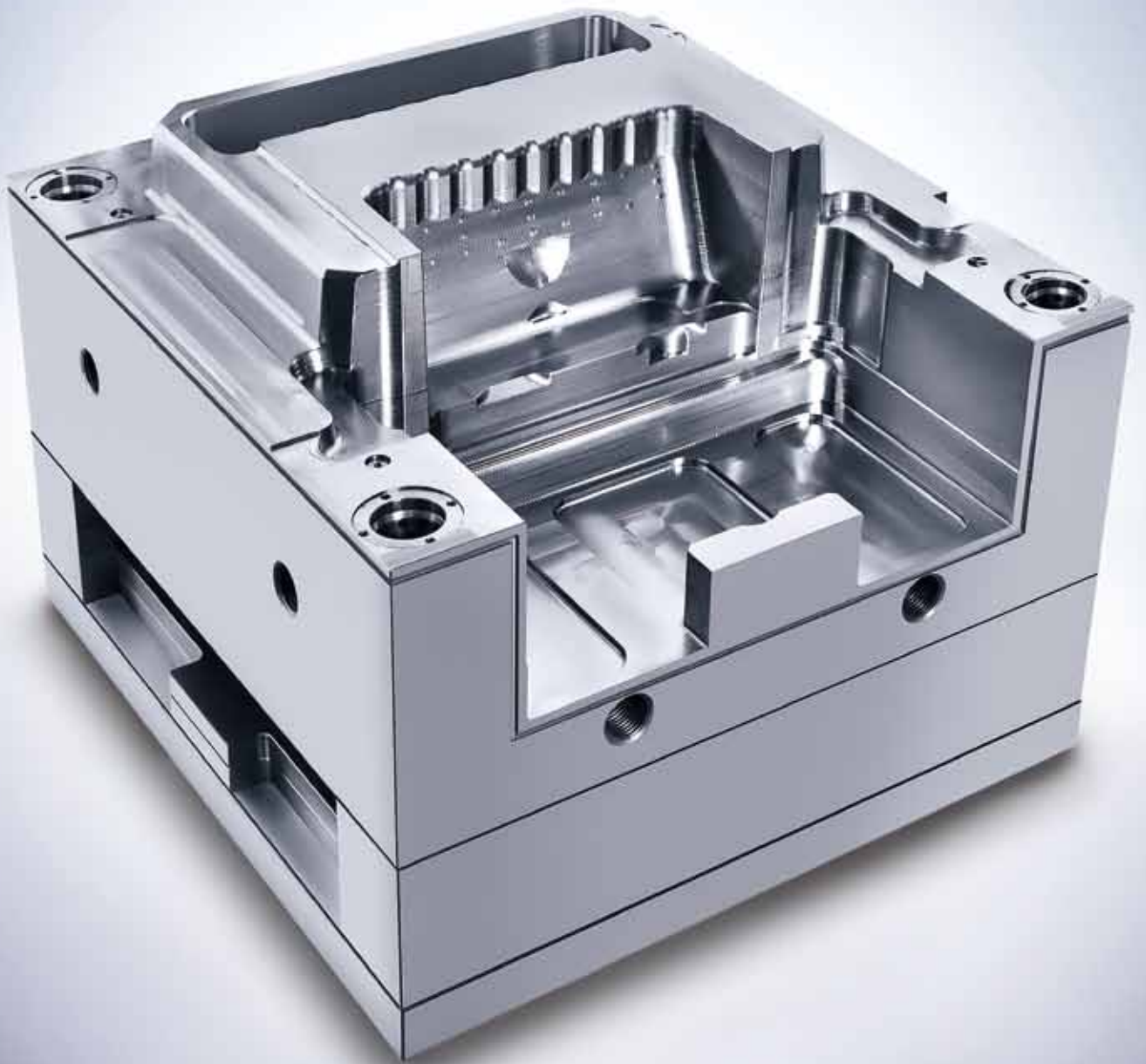




SIRIUS **850**
HIGH PERFORMANCE
VERTICAL MACHINING CENTER
FOR LARGEST DIE & MOLD **12K**

SIRIUS-850 / 1050

Large-Size Vertical Machining Center with Box Way



LARGE-SIZE VERTICAL MACHINING CENTER WITH BOX WAY

Worldwide professional count on SIRIUS-850/1050 Box Way Machining Center

The SIRIUS-850/1050 vertical machining centers incorporates highly rigid box way slide design for all axes for absolute consistent work result. The rigid high-output spindle delivers strong and efficient machining performance during roughing and at high speed, and the user-friendly design will make your work more productive.

