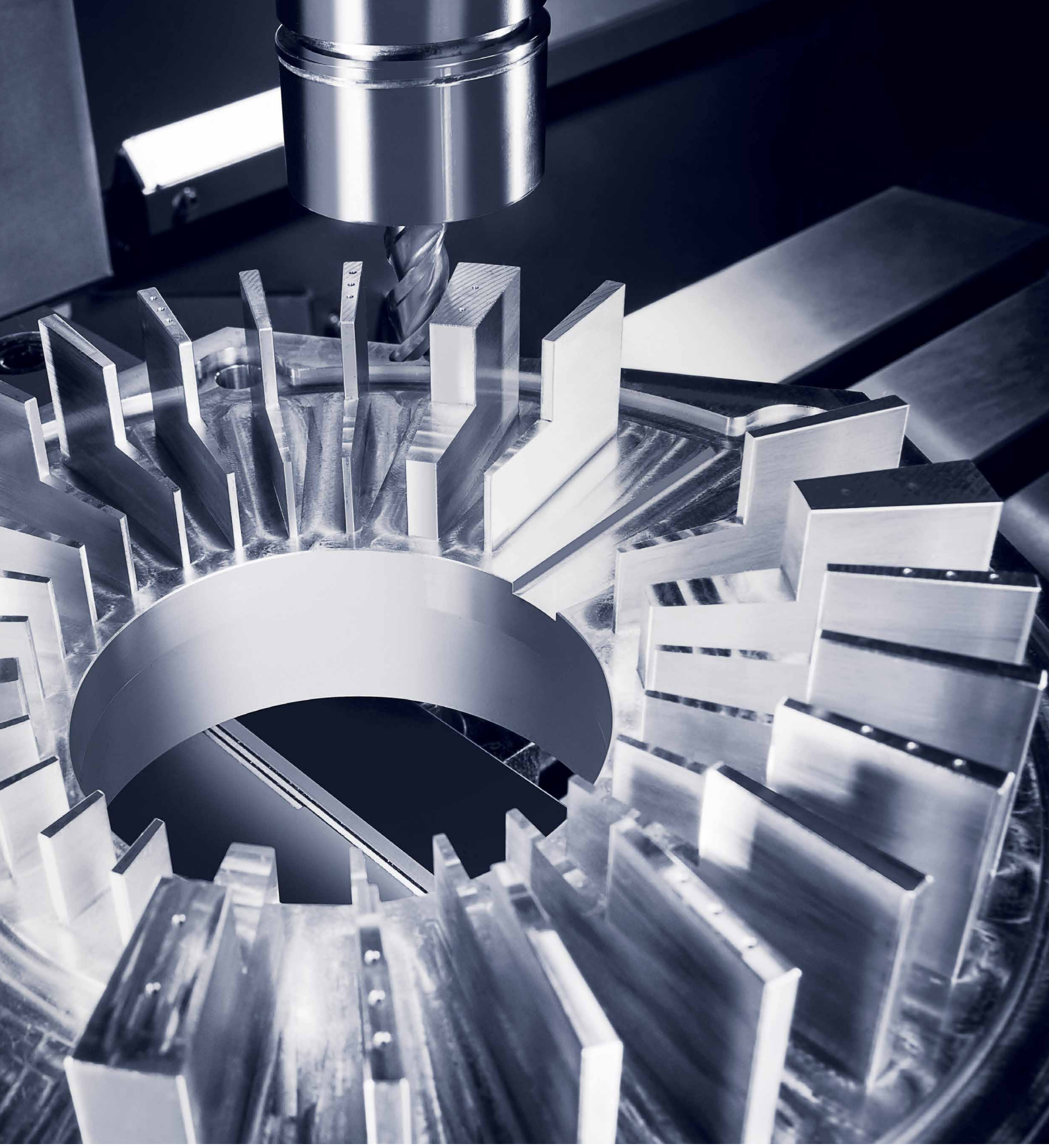


VESTA-1000+

Software Optimized Vertical Machining Center

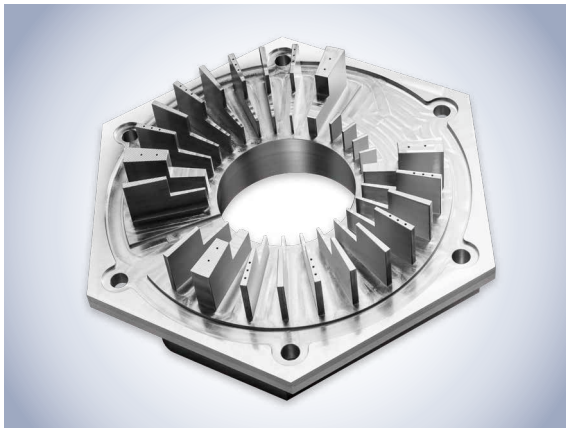
HWACHEON

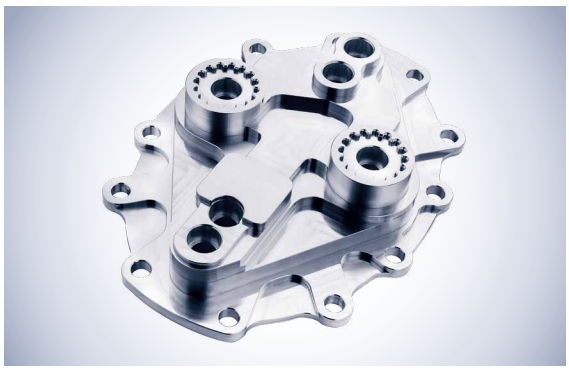
Contents

Product Overview

Basic Information

Detailed Information





1 LED Radiator / Aluminum
2 Part / Front Upright / Aluminum
3 Part / Air Flap Link / Aluminum

550 mm Y-axis Vertical Machining Center for Enhanced Productivity and Work Convenience

- VESTA-1000+provides high efficiency and satisfactory result with its highly-strengthened productivity and better user friendliness
- It is equipped with Hwacheon's proprietary technologies such as productivity enhancement software (HECC, HTLD and OPTIMA) and precision enhancement software (HTDC and HAI) and provides differentiated quality different from existing machining center for parts.
- Installation area size has been minimized relative to the size of other tools of the same class for more efficient usage of space in customer's factory

Upgrades for Enhanced Machining Performance

1. Improved table utilization (Max 4ea 6" vice utilization)
2. Enhanced tool switch time and chip to chip time (Cycle time 15% Improvement)
3. Hwacheon's proprietary software

Enhanced Work Convenience

