VESTA-2000

Software Optimized Vertical Machining Center

HWACHEON

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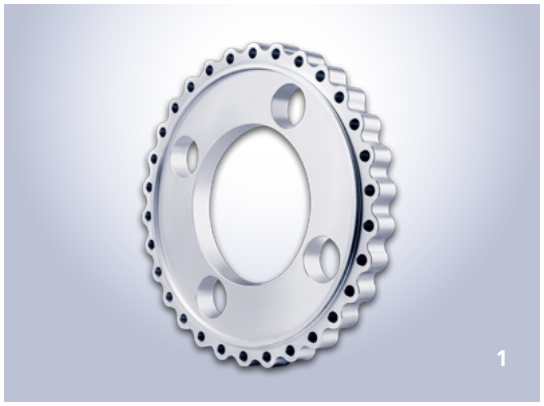
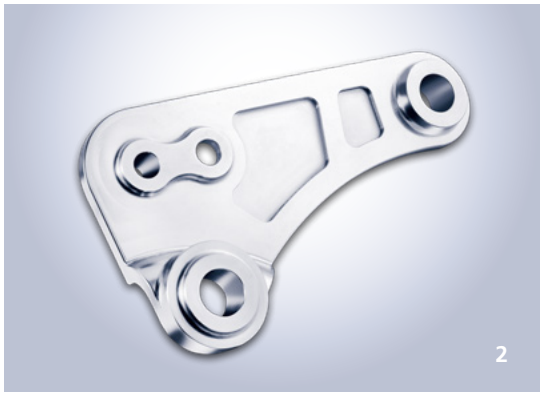
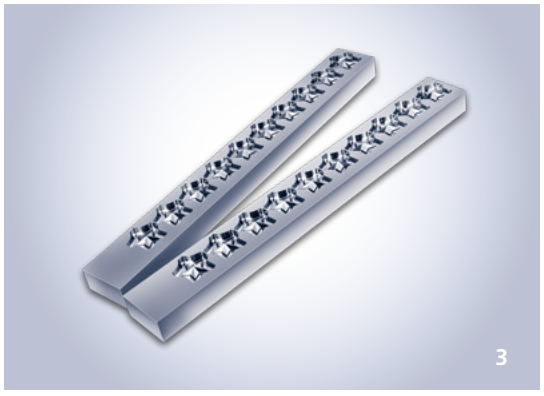
Product Overview

Basic Information

Detailed Information







1 Gear / Robot Arm / Aluminum
2 Part / Air Flap Link / Aluminum
3 HECC Sample / KP4M

850 mm Y-axis Vertical Machining Center with Software Function for Enhanced Productivity and Precision

VESTA-2000 is recommended for powerful cutting based on its stable structure. 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.

Upgrades for Enhanced Machining Performance

1. High rigid roller LM guide for every axis
2. 4 coil conveyors to enhance chip discharge performance
3. The table wide enough to mount multiple workpieces
4. Various direct-coupled main spindle specifications that meet machining purposes
5. Hwacheon's proprietary software

Enhanced User Convenience

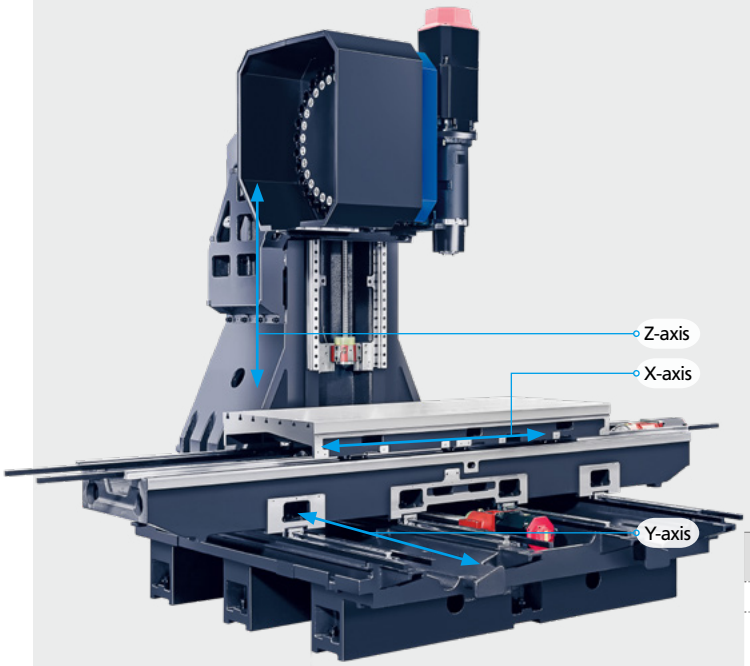
1. The tempered safety glass ensures machining visibility
2. The step integrated coolant tank ensures the front table accessibility
3. Eco-friendly oil water separation structure