1 Mold Base 2 Vacuum Pad (Head) / SUS304 3 Automotive Mold 4 Mold Base 5 Automotive Mold

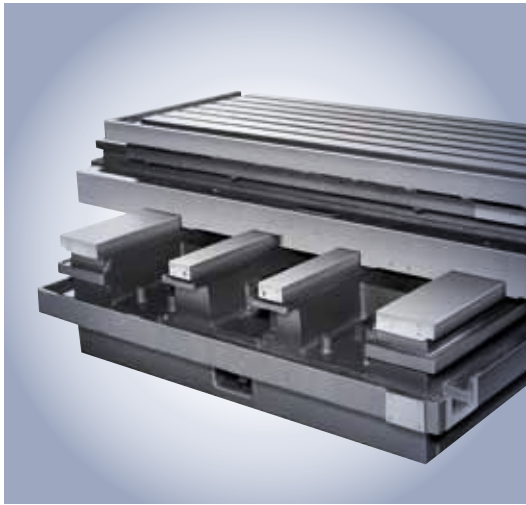


HIGH-SPEED STABILITY FOR LARGE-SIZE APPLICATIONS

Heavy Duty Machining

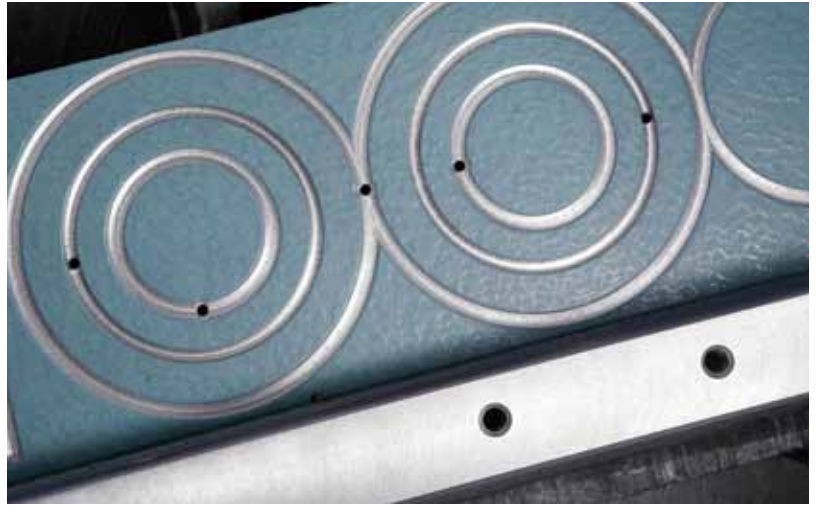
SIRIUS-850/1050 vertical machining centers have been trusted by the professionals all over the world for more than twenty years. The box way slide design guarantees persistent, quality result every time, and the air levitation feed system allows for gentle yet precise feed. The spindle integrates a powerful, high-performance motor to deliver perfect machining result for large-size workpiece. The large work area allows for easy clamping & unclamping of large workpieces the full-enclosure cover keeps your workspace safer and cleaner. Hwacheon's proprietary machining software options, and a wide selection of options and convenient features will help you to be productive and efficient.





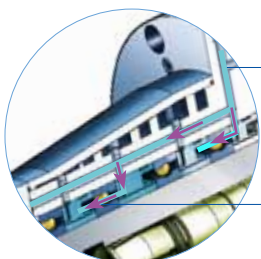
4-Guide Box Way Design

To reduce friction and to ensure accurate table feed, a 4-guide box way design has been integrated at the Y-axis. This ensures best support and keeps friction low. The guide ways are wide dimensioned.



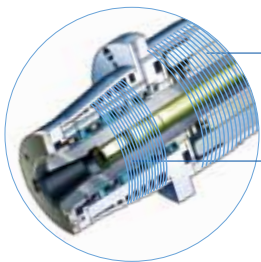
Air Floating System

Hwacheon's over 60 years of experience can be seen on the perfectly hand-scraped guide way surfaces. Ensuring lowest vibrations and achieving highest precision even during machining of hardest materials. The air floating system allows precise control in smallest increments even with heavy workpieces.



