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JOURNAL 8

The Ultimate Machining Power



AWEA® AROUND THE GLOBE

AWEA has been contributing to the development and production of machining centers for 33 years and sold machines to 38 countries or regions around the world. The production portfolio includes 5-axis, multi-face, vertical, horizontal, and other type of machining centers; especially the large gantry type machining center is well acknowledged in the global market. The product applications includes aerospace, automotive, shipbuilding, energy, electronics, communications, machinery, molds, and other professional manufacturing fields, in which AWEA machining centers have left a significant presence.



● AWEA OPERATION CENTER
● DEALERS

Global Sales Network

EUROPE

Finland	Belgium	Spain	Hungary	Slovakia
Denmark	France	Portugal	Czech	Russia
Netherlands	Switzerland	Italy	Slovenia	Lithuania
Ireland	Germany	Poland	Bulgaria	Turkey

AMERICA

Canada
U.S.A
Mexico
Brazil
Argentina

ASIA

Japan
Korea
Thailand
Malaysia
Indonesia
Vietnam
India
Israel

AFRICA

Morocco
Egypt
South Africa

OCEANIA

Australia



AiLINC
Intelligent Information
Control System

P.07



New Milestone of
multi-face machining centers

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New Generation
AWEA Attachment Heads

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AHM series
All New HMC Release

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AWEA MECHANTRONIC CO., LTD.
EDWARD YANG, PRESIDENT

Edward Yang

Company Vision

AWEA Mechantronic Co. is a professional manufacturer of CNC Milling Machines. Our product line includes a variety of integrated processing machines with X-Axis Lengths that range from 500 mm to 20 m. In the past five years, in response to the rapid demand of the market, our product specifications and performance have made breakthroughs in the large-scale, high-speed and compound product markets.

For example, the rapid rise of energy saving vehicles has pushed the original automotive sheet metal mold industry demand to new heights ; the booming information industry has increased the demand for the large prodution chambers required for display panels and semiconductors ; the requirement of larger and longer parts processing and manufacturing equipment by the aerospace industry and soon on. This is the emerging main market of the Group now and in the future.

Currently, our Taiwan factories and China factories are actively expanding. The Chiayi facility has completed the first phase of construction and commissioning, vertical machining center has completed the specification and modularization improvement; the large product line factory has also developed new models of floor type boring mill, moving cross beam and moving column bridge type machining centers, as well as actively upgrade the development and application of 5-axis machines. In looking forward to the future development of the Group, we hope to bring more creative value and services to our customers.

VALUES TO UPHOLD

Mr. Yang's Management Philosophy

The book "Persistence : From 100 million to 10 billion", depicts in detail how Mr. Yang, even in a difficult environment, relied on his will to succeed, and accumulating momentum bit by bit to achieve his goals. In the end, we will tell a touching story of the internationally renowned machine tool group. The story will be worth reading for the aspiring person, hoping to find inspiration to follow and achieve their dreams.

At present, the official website has been opened for ordering. The proceeds from the book sales will be donated to social welfare organizations and disadvantaged groups. AWEA Mechantronic Co. will work with you to better the world!



Online order
(Traditional Chinese Version)



Operation Centers

Continuous investment in product development and construction of production facilities has been our consistent policy over a long period of time.

After years of planning, land levelling and construction, phase one of the new Chiayi factory was completed at the end of 2018. It will significantly increase the production capacity for small and medium sized vertical machining centers.

The second construction phase of the Suzhou branch and Chiayi factory will be completed by the end of 2020. Under the global marketing strategy and capacity planning, laying the groundwork for the next golden decade of AWEA and providing high quality and most prompt service to our every valued customers.



Online Video
Grand Opening of the
New Chiayi factory

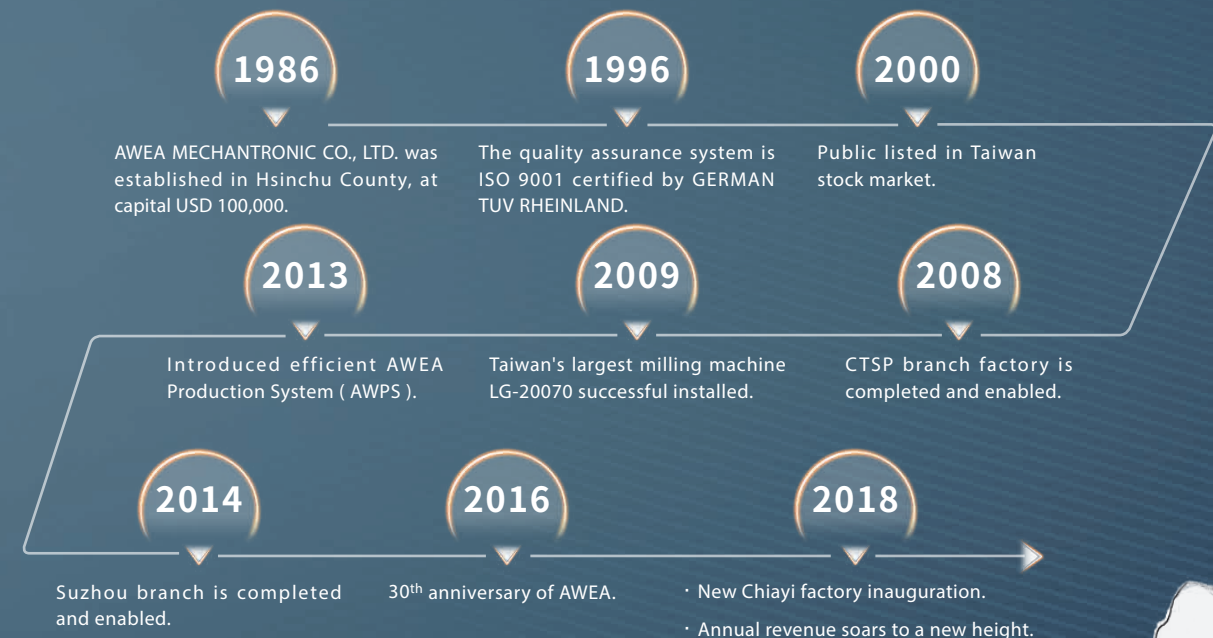
VMC production line
of the new Chiayi factory



Phase two schematic diagram
of the Suzhou branch



Milestones



Business philosophy

Outstanding Innovation & The Pursuit of Excellence

Chairman Mr. Edward Yang decided personally determined the spirit of his career early on, and based on this, determined the core values of the AWEA. He has successfully lead the group's decision making and development for many years.



Cornerstone at the Suzhou branch

HEADQUARTERS >



HSINCHU · TAIWAN
Manufacturing of bridge type
machining centers and boring mills
Area : 26,000 m²

CTSP BRANCH >



TAICHUNG · TAIWAN
Manufacturing of bridge type and
C-frame VMC
Area : 26,600 m²

CHIAYI BRANCH >



CHIAYI · TAIWAN
Manufacturing of VMC
Area : 56,600 m²

YAMA SEIKI USA., INC. >



LOS ANGELES · CALIFORNIA
Sales and service
Area : 24,000 m²

SUZHOU BRANCH >



WUJIANG · SUZHOU
Manufacturing of bridge type and
C-frame VMC
Area : 66,800 m²

AiLINC Intelligent Information Control System

AiLINC, the intelligent information control system newly developed and designed by AWEA, combines three features: convenient operation, intuitive information access and easy learning. With clear machine information and operation, powerful intelligent functions, and advanced artificial intelligence technology, your machine can link up with the world in the of Industry 4.0 era.

2020
Coming
Soon

Ai

Artificial Intelligence

- + AI heat distortion analysis
- + AI machine vibration analysis
- + Automatic neural network adaptation

AiLINC

Intelligent **iPC**

- + Parameter optimization
- + Rough cutting adaptive feed control
- + Spindle thermal compensation
- + Tool loading monitor

i

Information

- + Machine vibration
- + Machine temperature
- + Machine diagnosis
- + Production traceability

System functions

Intelligent operation

Diagnostic system

Real time information

i Console



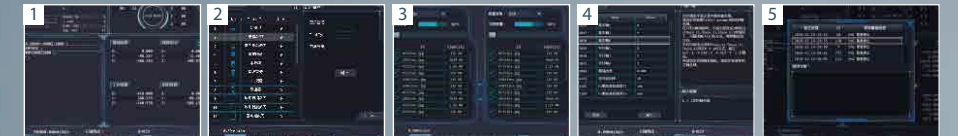
Machine diagnosis

- 1 Spindle system
- 2 Servo system
- 3 Tool magazine system
- 4 Hydraulic system
- 5 Pneumatic system
- 6 Track lubrication system
- 7 Coolant tank system



Machine

- 1 NC operation main screen
- 2 NC tool list
- 3 NC editor
- 4 NC maintenance
- 5 Alarm screen



i Console intelligent operations

- 1 Lighting setting
- 2 Chip conveyor setting
- 3 Buzzer setting
- 4 Automatic lubrication setting



i Console intelligent functions

- 1 Tool loading monitor
- 2 Spindle thermal compensation
- 3 Parameter optimization
- 4 Roughing adaptive feed control

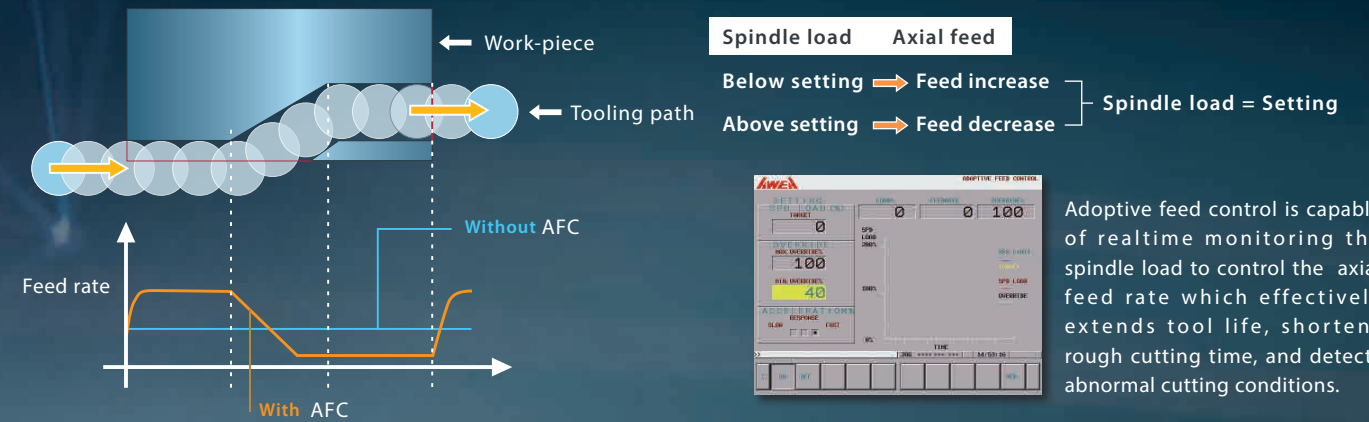


iConsole

We make machine smarter

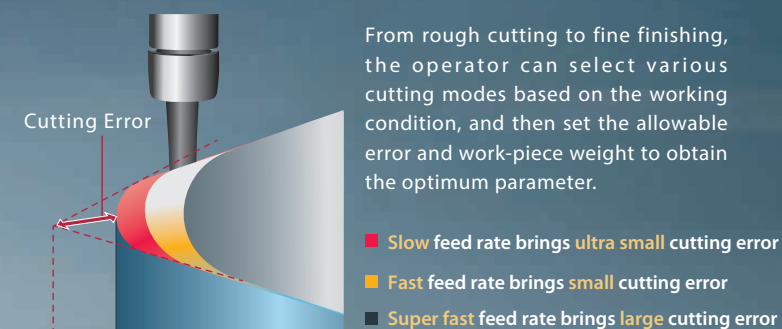


Adoptive Feed Control (AFC)

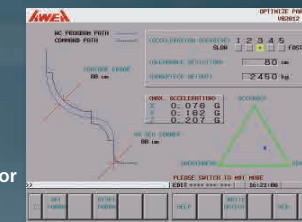


Adoptive feed control is capable of realtime monitoring the spindle load to control the axial feed rate which effectively extends tool life, shortens rough cutting time, and detects abnormal cutting conditions.

CNC Parameter Optimization

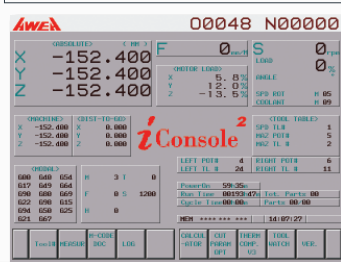


From rough cutting to fine finishing, the operator can select various cutting modes based on the working condition, and then set the allowable error and work-piece weight to obtain the optimum parameter.

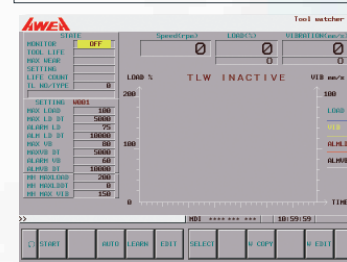


Based on feed rate difference for automatic corner deceleration, the smaller the setting value the better the accuracy but the cycle time relatively longer; set different feed rate in every axis with this parameter in order to calculate the deceleration at corner.

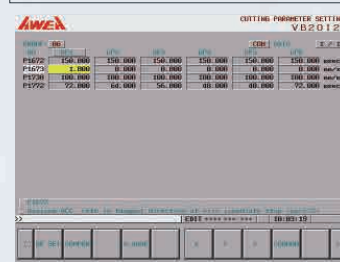
Main screen



Tool loading monitor



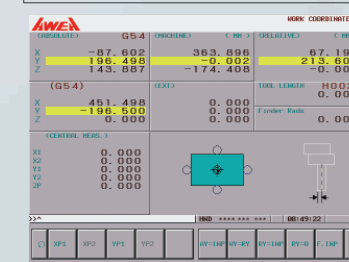
Machining parameter GP



Circular work-piece measurement



Basic rectangular work-piece measurement



Advanced rectangular work-piece measurement



- Instant messaging system
 - Tool list
 - Work-piece measurement
 - M code
 - Calculator
- OPTION :**
- CNC parameter optimization
 - Spindle thermal compensation
 - Adoptive feed control (AFC)

It is able to monitor each tool setting and detect the tool breakage to lower the possibility of work-piece been damaged.

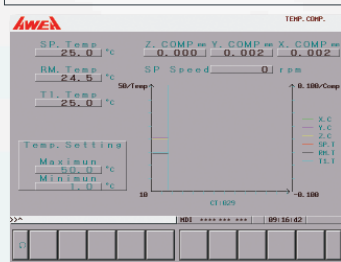
This function is different from CNC parameter optimization, it allows operator to set parameter by himself, to achieve optimal machining efficiency. (Opt.)

By measuring the A, B, C three points coordinates the circular work-piece's center point can be correctly calculated.

By measuring the X+、X-、Y+、Y- four points coordinates, the rectangular work-piece's center point can be calculated. Then the center point coordinate can be entered in the work-piece coordinate system. (G54 - G59)

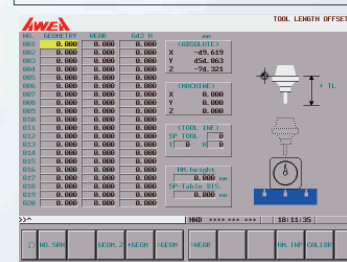
By measuring the A, B, C, D, and E five points coordinates, the rectangular work-piece's center point and slant angle can be calculated. Then the center point coordinate can be entered in the work-piece coordinate system. (G54 - G59)

Spindle thermal compensation



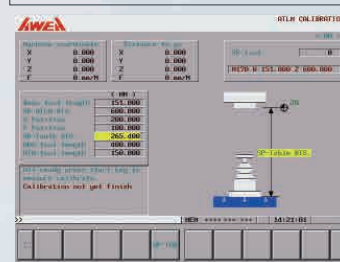
Decrease deformation on structure that caused by heat, Instantly monitoring temperature for automatic compensation to increase machining accuracy. (Opt.)

Tool length offset



After manually measuring the tool length, the controller will automatically calculate the tool tip position and enter the data into the tool length offset table.