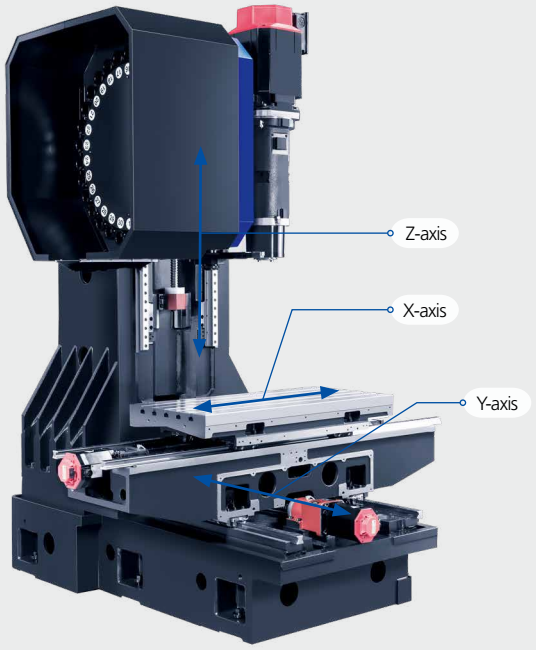
1. Reduction in work fatigue (Front Two-Door)
2. Pendant arm type operator panel
3. Lowered table height [950 mm (37.4 inch)]
4. The tempered safety glass ensures machining visibility

Easy Maintenance

1. Back & Side type chip conveyor
   - STD : Side chip bucket
   - OPT : Side type lift-up chip conveyor
     Back type lift-up chip conveyor
2. Wide side door for user convenience

Basic Information

Basic Structure



"Machining Stability Ensured"

- Stable machine structure
  (Outstanding rigid base and column structure ensured)
- C type structure for work accessibility
- High rigid roller LM guide for every axis
- Processing position with lower center point

※ High rigid roller LM guide for every axis

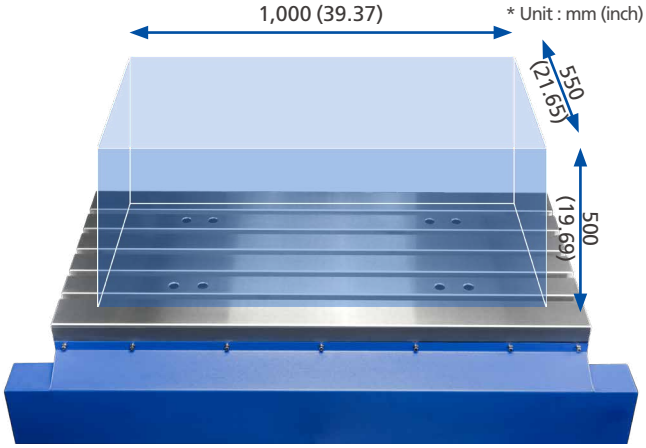
Stroke mm (inch)			Rapid Speed m/min (ipm)		
X-axis	Y-axis	Z-axis	X-axis	Y-axis	Z-axis
1,000 (39.37)	550 (21.65)	500 (19.69)	36 (1,417)	36 (1,417)	30 (1,181)

Table

"Wide Workpiece Mounting Area"

Possible to set workpieces and vices in various sizes
※ Max 4 ea 6" Vice Installation

Table Size mm(inch)	T Slot W x P mm (inch)	Max Loading Capacity kg_f (lb_f)
1,100 x 502 (43.31 x 19.76)	18 x 80 (0.71 x 3.15) / 5 ea	700 (1,543)



