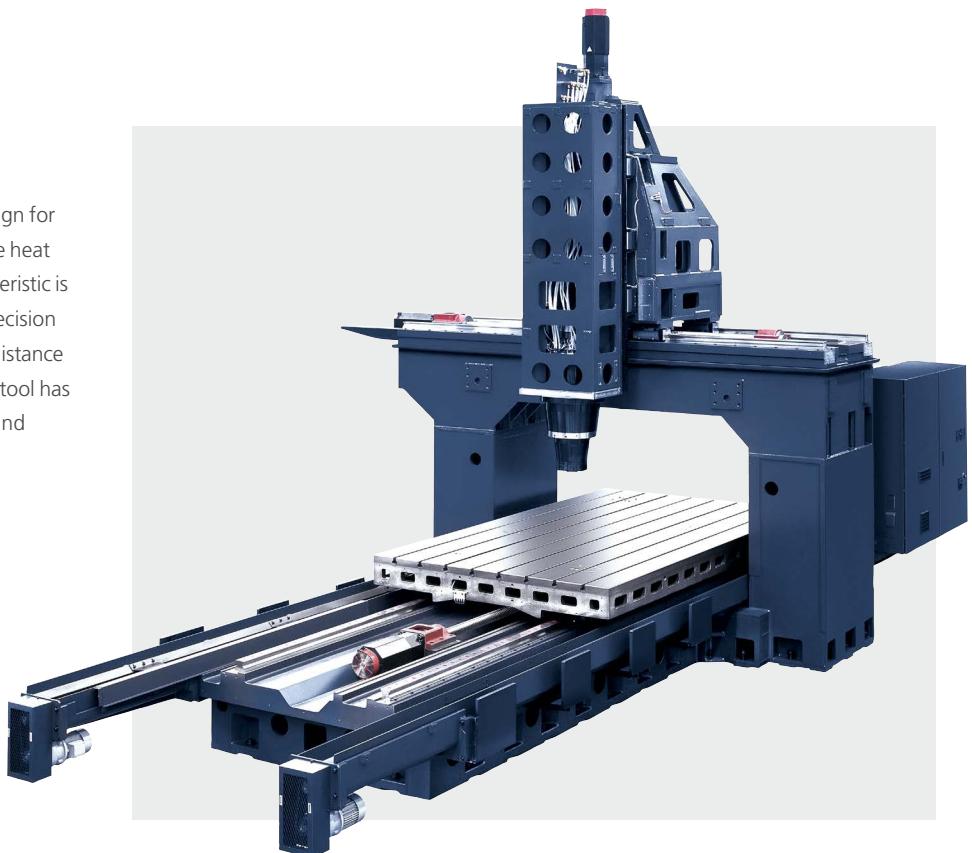
**Hwacheon's extra-size bridge type vertical machining centers guarantee to enhance the quality of your large mold applications, such as large display frame, automotive and aerospace parts.**

The SIRIUS series of large size vertical machining centers use powerful built-in motor spindles and high-speed, high precision milling heads complemented by Hwacheon's proprietary Oil-Jet cooling system to guarantee consistent strong roughing performance and provide high quality product result hours after hours of high speed machining. Each SIRIUS vertical center is designed using 3D simulation FEM analysis to achieve structural rigidity which can translate to quality product results; while the Hwacheon designed machining software components enhance safety and work efficiency in your factory. The machines are configurable with many different options so that they can integrate perfectly to your work environment and application.



## Symmetrical Portal Structure for Extra Stability

The symmetrical portal structure is the ideal design for distributing vibration, the upper weight, and the heat evenly throughout the entire frame. This characteristic is the base for the machine to maintain its feed precision even after hours of continuous machining; the distance between the Y-axis and the contact point of the tool has been minimized to enhance the overall rigidity and machining precision.