Easy Maintenance

1. Peripherals requiring maintenance are gathered in one place
2. Easy lubrication points

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
  (The Y-axis has 4 columns LM guide for saddle rigidity)

※ Y-axis, 4 columns LM Guide

Stroke mm (inch)			Rapid Speed m/min (ipm)		
X-axis	Y-axis	Z-axis	X-axis	Y-axis	Z-axis
2,000 (78.74)	850 (33.46)	800 (31.5)	24 (945)	24 (945)	24 (945)

Table

"Wide Workpiece Mounting Area"

Possible to set workpieces and vices in various sizes

* Unit : mm (inch)

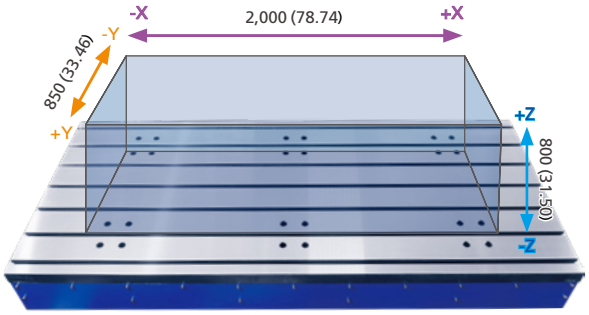


Table Size mm (inch)	T Slot W x P mm (inch)	Max Loading Capacity kg_f (lb_f)
2,000 x 850 (78.74 x 33.46)	18 x 125 (0.71 x 4.92) Number of T slot : 7 ea	1,800 (3,968)

Spindle

"Various Specifications for Direct-Coupled Spindles"

Meeting the customer's machining purposes

	Max Spindle Speed rpm		FANUC		SIEMENS		HEIDENHAIN	
			Spindle Motor kW	Max Torque Nm	Spindle Motor kW	Max Torque Nm	Spindle Motor kW	Max Torque Nm
BT-40	10,000	Regular Type	18.5	117.7	20.9	178	32	203.7
		CTS (OPT)						
	12,000 (OPT)	Regular Type						
		CTS (OPT)						
	15,000 (OPT)	Regular Type			20.9	120.5	-	-
		CTS (OPT)						
BT-50 (OPT)	8,000	Regular Type	15	287	-	-	46	286.5
		CTS (OPT)						

Magazine

"Magazines in Various Specifications"

Various specifications are available
based on users' tool types

Item \ Tool Shank	BT-40	OPT) SK-40, CAT-40 HSK-A63	OPT) BT-50, CAT-50 SK-50, HSK-A100
	Drum Type		Chain Type
Tool Storage Capacity	30	24	30
Method of Tool Selection	Memory Random		
Tool Change Type	Swing Arm		

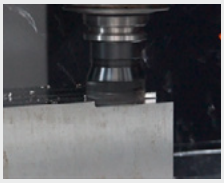
Cover Design

"Minimized Effects of External Temperature Variation"

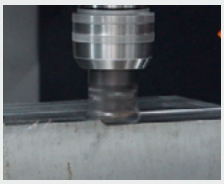
The cover designed to be tightly adhered to the bottom minimizes effects on the machine caused by various factors such as external temperature variation.

20 mm
(0.79 inch)

BT-40 Cutting Performance



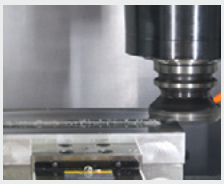
Face mill, Carbon Steel (SM45C)					
Tool Dia mm (inch)	Material Removal Rate cm^3/min	Spindle Speed rpm	Feed mm/min (ipm)	Axial Depth mm (inch)	Radial Depth mm (inch)
60 (2.36)	280	1,500	1,400 (55.12)	5 (0.2)	40 (1.57)



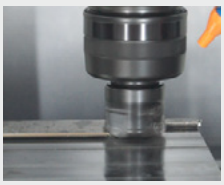
Face mill, Carbon Steel (SM45C)					
Tool Dia mm (inch)	Material Removal Rate cm^3/min	Spindle Speed rpm	Feed mm/min (ipm)	Axial Depth mm (inch)	Radial Depth mm (inch)
50 (1.97) / R8	300	1,500	1,500 (59.1)	5 (0.2)	40 (1.57)

BT-50 Cutting Performance

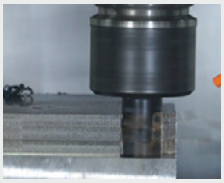
Face mill, Carbon Steel (SM45C)					
Tool Dia mm (inch)	Material Removal Rate cm^3/min	Spindle Speed rpm	Feed mm/min (ipm)	Axial Depth mm (inch)	Radial Depth mm (inch)
80 (3.15)	528	1,500	1,650 (65)	5 (0.2)	64 (2.52)



