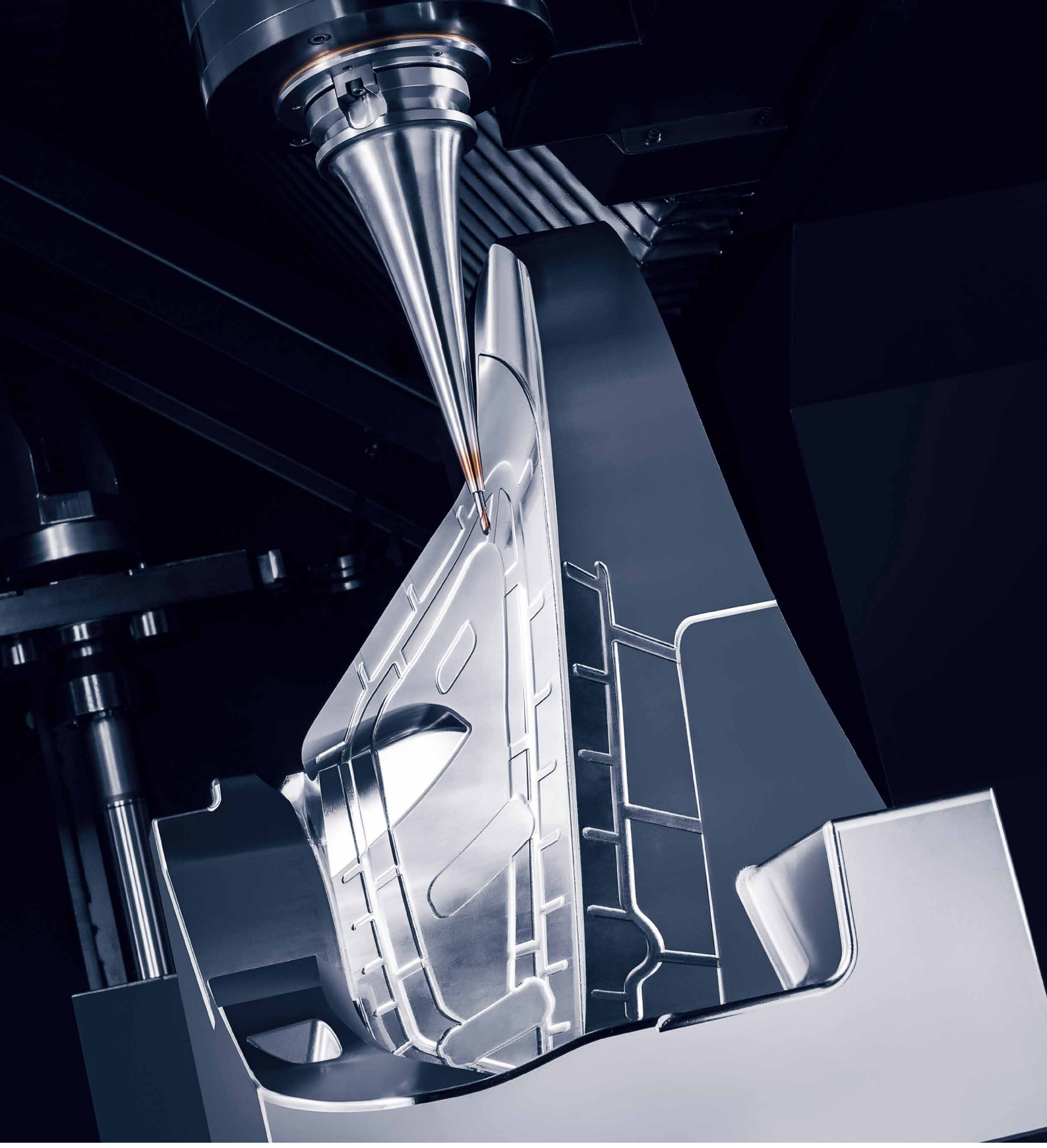


SIRIUS-1350

Large-Size Vertical Machining Center
in Bridge Type Design

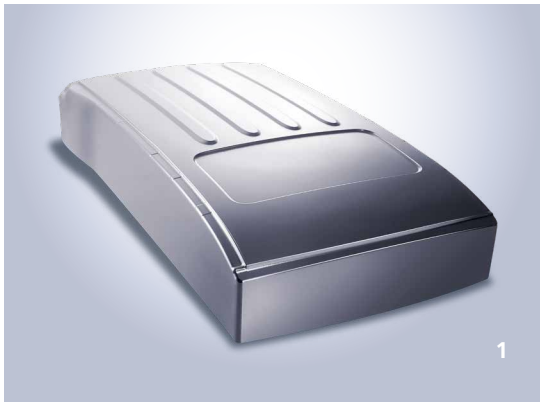
HWACHEON

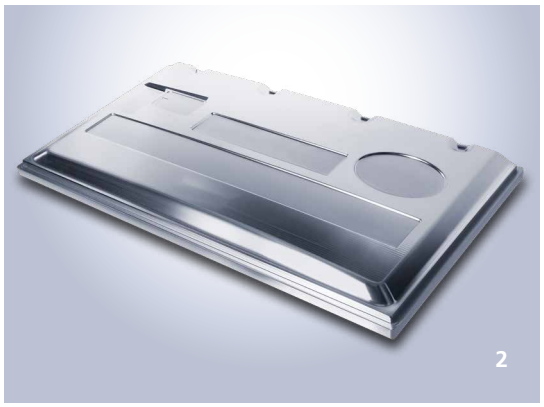
Contents

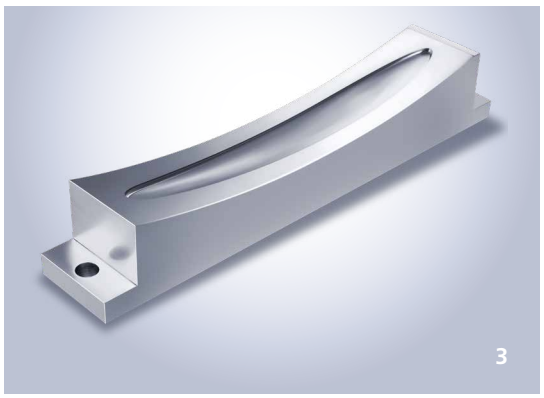
Product Overview

Basic Information

Detailed Information







COVER Mold / Head Light / P20ESR
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

Precision Machining for Medium/Large Size Mold & Die (Automotive Parts and Home Appliances)

SIRIUS-1350 is a precision mold machine specialized for medium to large size mold production. With Hwacheon's unique process software built in, it provides a shape precision level that satisfies customers with an improved productivity.
It is especially suited for high quality mold production like Head Light Bezel, which requires a superb surface illumination.