Spindle

"Low Vibration and Low Heat Generation Directly Applied to Main Axis"

	Max Spindle Speed rpm		Spindle Motor kW	Max Torque Nm
STD: BT-40 OPT: CAT-40, SK-40	12,000	Regular Type	18.5	117.7
		CTS (OPT)		
	10,000 (OPT)	Regular Type	15	95.5
		CTS (OPT)	18.5	117.7
	15,000 (OPT)	Regular Type	18.5	117.7
		CTS (OPT)		

Magazine

※ BT-40, 30 Tool Magazine

"30 Tool Magazine Applied"

Servo motor application brings less vibration during tool switching,
and 30Tool magazine is applied as standard for various machining conditions

Item \ Tool Shank	BT-40	CAT-40, SK-40 (OPT)
Tool Storage Capacity	30	
Method of Tool Selection	Memory Random	
Tool Change Type	Swing Arm	

Cover Design

"Compact Design"

Minimized floor space by installing coolant tank
and chip bucket inside of the machine

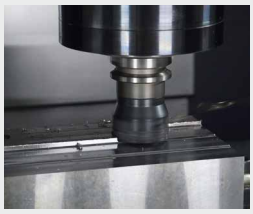
"Enhancement Table Accessibility"

Lowered table and widened doors allow easier work piece
setting and pendant arm type control panel makes better
use of the table

Pendant Arm Type Operator Panel

BT-40 Cutting Performance

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)
50 (1.97) / R8	400	1,500	5,000 (197)	2 (0.08)	40 (1.57)



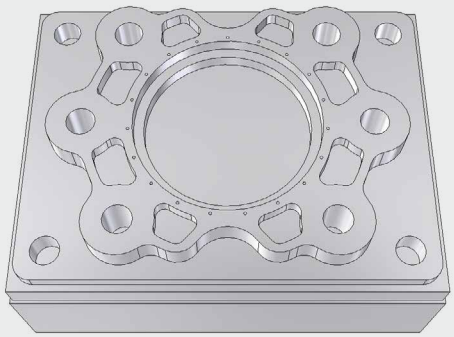
Face mill, Carbon Steel (SM45C)					
Tool Dia mm (inch)	Material Removal Rate cm^3/min	Spindle Speed rpm	Feed mm/min (ipm)	Axial Depth mm (inch)	Radial Depth mm (inch)
60 (2.36)	360	1,500	3,000 (118)	3 (0.12)	40 (1.57)

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)
80 (3.15)	317	1,500	2,640 (104)	2 (0.08)	60 (2.36)

Tap, Carbon Steel (SM45C)			
Tap Size	Spindle Speed rpm	Feed mm/min (ipm)	Spindle Load %
M28 x P3.0	300	900 (35.4)	100

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

Processing cycle time test



- 3D Modeling -

- Actual Output -

Machining Test
Auto Mobil Part (Aluminum)

Total processing time

22min 16sec

※ Execute same processing program

Compared with previous model **"Cycle Time 15% Improvement"**

※ 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				VESTA-1000+
1	Spindle	#40	12,000 rpm (Regular Type)	18.5 / 11 kW	117.7 Nm	S
2			12,000 rpm (CTS)			O
3			10,000 rpm (Regular Type)	15 / 11 kW	95.5 Nm	O
4			10,000 rpm (CTS)	18.5 / 11 kW	117.7 Nm	O
5			15,000 rpm (Regular Type)	18.5 / 11 kW	117.7 Nm	O
6			15,000 rpm (CTS)			O
7	Magazine	#40	30 Tools Magazine			S
8	Tool Shank	#40	BT-40			S
9			CAT-40, SK-40			O
10	Coolant Function	Head Coolant Pump (0.05 MPa, 0.4 kW)				S
11		Bead Flushing Pump (0.15 MPa, 1.1 kW)				S
12		CTS Coolant System (For 7 MPa, only water soluble coolants are available)		3 MPa	2.2 kW	O
13				7 MPa	2.2 kW	O
14		Oil Mist (Semi Dry Cutting System)				O
15	Chip Removal Function	Air Blower				S
16		Air Gun				O
17		Coolant Gun				O
18		Lift-up Chip Conveyor (Hinge Type / Scraper Type / Mesh-drum Type)		Back Type Lift-up Chip Conveyor		O
19				Side Type Lift-up Chip Conveyor		O
20		Mist Collector				O
21	Precision Machining Function	Linear Scale (X / Y / Z)				O
22		Hwacheon Artificial Intelligence Control System (HAI): 40 Block				S
23		Hwacheon Efficient Contour Control System (HECC)				S
24		Hwacheon Thermal Displacement Control System (HTDC) [Hwacheon Spindle Displacement Control System (HSDC) + Hwacheon Frame Displacement Control System (HFDC)]				S
25		Hwacheon Artificial Intelligence Control System (HAI): 200 Block				O
26		Hwacheon Artificial Intelligence Control System (HAI): 400 Block				O
27		Lubrication System				S
28		Spindle Cooler (Jacket Cooling)		Oil Cooler Type		S
29				Fan Cooler Type (10,000 rpm Spindle)		O
30	Measuring & Automation Function	Tool Measuring System: Renishaw / Blum (Touch Type, Laser Type)				O
31		Workpiece Measuring System: Renishaw / Blum (Touch Type)				O
32		Tool Life Management				O
33		Auto Door				O
34		Hwacheon Tool Load Detect System (HTLD)				S
35		Cutting Feed Optimization System (OPTIMA)				S
36	Convenient Functions	Ethernet Interface				S
37		MPG Handle (1ea)				S
38		MPG Handle (3ea)				O
39		Signal Lamp with 2 Color (R, G)				O
40		Signal Lamp with 3 Color (R, G, Y)				S
41		10.4" Color LCD				S
42		Tool Box				S
43		NC Cooler				O
44		Oil Skimmer				O
45		Air Dryer		12,000 rpm / 15,000 rpm Spindle		S
46				10,000 rpm Spindle		O
47		Door Interlock				S
48		Workpiece Coordinate System 48 pairs				S
49		Lubrication Oil Separation Tank				S
50		Perfect Base Around Splash Guard				S
51		Part Program Storage Length 1,280m (512kB)				S
52		Data Server (256MB)				O
53		Data Server (1,024MB)				O
54		Data Server Interface				O
55		Manual Guide i				O
56		Monitoring Solution of Real-time Operational Status (M-VISION Plus)				O
57		Transformer				O
58		4-axis Interface				O