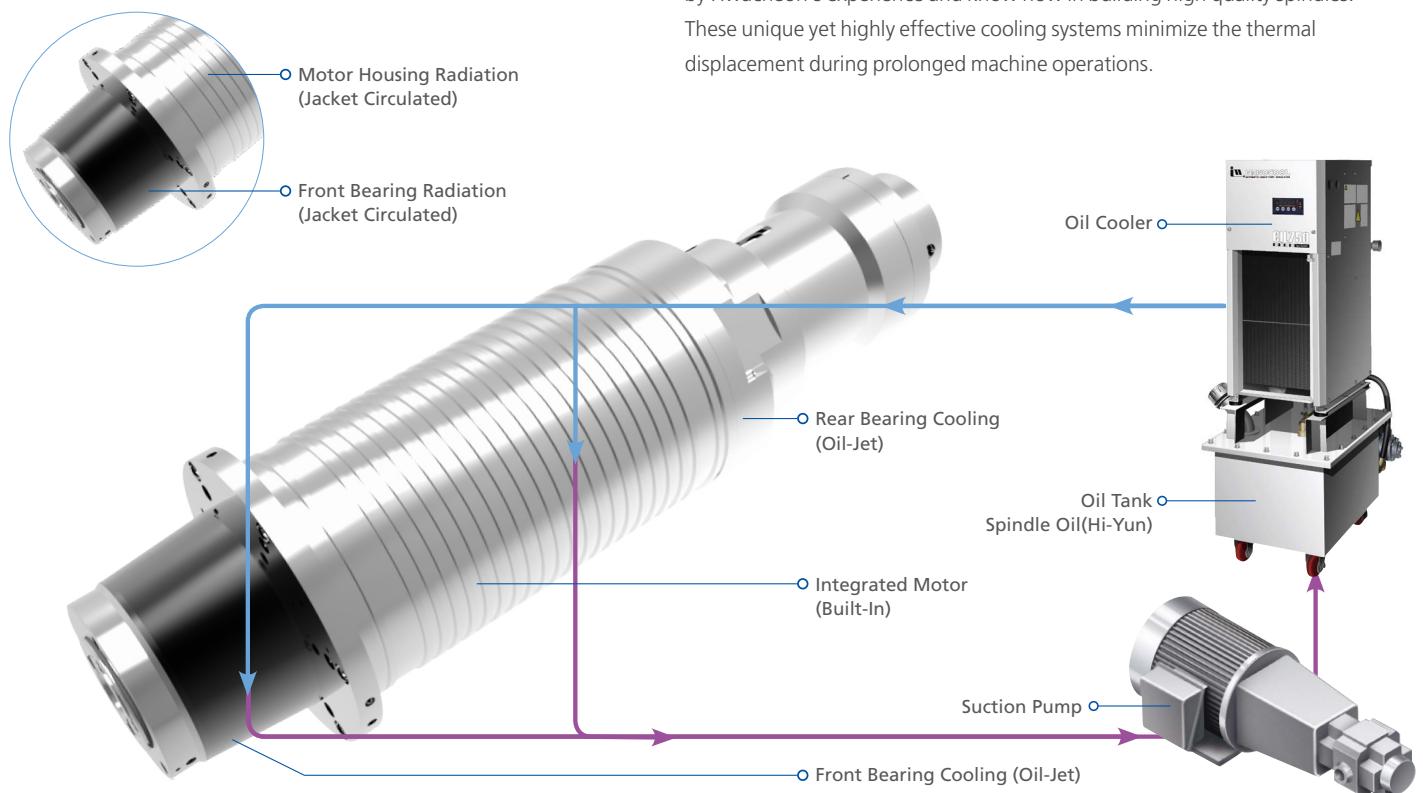


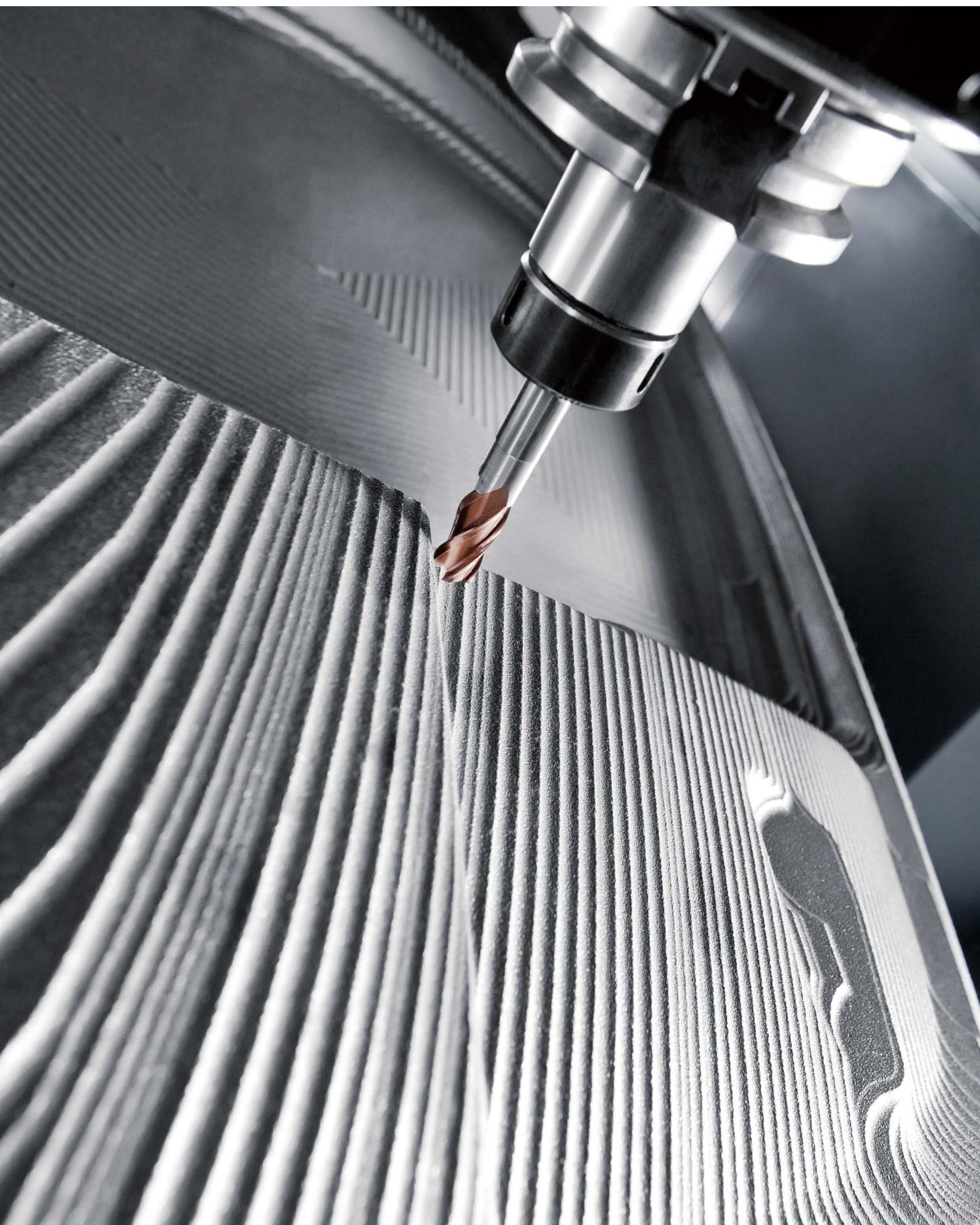
## Integrated Motor Spindle

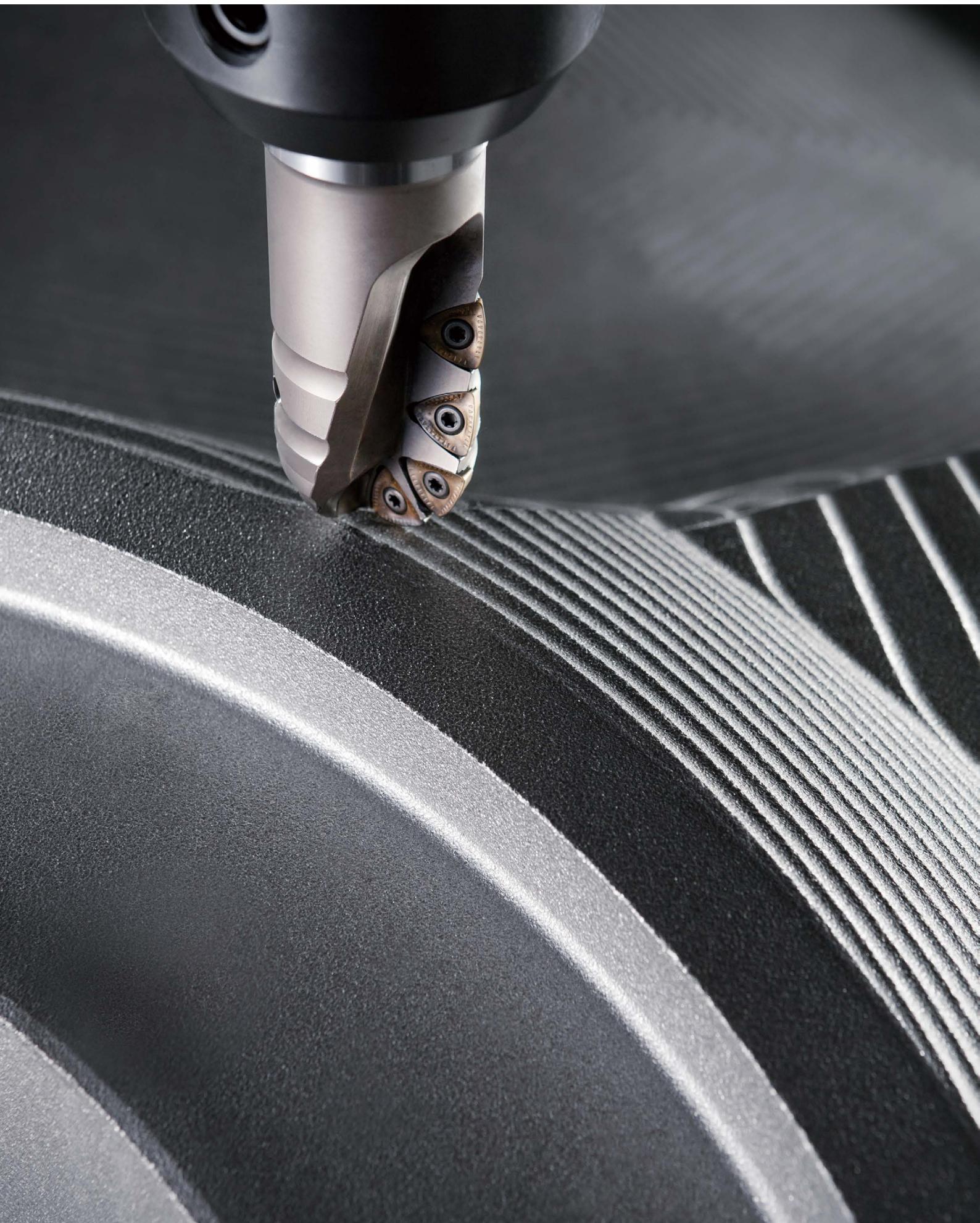
In Hwacheon temperature controlled clean room facilities, where this Super Precision High Speed Spindles are assembled, only the most experienced and skilled engineers are allowed to produce at highest industry and quality standards a spindle worth to be named Made by Hwacheon.

## 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. These unique yet highly effective cooling systems minimize the thermal displacement during prolonged machine operations.







# MACHINING SOFTWARE

## The Hwacheon Machining Software Components

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

+ RELIABILITY

### HTDC (HSDC + HFDC)

Hwacheon Thermal Displacement Control System (HSDC + HFDC)

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



**HTDC™**

Hwacheon Thermal Displacement Control

### HFDC

Hwacheon Frame Displacement Control System

HFDC is equipped with highly sensitive thermal sensors located at various locations where thermal activity is suspected; monitoring and correcting displacement.



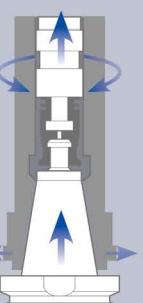
**HFDC™**

Hwacheon Frame Displacement Control

### 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 occurring from the taper expansion during the spindle's high speed rotation.

# PRECISION +



## 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)



## 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

SIRIUS-1250/1750/2500 vertical machining centers offer user friendly design and a wide variety of useful options for practical applications, so you can concentrate on what you do best: creating quality products-without losing your valuable time to the worries of machine failure and safety. A wide variety of performance enhancing options are available for faster, more precise machining.