Precision Machining for Medium/Large Size Mold & Die

1. Realization of maximum 8 tons of material molding
2. Maximum 500mm of tool length applied
3. Box Way's feed system precision enhancement applied
4. Vibration influence minimized during production by separation of Oil Cooler from the main body

Enhanced User Convenience

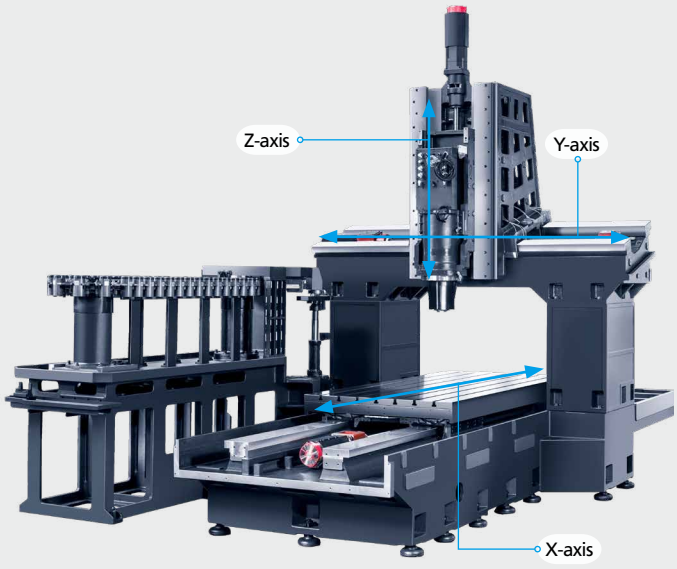
1. Scattering of chips & coolant inhibited with the Full Cover application
2. Enough Door Open range secured for easier detachment and attachment of large components
3. Coolant gun, needed for cleaning after processing, is applied by standard
4. Chip conveyor makes cleaning of coolant tank inside much easier

Easy Maintenance

1. Efficient Unit Arrangement
2. Linear coolant tank applied, which facilitates disassembling and reassembling for cleaning

Basic Information

Basic Structure



"Machining Stability Ensured"

· Bridge Type Structure For Stable Precision Machining

· Optimized Y-Axis Slant Structure Design for Excellent Straightness

· To minimize movement level during large scale mold productions

- A stable triangle rib structure on the Base applied

- Leveling points onto 22 locations for even mass distribution

Stroke mm (inch)			Rapid Speed m/min (ipm)		
X-axis	Y-axis	Z-axis	X-axis	Y-axis	Z-axis
2,550 (100.39)	1,350 (53.15)	750 (29.53)	16 (630)	16 (630)	16 (630)

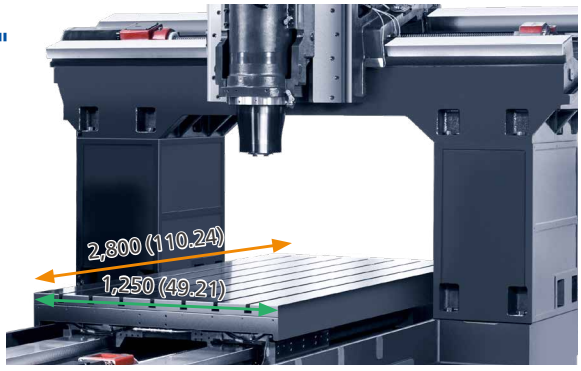
Table

* Unit : mm (inch)

"Secured an ability of processing large-size structures"

Setting of structures with various sizes is possible

Table Size mm (inch)	T Slot W x P mm (inch)
2,800 x 1,250 (110.24 x 49.21)	22 x Pitch160 (0.87 x Pitch 6.3) Number of T slot : 7 ea



Spindle

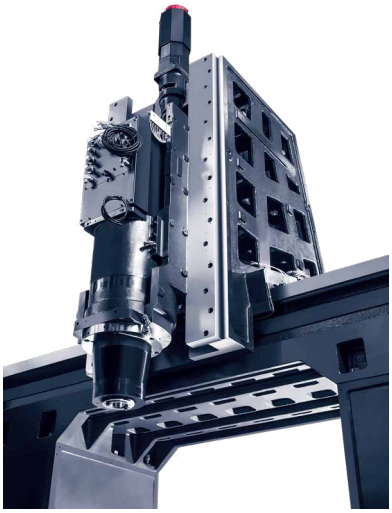
"Various main axis specifications with low vibration and low heat generation"

· Built-in Spindle applied

· Oil-Jet lubrication method employed

· Difficult-to-cut processes achieved through high torque spindle(optional) application

Max Spindle Speed rpm	Spindle Motor kW	Max Torque Nm
12,000	30	420
8,000 (OPT)	30	420
8,000 (High Torque) (OPT)	55	1,009



Increase Maximum Load Capacity

* Unit : mm (inch)

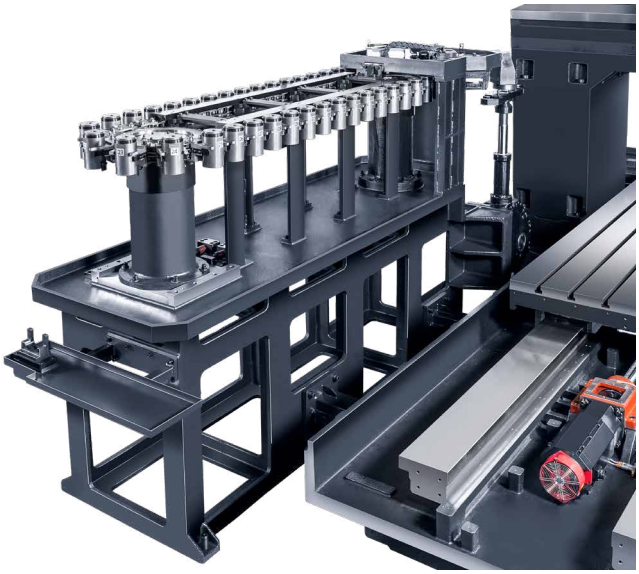
"High-rigidity feed system and feed accuracy enhancement technology"