Auto. tool length measurement



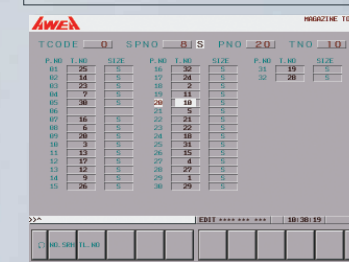
Graphical user interface is easy to use, and up to 12 tool length measurements can be done in one button, which saves programing time and lowers operation error. (Opt.)

Trouble shooting



When the alarm appears, the screen will display the malfunction message and trouble shooting procedure enabling the operator to solve problems to shorten the shutdown time.

Tools management



Intuitive fast tool set-up, and complete tools database let operators easy to use and lower possibility of error caused.

Counter function

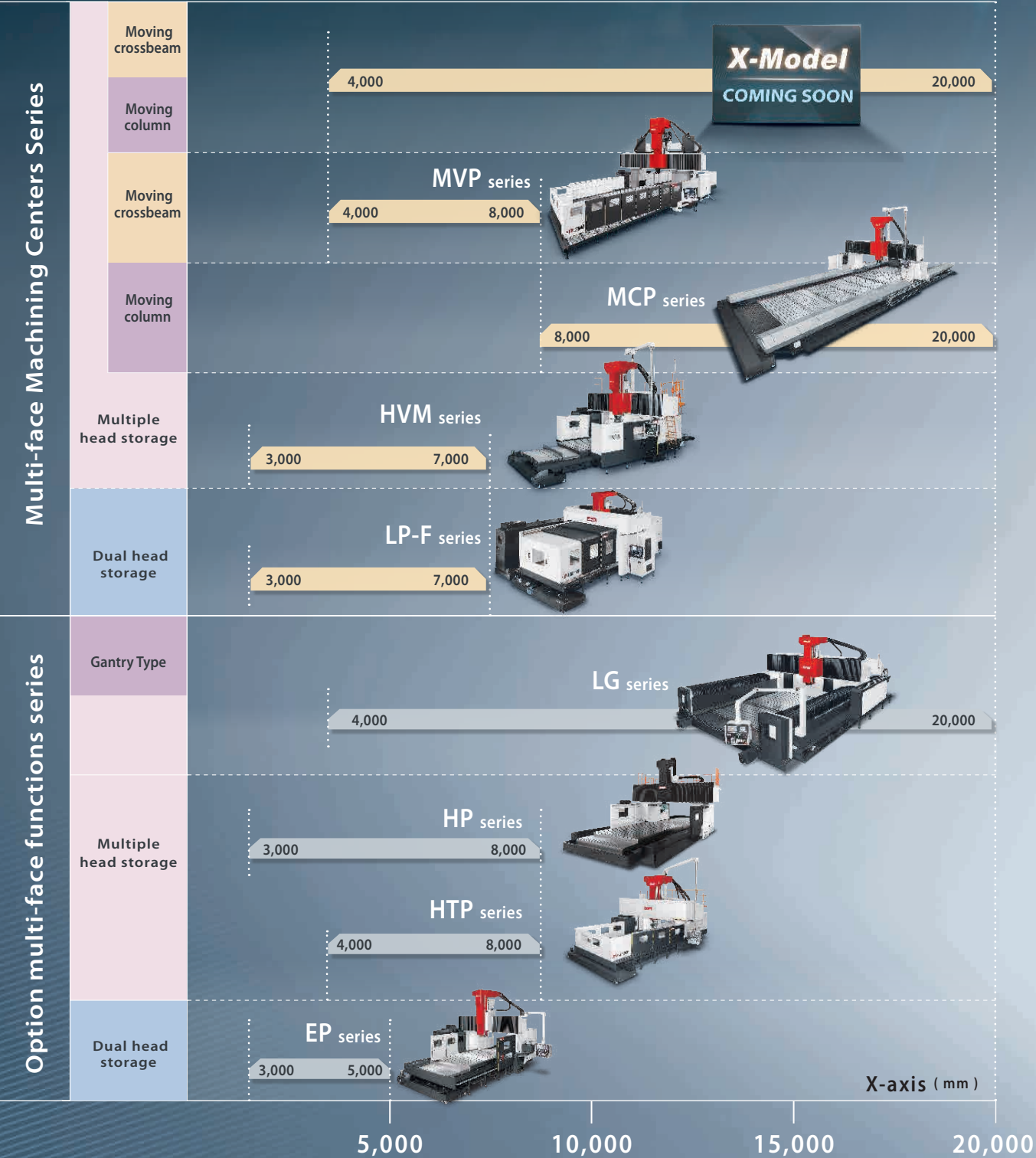


There are 3 sets of counters ready for individually start, stop and wipe out history, which is convenient for operator to regularly maintain machine or gather statistics for utilization and production.

Multi-face Processing

Self-developed vertical / horizontal ATC, automatic head exchange system and attachment heads to accomplish the ultimate performance of the AWEA multi-face machining centers.

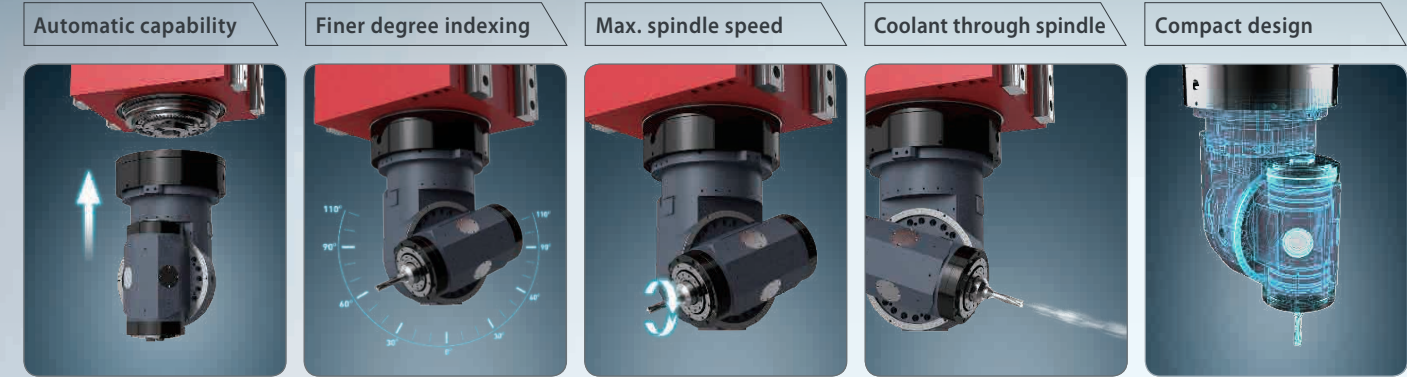
AWEA whole range of multi-face machining centers



NEW GENERATION AWEA Attachment Heads



100% self-designed, AWEA homemade, most complete attachment head series in the machining center industry



The whole series is equipped with automatic head clamping, tool clamping, and automatic indexing. (extension head w/o indexing)

Indexing available at 5°, 2.5° or 1° for the whole A-axis and C-axis on attachment heads. (except for extension head)

Max. spindle speed up to 4,500 rpm, extension head up to 6,000 rpm.

CTS function is available for the whole series.

Compact design, all circuits are integrated inside the attachment head.

The above specifications are optional or not available for parts of the attachment heads, please check the specifications table for details.

		Max. speed	A-axis indexing	C-axis indexing	Coolant through spindle	Coolant nozzle around spindle
Universal Head (Orthogonal type)	Auto.	3,000 / 4,500 rpm	5° / 2.5° / 1°	5° / 2.5° / 1°	√	○
	Semi-auto.	3,000 rpm		45° / 90°	—	○
	Manual				—	○
Universal Head (Oblique type)	Auto.	3,000 / 4,000*1 / 4,500 rpm	5° / 2.5° / 1°	5° / 2.5° / 1°	√	○
90° Head	Auto.	3,000 / 4,500 rpm	—	5° / 2.5° / 1°	√	Coolant at side of spindle
	Semi-auto.	3,000 rpm		45° / 90°	—	
	Manual				—	—
35° Head	Auto.	3,000 / 4,500 rpm	—	5° / 2.5° / 1°	√	Coolant at side of spindle
	Semi-auto.	3,000 rpm		45° / 90°	—	
	Manual				—	
Extension Head (Z-axis + 350)	Auto.	3,000 rpm	—		√	○
		6,000 rpm			√	○
	Manual	3,000 rpm			√	—

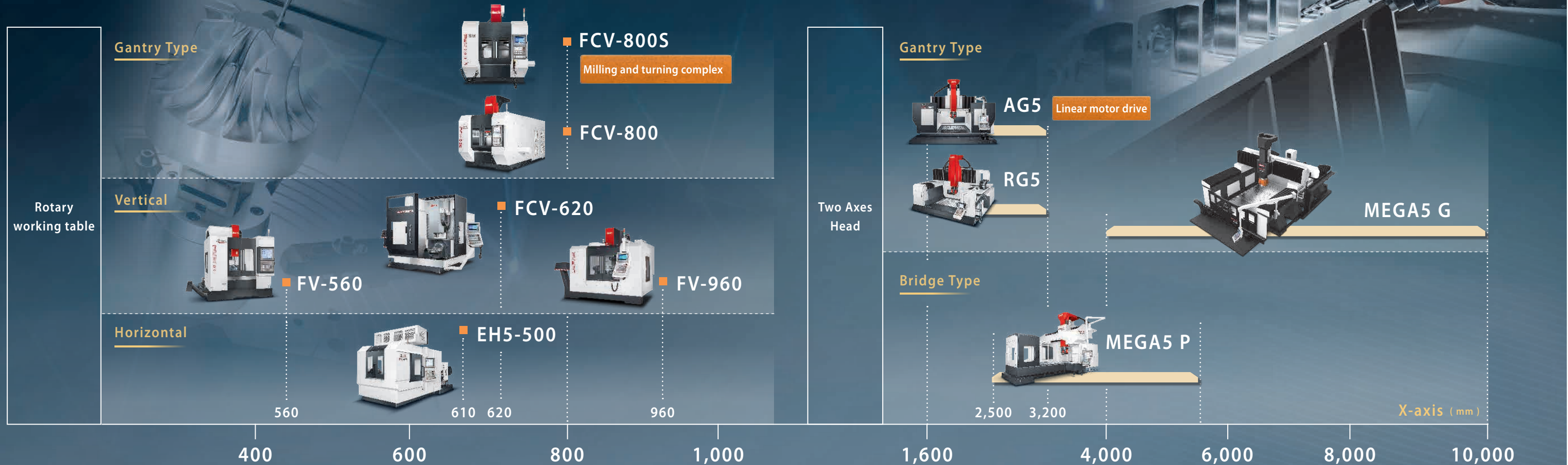
Nose + 100 mm
Z-axis + 200 mm
Nose+ 100, Z-axis + 200 mm

Z-axis + 600 mm
Z-axis + 850 mm

*1 : Horizontal application. √ : Optional ○ : Standard — : Not available

5-axis Processing

Complete full five-axis machine series for high speed, high precision performance, which can easily master complex processing tasks.



High performance two axes head



- ITALIAN made two axes head designed for high performance & high stability.
- A variety of two axes heads are available optionally - high speed / high torque / compact structure.
- The professional AWEA 5-axis service technical team have been trained by the original Italian manufacturer firm, could and can provide the best optimal technical support and efficient service.

TCH-30F



Spindle taper	HSK-A100
Max. spindle speed	12,000 rpm
Spindle motor	50 kW
B / C axes rotary angle	±110° ±240°
B / C axes max.speed	50 rpm
B / C axes position accuracy	± 3 arc.sec
B / C axes clamping torque	8,000 Nm

TCH-20F



Spindle taper	HSK-A63	HSK-A100
Max. spindle speed	24,000 rpm	15,000 rpm
Spindle motor	55 kW	65 kW
B / C axes rotary angle	±100°	±240°
B / C axes max. speed	50 rpm	
B / C axes position accuracy	± 3 arc.sec	
B / C axes clamping torque	4,000 Nm	

TCH-19F



Spindle taper	HSK-A63	HSK-A100
Max. spindle speed	24,000 rpm	15,000 rpm
Spindle motor	55 kW	65 kW
B / C axes rotary angle	±100°	±240°
B / C axes max. speed	50 rpm	
B / C axes position accuracy	± 3 arc.sec	
B / C axes clamping torque	4,000 Nm	

Leader For Large Equipment

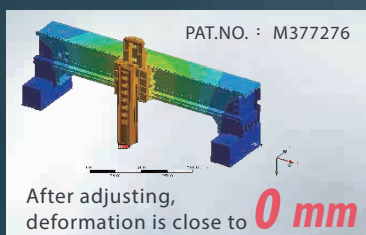
Since the first bridge type machine installation in 1986, AWEA has accumulated experience from thousands of installations for large machines, refining design, production, and data processing. We keep improving and this is the difference we make core technology.

Crossbeam Adjustable Mechanism



Our unique PLC control ensures the two servo motors operate in precise synchronization, avoiding tracking errors and providing optimal axial dynamic accuracy.

Crossbeam Adjustable Mechanism



AWEA Attachment Heads

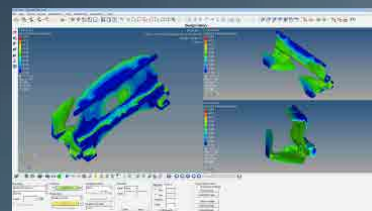


Designed and built by AWEA for seamless compatibility with our machines and enhanced, outstanding performance.



Core Technology

Topology Analysis



Through Topology Analysis, we design lightweight, but highly rigid structures that guarantee the best dynamic performance.

High Quality Key Components



Key components like ball screws, linear guideways, gears, etc. are made by top quality market leaders to ensure precise accuracy and long term durability of AWEA machines.

LG series

Gantry Type Machining Centers

Max. travel

- X-axis : 20,000 mm
- Y-axis : 7,000 mm
- Z-axis : 1,400 mm

MCP series

Moving Column Machining Centers

Max. travel

- X-axis : 20,000 mm
- Y-axis : 6,000 mm
- Z-axis : 1,400 mm

JB series

Floor Type Horizontal Boring Mills

Max. travel

- X-axis : 10,000 mm
- Y-axis : 3,600 mm
- Z-axis : 450 mm
- V-axis : 2,500 mm
- W-axis : 900 mm

Application Development Capability

AWEA provides comprehensive series of machines to fulfill the demand for processing a variety of material in an efficient and accurate matter.

Wet Processing



- Applicable material : Quartz, Ceramics ...
- Installed with specially designed dust collector for tiny and corrosive chips to protect operator against hazard and prolong life of machine.

Dry Processing



- Applicable material : Graphite, Carbon fiber...
- Installed with specially designed dust collector for tiny and scattering chips to protect operator against hazard and prolong life of machine.

Friction Stir Welding (FSW)



A rotating FSW tool is plunged between two clamped plates, the friction between the rotating stir tool and the work-piece material generates heat, causing a plasticized zone to form around the tool and thus a solid-phase joint.

Turn-Key Project



More than 10 years of experience in Turn-key projects; whether automatic loading / unloading systems, automatic and manual work-piece clamping systems, or precision measuring devices, we can tailor it to your specific requirements.

ALLCOOL SYSTEMS

High Pressure Coolant Systems

Machining Speed ⚡

Cutting speeds can be increased up to 20 % or more. Reduce machining cycle time up to 70 %.

Machining Precision ⚡

Improved cutting accuracy with excellent surface finishes.

Chip Removal ⚡

Excellent in deep-hole machining with best chip removal capability.

Tool Life ⚡

Extend tool life up to 25 % to 400 %. Breakthrough the vapor barrier for tool-tip heat removal.

R series i models

Max. Pressure : 100 / 70 Bar
Max. Flow Rate : 53 / 30 LPM

SC series

Max. Pressure : 140 / 70 Bar
Max. Flow Rate : 19 / 12 LPM

SK series

Max. Pressure : 70 Bar
Max. Flow Rate : 12 LPM

SU series

Max. Pressure : 70 Bar
Max. Flow Rate : 12 LPM

MB series

Max. Pressure : 35 / 20 Bar
Max. Flow Rate : 25 / 26 LPM

Production Advantage

All of the key production processes such as design, processing, assembly, and quality control are constantly improved and performed in house. This ensures the highest quality standards to achieve the ultimate machining performance and reliability.