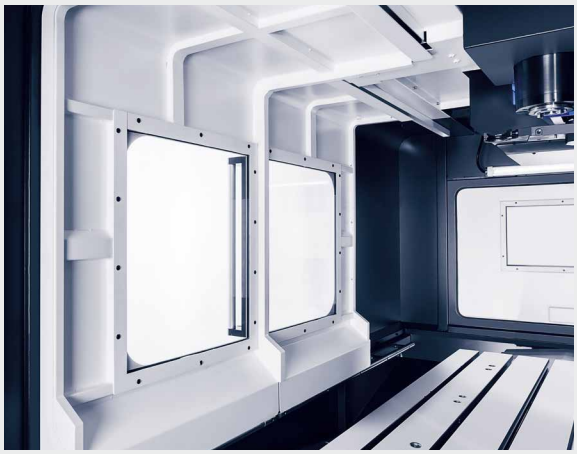
USER FRIENDLY DESIGN, A WIDE RANGE OF OPTIONAL FEATURES

User convenience and various additional function

VESTA-1000+ presents various options through its user friendly design. Highly practical functions have been applied with considerations on real usage environments to help operator focus better on the machining process, leading to safer and more efficient work flows.

"Enhanced User Convenience"

The two lightweight doors at the front reduces fatigue and the wide side door allows for easier maintenance

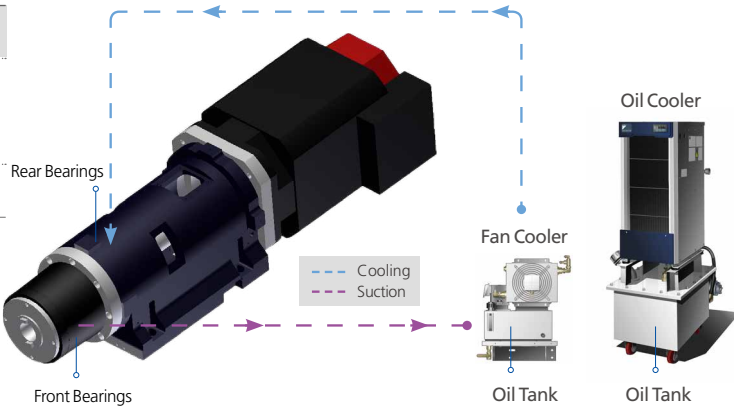


"Improve Working Environment"

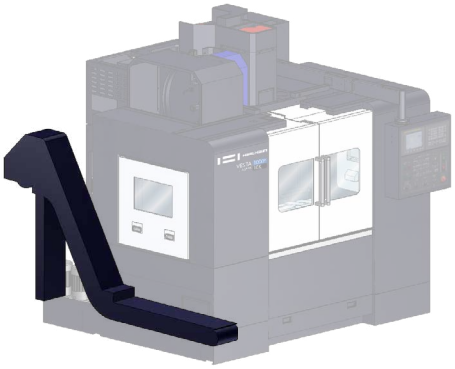
Totally enclosed cover design prevents scattering of chips and coolant while machining, maintaining pleasant work environment

Cooling System

	Jacket Cooling	Bearing Lubrication
12,000 rpm (STD)	Oil Cooler	Air-Oil Type
15,000 rpm		
10,000 rpm	Fan Cooler	Grease Type