· Minimized variance of moving level

· Allows to withstand up to 8 tons of feeding surface pressure

Max Workpiece Size (L x W x H) mm (inch)	Max Loading Capacity kg_f (lb_f)
2,550 x 1,350 x 750 (100.39 x 53.15 x 29.53)	8,000 (17,636)

Magazine

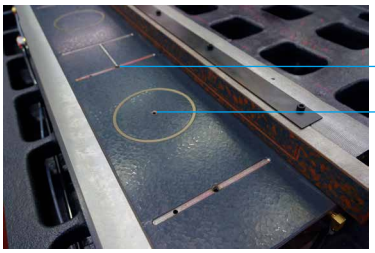


"Magazines in Various Specifications"

Options composition suited to each tool type features

Item \ Tool Shank	BBT-50 (OPT:CAT-50 / SK-50 / HSK-A100)
Tool Storage Capacity	40 ea (OPT:60 ea)
Max Tool Length	500 mm (19.69 inch)
Max Tool Dia	Ø200 mm (7.87 inch) (without Adjacent Tools)

Feed System



"Cylindrical Air Extruded Floating System"

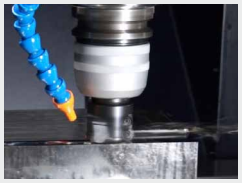
- Minimized air consumption
- Optimized for processing large size materials
- Reduced transport load
- High accuracy scrapping
- Low friction sliding bearing
- High speed processing realized

"Increased axis rigidity"

- Axis bearing fixation on both ends
- Bearing lubrication
- Wide rib structure on bearing fixation part

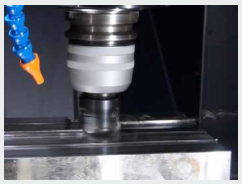
BBT-50 Cutting Performance

Face mill, Mold Steel (KP4M)					
Tool Dia mm (inch)	Material Removal Rate cm^3/min	Spindle Speed rpm	Feed mm/min (ipm)	Axial Depth mm (inch)	Radial Depth mm (inch)
D80 (D3.15)	633.6	1,500	8,800 (346.5)	1.2 (0.05)	60 (2.36)

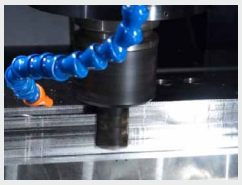


Face mill, Mold Steel (KP4M)					
Tool Dia mm (inch)	Material Removal Rate cm^3/min	Spindle Speed rpm	Feed mm/min (ipm)	Axial Depth mm (inch)	Radial Depth mm (inch)
D63 (D2.48)	705.6	1,500	3,136 (123.5)	5 (0.2)	45 (1.77)

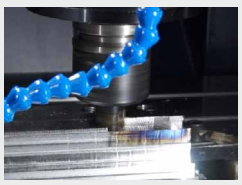
Face mill, Carbon Steel (SM45C)					
Tool Dia mm (inch)	Material Removal Rate cm^3/min	Spindle Speed rpm	Feed mm/min (ipm)	Axial Depth mm (inch)	Radial Depth mm (inch)
D160 (D6.3)	600	600	750 (29.53)	5 (0.2)	160 (6.3)
	384	600	200 (7.87)	12 (0.47)	160 (6.3)



Face mill, Carbon Steel (SM45C)					
Tool Dia mm (inch)	Material Removal Rate cm^3/min	Spindle Speed rpm	Feed mm/min (ipm)	Axial Depth mm (inch)	Radial Depth mm (inch)
D63 (D2.48)	882	1,500	3,920 (154.3)	5 (0.2)	45 (1.77)



End mill, Carbon Steel (SM45C)					
Tool Dia mm (inch)	Material Removal Rate cm^3/min	Spindle Speed rpm	Feed mm/min (ipm)	Axial Depth mm (inch)	Radial Depth mm (inch)
D40 (D1.57)	720	800	900 (35.43)	40 (1.57)	20 (0.79)



End mill, Carbon Steel (SM45C)					
Tool Dia mm (inch)	Material Removal Rate cm^3/min	Spindle Speed rpm	Feed mm/min (ipm)	Axial Depth mm (inch)	Radial Depth mm (inch)
D40 (D1.57)	588	540	735 (28.94)	20 (0.79)	40 (1.57)

Face mill, Carbon Steel (SM45C)					
Tool Dia mm (inch)	Material Removal Rate cm^3/min	Spindle Speed rpm	Feed mm/min (ipm)	Axial Depth mm (inch)	Radial Depth mm (inch)
D80 (D3.15)	752.4	1,500	10,450 (411.4)	1.2 (0.05)	60 (2.36)

U-Drill, Carbon Steel (SM45C)			
Tool Dia mm (inch)	Material Removal Rate cm^3/min	Spindle Speed rpm	Feed mm/min (ipm)
Ø85 (Ø3.35)	510.4	600	90 (3.54)

Tap, Carbon Steel (SM45C)			
Tap Size	Spindle Speed rpm	Feed mm/min (ipm)	Spindle Load %
M42 x P4.5 (M1.65 x P0.18)	600	2,700 (106.3)	67

※ The machining results above are examples based on the factory test standards, and are subjected to the changes in conditions.