R&D center



Assembly of core components

All core components are precisely assembled in a constant temperature controlled room, which possesses higher assembly quality and higher technology integration of machines than general competitors in the market.



Key components are imported from world famous companies

Precision machining

Core components are precisely machined by AWEA in temperature controlled facilities, using world class equipment to ensure the ultimate accuracy requirements are met.

- [A] Japan-made YASDA high precision horizontal machining center
- [B] Japan-made TOSHIBA bridge type multi-face machining center
- [C] Japan-made SUMITOMO high precision vertical grinding machine
- [D] Japan-made MITSUI SEIKI horizontal machining center



Machine assembly



Straightness check for linear guide ways



Parallelism measurement between ball screw and linear guideway



Measurement of linear axes perpendicularity on 5-axis machine

Precision hand scraping

High precision machine tools come from superb hand scraping skills. AWEA's well trained hand scraping team makes sure that all contact surfaces are precisely hand scrapped and carefully inspected to ensure the highest quality of our machines.



Standard Hand Scraping Platform

- Monthly maintain and annually inspected by 3D coordinate measuring machine.
- Platform flatness : 0.005 mm
- Hand-scraping density : 30 ~ 40 dots / in²



Hand-Scraping Standard

- Fixed surface hand-scraping density : 10 ~ 15 dots / in²
- Sliding surface hand-scraping density : 15 ~ 20 dots / in²

Quality control

Utilizing advanced inspection equipments to implement the accuracy check to ensure the final performance and quality of machine.



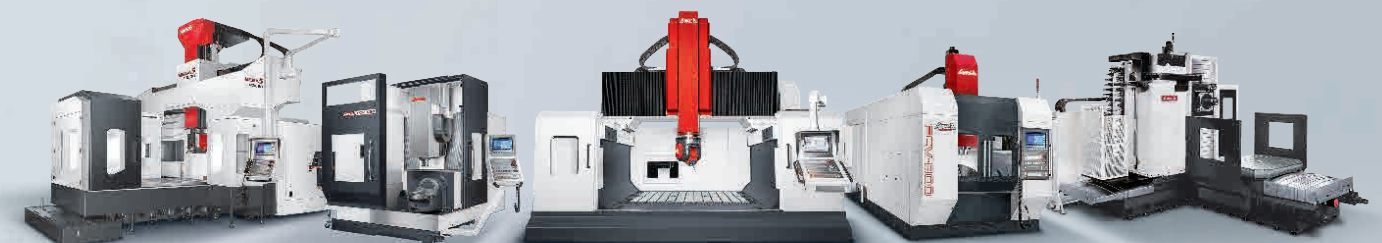
Simultaneously accuracy of 5 axes



Laser detection of accuracy



Ball bar detection for 3 axes



Corporate Social Responsibility



AWEA Dale Carnegie Training camp



Annual family day



AWEA Machine tool academy



Happy and harmonious day camp



Supplier thanking activity



Charity fundraising concert



Beach clean-up event



Tree planting



Machine tool improvement competition

X-Model
New Milestone
of Mutli-face Machining Centers
COMING SOON

Moving crossbeam · Moving column

Max. X-axis travel 20,000 mm

- AWEA new generation attachment heads
- Multiple head storage
- Horizontal / vertical ATC system

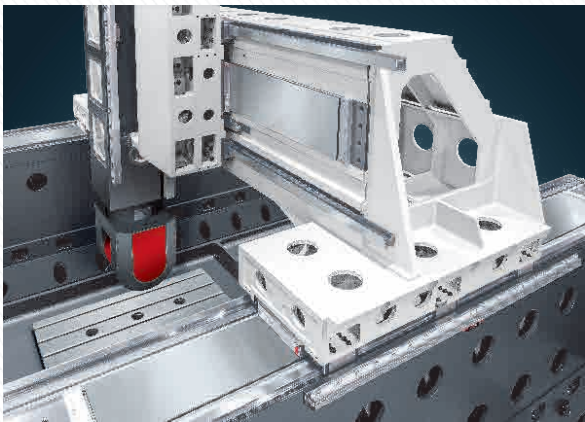
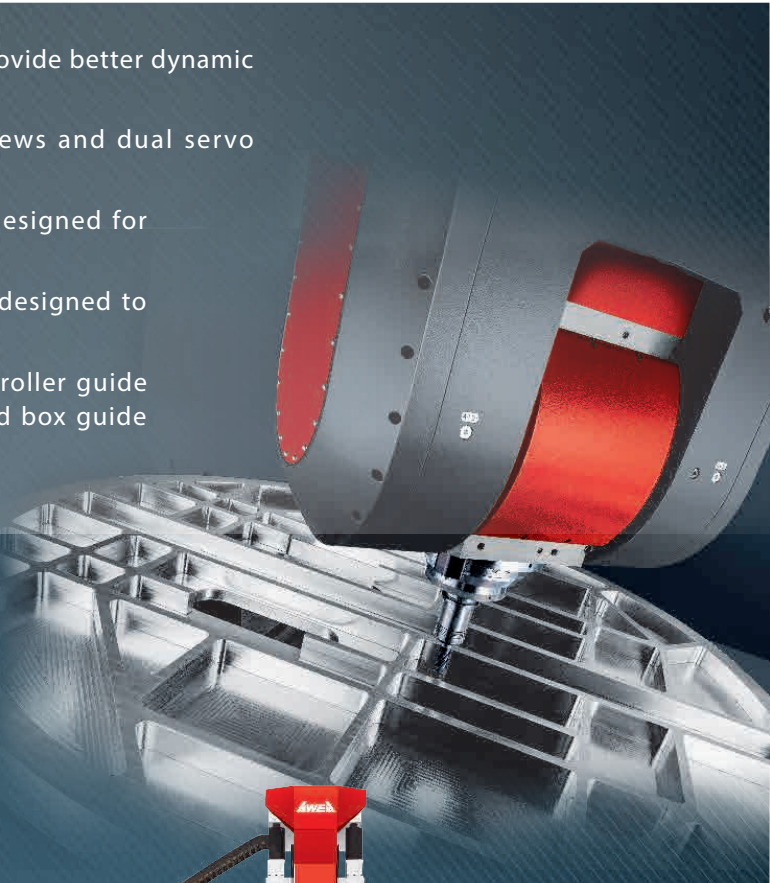
AG5 SERIES

- + X / Y axes equipped with high speed linear motor provide better dynamic response with high accuracy, zero backlash.
- + Z-axis is driven by new generation dual ball screws and dual servo motors, to ensure excellent dynamic response.
- + Italian-made high speed two axes milling head, designed for flexible and diverse cutting operations.
- + U shaped machine base with 4 linear guide ways, designed to evenly disperse the cutting forces.
- + The 3 linear axes are equipped with high loading roller guide ways, which combine the advantage of highly rigid box guide ways with the agility of linear guide ways.

AG5 series - ITALIAN Made Two Axes Head

Model	TCH-19F
Spindle Taper	HSK-A63
Spindle Speed	24,000 rpm
Spindel Motor *1	42 / 55 kW

*1 : S1 / S6 40%



X / Y axes driven by linear motor

- Without transmission components they offer high acceleration, high reliability, and cause less abrasion, thus enhancing system accuracy and lifetime.
- Motor is directly driven by air gap, non-touch, high efficiency, low noise.



		AG5-1620	AG5-3220
X-axis travel	mm	1,600	3,200
Y-axis travel	mm	2,000	
Z-axis travel	mm	1,000	
Table size (X x Y)	mm	1,600 x 2,000	3,200 x 2,000
Table load capacity	kg/m²	3,000	
X / Y axes rapid feed rate	m/min.	60	
Z-axis rapids feed rate	m/min.	50	

» B 、 C axes spec, please refer to P.13

Specifications are subject to change without notice.

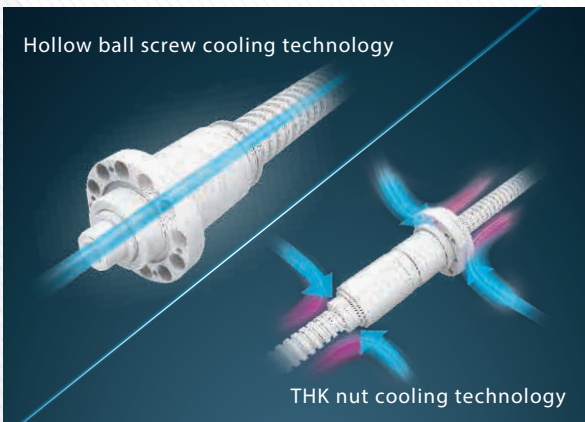
RG5 SERIES

- + The 3 linear axes are equipped with direct-drive servo motors and high resolution linear scales to ensure utmost accuracy.
- + Z-axis is driven by new generation dual ball screws and dual servo motors, to ensure excellent dynamic response.
- + Italian-made high speed two axes milling head, designed for flexible and diverse cutting operations.
- + Gantry type, machines use 40 % less floor space than bridge type machines.
- + The 3 linear axes are equipped with high loading roller guide ways, which combine the advantage of highly rigid box guide ways with the agility of linear guide ways.

RG5 series - ITALIAN Made Two Axes Head

Model	TCH-19F	TCH-20F	TCH-20F-A
Spindle Taper	HSK-A63	HSK-A63	HSK-A100
Spindle Speed	24,000 rpm	24,000 rpm	15,000 rpm
Spindel Motor *1	42 / 55 kW	42 / 55 kW	50 / 65 kW

*1 : S1 / S6 40%



X / Y axes with cooling technology (Opt.)

- THK latest nut cooling technology.
- AWEA hollow ball screw cooling technology.
- AWEA ball screw nut cooling technology.



		RG5-1625	RG5-3225
X-axis travel	mm	1,600	3,200
Y-axis travel	mm	2,500	
Z-axis travel	mm	1,000	
Table size (X x Y)	mm	1,600 x 2,500	3,200 x 2,500
Table load capacity	kg/m²	3,000	
X-axis rapid feed rate	m/min.	24	20
Y / Z axes rapid feed rate	m/min.	24	

Specifications are subject to change without notice.

Bridge Type 5 axes Machining Centers

MEGA5 SERIES

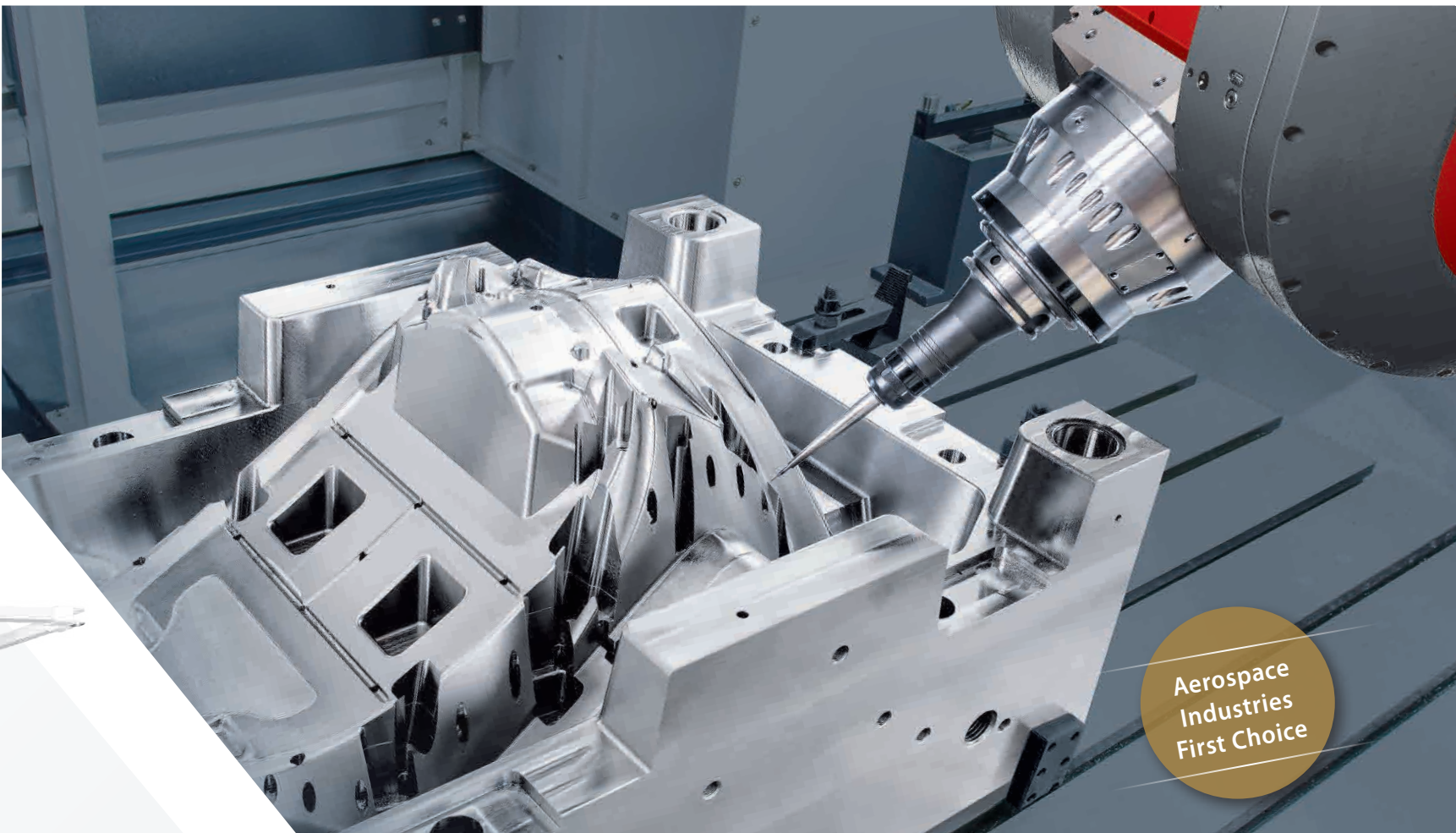
- + Available in a wide range of specifications to satisfy different machining demands.
- + ITALIAN made high speed / high torque output two axes milling head to meet your any difficult cutting need.
- + X, Y, and Z axes are equipped with closed-loop linear scales to ensure ultimate axial positioning accuracy.