Chip Conveyor

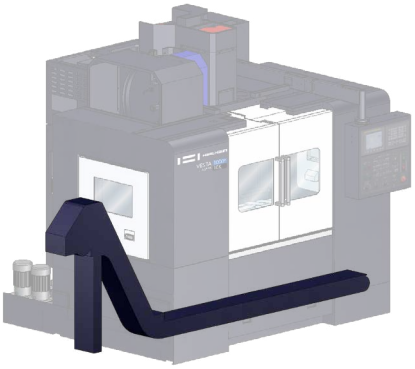


Back Type

Lift-up Chip Conveyor

Side Type

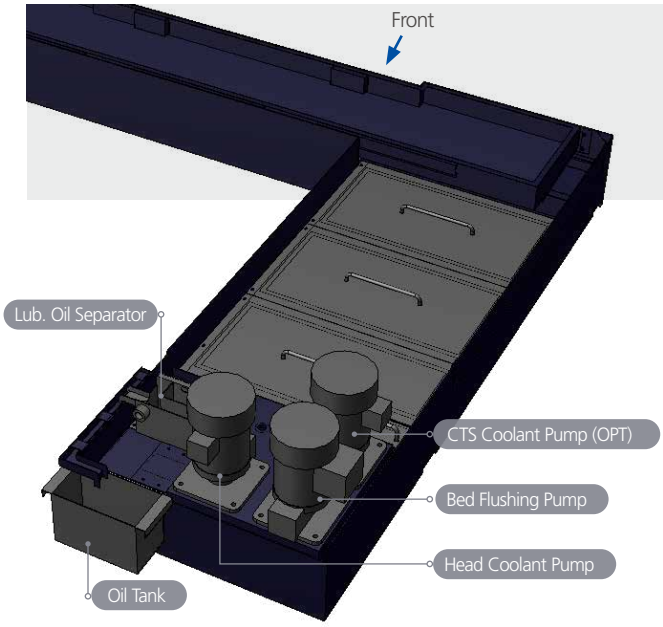
Lift-up Chip Conveyor



"Back & Side Type Chip Conveyor"

Excellent Coolant Tank and Chip Removal

"Possible to Select Type of Chip Conveyor"



※ Internal Coolant Tank

Coolant Tank Tank Capacity : 250 ℓ (66.04 gal)

- Coolant tank and chip bucket located on the bottom of the machine improve space usage efficiency

· Coolant Pump Specifications

Head Coolant Pump - Power : 0.4 kW

Bed Flushing Pump - Power : 1.1 kW

CTS Coolant Pump (OPT)

– Pressure : 3 MPa Power : 2.2 kW

– Pressure : 7 MPa Power : 2.2 kW

* For 7 MPa, only water soluble coolants are available

· Micro Chip Separation (OPT)

A separate mesh filter can be installed for better chip disposal when in case of machining material which carry generation of microchips like when machining aluminum

Convenient Operator Panel

Pendant Arm Type Operator Panel (STD)

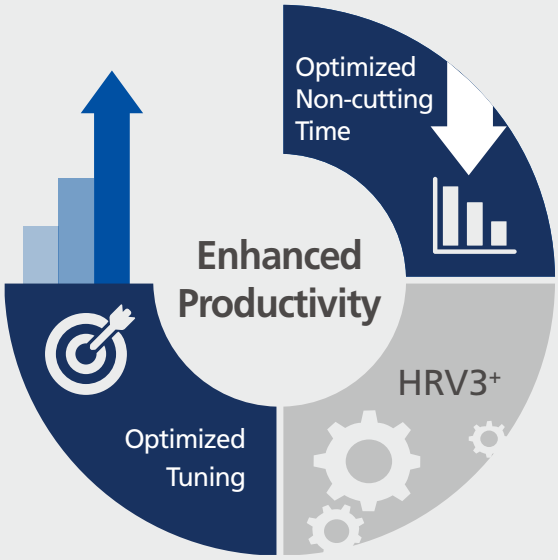
The operator panel is newly designed from the operator's viewpoint and thus enhances the operator's convenience.

"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
- Horizontal keys enhance user convenience.
- 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.

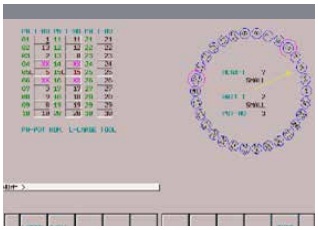
(However, it is necessary to discuss with factory in advance to add and / or change M-codes.)