Face mill, Aluminum (AL6061)					
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)
100 (3.94)	1,920	2,000	4,000 (157)	6 (0.24)	80 (3.15)



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)
63 (2.48) / R8	882	1,500	3,920 (154)	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)
40 (1.57)	336	800	420 (16.5)	40 (1.57)	20 (0.79)

U-Drill, Carbon Steel (SM45C)			
Tool Dia mm (inch)	Material Removal Rate cm^3/min	Spindle Speed rpm	Feed mm/min (ipm)
45 (1.77)	636	1,500	400 (15.7)

Tap, Carbon Steel (SM45C)			
Tap Size	Spindle Speed rpm	Feed mm/min (ipm)	Spindle Load %
M30 x P3.5	200 / 300	700 (27.6) / 1,050 (41.3)	60 / 60
M33 x P3.5	200 / 300	700 (27.6) / 1,050 (41.3)	76 / 78

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

Standard / Optional Accessories Status

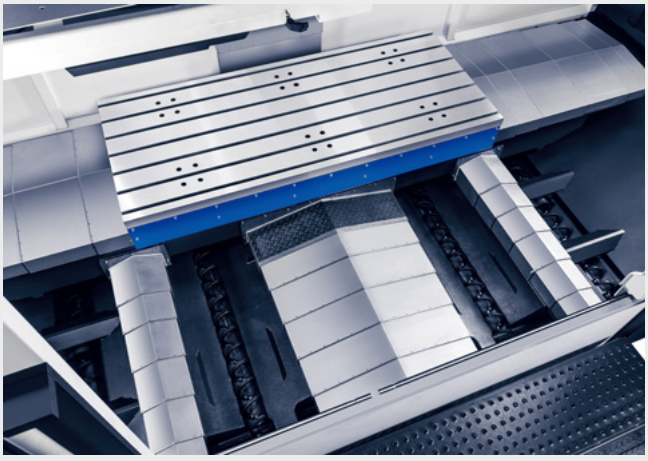
S : Standard O : Option

NO.	Item	Description					VESTA-2000
1	Spindle	#40	FANUC	10,000 rpm	18.5 / 11 kW	117.7 Nm	S
2				10,000 rpm (CTS)			O
3				12,000 rpm			O
4				15,000 rpm			O
5			SIEMENS	10,000 / 12,000 rpm	20.9 / 10.2 kW	178 Nm	O
6				15,000 rpm	20.9 / 11 kW	120.5 Nm	O
7			HEIDENHAIN	10,000 rpm	32 / 15 kW	203.7 Nm	O
8				12,000 rpm			O
9		#50	FANUC	8,000 rpm	15 / 11 kW	287 Nm	O
10				8,000 rpm (CTS)			O
11			HEIDENHAIN	8,000 rpm	46 / 22 kW	286.5 Nm	O
12	Magazine	#40	30 Tools Magazine				S
13			24, 30 Tools Magazine				O
14	Tool Shank	#40	BT-40				S
15			BBT-40 / CAT-40 / HSK-A63 / SK-40				O
16		#50	BT-50				O
17			BBT-50 / CAT-50 / HSK-A100 / SK-50				O
18	Coolant Function	Head Flushing (0.15 MPa, 0.6 kW)					S
19		CTS Coolant System (For 7 MPa, only water soluble coolants are available)			3 MPa	2.2 kW	O
20					7 MPa	2.2 kW	O
21		Oil Mist (Semi dry cutting system)					O
22	Chip Removal Function	Air Blower					S
23		Coil Conveyor (4ea)					S
24		Air Gun					O
25		Coolant Gun					O
26		Lift-up Chip Conveyor			Hinge Type, Scraper Type		O
27		Mist Collector					O
28	Precision Machining Function	Linear Scale (X / Y / Z)					O
29		Hwacheon Efficient Contour Control System (HECC)					S
30		Hwacheon Thermal Displacement Control System (HTDC)					S
31		Hwacheon Artificial Intelligence Control System (HAI): 200 Block					S
32		Hwacheon Artificial Intelligence Control System (HAI): 400 Block					O
33		Lubrication System					S
34		Spindle Cooler (Jacket Cooling)			Fan Cooler Type		S
35					Oil Cooler Type (12,000rpm, 15,000rpm Spindle)		O
36	Measuring & Automation Function	Tool Measuring System: Renishaw / Blum (Touch Type, Laser Type)					O
37		Workpiece Measuring System: Renishaw / Blum (Touch type)					O
38		Tool Life Management					O
39		Auto Door					O
40		Hwacheon Tool Load Detect System (HTLD)					S
41		Cutting Feed Optimization System (OPTIMA)					S
42	Convenient Functions	Ethernet Interface					S
43		MPG Handle (1ea)					S
44		MPG Handle (3ea)					O
45		Signal Lamp with 3 Color (R, G, Y)					S
46		Display Unit			15” Display		S
47					15” Touch Display (Fanuc i-HMI)		O
48		Tool Box					S
49		NC Cooler					O
50		Oil Skimmer					O
51		Air Dryer			10,000rpm, 8,000rpm		O
52					12,000rpm, 15,000rpm		S
53		Door Interlock					S
54		Workpiece Coordinate System			48 pairs		S
55					300 pairs		O
56		Lubrication Oil Separation Tank					S
57		Perfect Base Around Splash Guard					S
58		Part Program Storage Length 5,120m (2MB)					S
59		Data Server (256MB, 1GB, 2GB, 4GB, 16GB, 32GB)					O
60		Data Server Interface					O
61		Transformer					O
62		Manual Guide i					S
63		M-VISION Plus (Monitoring Solution of Real-time Operational Status)					O
64		M-VISION Pro (Operation Managing and Monitoring Solution of Real-time Operational Status)					O
65		4-axis Interface					O