MEGA5 P series

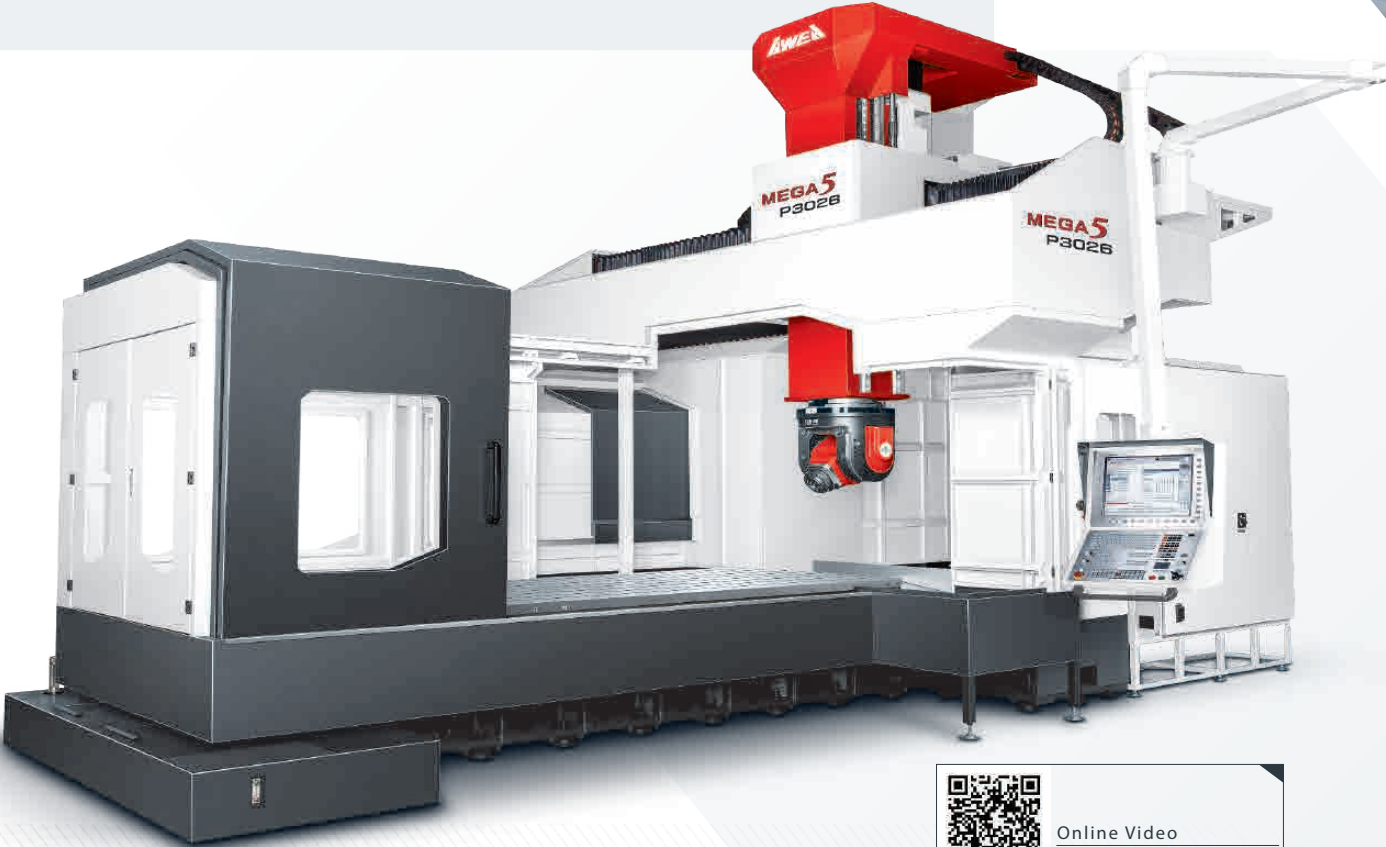
- Fixed column bridge type structure
- High rigidity base
- 40 T Chain type tool magazines
- Optional fully enclosed splash guard

MEGA5 G series

- Gantry type structure
- 4 precision linear guide ways on a high rigidity bed
- 20 T / 40 T drum type ATC
- Optional X-axis stainless steel telescopic cover



Aerospace Industries First Choice



Online Video
MEGA5 P cutting display



MEGA5 series - ITALIAN Made Two Axes Head

Model	TCH-20F	TCH-30F
Spindle Taper	HSK-A63	HSK-A100
Spindle Speed	24,000 rpm	12,000 rpm
Spindel Motor *1	55 kW	50 kW
Spindle Torque	87 Nm	314 Nm

*1 : S6 40 %

MEGA5 P series

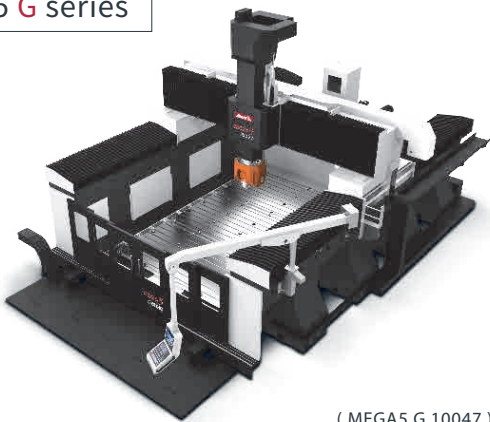


(MEGA5 P 2526)

MEGA5 P			
X-axis travel		mm	2,500 ~ 6,000
Y-axis travel		mm	2,620 / 3,200
Z-axis travel		mm	1,000 / 1,200
Table load capacity		kg	8,000 ~ 20,000
Max.work-piece	Length (X)	mm	2,310 ~ 6,000
	Width (Y)	mm	1,500 / 2,400
	Height (Z)	mm	850

Specifications are subject to change without notice.

MEGA5 G series



(MEGA5 G 10047)

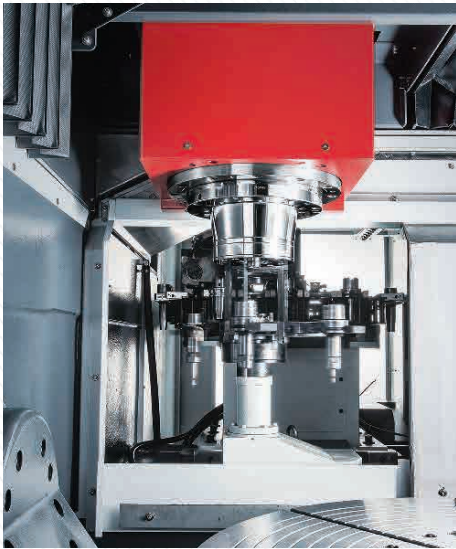
MEGA5 G			
X-axis travel		mm	4,000 ~ 10,000
Y-axis travel		mm	3,700 / 4,700
Z-axis travel		mm	1,200 / 1,400
Table load capacity		kg/m²	2,500
Max.work-piece	Length (X)	mm	4,000 ~ 10,000
	Width (Y)	mm	3,700 / 4,700
	Height (Z)	mm	1,050

Specifications are subject to change without notice.

Gantry Type 5 axes Machining Centers

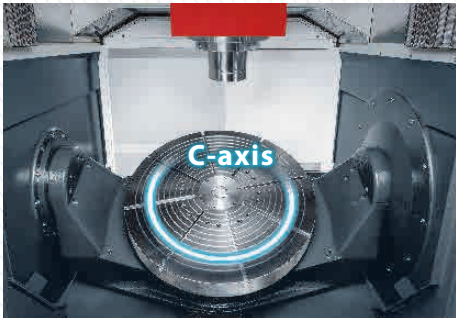
FCV-800 SERIES

- + Stable U shape machine base with Y-axis dual servo control technologies to ensure excellent dynamic accuracy.
- + 16,000 / 24,000 rpm high speed built-in spindles for ultimate surface finish and accuracy.
- + New generation of A / C axes brake systems substantially increase braking capacity.
- + X / Y / Z axes equipped with roller type linear guide ways; rapid feed rate up to 48 m/min. and cutting feed rate 24 m/min.
- + Side-exit or rear-exit chip conveyors available for best factory space utilization.



Highly reliable ATC system

- Standard ATC with a 40T chain type tool magazine (80T optional)
- Tool magazine with high-speed linear guide way
- Automatic tool magazine door to avoid contamination of the tools and the ATC by cutting fluid and chips.



New generation A / C axes trunnion table

- A-axis is designed with high torque motor and reducer; maximum torque output 12,600 Nm, 250 % stronger than the previous generation.
- C-axis driven by high speed, high torque, and zero backlash torque motor.
- C-axis bearing outside diameter increased by 40 % and axial dynamic stiffness increased by 70 %.



FCV-800		
X / Y / Z axes travel	mm	800 / 900 / 660
A-axis swiveling range		-120° ~ +30°
C-axis rotary range		360°
Table size	mm	Ø 850
Table load capacity	kg	(0°) : 1,000 / (90°) : 700
Spindle speed	rpm	16,000 / 24,000
Spindle motor	kW	25 / 29 (cont. / 30 min.)
Spindle taper		BBT40
X / Y / Z rapid feed rate	m/min.	48
ATC	T	40 (80 Opt.)

Specifications are subject to change without notice.

FCV-800S SERIES

Multi-tasking 5 axes Machining Centers



- + FCV-800S combines high-speed turning with 5-axis compound milling.
- + Trunnion table (C-axis) maximum speed 800 rpm
- + HSK-T63 18,000 rpm high speed built-in spindle
- + New generation A / C axes trunnion table



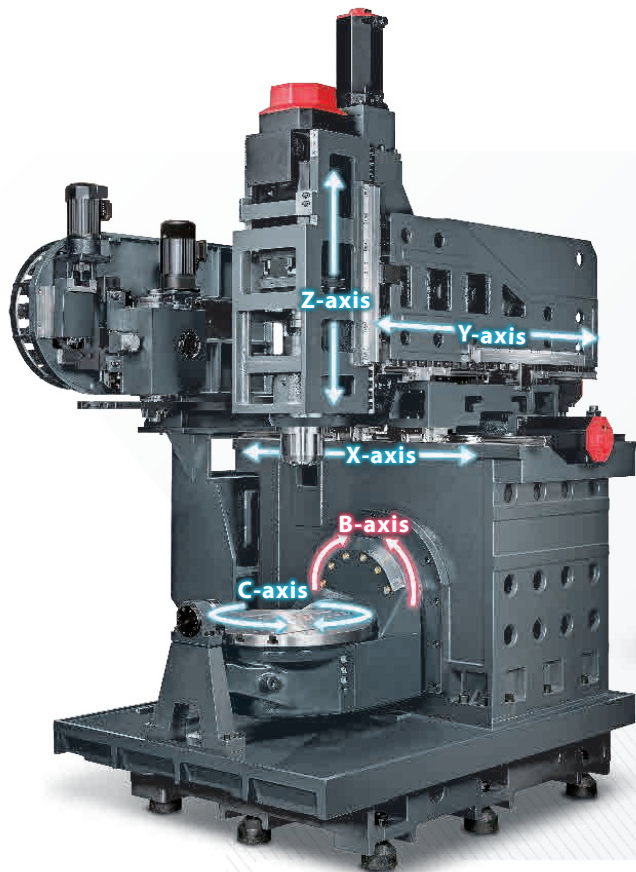
FCV-800S		
X / Y / Z axes travel	mm	800 / 900 / 660
A-axis swiveling range		-120° ~ +30°
C-axis rotary range		360°
Table size	mm	Ø 850
Table load capacity	Milling	kg (0°) : 1,000 / (90°) : 700
	Turning	kg (0°) : 800 / (90°) : 600
Spindle speed	rpm	18,000
Spindle motor	kW	11 / 12 (cont. / 30 min.)
X / Y / Z rapid feed rate	m/min.	48
ATC	T	40 (80 Opt.)

Specifications are subject to change without notice.

High Speed 5 axes Machining Centers

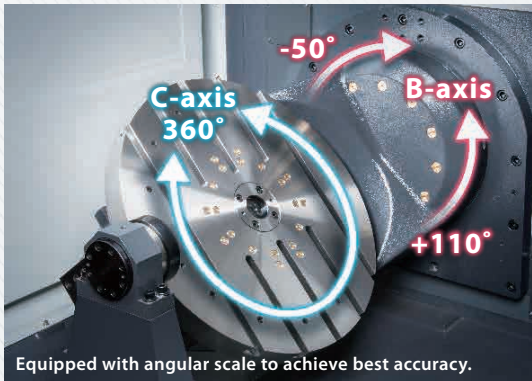
FCV-620 SERIES

- + The column and the Y-axis saddle are cast as especially thick rib re-enforced structures, to easily match the rigidity requirements for high speed cutting.
- + The trunnion table base is a one-piece casting made of ductile cast iron, and the double points support design provides optimal structural rigidity.
- + The 12,000 / 15,000 rpm direct drive spindle or 16,000 / 20,000 rpm built-in spindle and other options.
- + B / C axes are servo motors driven and full circular brake system, providing fast dynamic response and excellent braking capacity.
- + 3 linear axes are equipped with direct drive servo motors heavy duty roller type linear guide ways, rapid feed rate up to 36 m/min.
- + 32T / 40T / 60T chain type tool magazines, efficient tool exchange without waiting for next tool.



B / C axes trunnion table

- One-piece Meehanite cast iron, single drive, bilateral support
- High rigidity, high accuracy, balanced torque
- Equipped with HEIDENHAIN angular scale.
- Circular hydraulic brake system with excellent stopping capacity.



Equipped with angular scale to achieve best accuracy.



		FCV-620
X / Y / Z axes travel	mm	635 / 535 / 460
B-axis swiveling range		-50° ~ +110°
C-axis rotary range		360°
Table size	mm	Ø 650
Table load capacity	kg	(0° ~ 45°) : 300 (60° ~ 90°) : 200
Spindle speed	rpm	Direct drive 12,000 / 15,000 Built-in 16,000 / 20,000
Spindle motor	kW	11 / 15 (cont. / 30 min.)
Spindle taper		BBT40 / HSK-A63
X / Y / Z rapid feed rate	m/min.	36
ATC	T	32 (40 / 60 Opt.)

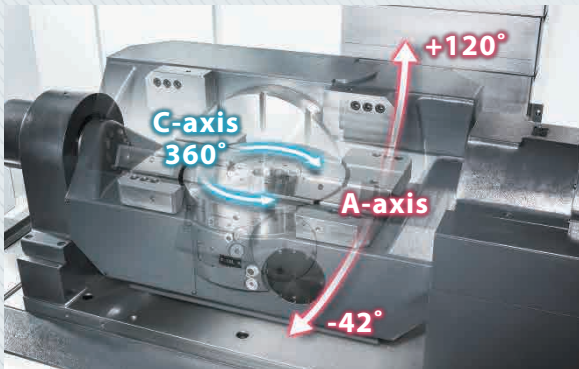
Specifications are subject to change without notice.

FV SERIES

Vertical 5 axes Machining Centers



- + Solid Δ (Delta) shape structure.
- + High speed direct-drive spindle ensures precision curve processing capability.
- + High performance A / C trunnion table with a minimum positioning index of 0.001°.
- + The FV series arm type ATC is available with 24T / 30T / 32T / 60T tool magazines.
- + Tiny floor space, the FV-560 requires only about 5.8 m²



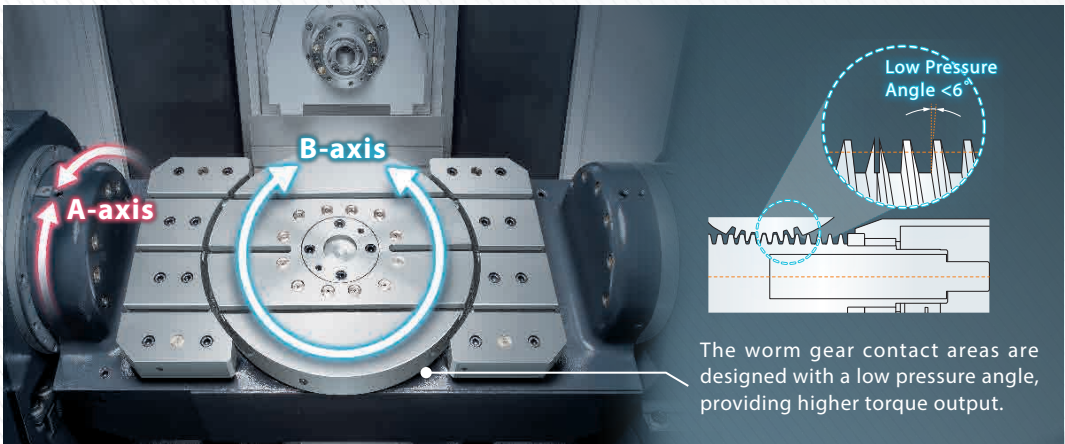
		FV560	FV-960
X / Y / Z axes travel	mm	560 / 510 / 460	960 / 600 / 480
A-axis swiveling range		-100° ~ +100°	-42° ~ +120°
C-axis rotary range		360°	
Table size	mm	Ø210	560 x 365 (Ø350)
Spindle speed	rpm	12,000 / 15,000	
Spindle taper		BBT40	
X / Y / Z rapid feed rate	m/min.	32 / 32 / 24	36 / 36 / 24

Specifications are subject to change without notice.

Horizontal 5 axes Machining Centers

EH5 SERIES

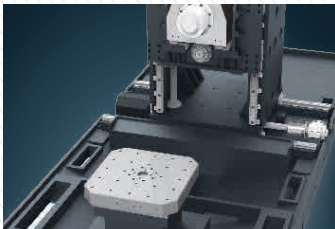
- + Compact structural design with very small foot print greatly increases factory space usage flexibility.
- + The unique headstock and saddle design minimizes sagging, even when the Z-axis is fully extended.
- + 12,000 / 15,000 rpm high speed direct drive spindle efficiently separates the heat generated by the motor from the spindle, which reduces deformation and thereby increases machining accuracy.
- + Three axes are equipped with roller type linear ways, rapid feed rate up to 60 m/min.
- + Highly efficient chip removal system. Chips are quickly cleared from the processing area, reliably ensuring continuous processing.
- + Arm type ATC with 24T tool magazine. 32T / 50T tool magazines are optional.



A / B axes trunnion table

- The embedded B-axis makes machining more flexible.
- High accuracy and high torque worm gear design.
- Circular hydraulic brake system for heavy cutting.
- Equipped with closed-loop linear scales.