Standard / Optional Accessories Status

S : Standard O : Option

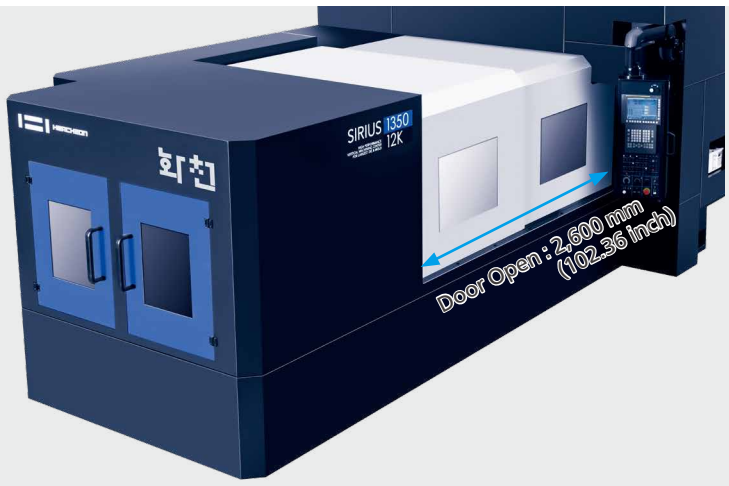
NO.	Item	Description			SIRIUS-1350
1	Spindle	12,000 rpm (Regular Type)	30 / 25 kW	420 Nm	S
2		12,000 rpm (CTS)	30 / 25 kW	420 Nm	O
3		8,000 rpm (Regular Type / CTS)	30 / 25 kW	420 Nm	O
4		8,000 rpm (High Torque) (Regular Type / CTS)	55 / 30 kW	1,009 Nm	O
5	Magazine	40 Tools Magazine			S
6		60 Tools Magazine			O
7	Tool Shank	BBT50			S
8		CAT50 / SK50 / HSK-A100			O
9	Coolant Function	Head Flushing (0.15 MPa, 0.75 kW)			S
10		CTS Coolant Device	3 MPa	2.2 kW	O
11			7 MPa	2.2 kW	O
12		Oil Mist (Semi dry cutting system)			O
13	Chip Removal Function	Air Blower			S
14		Screw Conveyor (2ea)			S
15		Air Gun			O
16		Coolant Gun			S
17		Lift-up Chip Conveyor	Hinge Type		S
18			Scraper Type		O
19		Mist Collector			O
20	Precision Machining Function	Linear Scare (X / Y / Z)			S
21		Hwacheon Efficient Contour Control System (HECC)			S
22		Hwacheon Thermal Displacement Control System (HTDC) [Hwacheon Spindle Displacement Control System (HSDC) + Hwacheon Frame Displacement Control System (HFDC)]			S
23		Hwacheon Artificial Intelligence Control System (HAI) - 200 Block			S
24		Hwacheon Artificial Intelligence Control System (HAI) - 600 / 1000 Block			O
25		Lubrication System			S
26		Bearing Lubrication	Oil-Jet Type		S
27		Spindle Cooler (Jacket Cooling)	Oil Cooler Type		S
28	Measuring & Automation Function	Tool Measuring System – Renishaw / Blum (Touch Type, Laser Type)			O
29		Workpiece Measuring System – Renishaw / Blum (Touch Type)			O
30		Tool Life Management			O
31		Hwacheon Tool Load Detect System (HTLD)			S
32		Cutting Feed Optimization System (OPTIMA)			S
33	Convenient Functions	Ethernet Interface			S
34		MPG Handle (1ea)			S
35		MPG Handle (3ea)			O
36		Signal Lamp with 3 Color (R, G, Y)			S
37		10.4" Color LCD			S
38		Tool Box			S
39		NC Cooler			O
40		Oil Skimmer (Belt Typr / Disk Type)			O
41		Air Dryer			O
42		Door Interlock			S
43		Workpiece Coordinate System 48 pairs			S
44		Workplate			O
45		Perfect Base Around Splash Guard			S
46		Part Program Storage Length 256 kB			S
47		Part Program Storage Length 512 kB / 1 MB / 2 MB			O
48		Data Server (256MB)			S
49		Data Server (1,024MB)			O
50		Data Server Interface			S
51		Manual Guide i			O
52		Monitoring Solution of Real-time Operational Status (M-VISION Plus)			O
53		Transformer			O
54		4-Axis Interface			O
55		Magnetic Table			O
56		Gap Type : High Column			O

Detailed Information

USER FRIENDLY DESIGN, A WIDE RANGE OF OPTIONAL FEATURES

User convenience and various additional function

SIRIUS-1350 system offers a user friendly design and a wide variety of upgrade options for a faster, more precise machining performance, so you can concentrate on what you do best : creating quality products.

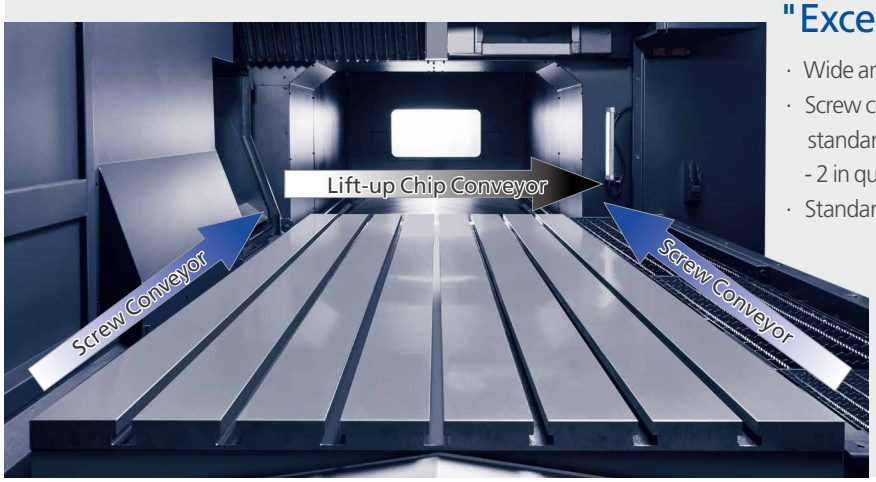


"Improved equipment usage environment"

- Chip scattering prevention
- Environmental pollution by coolant or fine dusts is prevented
- LED operation lighting standard application (3 locations)
- Safety glass application for securing process visibility

"Enough Door Open range secured"