○ Cooling oil in

○ Cooling oil out



○ Motor housing radiation (Jacket circulated)

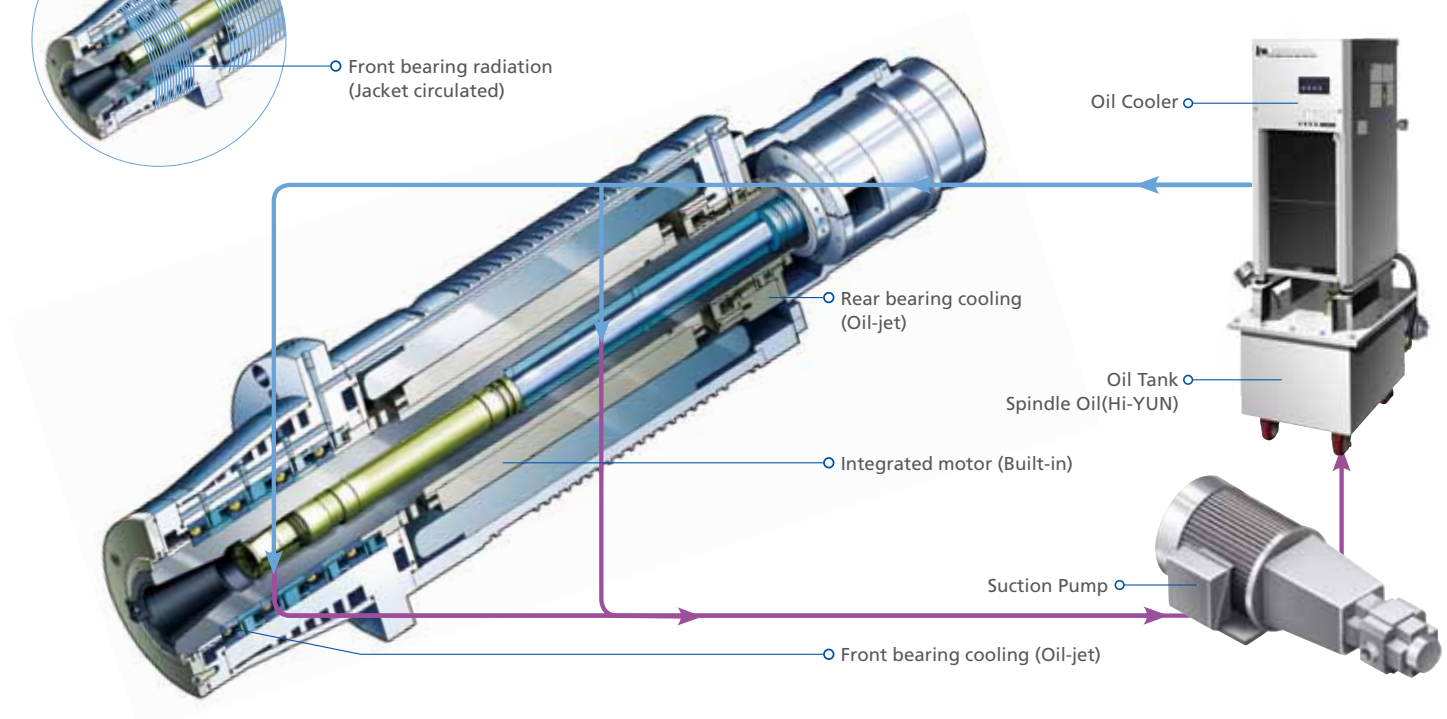
○ Front bearing radiation (Jacket circulated)

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.



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.



HSDC

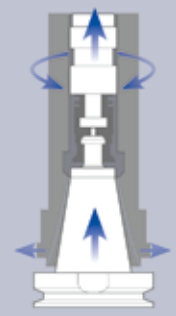
Hwacheon Spindle Displacement Control System

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-850/1050 offer user friendly design and a wide variety of useful options of 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 upgrade options are available for faster, more precise machining.



Wide work area

The user-friendly C-type frame structure and wide work area allow for quick, easy mounting and unmounting of a workpiece.

A large work -piece can be easily loaded and unloaded with the crane.