< 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

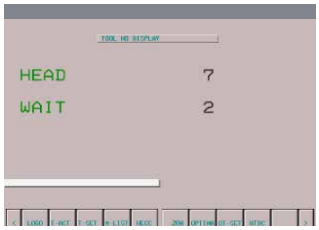
< Tool Management>

Large / Small Diameter Tool Management System



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

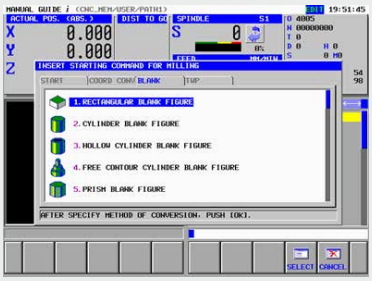
< Tool View >

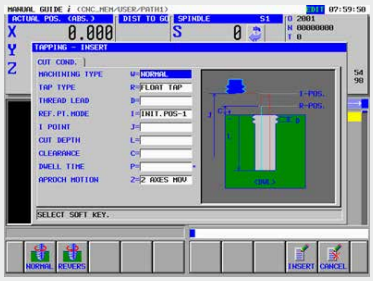


- Head mounted tool check in real time
- Waiting pot mounted tool check in real time

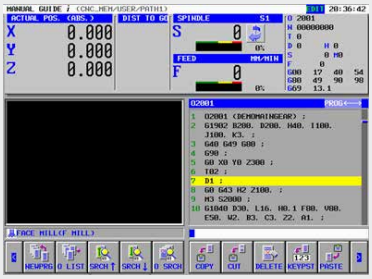
Manual Guide i

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.

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.

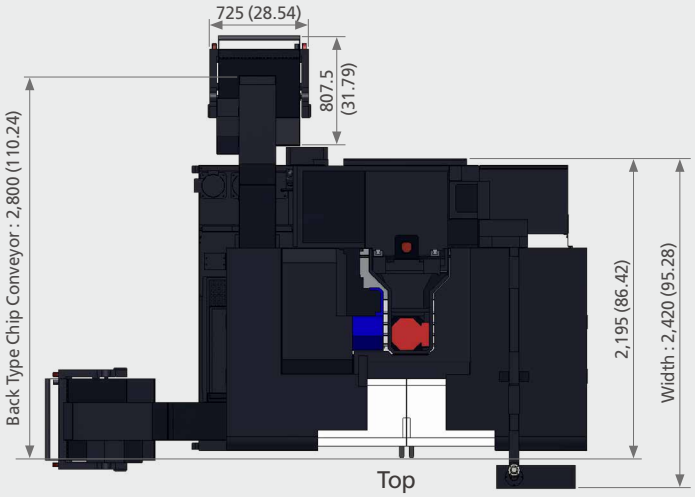
Monitoring Solution of Real-time Operational Status

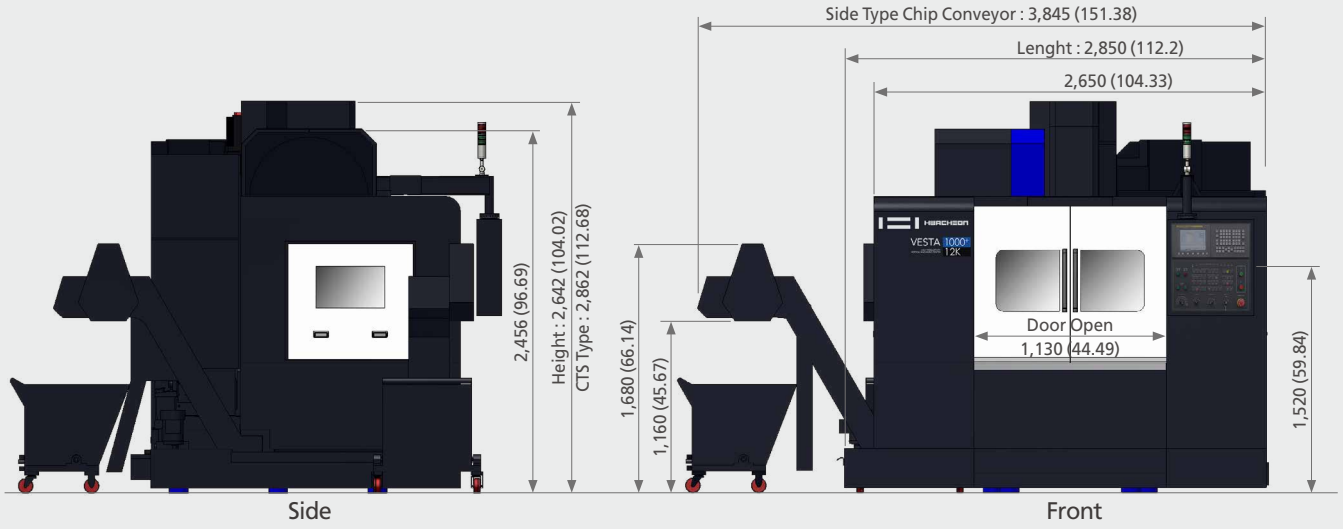
"See everything everywhere"

- 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)