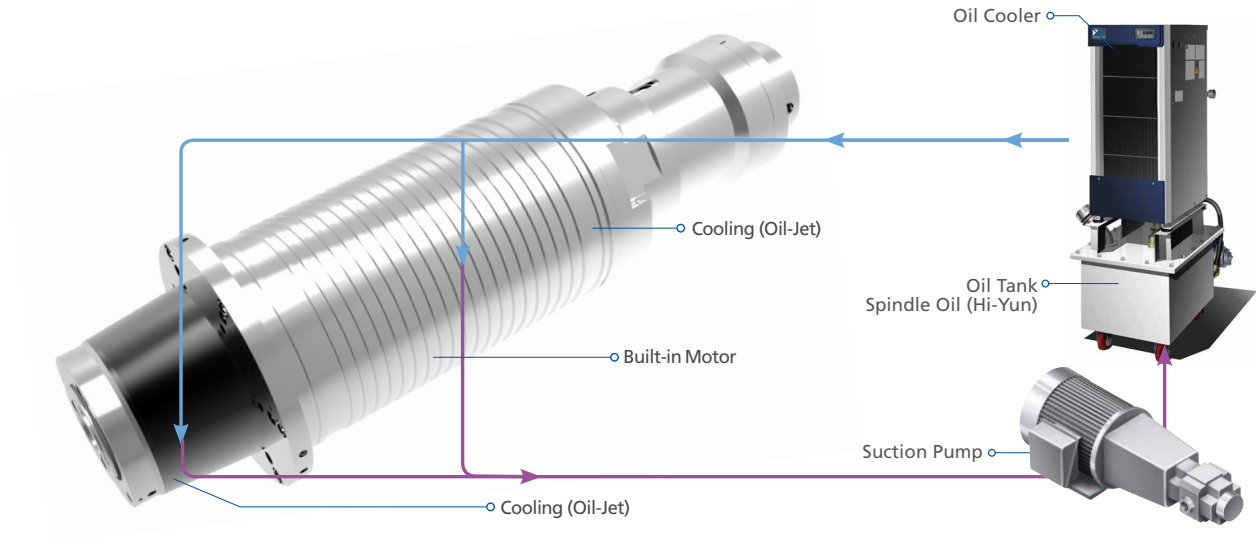
- Door Open range wider than transport distance along X axis : 2,550 mm (98.43 inch)



"Excellent chip release capability"

- Wide and solid slide cover
- Screw conveyor with superior chip processing performance standard application
  - 2 in quantity (left and right of table)
- Standard application of coolant gun facilitated for inside cleaning

Cooling System



Integrated Motor Spindle

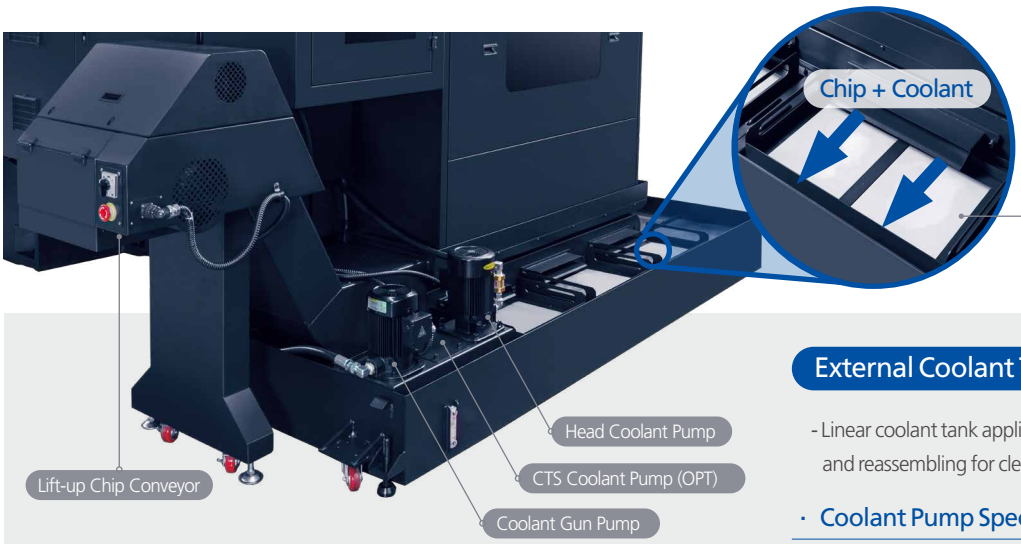
In Hwacheon temperature controlled clean room facilities, where this Super Precision High Speed Spindles are assembled, only the most experienced and skilled engineers are allowed to produce at highest industry and quality standards a spindle worth to be named Made by Hwacheon.

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.

	Jacket Cooling	Bearing Lubrication
12,000 rpm (STD)	Oil Cooler Type	Oil-Jet Type
8,000 rpm (OPT)		
8,000 rpm (High Torque)(OPT)		

Excellent Coolant Tank and Chip Removal



· **Micro Chip Separated**

Chip filter is used to remove micro chips and keep the coolant tank clean

External Coolant Tank Tank Capacity : 450 ℓ (118.88 gal)

- Linear coolant tank applied, which facilitates disassembling and reassembling for cleaning

· **Coolant Pump Specification**

CTS Coolant Pump (OPT) - Pressure / Power : 3 MPa / 2.2 kW

Head Coolant Pump - Power : 0.75 kW

Coolant Gun Pump - Power : 0.6 kW

"Possible to Select Type of Chip Conveyor"

- Hinge Type Chip Conveyor (STD)
  (Suitable for coarse chips discharge)
- Scraper Type Chip Conveyor (OPT)
  (Suitable for fine chips discharge)

Detailed Information

Convenient Operator Panel

Pendant Arm Type Operator Panel (STD)

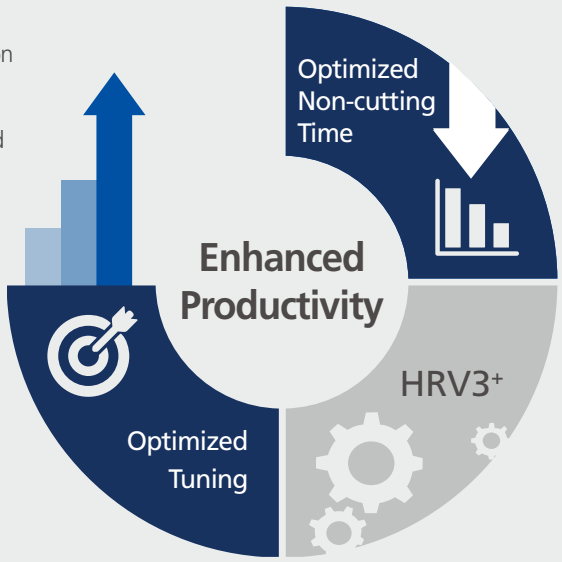
The operator panel is newly designed from the operator's viewpoint and thus enhances the operator's convenience.

"User Friendly Design"

- 10.4" display as standard
  (USB and PCMCIA cards as standard)
- Enhanced operability by optimizing the layout and improving the touch feeling of control buttons
- Separately mounting MPG for workpiece setting convenience.
- Long time continuous DNC operation with the CF card even without the data server.