## Auto Measurement System (Option)

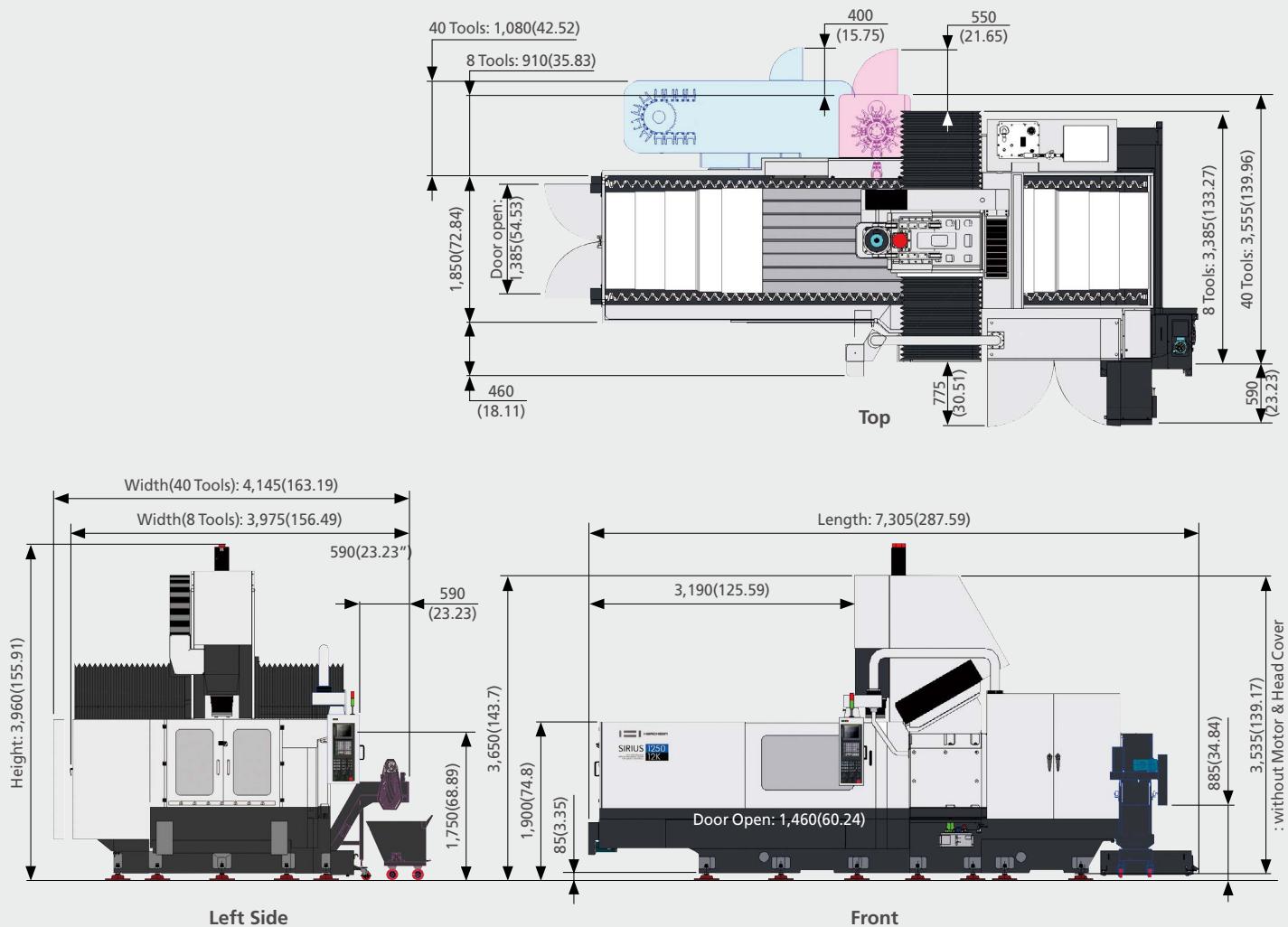
When the machine begins to work, the measurement system automatically measures the work-piece and the tool, and makes necessary adjustment. This system saves machining time and guarantees high quality result every time regardless of the machinist's skill and because the system constantly monitors the tools and the workpiece for any abnormality, potential machine-related accidents can be prevented. The system integrates perfectly with other equipment to make your automated production line more productive and efficient.

## Full Enclosure Exterior Cover (Option for SIRIUS-1250/1750/2500)

The exterior cover envelops the machine to keep the operator safe from chips, lubricant, dust and helps to maintain clean work environment. The smooth-operating slide door is easily accessible even from the opposite side when setting up a large workpiece.

## Product Data : SIRIUS-1250

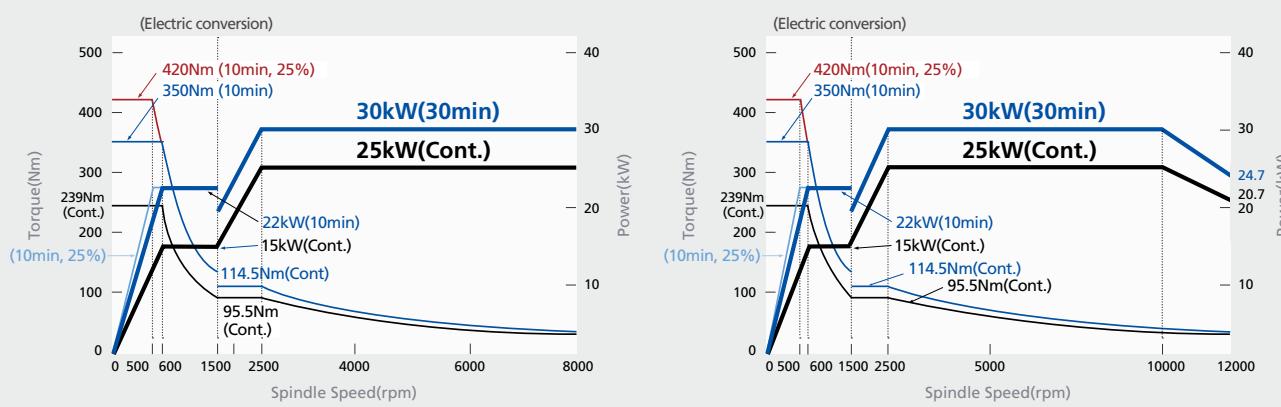
\* Unit: mm(inch)



## Spindle Power – Torque Diagram

Standard (8,000rpm)