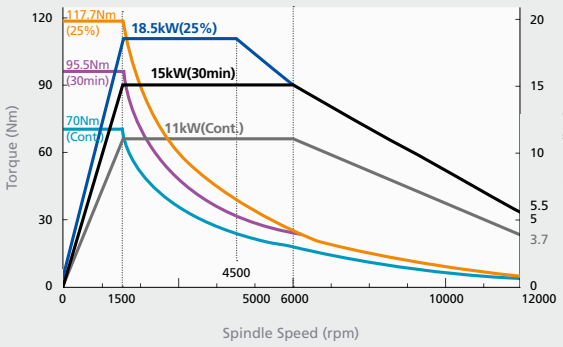




Spindle Power – Torque Diagram

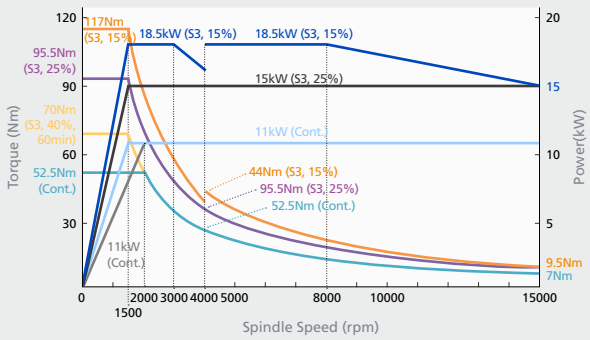
12,000 rpm Regular Type (STD) / CTS Type (OPT)

Max Power : 18.5 kW (25 HP) / Max Torque : 117.7 Nm



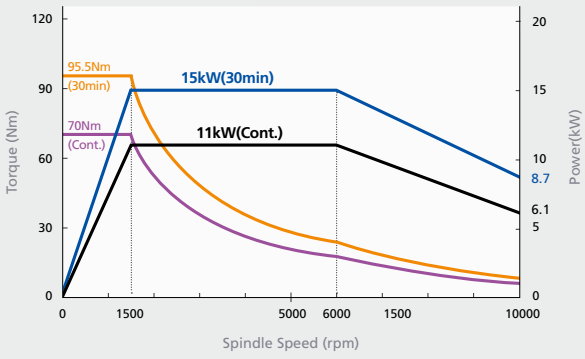
15,000 rpm Regular Type / CTS Type (OPT)

Max Power : 18.5 kW (25 HP) / Max Torque : 117.7 Nm



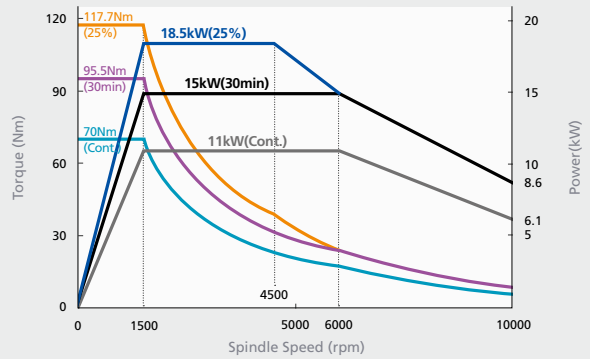
10,000 rpm Regular Type (OPT)

Max Power : 15 kW (20 HP) / Max Torque : 95.5 Nm



10,000 rpm CTS Type (OPT)

Max Power : 18.5 kW (25 HP) / Max Torque : 117.7 Nm



Product Line-up

Machine Specifications

ITEM		VESTA-1000+					
Travel							
X-axis Stroke	mm (inch)	1,000 (39.37)					
Y-axis Stroke	mm (inch)	550 (21.65)					
Z-axis Stroke	mm (inch)	500 (19.69)					
Distance from Table Surface to Spindle Gauge Plane	mm (inch)	130 ~ 630 (5.12 ~ 24.8)					
Distance between Columns to Spindle Center	mm (inch)	560 (22.05)					
Table							
Table Size	mm (inch)	1,100 x 502 (43.31 x 19.76)					
Table Loading Capacity	kg_f (lb_f)	700 (1,543)					
T Slot (WxP / No. of slots)	mm (inch)	18 x 80 (0.71 x 3.15) / 5 ea					
Spindle							
Max Spindle Speed	rpm	12,000	12,000 (CTS)	15,000	15,000 (CTS)	10,000	10,000 (CTS)
Spindle Motor	kW (HP)	18.5 / 11 (25 / 15)		18.5 / 11 (25 / 15)		15 / 11 (20 / 15)	18.5 / 11 (25 / 15)
Type of Spindle Taper Hole	-	ISO#40, 7 / 24 Taper (BT-40)					
Spindle Bearing Inner Diameter	mm (inch)	Ø70 (Ø2.76)					
Feedrate							
Rapid Traverse (X / Y / Z)	m/min (ipm)	36 / 36 / 30 (1,417 / 1,417 / 1,181)					
Cutting Feedrate (X / Y / Z)	mm/min (ipm)	1 ~ 24,000 (0.04 ~ 945)					
Motor							
Feed Motor (X / Y / Z)	kW (HP)	1.8 / 1.8 / 3 (2.5 / 2.5 / 4)					
Coolant Motor (Spindle / Bed)	kW (HP)	0.4 / 1.1 (0.5 / 1.5)					
Spindle Cooler Motor	kW (HP)	0.4 (0.5)				0.18 (0.2)	
ATC							
Type of Tool Shank	-	BT-40 (OPT: CAT-40, SK-40)					
Type of Pull Stud	-	MAS P40T-1 (45°)					
Tool Storage Capacity	ea	30					
Max Tool Dia (with / without Adjacent Tools)	mm (inch)	Ø75 / Ø150 (Ø2.95 / Ø5.91)					
Max Tool Length	mm (inch)	300 (11.81)					
Max Tool Weight	kg_f (lb_f)	8 (17.64)					
Method of Tool Selection	-	Memory Random					
Method of Operation	-	Servo Motor					
Power Source							
Electric Power Supply	kVA	30					
Compressed Air Supply (Pressure X Consumption)	-	0.5 ~ 0.7 MPa x 690 Nℓ/min					
Tank Capacity							
Spindle Cooling / Lubrication	ℓ (gal)	20 / 6 (5.28 / 1.59)					
Coolant	ℓ (gal)	250 (66.04)					
Machine Size							
Height	mm (inch)	2,642 (104.02)					
Floor Space (Length x Width)	mm (inch)	2,850 x 2,420 (112.2 x 95.28)					
Weight	kg_f (lb_f)	5,040 (11,111)					
NC Controller		Fanuc 0i-MF					