Auto measurement system (Option)

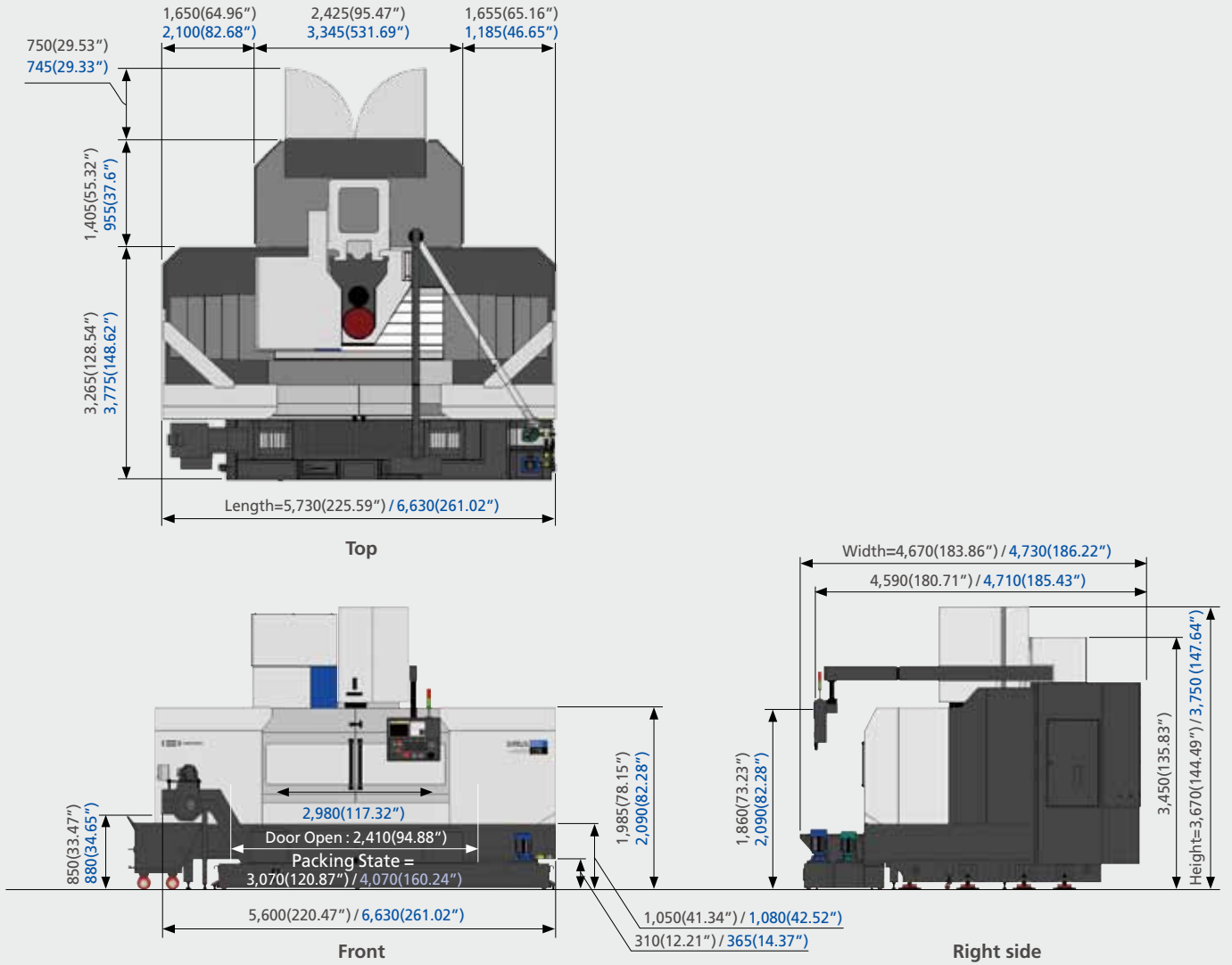
When the machine begins to work, the measurement system automatically measures the work-piece and the tool, and makes necessary adjustment. This system saves machining time and guarantees high quality result every time regardless of the machinist's skill and because the system constantly monitors the 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.