Machine Optimization (STD)

- Smart rigid tap function applied for machining time reduction.
- The cycle machining as well as the operating time and the acceleration / deceleration speed of feeding system are optimized.
- High-level precision, speed and smoothness are realized by enhanced processing performance of tiny segments.
- Dramatically reduced non-cutting time during machining ensures optimal productivity.
- The latest machining technology adopted.
- Machining surface quality enhanced by HRV3+ control.
  (HRV3+: effectively prevents machine oscillation by controlling the servo current to enhance the machining surface quality.)



"Enhanced Productivity"

Operating Convenience Function

< M-CODE LIST >

- M-CODE LIST
- The screen provides easy and quick search and utilization.

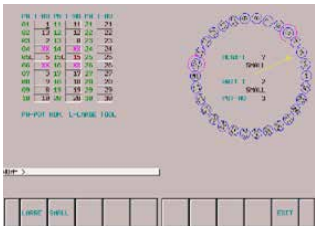
(However, it is necessary to discuss with factory in advance to add and / or change M-codes.)

< GUI (Graphical User Interface) >

- Graphic interface for tool / workpiece measurement
- Automatic offset update function
- Tool setting and damaged tool detection, Workpiece setup and measuring while machining
- Optimized time and failure rate High competitiveness

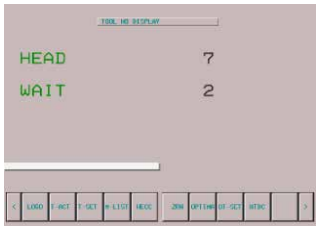
< Tool Management >

Large / Small Diameter Tool Management System



- Magazine tool management system
- Magazine tool check in real time
- Large / small diameter tools setting

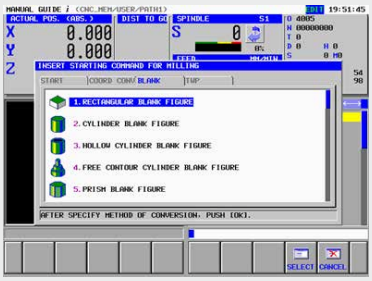
< Tool View >

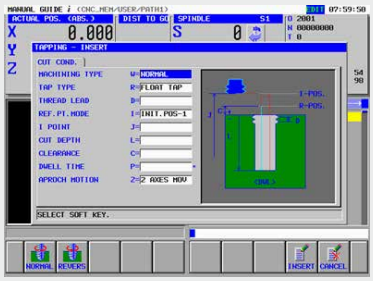


- Head mounted tool check in real time
- Waiting pot mounted tool check in real time

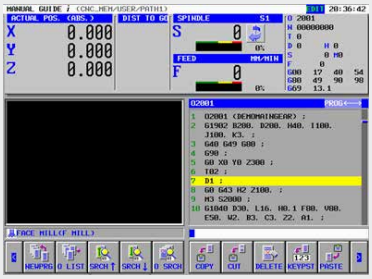
Manual Guide i

With the Manual Guide i, the operator is able to create a machining program for the desired geometry including the pattern simply if he / she enters numeric values for the basic machining geometry.





· Programming in convenient functions and rich machining cycles



· It displays the machine status and the tools in use while machining.

· The realistic machining simulation checks the program.

Detailed Information

Hwacheon Software

Hwacheon Tool Load Detect System

"Detect and diagnose the most minute of tool-end point movement"

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.)

Hwacheon High Efficiency Contour Control System

"Roughing quickly, finishing is precisely"

HECC offers an easy to use programming interface for different workpieces 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.

Cutting Feed Optimization System

"Maximize your productivity with intelligent 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 optimized.

Hwacheon Spindle Displacement Control System

"Real-time correction for the displacement in the spindle"

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 eff ectively minimizing thermal displacement.

Hwacheon Frame Displacement Control System

"System for maintaining processing accuracy for a long period of machining"

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

Hwacheon Thermal Displacement Control System

"Hwacheon Spindle Displacement Control System + Hwacheon Frame Displacement Control System"

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

Monitoring Solution of Real-time Operational Status

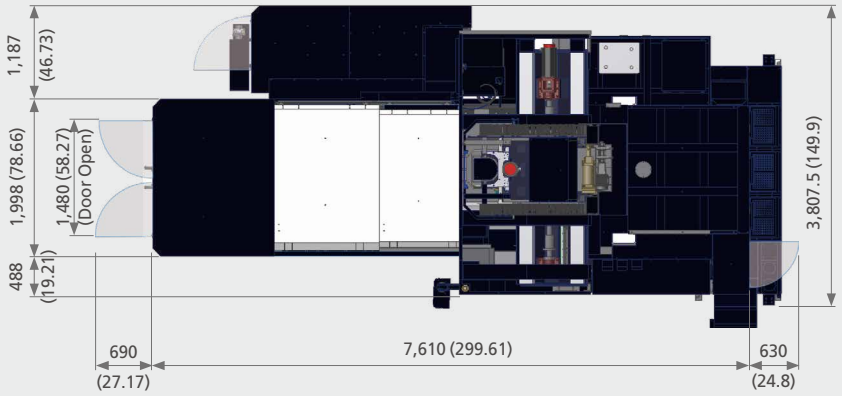
"See everything everywhere"

- Monitoring system for the User's factory machine management
- User can always check the status of the machine utilizes a smartphone

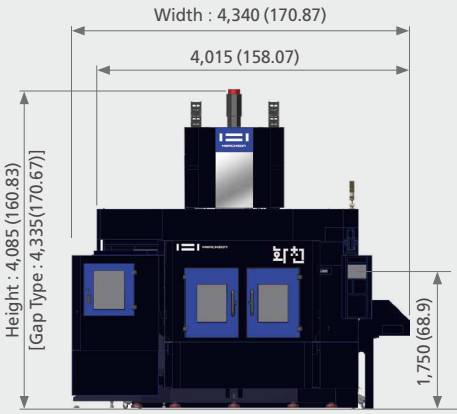
Machine Size

* Unit : mm (inch)