USER FRIENDLY DESIGN, A WIDE RANGE OF OPTIONAL FEATURES

User convenience and various additional function

VESTA-2000 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.



"Excellent Chip Disposal"

Four coil conveyors in the wide and steeply slanted slide cover structure that are located under the table provide excellent chip disposal performance.

4 Coil Conveyors

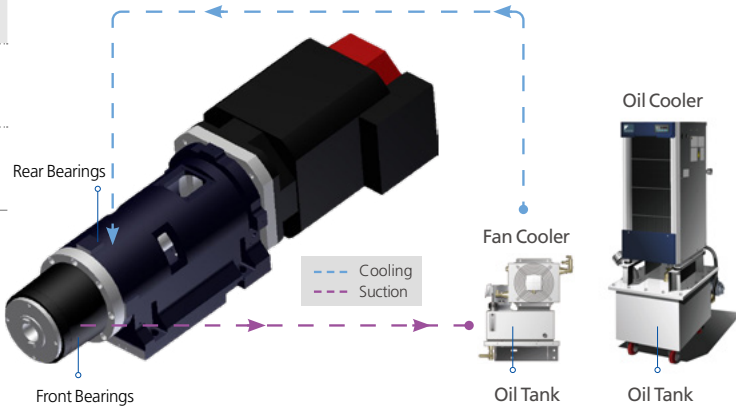
Four coils conveyors as standard will rapidly remove a large amount of chips generated during machining.

Convenient Accessibility

Coolant tank combined with step helps user accessibility during operation and enhance space utilization.

Cooling System

	Jacket Cooling	Bearing Lubrication
10,000 rpm (STD)	Fan Cooler	Grease Type
8,000 rpm (OPT)		
12,000 rpm (OPT)	Oil Cooler	Air-Oil Type
15,000 rpm (OPT)		



Convenient Maintenance

Improved the manageability of machine through the integration of peripheral devices for required maintenance.

LED Work Light

Long-life LED work lights at three places ensures comfortable working environment and minimizes heat generation.

Excellent Coolant Tank and Chip Removal

"Possible to Select Type of Chip Conveyor" according to machining purpose

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

External Coolant Tank Tank Capacity : 740ℓ(195.49 gal)

- External coolant tank is installed at the front of machine.
  Easy to exchange coolant, clean the tank and maintain pump.
- Step integrated coolant tank for better table accessibility.

· Micro Chip Separation

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

· Coolant Pump Specifications

CTS Coolant Pump (OPT) - Pressure : 3 MPa / 7 MPa
- Power : 2.2 kW

* For 7 MPa, only water soluble coolants are available

Head Coolant Pump
- Power : 0.6 kW

Coolant Gun Pump
- Power : 1.1 kW

Convenient Operator Panel

Pendant Arm Type Operator Panel (STD)

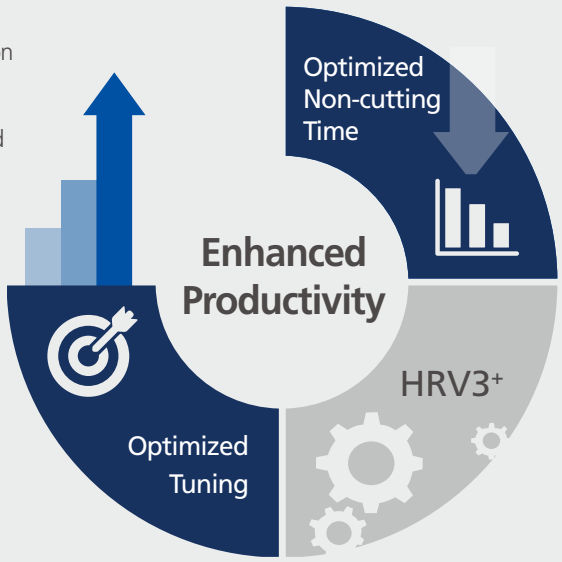
The operator panel is newly designed from the operator's viewpoint and thus enhances the operator's convenience.