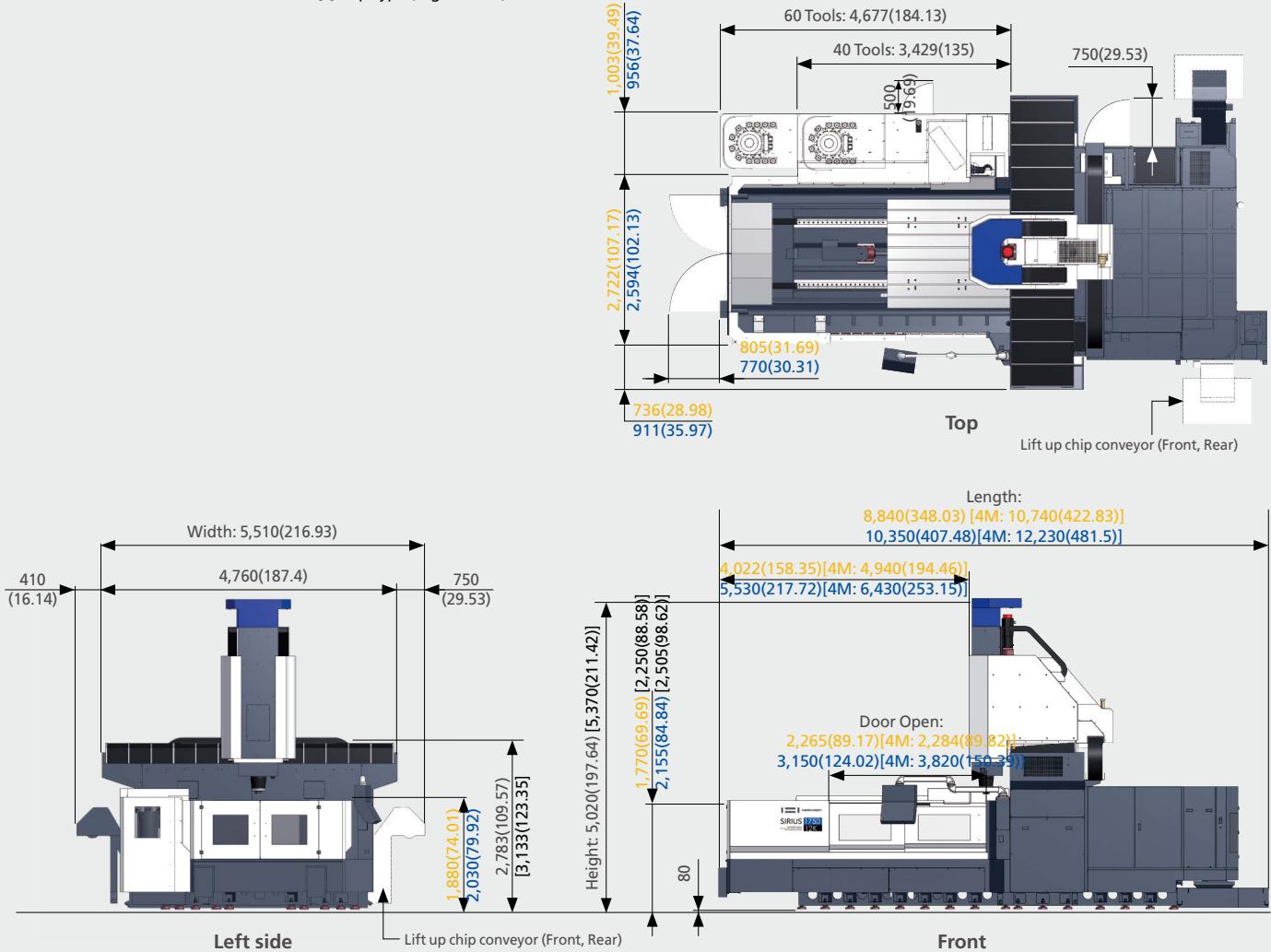
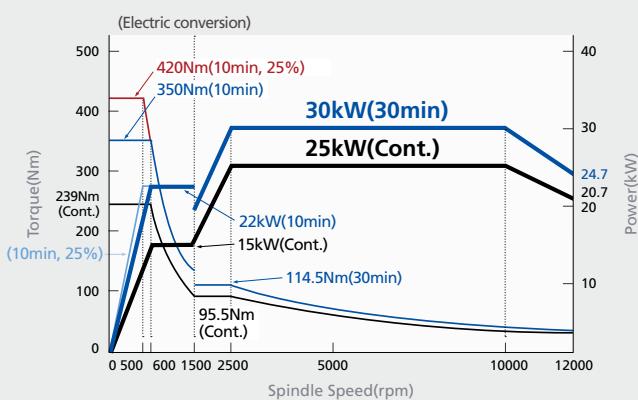
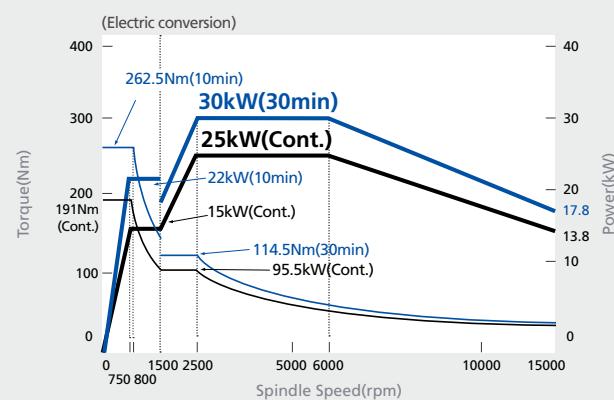
Option (12,000rpm)