NC Specifications [Fanuc 0i-MF]

※ 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
Reference Position Return Check	G27	S
Reference Position Return Return	G28,G29	S
2nd Reference Position Return	G30	S
Skip Function	G31	S
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	9 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		S
Addition of Workpiece Coordinate Pair	48 ea	S
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	S
Canned Cycles for Drilling		S
Feedrate Control With Acceleration in Circular Interpolation		S

ITEM	SPECIFICATION	
Program Input		
Automatic Corner Override		S
Coordinate System Rotation		S
Scaling		S
Polar Coordinate System		S
Programmable Mirror Image		S
Tape Format For Fanuc Series 10 / 11		S
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 / 400 ea	S
Tool Offset Memory C		S
Cutter Compensation C		S
Tool Length Measurement		S
Tool Life Management		O
Tool Length Compensation		S
Editing Operation		
Part program Storage length	1,280 m (512 kB)	S
Number of Register Able Programs	400 ea	S
Background Editing		S
Extended Part Program Editing		S
Play Back		S
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 / 1,024 MB	O
Data Server Interface		O
Ethernet Interface		S
Memory Card Interface		S
USB Interface		S
4-axis Interface Function (Option)		
Controlled Axis	Included 4-axis interface Option	O
Simultaneously Controlled Axis	Included 4-axis interface Option	O
Control Axis Detach	Included 4-axis interface Option	O
Others		
Display Unit	10.4" Color LCD	S
HWACHEON Machining Software		
Hwacheon Artificial Intelligence Control System (HAI): 40 Block		S
Hwacheon Artificial Intelligence Control System (HAI): 200 / 400 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.

HEAD OFFICE
HWACHEON MACHINE TOOL CO., LTD.
123-17, HANAMSANDAN 4BEON-RO, GWANGSAN-GU, GWANGJU, KOREA
TEL: +82-62-951-5111 FAX: +82-62-951-0086

SEOUL OFFICE
46, BANGBAE-RO, SEOCHO-GU, SEOUL, KOREA
TEL: +82-2-523-7766 FAX: +82-2-523-2867

USA
HWACHEON MACHINERY AMERICA, INC.
555 BOND STREET, LINCOLNSHIRE, ILLINOIS, 60069, USA
TEL: +1-847-573-0100 FAX: +1-847-573-9900

SINGAPORE
HWACHEON ASIA PACIFIC PTE. LTD.
21 BUKIT BATOK CRESCENT, #08-79 WCEGA TOWER,
658065, SINGAPORE
TEL: +65-6515-4357 FAX: +65-6515-4358

VIETNAM
HWACHEON MACHINE TOOL VIETNAM CO., LTD.
HCM: TOA NHA SCS, KHU CNC, Q.9, HCMC, VIET NAM
TEL: +84-28-2253-2613
HN: SO 11, D.HUU NGHI, VSIP BAC NINH, VIET NAM
TEL: +84-22-2390-8981

GERMANY
HWACHEON MACHINERY EUROPE GMBH
JOSEF-BAUMANN STR. 25, 44805, BOCHUM, GERMANY
TEL: +49-234-912-816-0 FAX: +49-234-912-816-60

INDIA
HWACHEON MACHINE TOOL INDIA PVT. LTD.
LUNKAD SKY VISTA, UNIT NO.202, 2ND FLOOR PLOT NO.84,
LOHEGAON, VIMAN NAGAR, PUNE 411014, INDIA
TEL: +91 96 73 986633

CHINA
HWACHEON MACHINE TOOL CHINA CO., LTD.
B03A LIANGUAN JUHE INTERNATIONAL HARDWARE CITY, NO.
143 ZHENANZHONG ROAD, JINXIA, CHANGAN TOWN,
DONGGUAN CITY, GUANDONG PROVINCE , CHINA #523852
TEL: +86-769-8932-0601 FAX: +86-769-8932-0602

HC-M299-R5.4-202008