"User Friendly Design"

- 15" display as standard
  (USB and PCMCIA cards as standard)
- Enhanced operability by optimizing the layout and improving the touch feeling of control buttons
- QWERTY Key MDI 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.

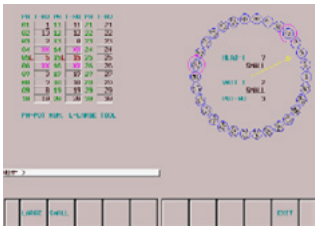
(However, it is necessary to discuss with factory in advance to add and / or change M-codes.)

< 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

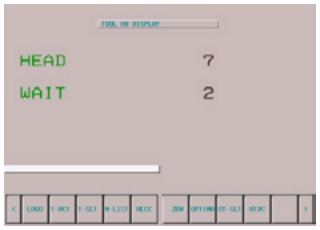
< Tool Management>

Large / Small Diameter Tool Management System



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

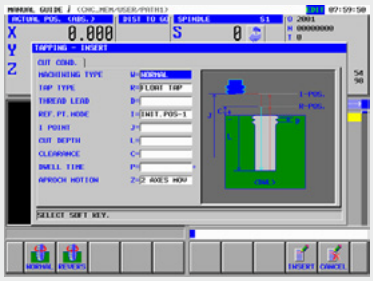
< Tool View >



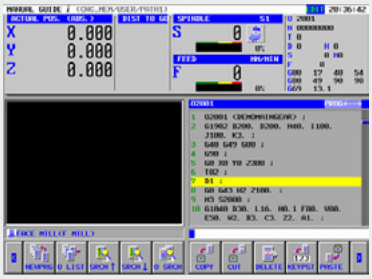
- Head mounted tool check in real time
- Waiting pot mounted tool check in real time

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 (HTLD)

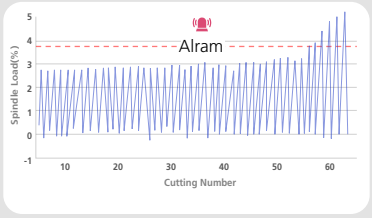
HTLD constantly monitors the tool wear to prevent accidents and collisions that may result from worn or broken tools. It also helps to prevent the work piece from being damaged or scrapped.

Prevent processing defects

Prevention of the defective tool breakage

Able to quickly respond to wear and tear of tools

When tool breakage alarm



Hwacheon Efficient Contour Control System (HECC)

Workplece and the desired mode selected depending on the need to shorten processing time / improve contour accuracy / enhanced tool life.

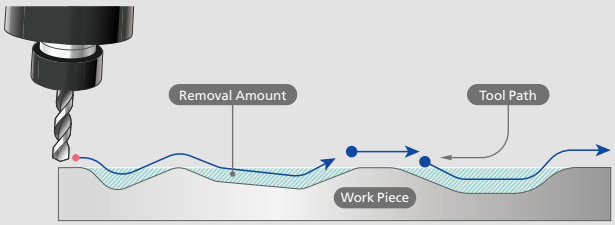
"Roughing quickly, finishing is precisely"

Level(R)	1.0	1.1	1.2	~	8.8	8.9	9.0
Cutting time		Fast (1.5~3.0 Times)				Slow (1.0 Times)	
Surface		No Good				Good	
Process		Rough				Finish	
Tool life		Good				No Good	

Cutting Feed Optimization System (OPTIMA)

Prevent damage to the tool in real time by automatically controlling the feed rate to maintain a constant cutting force during the machining process which typically results in reduced cycle times.

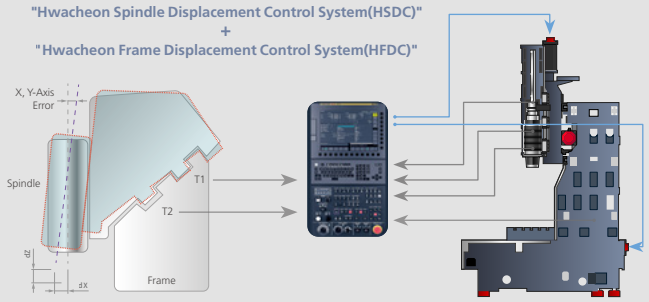
"Maximize your productivity with intelligent system"



Hwacheon Thermal Displacement Control System (HTDC)

The high sensitivity temperature sensors are installed at integral elements to capture and display real-time data while processing.