**Product Data : SIRIUS-1750 / SIRIUS-1750L (Long Bed : 4M)**

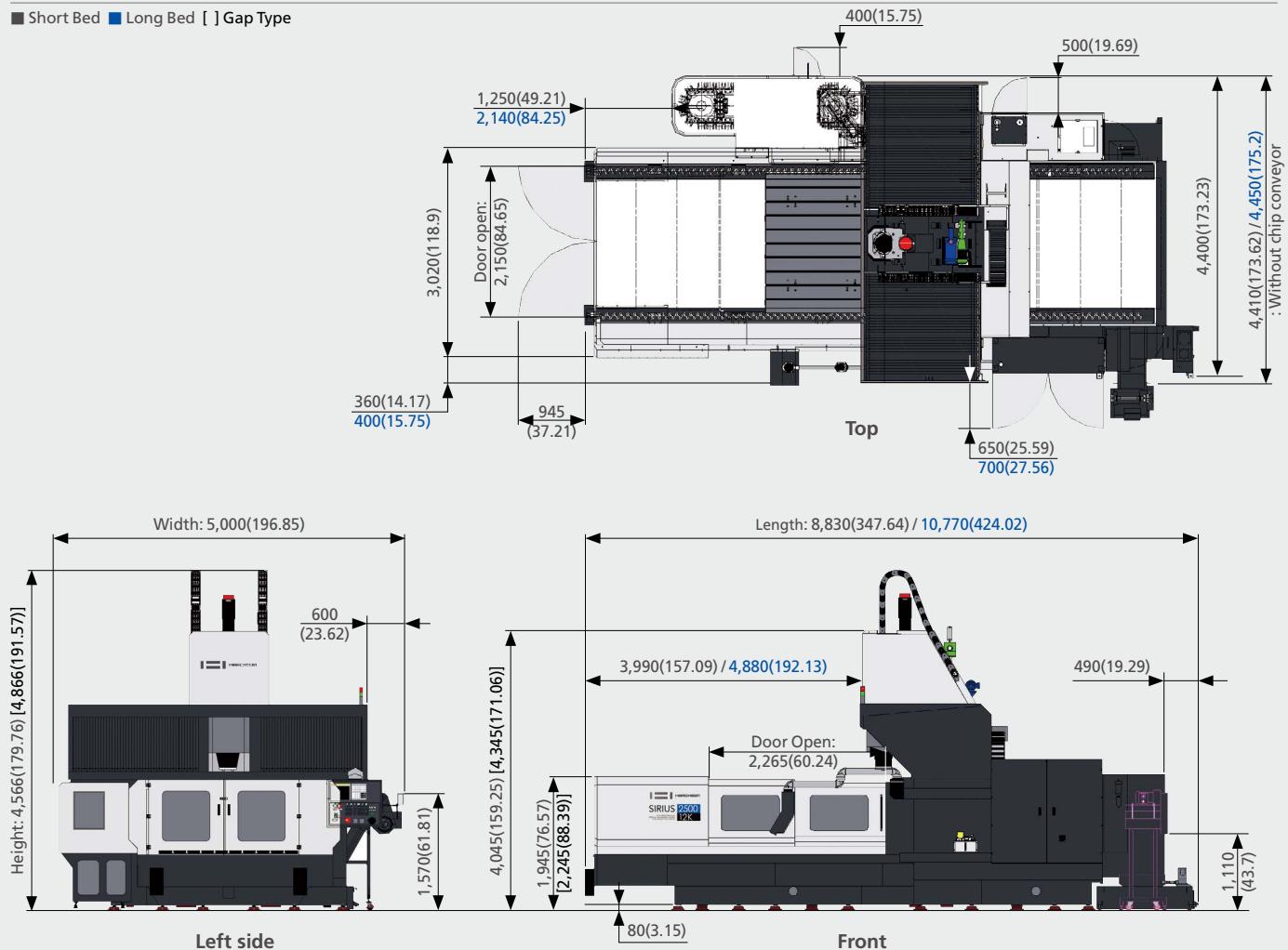
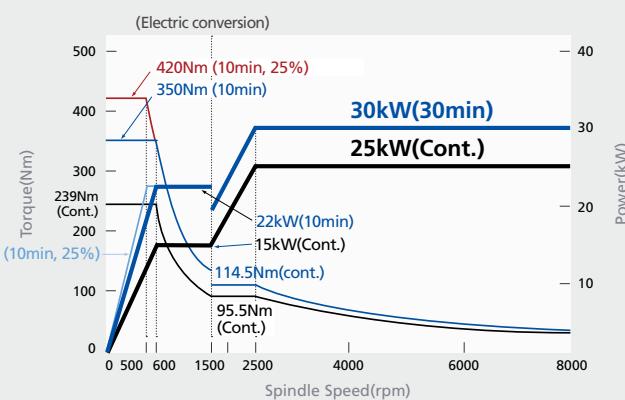
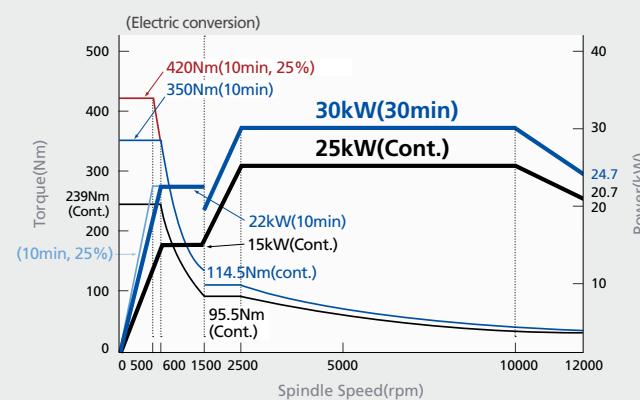
\* Unit: mm(inch)

■ Common ■ Semi Cover ■ Full Cover [ ] Gap Type (High Column)

**Spindle Power – Torque Diagram****Standard (12,000rpm)****Option (15,000rpm)**

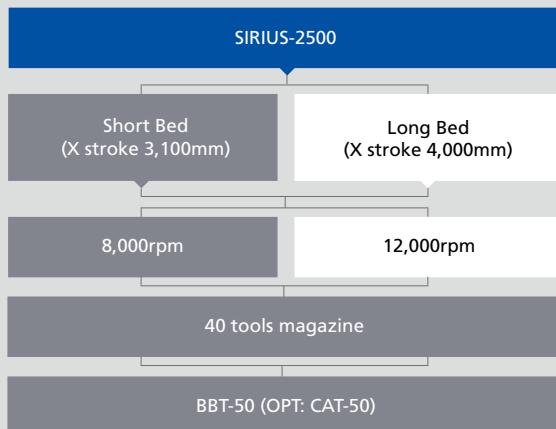
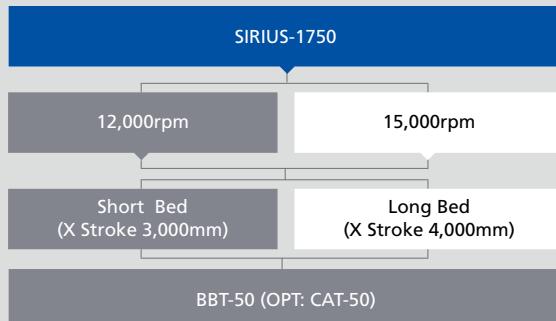
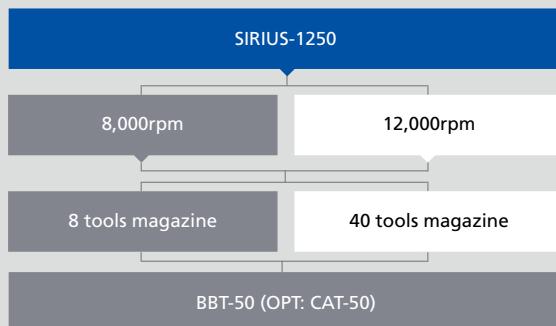
**Product Data : SIRIUS-2500 (Short Bed) / SIRIUS-2500L (Long Bed : 4M)**

\* Unit: mm(inch)

█ Short Bed   █ Long Bed   █ Gap Type

**Spindle Power – Torque Diagram**
**Standard (8,000rpm)****Option (12,000rpm)**

## Product Configuration

Each product can be configured to fit your application.