Product Data

■ SIRIUS-850 ■ SIRIUS-1050

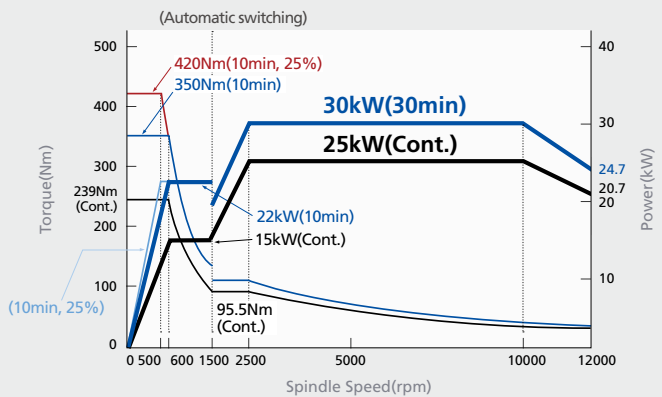
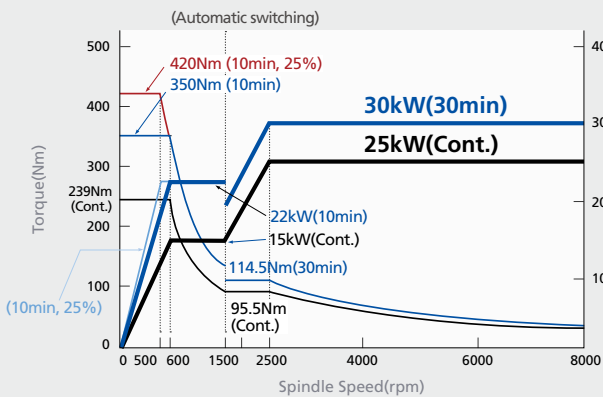
* Unit: mm(inch)



Spindle Power – Torque Diagram

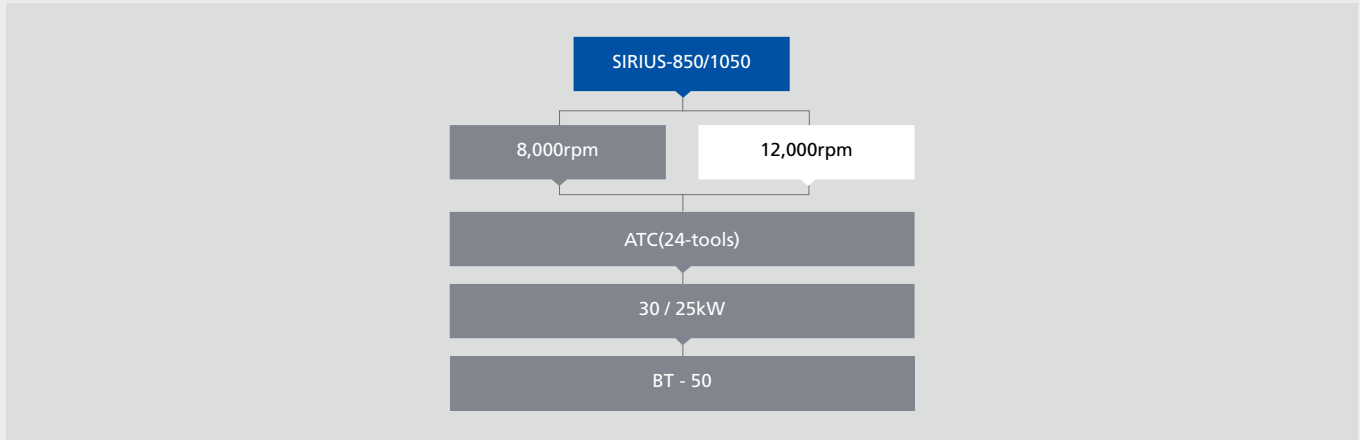
Standard (8,000rpm)

Option (12,000rpm)



Product Configuration

Each product can be configured to fit your application.