"Hwacheon Spindle Displacement Control System(HSDC)"
+
"Hwacheon Frame Displacement Control System(HFDC)"



Monitoring Solution of Real-time Operational Status (M-VISION Plus / Pro)

Real-time operational status monitoring system for the User's factory machine management.

M-VISION Plus

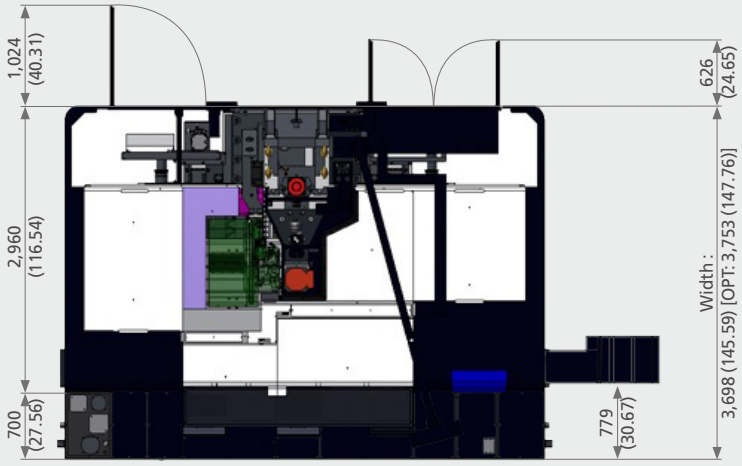
- Monitoring of real-time operational status
- Mobile app supported
- Machining history saving, retrieving and statistics
- Statistics on operational efficiency and history by equipment

M-VISION Pro

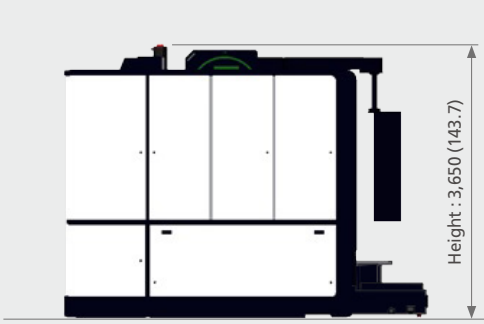
- Real-time machine operation status monitoring
- Mobile app supported
- Saving machining/alarm history, retrieving and statistics
- Statistics on operational efficiency and history by equipment/by equipment in total , operator, and arbitrary set period
- Machining Management

Machine Size

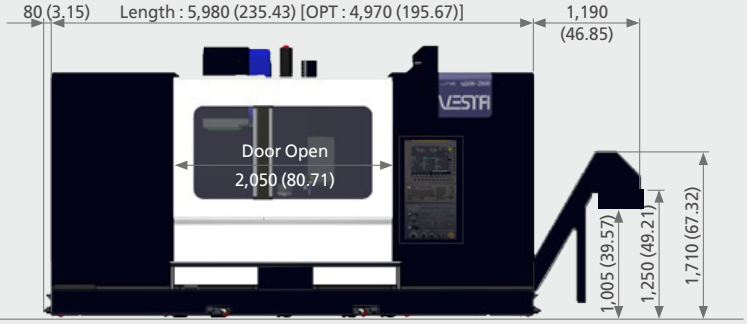
* Unit : mm (inch)



Top



Side

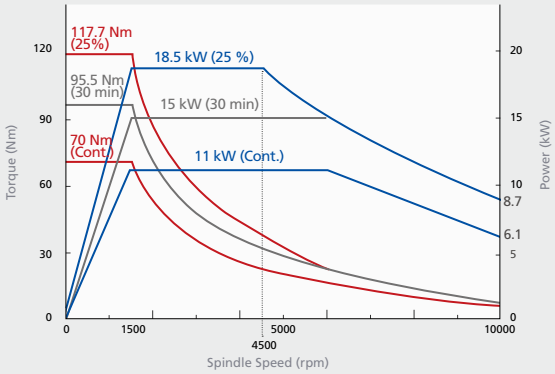


Front

Spindle Power – Torque Diagram

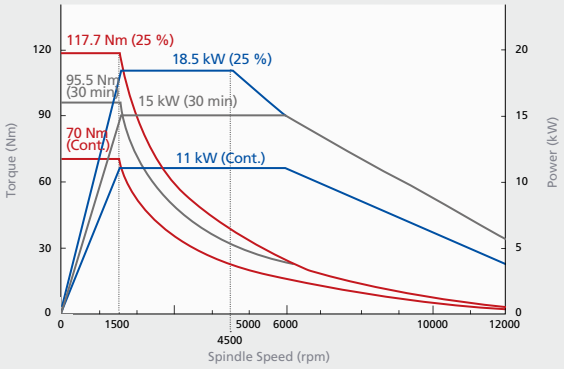
10,000 rpm

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



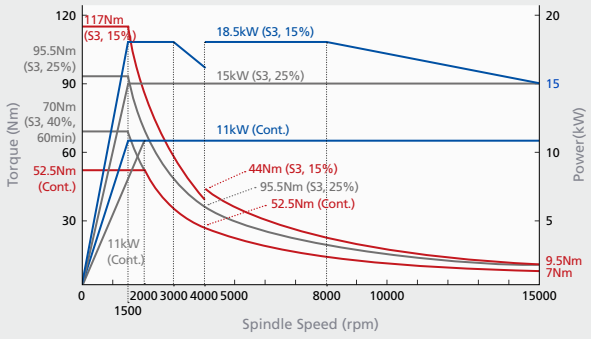
12,000 rpm (OPT)