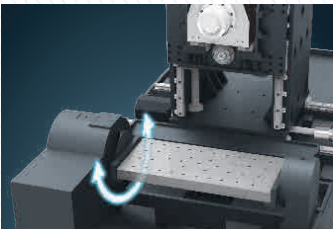
A variety of working table configurations



Fixed table

Table size (X x Y) **500 x 500 mm**

Table load capacity **600 kg**



A-axis table

Table size (X x Y) **620 x 360 mm**

Table load capacity **300 kg**



B-axis table

Table size (X x Y) **500 x 500 mm**

Table load capacity **600 kg**



Auto. pallet change system

Table size (X x Y) **500 x 500 mm**

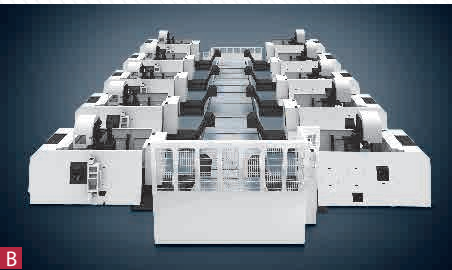
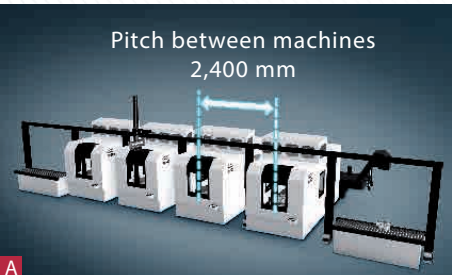
Table load capacity **600 kg**



Online Video
EH5 cutting display

		EH5-500
X / Y / Z axes travel	mm	610 / 610 / 610
A-axis swiveling range		-120° ~ +42°
B-axis rotary range		±360°
Max. work-piece diameter / height	mm	Ø 600 / 650
Table size	mm	620 x 360 mm (Ø 400)
Table load capacity	kg	(0° ~ 45°) : 200 (45° ~ 90°) : 100
Spindle speed	rpm	Direct drive 12,000 / 15,000 (Opt.)
Spindle motor	kW	7.5 / 11 (cont. / 30 min.)
Spindle taper		BBT40
X / Y / Z rapid feed rate	m/min.	60
ATC	T	24

Specifications are subject to change without notice.



Small foot print makes production line planning more convenient.

- [A] The shortest distance between the centers of two machines is only about 2,400 mm, allowing to utilize a more compact loading and unloading system.
- [B] Rear-exit chip conveyors allow two production lines to share a central chip conveyor, for more convenient chip removal.

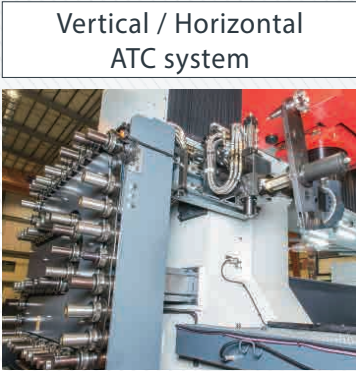
Moving Column Bridge Type Multi-face Machining Centers

MCP SERIES

- + Moving Column type structure design provides optimal dynamic accuracy and uses 40% less space than bridge models.
- + Three linear guide ways on the Y-axis and four linear guide ways on the Z-axis provide reliable heavy cutting capability.
- + The optimized design of the two-step continuous variable speed gear-drive spindle combined with a short transmission shaft allows the MCP series to provide extra torque output.
- + The fixed work table provides heavy load capability without wear and tear.
- + The fully enclosed operator cabinet moves along with the X-axis, protecting the operator against hazards while providing ease of use.
- + Two chip augers on each sides of the work table together with the chip conveyor provide efficient chip removal.



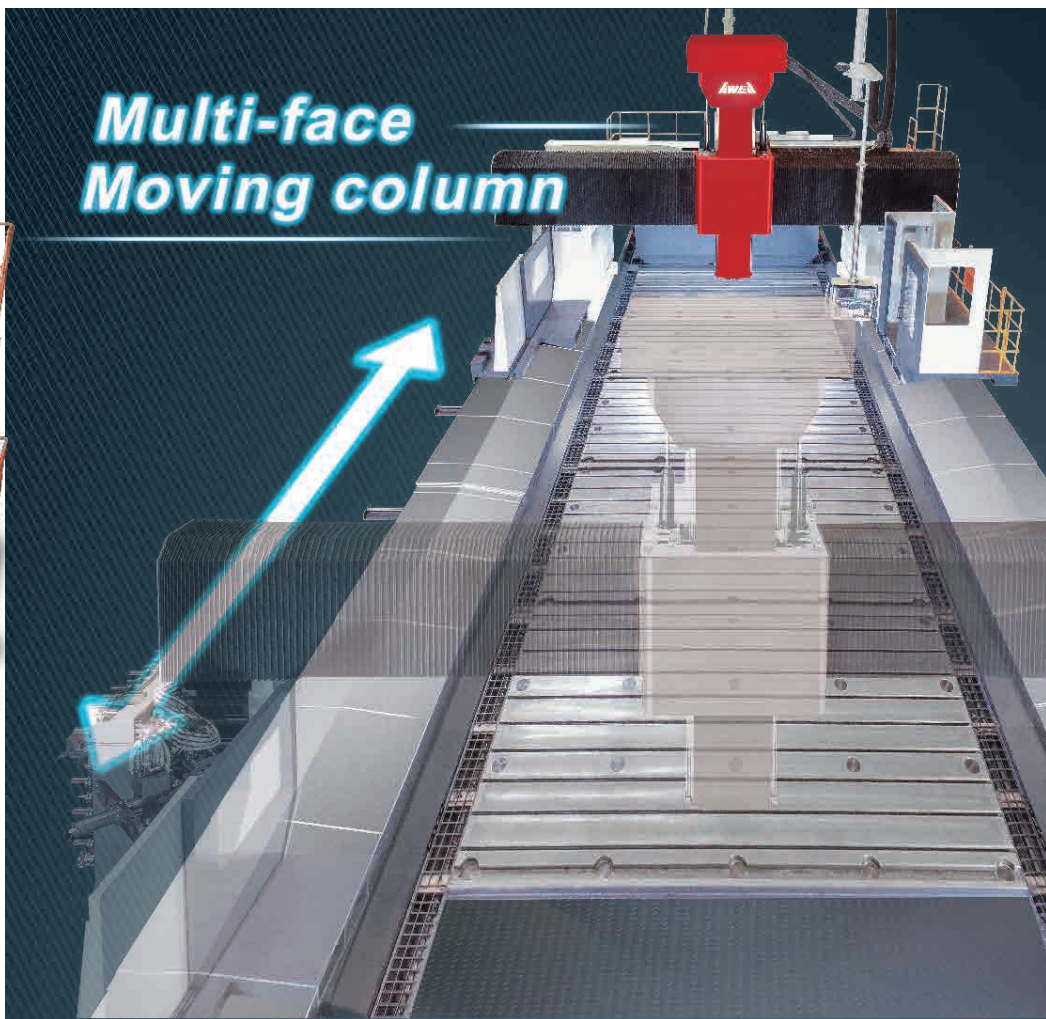
Multi-head storage compartment placed behind the work table, allows access to different milling heads for diverse processing needs.



The vertical / horizontal ATC greatly improves the tool change efficiency. T-T : 5.5 sec. (V) / 8 sec. (H)



Big opening machining area with low side support makes the loading and unloading of large workpieces more convenient and safe.



High Precision
High Rigidity

- High performance X-axis feed rate system
- High rigidity rack and pinion design
 - 4 roller type linear guide way structure
 - Dual gears driven mechanism – mechanically preloaded to eliminate backlash
 - Equipped with high resolution 1 μ m linear scales

		MCP series
X -axis travel	mm	8,000 ~ 20,000
Y -axis travel	mm	4,400 / 5,400
Z -axis travel	mm	1,200 (1,400 Opt.)
Dist. between columns (X-axis cover)	mm	3,700 (3,500) / 4,700 (4,500)
Table size (X x Y)	mm	8,000 ~ 20,000 x 2,800 / 3,800
Table load capacity	kg/m ²	2,500
Spindle speed	rpm	4,000 (5,000 / 6,000 Opt.)
Spindle motor	kW	22 / 26 (cont. / 30 min.)
ATC	T	40 (60 Opt.)

Specifications are subject to change without notice.

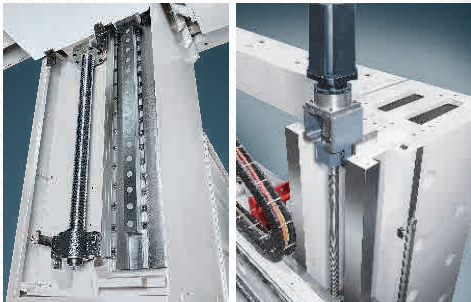
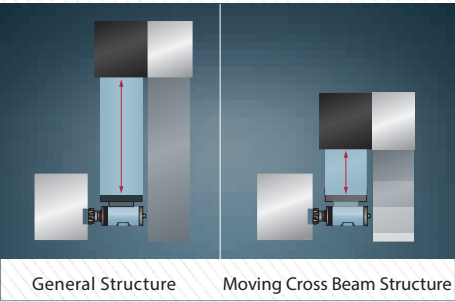
Moving Cross Beam Bridge Type Multi-face Machining Centers



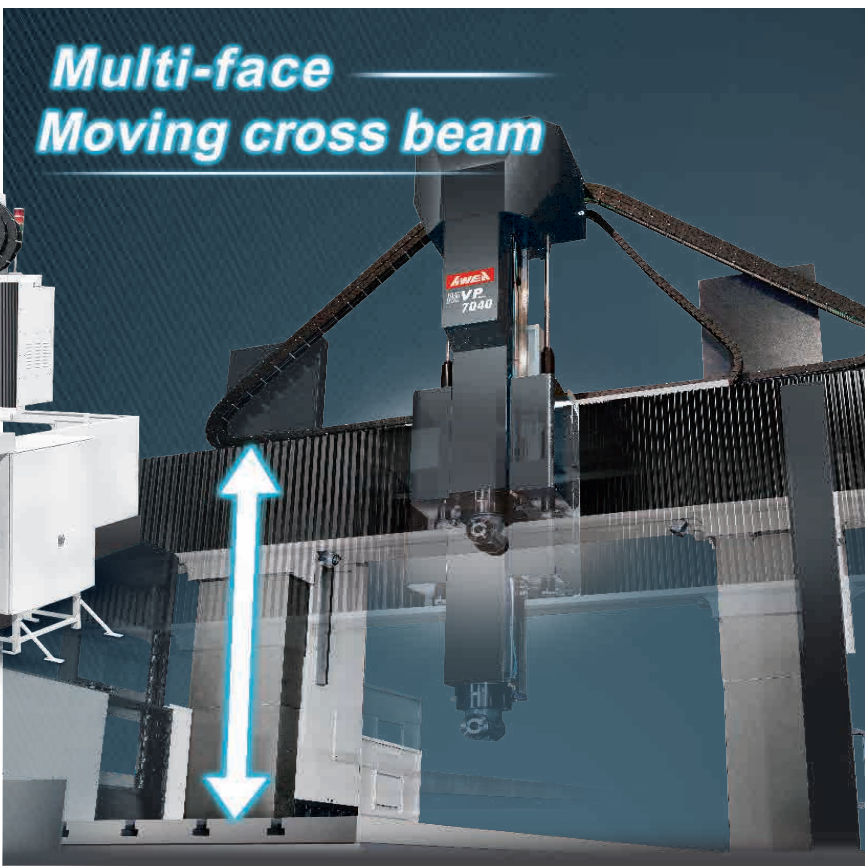
MVP SERIES

- + The moving cross beam design effectively shortens the overhang of the Z-axis, ensuring excellent cutting rigidity.
- + 4,000 rpm two-step gearbox spindle driven by powerful 26 kW motor, delivering maximum torque of 977 Nm.
- + The cross-section of the column is 30 % larger than the fixed bridge type columns, providing superior structural rigidity for the moving cross beam.
- + 4 high rigidity compound guide ways provide full travel support for the table, effectively enhancing table load capacity and dynamic accuracy.
- + Standardly equipped with automatic two compartments head storage and horizontal / vertical ATC system. Available for options with multiple heads to fulfill various machining demands.
- + The Multi-Face Coordinate Conversion System for automatic coordinate transformation, which saves considerable time in programming.

High efficiency W-axis



- The MVP series reduces the overhang of the ram by moving the cross beam through the W-axis, shortening the distance between the tool and the milling head, and improving the cutting rigidity.
- W-axis adopts twin hydraulic cylinders for counterweight balancing. Rails available for option high efficiency linear guide ways or high rigidity box ways per customer demand.
- The "Synchronized - controlled technology" effectively reduces following error from both sides of W-axis movement which ensures the optimal dynamic accuracy.



		MVP-4032	MVP-5032	MVP-6032	MVP-7032	MVP-4040	MVP-5040	MVP-6040	MVP-7040
X-axis travel	mm	4,000	5,000	6,000	7,000	4,000	5,000	6,000	7,000
Y-axis travel	mm	3,200				4,000			
Z-axis travel	mm	1,000 (1,200 / 1,400 Opt.)							
W-axis travel	mm	1,250							
Table size (X x Y)	mm	4,020 x 2,400	5,020 x 2,400	6,020 x 2,400	7,020 x 2,400	4,020 x 3,010	5,020 x 3,010	6,020 x 3,010	7,020 x 3,010
Table load capacity	kg	15,000	18,000	20,000		15,000	18,000	20,000	
Spindle speed	rpm	4,000 (Vertical) / 3,000 (Horizontal)							
Spindle motor	kW	22 / 26 (cont. / 30 min.)							
ATC	T	60 (90 / 120 Opt.)							

Specifications are subject to change without notice.

HVM SERIES Bridge Type Multi-face Machining Centers

- + 4,000 rpm 2-step gear spindle, output of torque is up to 827 Nm.
- + 4 high rigidity linear guide ways with full travel support of the table effectively avoid table deflection and guarantee optimal dynamic accuracy.
- + Automatic head storage compartment could store up to 6 heads. (Opt.)
- + High reliability 60T vertical / horizontal ATC system. (90T / 120T Opt.)
- + The overhead swivel pendulum type control panel allows the operator to adjust the control panel to their ergonomic needs, and the freedom to move their position to best observe the current machining process.



		HVM series
X-axis travel	mm	3,060 ~ 7,000
Y-axis travel	mm	2,500 ~ 4,500
Z-axis travel	mm	1,000 (1,200 / 1,400 Opt.)
Table size (X x Y)	mm	3,260 ~ 6,020 x 1,500 ~ 2,400
Table load capacity	kg	10,000 ~ 20,000
Spindle speed	rpm	4,000 (Vertical) / 3,000 (Horizontal)
Spindle motor	kW	22 / 26 (cont. / 30 min.)
ATC	T	60 (90 / 120 Opt.)

Specifications are subject to change without notice.