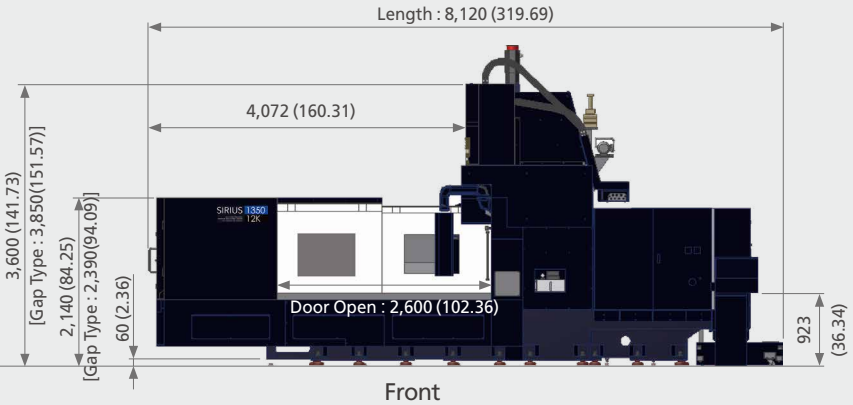
*Gap Type : High Column



Top



Side

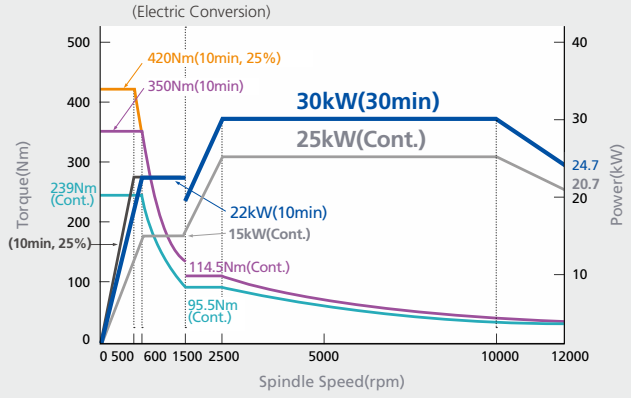


Front

Spindle Power – Torque Diagram

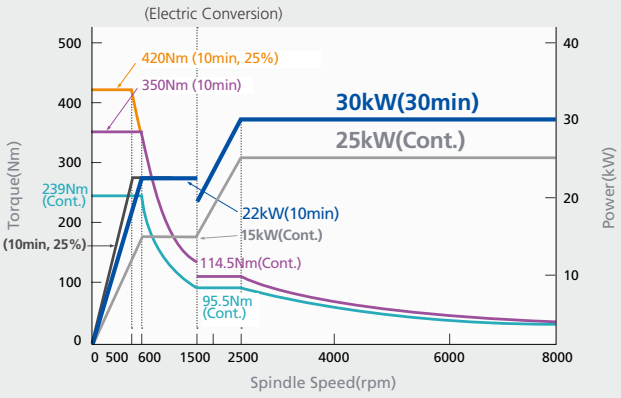
12,000 rpm

Max Power : 30 kW (40 HP) / Max Torque : 420 Nm



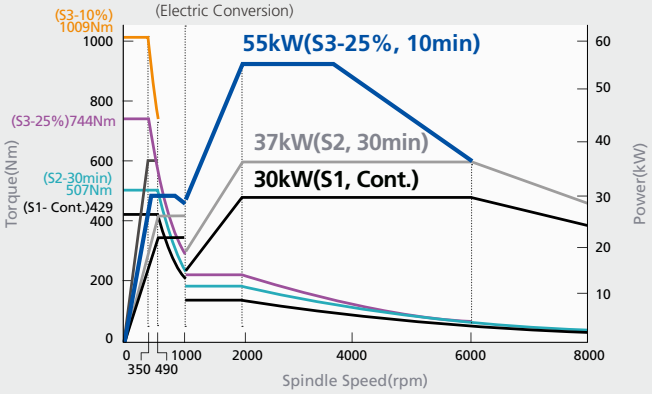
8,000 rpm (OPT)

Max Power : 30 kW (40 HP) / Max Torque : 420 Nm



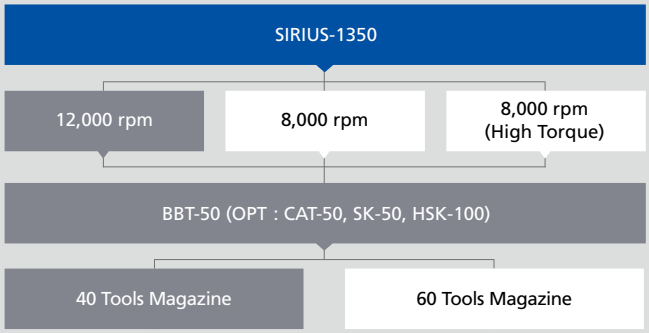
8,000 rpm (High Torque) (OPT)