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



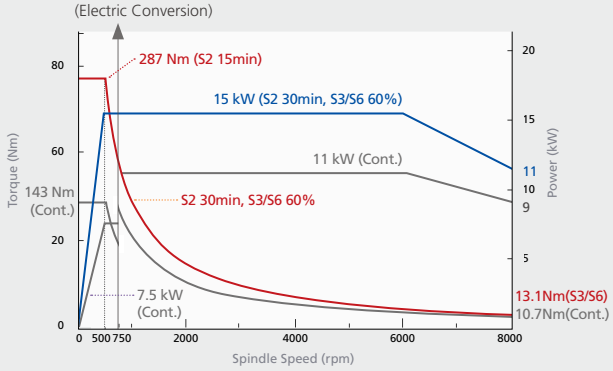
15,000 rpm (OPT)

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

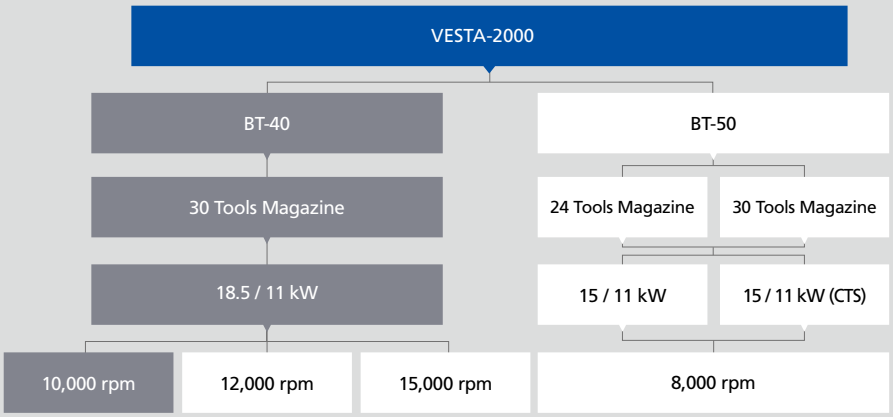


8,000 rpm (OPT)

Max Power : 15 kW (20 HP) / Max Torque : 287 Nm



Product Line-up



Machine Specifications

Item		VESTA-2000			
Travel					
Stroke (X / Y / Z)	mm (inch)	2,000 / 850 / 800 (78.74 / 33.46 / 31.5)			
Distance from Table Surface to Spindle Gauge Plane	mm (inch)	150 ~ 950 (5.91 ~ 37.4)			
Distance between Columns to Spindle Center	mm (inch)	905 (35.63)			
Table					
Table Size	mm (inch)	2,000 x 850 (78.74 x 33.46)			
Table Loading Capacity	kg_f (lb_f)	1,800 (3,968)			
T Slot (WxP / No. of slots)	mm (inch)	18 x 125 (0.71 x 4.92) / 7 ea			
Spindle					
Max Spindle Speed	rpm	10,000	12,000	15,000	8,000
Spindle Motor	kW (HP)	18.5 / 11 (25 / 15) SIEMENS: 20.9 / 10.2 (28 / 13.6) HEIDENHAIN: 32 / 15 (43 / 20)		18.5 / 11 (25 / 15) SIEMENS: 20.9 / 11 (28 / 15)	15 / 11 (20 / 15) SIEMENS: 33 / 22 (44 / 30), HEIDENHAIN: 46 / 22 (62 / 30)
Type of Spindle Taper Hole	-	ISO#40, 7/24 Taper (BT-40)			ISO#50, 7/24 Taper (BT-50)
Spindle Bearing Inner Diameter	mm (inch)	Ø70 (2.76)			Ø90 (3.54)
Feedrate					
Rapid Traverse (X / Y / Z)	m/min (ipm)	24 / 24 / 24 (945 / 945 / 945)			
Cutting Feedrate (X / Y / Z)	mm/min (ipm)	1 ~ 10,000 (0.04 ~ 394)			
Motor					
Feed Motor (X / Y / Z)	kW (HP)	4 / 4 / 7 (5.4 / 5.4 / 9.4)			
Coolant Motor (Spindle)	kW (HP)	0.6 (0.8)			
Spindle Cooler Motor	kW (HP)	0.18 (0.2)	2.8 / 3.2 (3.8 / 4.3)		0.18 (0.2)
ATC					
Type of Tool Shank	-	BT-40 (OPT: BBT-40, CAT-40, HSK-A63, SK-40)			BT-50 (OPT: BBT-50, CAT-50, HSK-A100, SK-50)
Type of Pull Stud	-	MAS P40T-1 (45°)			BT-50 (90°)
Tool Storage Capacity	ea	30			24 (OPT: 30)
Max Tool Dia (with / without Adjacent Tools)	mm (inch)	Ø75 / Ø150 (Ø2.95 / Ø5.91)			Ø125 / Ø245 (Ø4.92 / Ø9.65)
Max Tool Length	mm (inch)	300 (11.81)			350 (13.78)
Max Tool Weight	kg_f (lb_f)	8 (17.64)			20 (44.09)
Method of Tool Selection	-	Memory Random			
Power Source					
Electric Power Supply	kVA	45			45 / CTS:55
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)	740 (195.49)			
Machine Size					
Height	mm (inch)	3,650 (143.7)			3,650 (143.7)
Floor Space (Length x Width)	mm (inch)	5,980 x 3,698 (235.43 x 145.59) [OPT: 4,970 x 3,753 (195.67 x 147.76)]			
Weight	kg_f (lb_f)	12,700 (27,999)			13,900 (30,644)
NC Controller		Fanuc 0i-MF Plus			