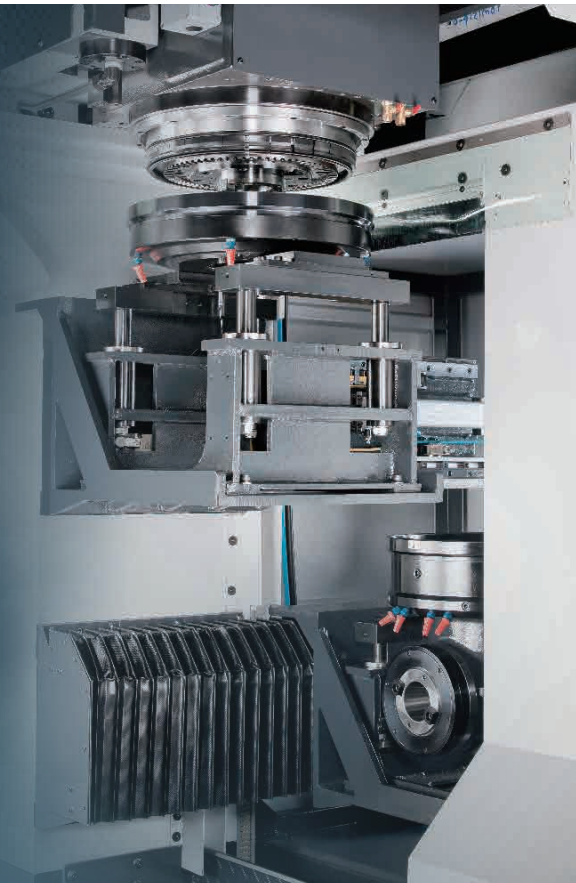
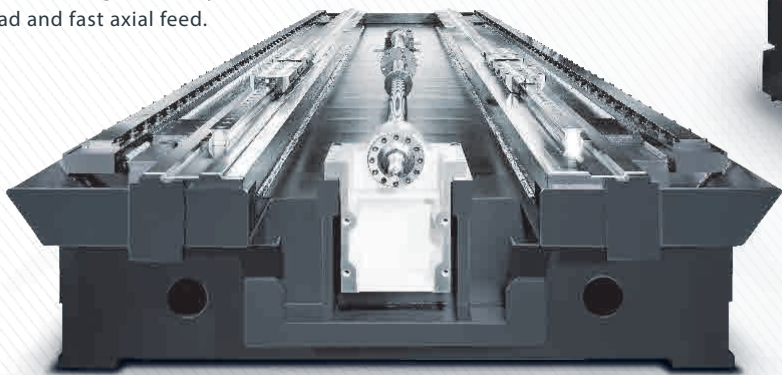
Bridge Type Multi-face Machining Centers

LP-F SERIES

- + Most affordable multi-face machining solution.
- + The modular spindle design offers high flexibility to execute diverse machining operations.
- + The Multi-face Coordinate Conversion System can automatically convert the coordinates between the faces of the work piece, thus massively saving programming time.

Compound 4 guide ways base

- 4 high rigidity linear guide ways with full travel support of the table effectively avoid table deflection and guarantee optimal dynamic accuracy.
- X-axis with symmetrical center drive design; the ball screw is at the center of the moving axis and provides of high accuracy, even under heavy load and fast axial feed.



Dual head storage compartment



Dual head storage compartment is operated independently, linear guide way tracks allow for fast milling heads changing.

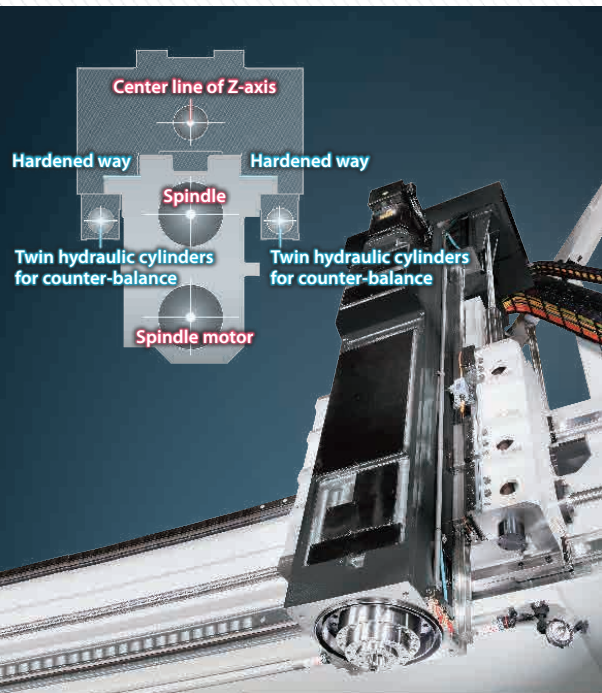
Vertical / Horizontal ATC system



32T / 60T / 90T / 120T vertical / horizontal ATC system with excellent reliability and tool changing efficiency.

Centro-symmetric Spindle Head Design

- The unique spindle head design, with the main spindle, spindle motor, and ball screw all aligned along the center of the spindle head and the hydraulic counter weight cylinders placed symmetrically, prevents thermal distortion and minimizes deflection, thereby providing high accuracy and heavy cutting capability.



		LP-3021YF	LP-4021YF	LP-5021YF	LP-6021YF	LP-3025YF	LP-4025YF	LP-5025YF	LP-6025YF	LP-4033YF	LP-5033YF	LP-6033YF	LP-7033YF
X-axis travel	mm	3,000	4,000	5,000	6,000	3,000	4,000	5,000	6,000	4,000	5,000	6,000	7,000
Y-axis travel	mm	2,800				3,200				4,000			
Z-axis travel	mm	760 (1,000 / 1,200 / 1,400 Opt.)				760 (1,000 / 1,200 / 1,400 Opt.)							
Table size (X x Y)	mm	3,020 x 2,010	4,020 x 2,400	5,020 x 2,010	6,020 x 2,010	3,020 x 2,400	4,020 x 2,400	5,020 x 2,400	6,020 x 2,400	4,020 x 2,400	5,020 x 2,400	6,020 x 2,400	7,020 x 3,000
Table load capacity	kg	10,000	12,000	15,000	18,000	12,000	15,000	18,000	20,000	15,000	18,000	20,000	20,000
Spindle speed	rpm	6,000 (8,000 / 10,000 Opt.) Vertical / 3,000 Horizontal											
Spindle motor		22 / 26 (cont. / 30 min.)											
ATC	T	32 (40 / 60 / 90 / 120 Opt.)											

Specifications are subject to change without notice.

Heavy Load Horizontal Boring Mills

BL SERIES

- + X、Y、Z、W、B five axes control with four axes simultaneous processing.
- + Moving column structure with independent X-axis and Z-axis base, providing excellent structural rigidity and axial accuracy.
- + Modular quill or ram type spindle system to meet the processing needs of high precision parts or high chip removal rates.
- + B-axis work table is controllable by CNC and indexed at any angle, one set up the work-piece could be completed on a multi-face processing.
- + The X / Y / Z axes are equipped with high resolution optical scales to provide extreme machining accuracy.
- + 40T / 60T arm type tool magazine. The maximum tool weight is 25 kg, and the tool magazine maximum load capacity is 600 kg.
- + Fully enclosed operator room, to ensure the safety of the operator during heavy cutting or when using high-pressure coolant.

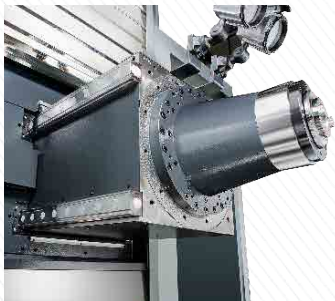


Quill Type Spindle (BL-S)



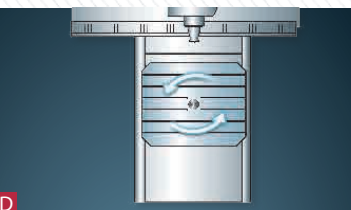
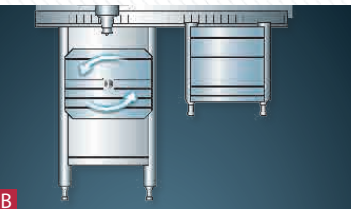
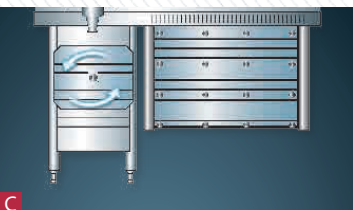
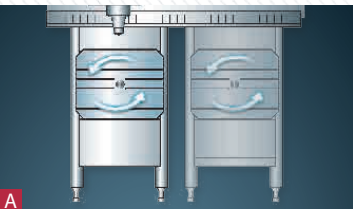
- High precision quill type spindle $\varnothing$ 120 mm.
- The maximum stroke of the W-axis is 600 mm.
- Two step gear box spindle.

Ram Type Spindle (BL-FM)



- The cross section of ram is 480 x 470 mm.
- The maximum travel of W-axis is 600 mm.
- Built-in spindle motor design.

A variety of work table configuration



- [A] Rotray table 1,600 x 1,800 mm
- [B] Rotray table 1,600 x 1,800 mm
Fixed table 1,600 x 1,200 mm
- [C] Rotray table 1,600 x 1,800 mm
Fixed table 2,800 x 2,000 mm
- [D] Rotray table 2,500 x 2,300 mm



BL series		
X-axis travel	mm	2,000 / 3,000 / 4,000
Y-axis travel	mm	1,800 / 2,400
Z-axis travel	mm	1,300 (1,700 Opt.)
W-axis travel	mm	600
Table size	mm	1,600 x 1,800
Boring spindle size	mm	Quill Type $\varnothing$ 120 / Ram Type 480 x 470
Table load capacity	kg	15,000
Spindle speed	rpm	2-step gear box 2,400 Built-in 6,000 (8,000 Opt.)
Spindle motor	kW	22 / 26 (cont. / 30 min.)

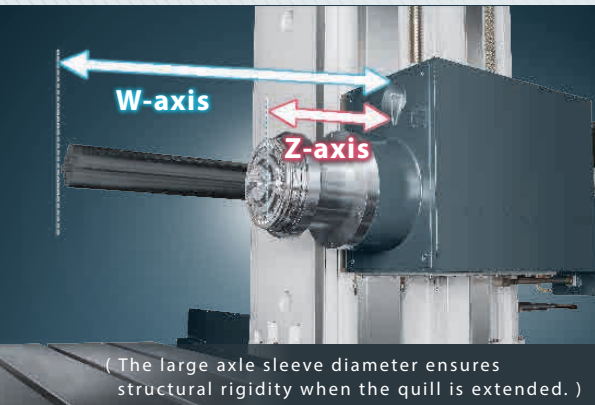
Specifications are subject to change without notice.

JB SERIES
Floor Type Horizontal Boring Mills



Super Size
Floor Type

- + X、Y、Z、W、B five axes control with four axes simultaneous processing.
- + 3-step gear-drive spindle with a maximum torque output of 3,039 Nm.
- + The quill type spindle diameter $\varnothing$ 150 mm / $\varnothing$ 130 mm.
- + 4 high rigidity linear guide ways to optimize support of the table without overhang.
- + Dual compartment head storage, 40T / 60T arm type tool magazine.



(The large axle sleeve diameter ensures structural rigidity when the quill is extended.)

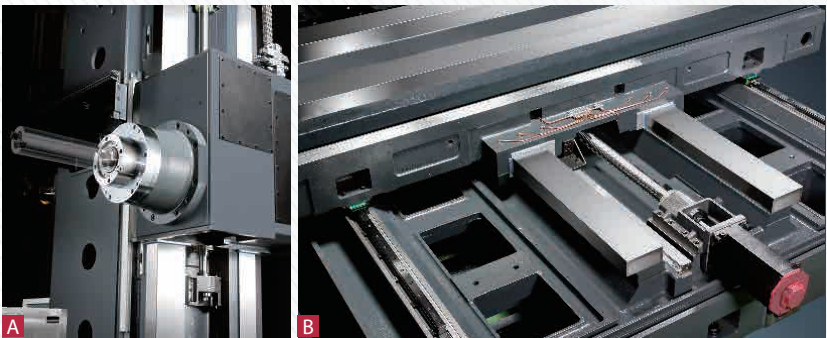
JB series		
X-axis travel	mm	3,000 ~ 10,000
Y-axis travel	mm	1,800 ~ 3,600
Z-axis travel	mm	450
V-axis travel	mm	1,300 ~ 2,500
W-axis travel	mm	900

Specifications are subject to change without notice.

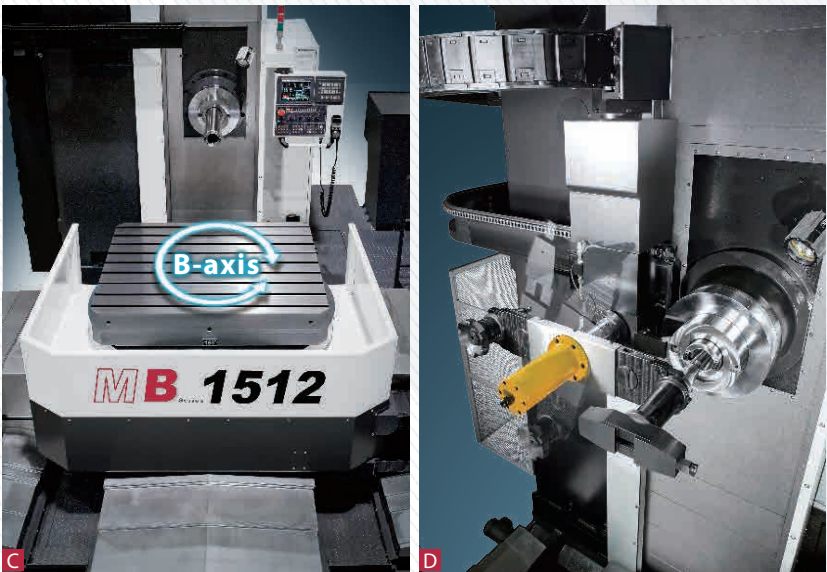
High Accuracy Horizontal Boring Mills

MB SERIES

- + X、Y、Z、W、B five axes control with four axes simultaneous processing.
- + 3 speed gear type spindle with 1,800 Nm torque output at 137 rpm.
- + Fixed column structure; the column and the base contact surfaces are all precision hand scraped, providing a very solid support for the headstock.
- + The X / Y axes are equipped with super rigid box ways that are pre-heated and precision ground, for optimal heavy-duty cutting support.
- + The X / Y / Z / B axes are equipped with high resolution optical scales to ensure ultimate machining accuracy.
- + BBT50 dual surfaces contact spindle taper provide more powerful tool holding force.



- A** Ø 110 mm high precision quill; W-axis maximum travel: 500 mm.
- B** The Z-axis is designed with four compound guideways to avoid worktable overhang effectively, ensuring optimal support.



- C** B-axis worktable is controllable by CNC and indexing resolution at 1° or 0.001°, one set up the work-piece could be completed on a multi-face processing.
- 1° indexing : Positioning by way of three-piece gear coupling mechanism, suitable for heavy cutting.
- 0.001° indexing : Positioning by way of worm gear mechanism, also suitable for continuous cutting.
- D** 40T / 60T arm type tool magazine. The maximum tool weight is 25 kg, and the tool magazine maximum load capacity is 600 kg.



MB-1512 Roof enclosure splash guard (Opt.)



MB-1512 Automatic Pallet Changer (Opt.)



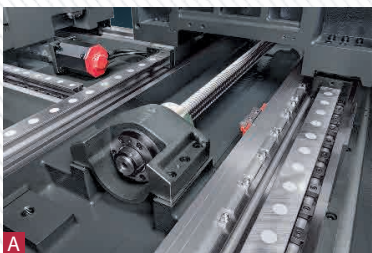
		MB-1512	MB-2012
X-axis travel	mm	1,500	2,000
Y-axis travel	mm	1,200	
Z-axis travel	mm	900	
W-axis travel	mm	500	
Table size	mm	1,250 x 1,150	
Boring spindle size	mm	Ø 110	
Table load capacity	kg	4,000	
Spindle speed	rpm	3,200	
Spindle motor	kW	22 / 26 (cont. / 30 min.)	

Specifications are subject to change without notice.