### Standard and Optional product components : SIRIUS-1250

Standard Accessories	Optional Accessories
<ul style="list-style-type: none"> <li>• Adjust Bolt, Block &amp; Plate</li> <li>• Air Blower</li> <li>• Base Around Splash Guard (Semi Cover)</li> <li>• Coil Conveyor (2ea)</li> <li>• Coolant System</li> <li>• Linear Scale (X / Y / Z)</li> <li>• Lubrication System</li> <li>• MPG Handle (1ea)</li> <li>• Operation Manual &amp; Parts List</li> <li>• Pneumatics System</li> <li>• Rigid Tapping</li> <li>• Signal Lamp (R / G / Y, 3 color)</li> <li>• Spindle Cooler</li> <li>• Tool Kit &amp; Box</li> <li>• Work Light</li> <li>• Workpiece Coordinate System(48ea)</li> <li>• 10.4" Color LCD</li> </ul>	<ul style="list-style-type: none"> <li>• Cutting Feed Optimization System (OPTIMA)</li> <li>• Hwacheon Efficient Contour Control System (HECC)</li> <li>• Hwacheon Tool Load Detect System(HTLD)</li> <li>• Hwacheon Thermal Displacement Control System (HTDC)</li> <li>- Hwacheon Spindle Displacement Control System (HSDC)+</li> <li>- Hwacheon Frame Displacement Control System (HFDC)</li> <li>• Hwacheon Artificial Intelligence Control System(HAI): 200 block</li> <li>• Air Dryer</li> <li>• Air Gun</li> <li>• Coolant Gun</li> <li>• Data Server Interface</li> <li>• Data Server (256MB / 1,024MB)</li> <li>• Gap 225mm (High Column)</li> <li>• Lift Up Chip Conveyor (Hinge Type, Scraper type)</li> <li>• Manual Guide i</li> <li>• MPG Handle (3ea)</li> <li>• Nano Smoothing Interpolation</li> <li>• NC Cooler</li> <li>• NURBS Interpolation</li> <li>• Oil Mist (Semi Dry Cutting System)</li> <li>• Oil Skimmer</li> <li>• Tool Life Management</li> </ul>

### Standard and Optional product components: SIRIUS-1750

Standard Accessories	Optional Accessories
<ul style="list-style-type: none"> <li>• Adjust Bolt, Block &amp; Plate</li> <li>• Air Blower</li> <li>• Base Around Splash Guard (Semi Cover)</li> <li>• Coil Conveyor (2ea)</li> <li>• Coolant System</li> <li>• Data Server (256 MB)</li> <li>• Linear Scale (X / Y / Z)</li> <li>• Lubrication System</li> <li>• MPG Handle (1ea)</li> <li>• Operation Manual &amp; Parts List</li> <li>• Pneumatics System</li> <li>• Rigid Tapping</li> <li>• Signal Lamp (R / G / Y, 3 Color)</li> <li>• Spindle Cooler</li> <li>• Tool Kit &amp; Box</li> <li>• Work Light</li> <li>• Workpiece Coordinate System (48ea)</li> <li>• 10.4" Color LCD</li> </ul>	<ul style="list-style-type: none"> <li>• 10.4" Color LCD</li> <li>• Cutting Feed Optimization System (OPTIMA)</li> <li>• Hwacheon Efficient Contour Control System (HECC)</li> <li>• Hwacheon Tool Load Detect System (HTLD)</li> <li>• Hwacheon Thermal Displacement Control System (HTDC)</li> <li>- Hwacheon Spindle Displacement Control System (HSDC)+</li> <li>- Hwacheon Frame Displacement Control System (HFDC)</li> <li>• Hwacheon Artificial Intelligence Control System(HAI): 200 block</li> <li>• Additional Tool Storage Capacity - 60ea</li> <li>• Air Dryer</li> <li>• Air Gun</li> <li>• Auto Door</li> <li>• Base Around Splash Guard (Full Cover)</li> <li>• Coolant Gun</li> <li>• Data Server Interface</li> <li>• Data Server (1,024MB)</li> <li>• Gap 225, 350 mm (High column)</li> <li>• Lift Up Chip Conveyor (Hinge Type, Scraper Type)</li> <li>• Manual Guide i</li> <li>• Mist Collector</li> <li>• MPG Handle (3ea)</li> <li>• Nano Smoothing Interpolation</li> <li>• NURBS Interpolation</li> <li>• Oil Mist (Semi Dry Cutting System)</li> </ul>

### Standard and Optional product components : SIRIUS-2500

Standard Accessories	Optional Accessories
<ul style="list-style-type: none"> <li>• Adjust Bolt, Block &amp; Plate</li> <li>• Air Blower</li> <li>• Air Dryer</li> <li>• Base Around Splash Guard (Semi Cover)</li> <li>• Coil Conveyor (2ea)</li> <li>• Coolant Gun</li> <li>• Coolant System</li> <li>• Data Server Interface</li> <li>• Data Server (256MB)</li> <li>• Lift up chip conveyor (Hinge type)</li> <li>• Linear Scale (X / Y / Z)</li> <li>• Lubrication System</li> <li>• MPG Handle (3ea)</li> <li>• Operation Manual &amp; Parts List</li> <li>• Pneumatics System</li> <li>• Rigid Tapping</li> <li>• Signal Lamp (R / G / Y, 3 Color)</li> <li>• Spindle Cooler</li> <li>• Tool Kit &amp; Box</li> <li>• Work Light</li> <li>• Workpiece Cordinate System (48ea)</li> <li>• 10.4" Color LCD</li> <li>• Cutting Feed Optimization System (OPTIMA)</li> <li>• Hwacheon Efficient Contour Control System (HECC)</li> <li>• Hwacheon Tool Load Detect System (HTLD)</li> <li>• Hwacheon Thermal Displacement Control System (HTDC)</li> <li>- Hwacheon Spindle Displacement Control System (HSDC)+</li> <li>- Hwacheon Frame Displacement Control System (HFDC)</li> <li>• Hwacheon Artificial Intelligence Control System(HAI): 200 Block</li> </ul>	<ul style="list-style-type: none"> <li>• Air Gun</li> <li>• Data Server (1,024MB)</li> <li>• Gap 300mm (High Column)</li> <li>• Lift up chip conveyor (Scraper type)</li> <li>• Manual Gulde i</li> <li>• Nano Smoothing Interpolation</li> <li>• NC Cooler</li> <li>• NURBS Interpolation</li> <li>• Oil Mist (Semi dry cutting system)</li> <li>• Oil Skimmer</li> <li>• Tool Life Management</li> <li>• Tool Measuring System-Renishaw / Blum (Touch Type, Laser Type)</li> <li>• 4-Axis Interface</li> <li>• Hwacheon Artificial Intelligence Control System(HAI): 600/1,000 block</li> <li>• Transformer</li> <li>• Workpiece Measuring System-Renishaw / Blum (Touch type)</li> </ul>