Machine Specifications

ITEM	SIRIUS-850		SIRIUS-1050	
	8,000	12,000	8,000	12,000
Travel				
Stroke (X / Y / Z)	2,000 (78.74") / 850 (33.47") / 750 (29.53")		2,500 (98.43") / 1,050 (41.34") / 850 (33.47")	
Distance from table surface to spindle gauge plane	200 (7.87") ~ 950 (37.4")		200 (7.87") ~ 1,050 (41.34")	
Distance between columns to spindle center	900 (35.43")		1,090 (42.91")	
Table				
Working surface	2,150 (84.65") x 850 (33.47")		2,800 (110.24") x 1,050 (41.34")	
Table loading capacity	4,000 (8,818)		5,000 (11,023)	
Table surface configuration (T slots WxP – No. of slots)	22 (0.87") x 125 (4.92") - 6ea		22 (0.87") x 150 (5.91") - 7ea	
Spindle				
Max.Spindle speed	8,000	12,000	8,000	12,000
Spindle motor	30 (40) / 25 (34)			
Type of spindle taper hole	ISO#50, 7 / 24 Taper (BT-50)			
Spindle bearing inner diameter	Ø100 (Ø3.94")			
Method of spindle lubrication & cooling	Oil-Jet Lub. + Jacket Cooling			
Feedrate				
Rapid speed (X / Y / Z)	16 (630) / 16 (630) / 16 (630)		20 (787) / 20 (787) / 16 (630)	
Feedrate (X / Y / Z)	1 (0.04) ~ 10,000 (394)		1 (0.04) ~ 8,000 (315)	
ATC				
Type of tool shank	BT-50 (Opt.:BBT-50, CAT-50)		BT-50 (Opt.:BBT-50, CAT-50)	
Type of pull stud	90°Type		90°Type	
Tool storage capacity	24		24	
Max. Tool diameter [Without adjacent tools]	Ø110 (4.33") / Ø200 (7.87")		Ø100 (3.94") / Ø200 (7.87")	
Max. Tool length	350 (13.78")		350 (13.78")	
Max. Tool weight	20 (44.09")		20 (44.09")	
Method of tool selection	Memory random		Memory random	
Method of operation (Magazine / Swing arm)	Geared Motor / Geared Motor		Geared Motor / Geared Motor	
Tool changing time (T to T / C to C)	3.5 / 8		3.5 / 9	
Motor				
Feed motor (X / Y / Z)	4.0 (5.5) / 4.0 (5.5) / 7.0 (9.5)		6.0 (8.0) / 9.0 (12.0) / 9.0 (12.0)	
Coolant motor (Spindle / Chip flushing)	0.4 (0.54) / 0.9 (1.24)		0.4 (0.54) / 0.9 (1.24)	
Power Source				
Electric power supply	75		75	
Compressed air supply (Pressure x Consumption)	0.5 ~ 0.7MPa x 1,870N ℓ/min		0.5 ~ 0.7MPa x 1,870N ℓ/min	
Tank Capacity				
Spindle cooling / Lubrication	ℓ (gal) 60 (15.85) / 12 (3.17)		60 (15.85) / [X,Y Axis] 12 (3.17), [Z Axis] 2(0.53)	
Coolant	ℓ (gal) 1,020 (270)		1,250 (330.22)	
Machine Size				
Height	mm(inch) 3,670 (144.49")		3,750 (147.64")	
Floor space (Length x Width)	mm(inch) 5,730 (225.59") x 4,670 (183.86")		6,630 (261.02") x 4,730 (186.22")	
Weight	kg(lb) 27,850 (61,399)		31,700 (69,887)	
NC Controller	Fanuc 31i-A			

Standard and Optional product components

Standard Accessories		Optional Accessories	
• Adjust bolt, block & plate	• Tool kit & box	• Air dryer	• Oil skimmer
• Air blower	• Workpiece coordinate system (48ea)	• Air gun	• Oil mist (Semi dry cutting system, Eco booster)
• Base around splash guard (Semi cover)	• Work light	• Auto door	• Signal lamp (R / G / Y, 3 colors)
• Coil conveyor, SIRIUS-850 (3ea)	• 8.4" Color LCD display	• Base around splash guard (Full cover)	• Spindle through coolant (30bar, 70bar) – In case of Full cover applicable
• Coil conveyor, SIRIUS-1050 (2ea)	• Cutting Feed Optimization System (OPTIMA)	• Coolant gun	• Tool life management
• Coolant system	• Hwacheon Efficient Contour Control System (HECC)	• Data server interface	• Tool measuring system-Renishaw / Blum (Touch type, Laser type)
• Data server (256M) : SIRIUS-1050	• Hwacheon Tool Load Detect System (HTLD)	• Data server -SIRIUS-850 (256MB / 1,024MB) -SIRIUS-1050 (1,024MB)	• Transformer
• Door interlock	• Hwacheon AI Nano Contour Control System (HAI) 200 block buffer	• Lift up chip conveyor (Hinge type, Scraper type)	• Workpiece measuring system- Renishaw / Blum (Touch type)
• Lubrication system		• Linear scale (X / Y / Z)	• 4-axis interface
• MPG handle (1ea)		• Manual guide i	• Hwacheon Thermal Displacement Control System (HTDC)
• Operation manual & parts list		• Mist collector – Full cover	• Hwacheon Spindle Displacement Control System (HSDC) +
• Pneumatics system		• MPG handle (3ea)	• Hwacheon Frame Displacement Control System (HFDC)
• Rigid tapping		• Nano smoothing interpolation	• Hwacheon AI Nano Contour Control System (HAI) 600/1000 block buffer
• Signal lamp (R / G, 2 color)		• NURBS interpolation	
• Spindle cooler			