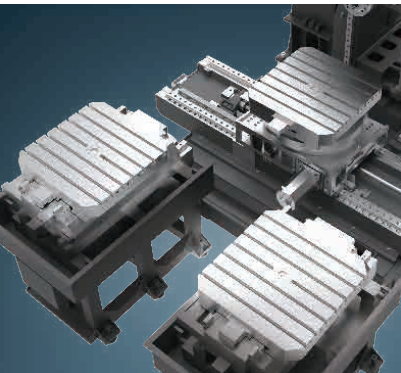
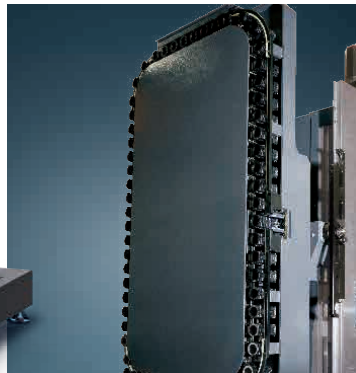
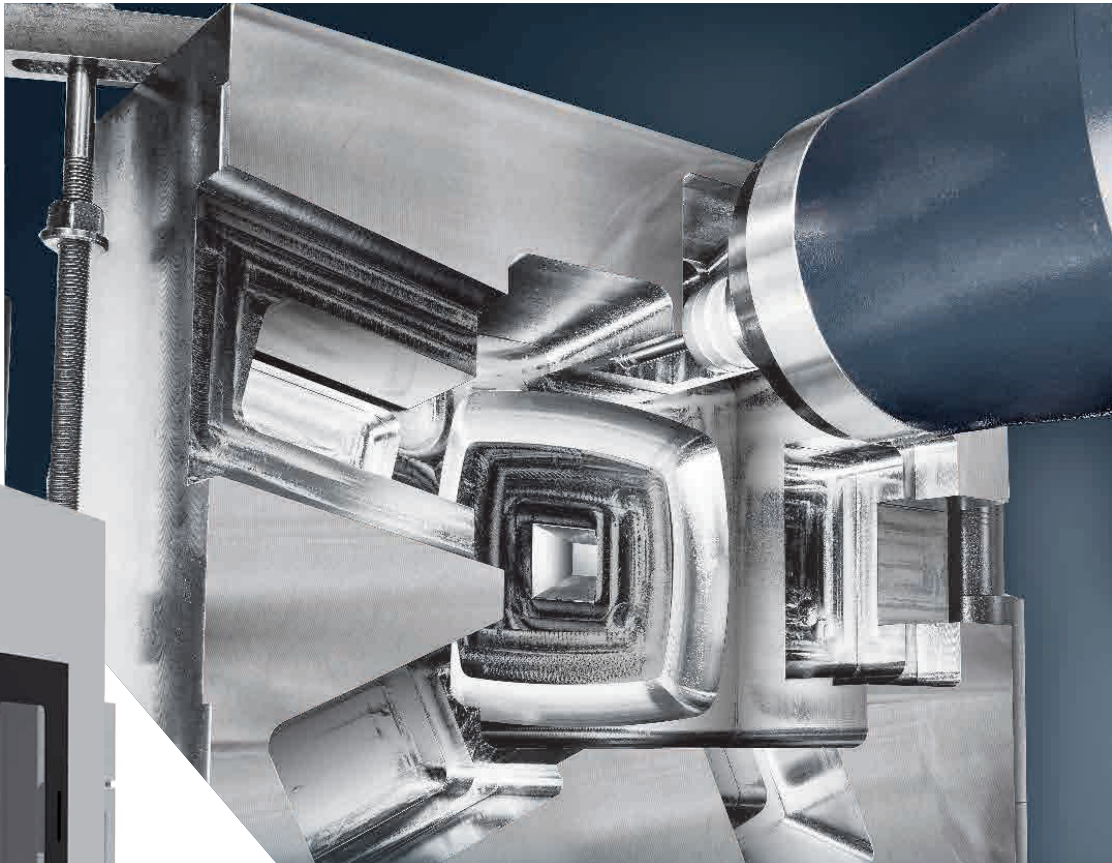
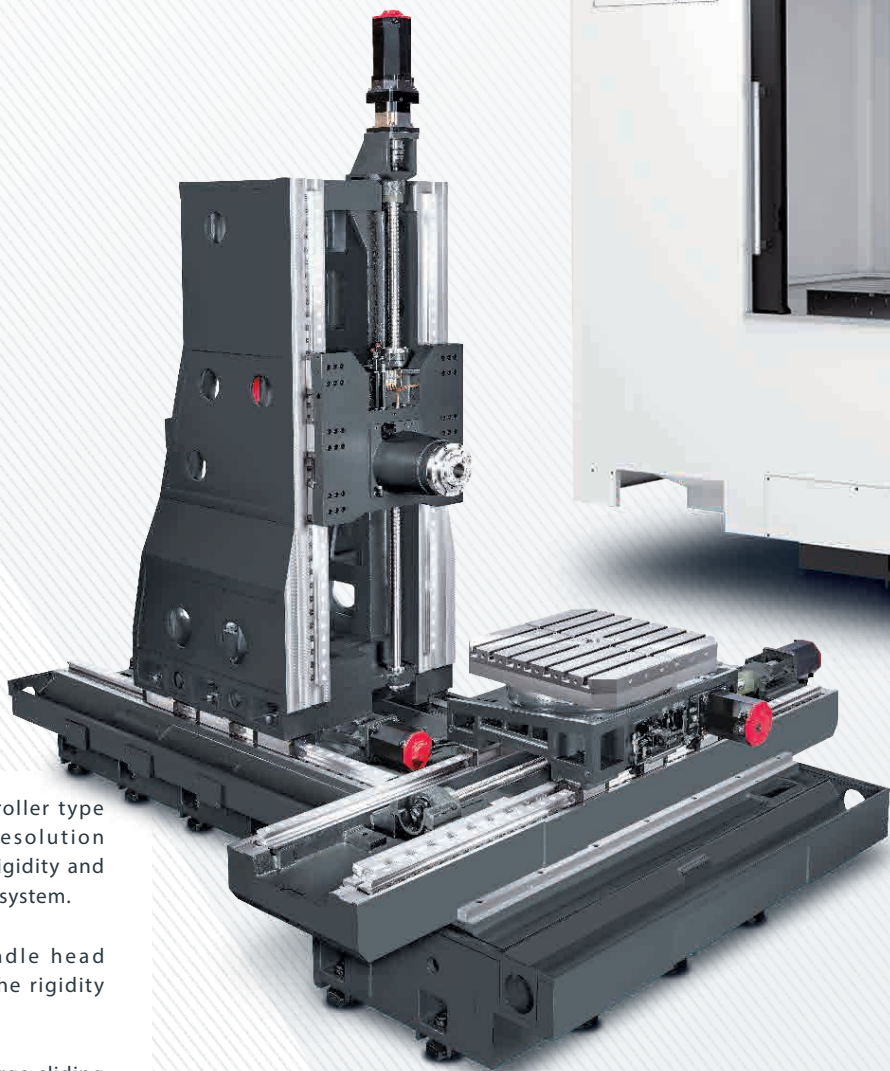
Horizontal Machining Centers

AHM SERIES

- + One-piece T-shaped base cast with high quality Meehanite® to enhance the table rigidity.
- + High torque 2-step gear spindle provides 776 Nm torque output at 320 rpm.
- + BBT50 dual surfaces contact spindle taper provide more powerful tool holding force.
- + High accuracy B-axis indexing work table can be positioned at 1° or 0.001° according to requirements.
- + The base is equipped with 4 Chip augers, chips can be removed from the processing area quickly to guarantee machining accuracy.
- + Front-exit chip conveyors reduce requirements of operating place and ease of maintenance.



- A** The 3 axes are equipped with roller type linear guide ways and high resolution linear scales to ensure optimal rigidity and positioning accuracy for the axial system.
- B** The Y-axis supports the spindle head with 6 sliding blocks to meet the rigidity requirements of heavy cutting.
- C** The column is supported by 6 large sliding blocks in Z-axis to ensure the stationarity and avoid deformation during machining.



40T / 60T chain type tool magazine with arm type ATC, high reliability, can use a variety of large size tools.

High reliability parallel ty exchange pallet design. (AHM-800 APC)

		AHM-800	AHM-1000	AHM-800APC
X-axis travel	mm	1,700 (2,100 Opt.)		
Y-axis travel	mm	1,350		1,150
Z-axis travel	mm	1,200		
Table size (X x Y)	mm	800 x 800	1,000 x 1,000	800 x 800
Table load capacity	kg	4,000		
Max. work-piece dia. / height	mm	Ø 1,600 / 1,350		Ø 1,300 / 1,150
Spindle taper		BBT50		
Spindle speed	rpm	Gear 6,000		
Spindle motor	kW	22		

Specifications are subject to change without notice.

Horizontal Machining Centers

AH SERIES

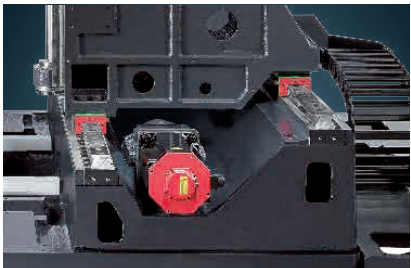
- + Excellent chip removal capability, particularly suitable for processing tasks such as hollowing out cavities and other tasks that create a lot of chips.
- + BBT50 dual surfaces contact spindle taper, providing more powerful tool holding force to ensure machining accuracy.
- + The APC system is driven by a powerful servo motor; pallet exchanges are reliable and fast.
- + The three axes are equipped with roller type linear guide ways, rapid feed rate up to 48 m/min.*1
- + Servo driven arm-type ATC with 60T tool magazine. Tool magazines up to 240T optional, T-T is 3.4 seconds.

*1 : Feed rates vary depending on the model.

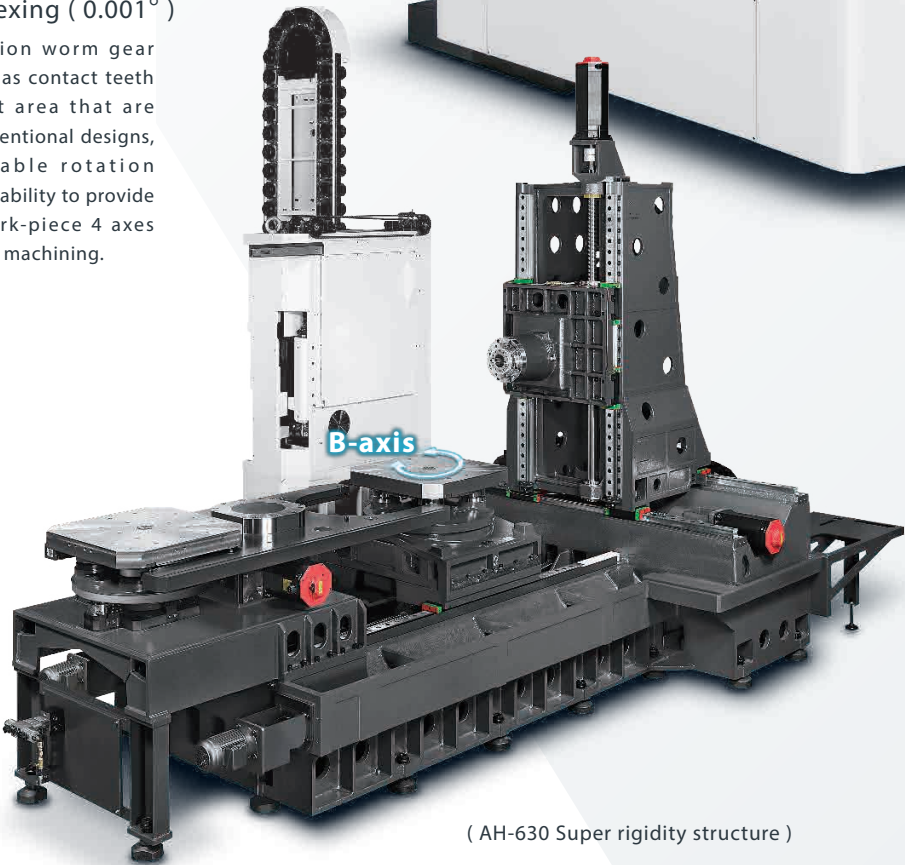


B-axis indexing (1°)
High rigidity clutch type indexing, positioning accuracy at 8", repeatability at 2", most suitable for heavy-duty machining.

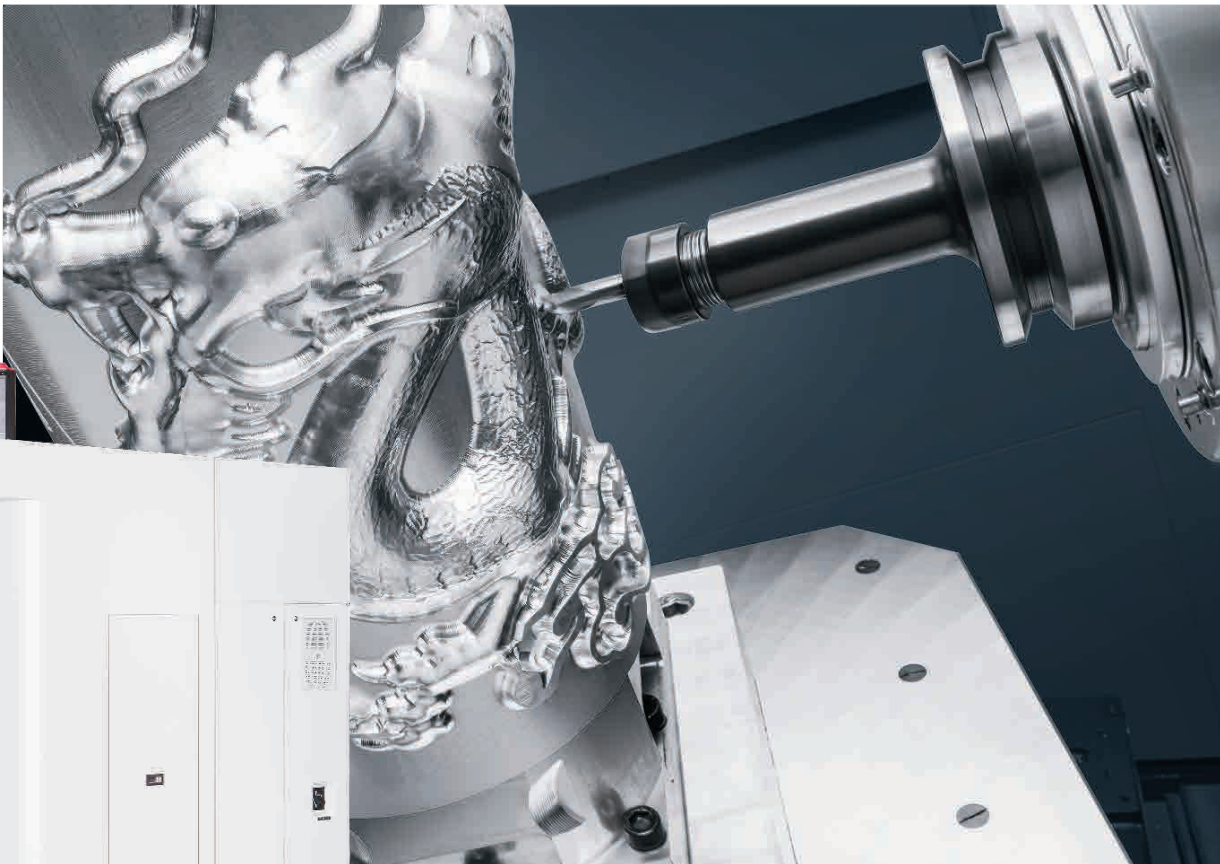
B-axis indexing (0.001°)
High precision worm gear mechanism has contact teeth and contact area that are twice of conventional designs, ensuring table rotation accuracy and ability to provide complex work-piece 4 axes simultaneous machining.



- The X-axis guide ways with offset design provides strong rigidity for the column and the spindle head.
- The base is cast in one piece from Meehanite, a very strong and durable type of iron that has vibration absorbing capabilities. The symmetric T-shape design further enhances the rigidity of the structure, easily outperforming competing models.



(AH-630 Super rigidity structure)



Cooling and Chip Removal System

- A Rear-exit coolant tank
- B Flushing from top
Coolant nozzles around spindle
Optional coolant through spindle (20 ~ 140 bar)
- C 2 chip augers

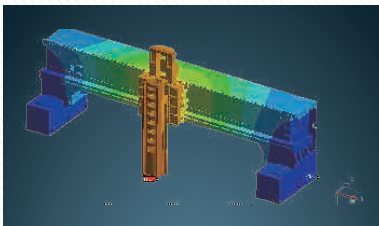
		AH-500	AH-630
X-axis travel	mm	780	1,020
Y-axis travel	mm	670	900
Z-axis travel	mm	650	900
Table size	mm	500 x 500	630 x 630
Max. work-piece dia. / height	mm	Ø 700 / 800	Ø 1,020 / 1,000
Table load capacity	kg	500	1,200
Spindle taper		BBT50	
Spindle speed	rpm	Gear 6,000 / Direct drive 10,000	
Spindle motor	kW	22 / 26 (cont. / 30 min.)	

Specifications are subject to change without notice.