Max Power : 55 kW (74 HP) / Max Torque : 1,009 Nm



Detailed Information

Product Line-up



Machine Specifications

Item		SIRIUS-1350 12,000 rpm	SIRIUS-1350 8,000 rpm	SIRIUS-1350 8,000 rpm (High Torque)
Travel				
X-axis Stroke	mm (inch)	2,550 (100.39)		
Y-axis Stroke	mm (inch)	1,350 (53.15)		
Z-axis Stroke	mm (inch)	750 (29.53)		
Distance from Table Surface to Spindle Gauge Plane	mm (inch)	250 ~ 1,000 (9.84 ~ 39.37)		
Possible Sze of Penetrating Materials	mm (inch)	1,550 x 800 (61.02 x 31.5)		
Table				
Table Size	mm (inch)	2,800 x 1,250 (110.24 x 49.21)		
Table Loading Capacity	kg_f (lb_f)	8,000 (17,636)		
T Slot (WxP / No. of slots)	mm (inch)	22 x 160 (0.87 x 6.3) / 7 ea		
Spindle				
Max Spindle Speed	rpm	12,000	8,000	8,000
Spindle Motor	kW (HP)	30 / 25 (40 / 34)		55 / 30 (74 / 40)
Type of Spindle Taper Hole	-	BBT-50		
Spindle Bearing Inner Diameter	mm (inch)	Ø100 (Ø3.94)		Ø120 (Ø4.72)
Feedrate				
Rapid Speed (X / Y / Z)	m/min (ipm)	16 / 16 / 16 (630 / 630 / 630)		
Feed (X / Y / Z)	mm/min (ipm)	1 ~ 8,000 (0.04 ~ 315)		
Motor				
Feed Motor (X / Y / Z)	kW (HP)	9 / 6 / 9 (12 / 8 / 12)		
Coolant Motor (Spindle / Chip Flushing)	kW (HP)	0.7 (0.9)		
Spindle Cooler Motor	kW (HP)	8 / 8.9 (11 / 12)		
ATC				
Type of Tool Shank	-	BBT-50 (OPT: CAT-50 / SK-50 / HSK-100)		
Type of Pull Stud	-	90° Type		
Tool Storage Capacity	ea	40 (OPT: 60)		
Max Tool Dia (with / without Adjacent Tools)	mm (inch)	Ø120 / Ø200 (Ø4.72 / Ø7.87)		
Max Tool Length	mm (inch)	500 (19.69)		
Max Tool Weight	kg_f (lb_f)	20 (44.09)		
Method of Tool Selection	-	Memory Random (OPT: Fixed)		
Method of Operation	-	Servo Motor		
Power Source				
Electric Power Supply	kVA	75		
Compressed Air Supply (Pressure X Consumption)	-	0.5 ~ 0.7 MPa x 1,870 Nℓ/min		
Tank Capacity				
Spindle Cooling / Lubrication	ℓ (gal)	60 / 12 (15.85 / 3.17)		
Coolant	ℓ (gal)	450 (118.88)		
Machine Size				
Height	mm (inch)	4,085 (160.83) [High Column Type: 4,335 (170.67)]		
Floor Space (Length x Width)	mm (inch)	8,120 x 4,340 (319.69 x 170.87)		
Weight (without Magazine)	kg_f (lb_f)	25,000 (55,115)		
NC Controller		Fanuc 31i-B		

NC Specifications [Fanuc 31i-B]

※ S : Standard O : Option

Item	Specification	
Controlled Axis		
Controlled Axis	3-axis	S
Controlled Axis	5-axis (Max)	O
Simultaneously Controlled Axis	3-axis	S
Simultaneously Controlled Axis	4-axis (Max)	O
Least Input Increment	0.001mm, 0.001deg, 0.0001inch	S
Least Input Increment 1 / 10	0.0001mm, 0.0001deg, 0.00001inch	O
inch / metric Conversion	G20, G21	S
Store Stroke Check 1		S
Store Stroke Check 2		S
Mirror Image		S
Stored Pitch Error Compensation		S
Backlash Compensation		S
Operation		
Automatic & MDI Operation		S
DNC Operation by Memory Card	PCMCIA Card is Required	S
Program Number Search		S
Sequence Number Search		S
Dry Run, Single Block		S
Manual Handle Feed	1Unit	S
Manual Handle Feed Rate	x1, x10, x100	S
Handle Interruption		S
Interpolation Function		
Positioning	G00	S
Linear Interpolation	G01	S
Circular Interpolation	G02, G03	S
Dwell (Per Deconds)	G04	S
Cylindrical Interpolation	4-axis Interface Option is Required	S
Helical Interpolation	Circular interpolation plus max 2-axis linear interpolation	S
Nano Smoothing		O
Reference Position Return Check	G27	S
Reference Position Return Return	G28,G29	S
2nd Reference Position Return	G30	S
Skip Function	G31	S
NURBS Interpolation		O
Feed Function		
Rapid Traverse Override	F0, F25, F50, F100	S
Feedrate (mm/min)		S
Feedrate Override	0 ~ 200 %	S
Jog Feed Override	0 ~ 6,000 mm/min	S
Override Cancel	M48, M49	S
Program Input		
Tape Code	EIA / ISO	S
Optional Block Skip	1 ea	S
Program Number	O4-digits	S
Sequence Number	N8-digits	S
Decimal Point Programming		S
Coordinate Dystem Detting	G92	S
Workpiece Coordinate System	G54 - G59	S
Workpiece Coordinate System Preset		O
Addition of Workpiece Coordinate Pair	48 ea	S
Addition of Workpiece Coordinate Pair	300 ea	O
Extend Program Edit Function	Copy / Move / Etc.	S
Manual Absolute ON and OFF		S
Chamfering / Corner R		S
Programmable Data Input	G10	S
Sub Program Call	10 Folds Nested	S
Custom Macro B		S
Addition of Custom Macro Common Variables	#100 - #199, #500 - #999	O
Automatic Corner Override		O

Item	Specification	
Program Input		
Feedrate Control With Acceleration in Circular Interpolation		S
Canned Cycles for Drilling		S
Scaling		O
Coordinate System Rotation		S
Polar Coordinate Command		O
Program Restart		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 %	S
Spindle Orientation		S
Rigid Tapping		S
Tool Function / Compensation		
Tool Function	T4-digits	S
Tool Offset Pairs	±6-digits / 200 ea	S
Tool Offset Pairs	±6-digits / 400 ea , 999 ea	O
Tool Offset Memory C		S
Tool Length Measurement		S
Cutter Compensation C		S
Tool Life Management		O
Tool Length Compensation		S
Editing Operation		
Part program Storage length / Number of Register Able Programs	256 kB / 500 ea	S
Part program Storage length / Number of Register Able Programs	512 kB / 1,000 ea 1 MB / 1,000 ea, 2 MB / 1,000 ea	O
Background Editing		S
Extended Part Program Editing		S
Play Back		O
Setting and Display		
Clock Function		S
Self-Diagnosis Function		S
Alarm History Display		S
Help Function		S
Graphic Function		S
Run Hour and Parts Count Display		S
Dynamic Garphic Display		O
Multi-language Display	English, German, French, Italian, Chinese, Spanish, Korean, Portuguese, Polish, Hungarian, Swedish, Russian	S
Data Input / Output		
Reader / Puncher Interface CH1	RS232C	S
Data Server	256 MB	S
Data Server	1,024 MB	O
Ethernet Interface		S
Memory Card Interface		S
USB Interface		S
Others		
Display Unit	10.4" Color LCD	S
HWACHEON Machining Software		
Hwacheon Artificial Intelligence Control System (HAI): 200 Block		S
Hwacheon Artificial Intelligence Control System (HAI): 600/1,000 Block		O
Hwacheon Efficient Contour Control System (HECC)		S
Hwacheon Tool Load Detect System (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

Hwacheon Global Network

Hwacheon Headquarters Hwacheon Europe Hwacheon Asia Hwacheon America

HWACHEON

Please contact 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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