NC Specifications [Fanuc 31i-A]

※ — : Not available S : Standard O : Option

ITEM	SPECIFICATION	ITEM	SPECIFICATION
Controlled axis		Scaling, Programmable mirror image	O
Controlled axis	3-Axes	Coordinate system rotation	S
Controlled axis	5-Axes (Max.)	Tape format for fanuc series 15	O
Simultaneously controlled axes	3-Axes	Manual guide i	O
Simultaneously controlled axes	4-Axes (Max.)	Spindle speed function	
Least input increment	0.001mm, 0.001deg, 0.0001inch	Spindle serial output	S
Least input increment 1 / 10	0.0001mm, 0.0001deg, 0.00001inch	Spindle override	50 - 120%
inch/metric conversion	G20, G21	Spindle orientation / Rigid tapping	S
Store stroke check 1 / 2		Tool function / compensation	
Mirror Image		Tool function	T4 - digits
Store pitch error compensation		Tool offset pairs	±6 - digits 200ea
Backlash compensation		Tool offset pairs	±6 - digits 400ea, 999ea
Operation		Tool offset memory C	S
Automatic & MDI operation		Tool length compensation / Tool length measurement	S
DNC operation by memory card	PCMCIA card is required	Cutter compensation C	S
Program number search / Sequence number search		Tool life management	O
Dry run, single block		Editing operation	
Manual handle feed / feed rate	1 Unit / x1, x10, x100	Part program storage length / Number of register able programs	128kB / 250ea
Interpolation function		Part program storage length / Number of register able programs	256kB / 500ea, 512kB / 1,000ea
Positioning / Linear interpolation / Circular interpolation / Dwell (Per seconds)	G00 / G01 / G02,G03 / G04	Extended part program editing / Background editing	S
Cylindrical interpolation	4-axis interface option is required	Play Back	O
Helical interpolation	Circular interpolation plus max.2axes linear interpolation	Setting and display	
Reference position return check / Return	G27 / G28,G29	Clock function	S
2nd, 3rd and 4th reference position return	G30	Self-diagnosis function / Alarm history display	S
Skip	G31	Help function / Graphic function	S
Feed function		Run hour and parts count display	S
Rapid traverse override	F0, F25, F50, F100	Multi-language display	English, German, French, Italian, Chinese, Spanish, Korean, Russian, Portuguese, Polish, Hungarian, Swedish
Feedrate (mm/min)		Data input / output	
Feedrate override	0 ~ 150%	Reader / Puncher interface CH1	RS232C
Jog feed override / Override cancel	0 ~ 4,000mm/min / M48, M49	Data server	SIRIUS-850 : 256MB SIRIUS-1050 : 256MB SIRIUS-850/1050 : 1,024MB
Program input		Ethernet Interface / Memory card interface	S
Tape code	EIA RS244 / ISO840	Auto data backup	SRAM+Part Prog ram
Sequence number	N8 - Digits	Others	
Decimal point programming		Display unit	8.4" Color LCD
Coordinate system setting	G92	HWACHEON Artificial Intelligence	
Workpiece coordinate system	G54 - G59	AI Nano Contour Control System (HAI) 200 block buffer	S
Workpiece coordinate system preset		AI Nano Contour Control System (HAI) 600 / 1000 block buffer	O
Addition of workpiece coordinate pair	48ea	Hwacheon Efficient Contour Control System (HECC)	S
Addition of workpiece coordinate pair	300ea	Hwacheon Tool Load Detect (HTLD)	S
Manual absolute on and off		Cutting Feed Optimization System (OPTIMA)	S
Chamfering / Corner R		Hwacheon Thermal Displacement Control System (HTDC)	O
Programmable data input	G10	4 - Axis interface function Option	
Sub program call	10 folds nested	Controlled axes / Simultaneously controlled axes / Control axis detach	Included 4-axis Interface option
Custom macro B			O
Addition of custom macro common variables	#100 - #199, #500 - #999		
Canned cycles for drilling			
Automatic corner override			
Feedrate clamp based on arc radius			

Hwacheon Global Network

 Hwacheon Headquarters  Hwacheon Europe  Hwacheon Asia  Hwacheon America



HWACHEON

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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