## Machine Specifications

**NC Specifications [Fanuc 31i-B]**

※ — : Not available S : Standard O : Option

ITEM	SPECIFICATION
Controlled Axis	
Controlled Axis	3-axis
Controlled Axis	5-axis (Max.)
Simultaneously Controlled Axes	3-axis
Simultaneously Controlled Axes	4-axis (Max.)
Least Input Increment	0.001mm, 0.001deg, 0.0001inch
Least Input Increment 1 / 10	0.0001mm, 0.0001deg, 0.00001inch
inch / metric Conversion	G20, G21
Store Stroke Check 1 / 2	
Mirror Image	
Store Pitch Error Compensation	
Backlash Compensation	
Operation	
Automatic & MDI operation	S
DNC Operation by Memory Card	PCMCIA Card is Required
Program Number Search	
Sequence Number Search	
Dry Run, Single Block	S
Manual Handle Feed / Feed Rate	1Unit / x1, x10, x100
Interpolation Function	
Positioning / Linear interpolation / Circular interpolation / Dwell (Per seconds)	G00 / G01 / G02, G03 / G04
Helical Interpolation	Circular interpolation plus Max. 2-axis linear interpolation
Nano Smoothing	O
Reference Position Return Check / Return	G27 / G28, G29
2nd Reference Position Return	G30
Skip	G31
NURBS Interpolation	O
Feed Function	
Rapid Traverse Override	F0, F25, F50, F100
Feedrate (mm/min)	S
Feedrate Override	0 ~ 150%
Jog Feed Override	0 ~ 4,000 mm/min
Override Cancel	M48, M49
Program Input	
Tape Code	EIA / ISO
Optional Block Skip	1ea
Program Number	O4-digits
Sequence Number	N8-digits
Decimal Point Programming	S
Coordinate System Setting	G92
Workpiece Coordinate System	G54 ~ G59
Workpiece Coordinate System Preset	O
Addition of Workpiece Coordinate Pair	48ea
Addition of Workpiece Coordinate Pair	300ea
Extend program Edit Function	Copy / Move / ..
Manual Absolute ON and OFF	S
Chamfering / Corner R	S
Sub Program Call	10 Folds Nested
Custom Macro B	S
Addition of Custom Macro Common Variables	#100 ~ #199, #500 ~ #999
Canned Cycle for Drilling	S
Small-hole Peck Drilling Cycle	O
Automatic Corner Override	O
Feedrate Clamp Based on Arc Radius	S
Coordinate System Rotation	S

ITEM	SPECIFICATION
Programmable Data Input	G10
Scaling	O
Polar Coordinate System	O
Programmable Mirror Image	O
Tape format for Fanuc Series 15	O
Manual Guide i	O
Spindle Speed Function	
Spindle Serial Output	S
Spindle Override	50 - 120%
Spindle Orientation	S
Rigid Tapping	S
Tool Function / Compensation	
Tool Function	T4-digits
Tool Offset Pairs	±6-digits / 200ea
Tool Offset Pairs	±6-digits / 400ea, 999ea
Tool Offset Memory C	S
Tool Length Compensation	S
Cutter Compensation C	S
Tool Life Management	O
Tool Length Measurement	S
Editing Operation	
Part Program Storage Length / Number of Register Able Programs	256kB / 500ea
Part Program Storage Length / Number of Register Able Programs	512kB / 1,000ea 1MB / 1,000ea, 2MB / 1,000ea
Background Editing	S
Extended Editing Functions	S
Play Back	O
Setting and Display	
Clock Function	S
Self-diagnosis Function	S
Graphic Function	S
Alarm history Display Help Function	S
Run Hour and Parts Count Display	S
Dynamic Graphic Display	O
Multi-language Display	English, German, French, Italian, Chinese, Spanish, Korean, Portuguese, Polish, Hungarian, Swedish, Russian
Data Input / Output	
Reader / Puncher Interface CH1	RS232C
Data Server 256MB	SIRIUS-1250
Data Server 1,024MB	SIRIUS-1750/2500
Ethernet Interface	S
Memory Card / Interface	S
Others	
Display Unit	10.4" Color LCD
HWACHEON Machining Software	
Hwacheon Artificial Intelligence Control System (HAI): 200 Block	S
Hwacheon Artificial Intelligence Control System (HAI): 600/1000 Block	O
Hwacheon Efficient Contour Control System (HECC)	S
Hwacheon Tool Load Detect (HTLD)	S
Cutting Feed Optimization System (OPTIMA)	S
Hwacheon Thermal Displacement Control System (HTDC) = Hwacheon Spindle Displacement Control System (HSDC) + Hwacheon Frame Displacement Control System (HFDC)	S
4-axis Interface Function Option	
Controlled Axis	Included 4-axis Interface Option
Control Axis Detach	Included 4-axis Interface Option
Simultaneously Controlled Axis	Included 4-axis Interface Option

## Hwacheon Global Network

■ Hwacheon Headquarters ■ Hwacheon Europe ■ Hwacheon Asia ■ Hwacheon America



Please contact us for product inquiries.

[www.hwacheon.com](http://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.

### HEAD OFFICE

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