NC Specifications [Fanuc 0i-MF Plus]

※ S : Standard O : Option

ITEM	SPECIFICATION	
Controlled Axis		
Controlled Axis	4-axes	S
	5-axes (Max.)	O
Simultaneously Controlled Axes	3-axes	S
	4-axes (Max.)	O
Least Input Increment	0.001 mm, 0.001 deg, 0.000 1inch	S
Least Input Increment 1/10	0.0001 mm, 0.0001 deg, 0.0000 1inch	O
inch / metric Conversion	G20, G21	S
Stored Stroke Check 1		S
Stored 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 Seconds)	G04	S
Cylindrical Interpolation	4-axis Interface Option is Required	S
Helical Interpolation	Circular interpolation plus max 2 axes linear interpolation	S
Reference Position Return Check	G27	S
Reference Position Return	G28,G29	S
2nd Reference Position Return	G30	S
Skip Function	G31	S
Feed Function		
Rapid Traverse Override	F0, F25, F50, F100	S
Feed Rate (mm/min)		S
Feed Rate 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	9ea	S
Program Number	O4 Digits (1 - 9999)	S
Sequence Number	N8 Digits	S
Decimal Point Programming		S
Coordinate System Setting	G92	S
Workpiece Coordinate System	G54 - G59	S
Workpiece Coordinate System Preset		S
Additional Workpiece Coordinate Pairs	48ea	S
	300ea	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	S
Canned Cycles for Drilling		S

ITEM	SPECIFICATION	
Program Input		
Automatic Corner Override		S
Feed Rate Clamp Based on Arc Radius		S
Scaling		S
Coordinate System Rotation		S
Polar Coordinate System		S
Programmable Mirror Image		S
Tape Format for Fanuc Series 10/11		S
Manual Guide i		S
Spindle Speed Function		
Spindle Serial Output		S
Spindle Override	50 - 150%	S
Spindle Orientation		S
Rigid Tapping		S
Tool Function / Compensation		
Tool Function	T4 Digits	S
Tool Offset Pairs	400ea	S
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	5,120m (2MB)	S
Number of Register Able Programs	Max. 1,000ea	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
Run Hour and Parts Count Display		S
Graphic Function		S
Multi-language Display	Chinese, English, French, German, Hungarian, Italian, Korean, Polish, Portuguese, Spanish, Swedish, Russian	S
Data Input / Output		
Data Server	256MB, 1GB, 2GB, 4GB, 16GB, 32GB	O
Data Server Interface		O
Ethernet Interface		S
Memory Card Interface		S
USB Card Interface		S
Others		
Display Unit	15" Non-Touch Display	S
Fanuc i-HMI	15" Touch Display	
HWACHEON Software		
High Speed HRV3˚ Function		S
Hwacheon Artificial Intelligence Control System (HAI): 200 Block		S
Hwacheon Artificial Intelligence Control System (HAI): 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)		S
M-VISION Plus (Monitoring of Real-time Operational Status)		O
M-VISION Pro (Operation Managing and Monitoring of Real-time Operational Status)		O

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: TRAINING CENTER, KCN CAO, Q.9, HCMC, VIETNAM
TEL: +84-28-6275-7011
HN: SO 11, D.HUU NGHI, VSIP BAC NINH, VIETNAM
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

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