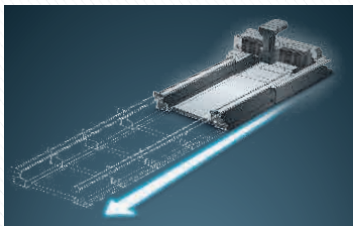
Gantry Type Machining Centers

LG SERIES

- + Extreme large travel range: X-axis 20,000 mm, Y-axis 7,000 mm, Z-axis 1,400 mm.
- + The gantry type structure design provides optimal stable dynamic accuracy and the space usage 40 % less than bridge models.
- + The fixed working table provides heavy loading capability.
- + The X-axis utilizes the AWEA "Synchronized-controlled technology", which effectively eliminates following errors between two driving systems (X & U axis) to ensure machining accuracy.
- + Chip augers on both sides of the work table.



Adjustable Crossbeam Structure
AWEA patented design has successfully overcome the physical limits, minimizing the deformation caused by the weight of the 7,000 mm super wide cross beam, thus ensuring optimal machining accuracy.



Modular design of the X-axis
Work table and side columns are of modular design, so the X-axis travel can be extended to meet the requirements of even the longest work piece.



- A** 4,000 rpm high torque gear type spindle. 6,000 / 8,000 rpm high speed, high accuracy built-in spindle optional.
- B** X / Y axes patented rack & pinion design with 1μm high resolution linear scale to long travel dynamic accuracy (standard for X-axis 6,000 mm or longer).
- C** Optional vertical / horizontal ATC system and automatic head changer (2 and 3 heads storage) for upgrading to multi-face machining center.

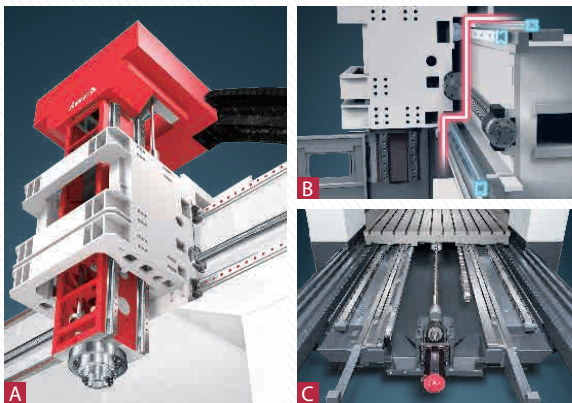
		LG-4030	LG-5030	LG-6030	LG-8030	LG-10030	LG-5040	LG-6040	LG-8040	LG-10040	LG-6050	LG-8050	LG-10050	LG-14050	LG-10070	LG-20070	
X-axis travel	mm	4,000	5,000	6,000	8,000	10,000	5,000	6,000	8,000	10,000	6,000	8,000	10,000	14,000	10,000	20,000	
Y-axis travel	mm	3,000					4,000		4,000		5,000				7,000		
Z-axis travel	mm	1,000 (1,200 / 1,400 Opt.)							1,000 (1,200 / 1,400 Opt.)								
Table load capacity	kg/m²	2,500							2,500								
Spindle speed	rpm	4,000 (6,000 / 8,000 / 10,000 / 12,000 Opt.)							4,000 (6,000 / 8,000 / 10,000 / 12,000 Opt.)								
ATC	T	32					32 (60 Opt.)		32 (60 Opt.)								
Spindle motor	kW	22 / 26 (cont. / 30 min.)							22 / 26 (cont. / 30 min.)								

Specifications are subject to change without notice.

High Rigidity Bridge Type Machining Centers

HTP SERIES

- + Y-axis with three linear guide ways and Z-axis with 4 linear guide ways greatly enhance the machining reliability and heavy cutting capability.
- + The enclosed box structure saddle provides firmly support on both sides of headstock, increasing its rigidity by 40 %, compared to the traditional design.
- + Z-axis has 10 sets of large slides which allow cutting force to be evenly distributed to both sides of headstock. This increases the vibration absorption and significantly enhances accuracy.
- + Optional equipped with high efficiency automatic dual head storage compartments combined with AWEA vertical / horizontal ATC system.
- + Optional multiple head storage compartment for automatic milling heads.



- A** The advanced design of the headstock, four guide ways with ten sliding blocks, combined with the large size, U-shaped saddle and three sets of holders, the headstock rigidity of the HTP series has reached an unprecedented level.
- B** The Y-axis 3 guide ways install on orthogonal planes of the cross beam, counter the distortion moment of the headstock and substantially improve the rigidity for heavy cutting.
- C** 4 high rigidity linear guide ways perfectly support the table. Without overhang table deflection is eliminated and optimal dynamic accuracy is ensured.

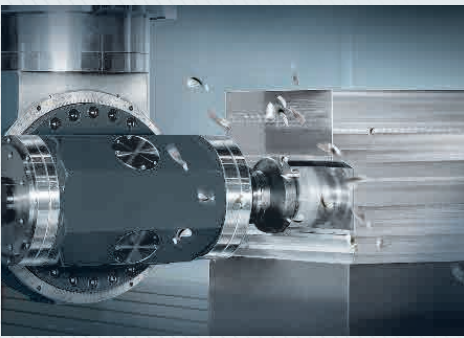


		HTP series
X-axis travel	mm	4,000 ~ 8,000
Y-axis travel	mm	3,200 / 4,000 / 4,800
Z-axis travel	mm	1,000 (1,200 / 1,400 Opt.)
Table size (X x Y)	mm	4,020 ~ 8,020 x 2,400 / 3,000
Table load capacity	kg	15,000 ~ 20,000
Spindle speed	rpm	Gear 4,000
Spindle motor	kW	22 / 26 (cont. / 30 min.)
ATC	T	32 (40 / 60 / 90 / 120 Opt.)

Specifications are subject to change without notice.

HP SERIES Bridge Type Machining Centers

- + Super large bridge structure, the table load capacity is 30% more than similar models.
- + Equipped with a heavy-duty work table, the thickness of the walls and ribbing is enlarged by 20 %, which substantially increases the rigidity by 60 %, compared to similar models.
- + 2-step gear spindle with the transmission shaft shortened by 20 % to achieve outstanding heavy-duty cutting capability.
- + 4 guide ways with full travel support of the table.

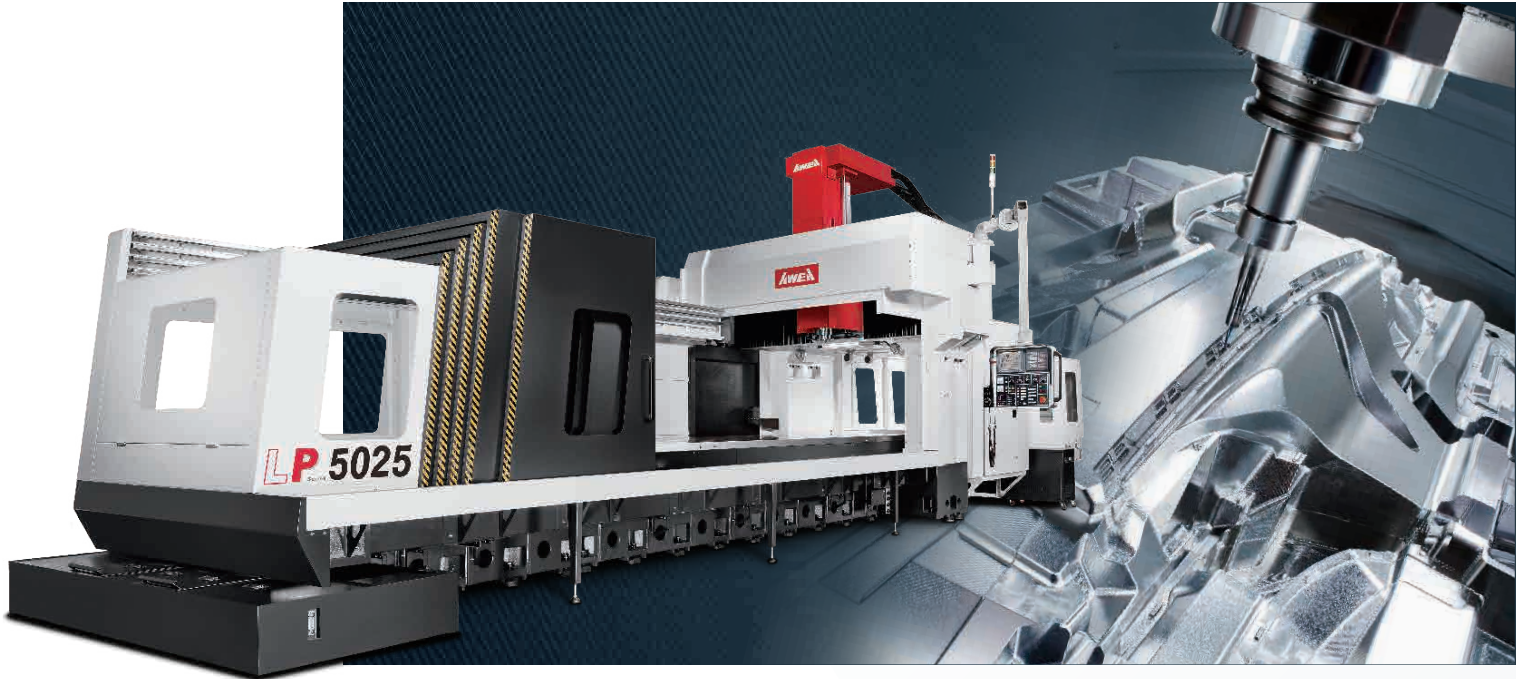


Optional automatic head storage compartment and horizontal/vertical ATC system for upgrading the machine into a multi-face machining center.

		HP series
X-axis travel	mm	3,200 ~ 8,200
Y-axis travel	mm	2,100 / 2,800 / 3,500 / 4,200 / 4,900
Z-axis travel	mm	850 (1,000 / 1,200 / 1,400 Opt.)
Table size (X x Y)	mm	3,020 ~ 8,020 x 2,000 ~ 3,600
Table load capacity	kg	13,000 ~ 40,000
Spindle speed	rpm	6,000
Spindle motor	kW	22 / 26 (cont. / 30 min.)
ATC	T	32 (40 / 60 / 90 / 120 Opt.)

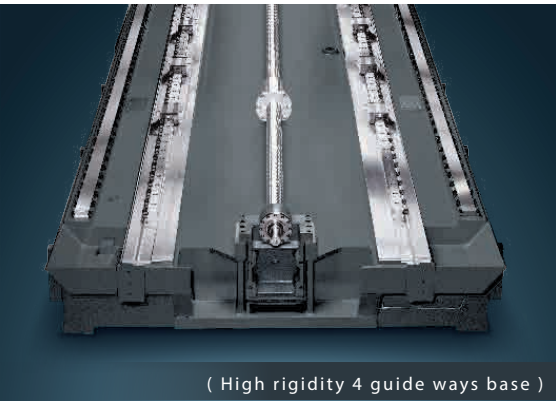
Specifications are subject to change without notice.

LP SERIES



- + The width of the work table and the distance between the columns can be adjusted according to actual needs, customizing the perfect bridge type machine for you.
- + High rigidity 4 linear guide ways on bed with full travel support of table, effectively avoids table deflection and guarantees optimal dynamic accuracy.
- + The modular spindle design offers cutting flexibility for various working conditions.
- + High rigidity roller type linear guide ways on the X and Y axes provide heavy-duty cutting, fast movement and low friction capabilities.
- + The Z-axis is equipped with hardened and grounded box ways, which are optimal for heavy-duty cutting conditions.*1
- + Ball screw vibration absorbers reduce the vibration of long ball screws.

*1 : If Z-axis travel exceeds 1,000 mm, roller type linear guide ways are used instead.



(High rigidity 4 guide ways base)

LP series		
X-axis travel	mm	3,000 ~ 7,000
Y-axis travel	mm	2,100 ~ 4,800
Z-axis travel	mm	760 ~ 1,400
Table size (X x Y)	mm	3,020~7,020 x 2,010~3,010
Table load capacity	kg	10,000 ~ 20,000
Spindle speed	rpm	6,000 ~ 12,000
Spindle motor	kW	22 / 26 (cont. / 30 min.)
ATC	T	32 (40 / 60 / 90 / 120 Opt.)

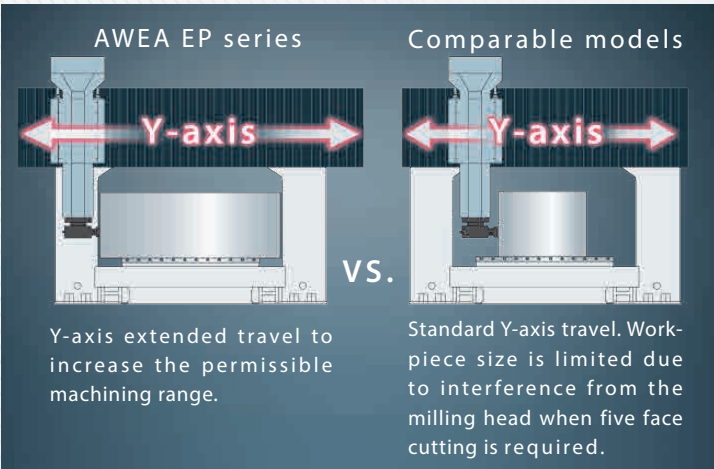
Specifications are subject to change without notice.

EP SERIES



- + Super large Y-axis cross beam design, the machining range exceeds comparable models by 20 %.
- + Modular gear / direct-driven spindle designs to meet heavy-duty or precision cutting demands.
- + X / Y axes equipped with roller type linear ways, Z-axis equipped with high rigidity box ways, for both heavy cutting capability and fast movement.
- + 32T (standard) / 40T / 60T arm type ATC tool magazine.
- + Vertical / Horizontal ATC and automatic head changer optional to upgrade to multi-face machining center.

Super large Y-axis travel



		EP series
X-axis travel	mm	3,000 ~ 5,000
Y-axis travel	mm	1,600 ~ 2,500
Z-axis travel	mm	760 / 1,000
Table size (X)	mm	3,020 ~ 5,020
Table size (Y)	mm	1,500 / 2,010
Table load capacity	kg	10,000 ~ 15,000
Spindle speed	rpm	6,000 ~ 10,000
Spindle motor	kW	22 / 26 (cont. / 30 min.)
ATC	T	32 (40 / 60 Opt.)

Specifications are subject to change without notice.

Bridge Type Machining Centers

SP
SERIES



- + Various gear / direct-driven spindle available to meet heavy-duty or precision cutting requirements.
- + The bridge and the base are cast in one piece each to provide maximum structural integrity. Hand scraped contact surfaces ensure optimum assembly precision, strong mechanical integrity and perfect load distribution.
- + X / Y axes with roller linear guide ways,featuring both heavy cutting capability and fast movement.
- + The Z-axis is equipped with hardened and precision ground super rigid box guide ways, which are optimal for heavy-duty cutting conditions.



The bridge and the base are cast in one piece.
The bridge and the base are cast in one piece each from high quality Meehanite, which has vibration dampening properties and is extremely durable. The heavily ribbed structures effectively resist distortion and guarantee long term precision cutting.

SP series		
X-axis travel	mm	2,100 / 3,060 / 4,000
Y-axis travel	mm	1,600
Z-axis travel	mm	760
Table size (X x Y)	mm	2,310 / 3,260 / 4,200 x 1,500
Table load capacity	kg	8,000 / 10,000 / 12,000
Spindle speed	rpm	6,000
Spindle motor	kW	22 / 26 (cont. / 30 min.)
ATC	T	32 (24 / 40 / 60 Opt.)

Specifications are subject to change without notice.

Super Rigid Bridge Type Machining Centers

HD
SERIES



- + Major casting structures enforced structural design, overall rigidity of the machine is 30 % higher than comparable models.
- + The high torque gear type spindle with a 26 kW high-power output spindle motor easily meet the processing needs of heavy duty cutting.
- + The X / Y axes are equipped with roller type linear guide ways, and the Z-axis using highly rigid box ways, enabling the machine to perform heavy duty cutting and dynamic movements.

Surpassing comparable models
with enforced structure

↑ 42 %
Base and column contact area

↑ 24 %
Column cross-section

↑ 22 %
The maximum table load

HD-2012 cutting test	
Tool size : Ø 100 mm Spindle speed : 477 rpm	No. of blade : 7 Material : S50C
32 cc/kW 720 cc/min. Chips removal rate	Cutting width : 60 mm Cutting depth : 4 mm Feed rate : 3,000 mm/min. Spindle load : 105%
	</

Specifications are subject to change without notice.

High Speed Bridge Type Machining Centers

VP-HS SERIES

- + The modular design allows for either direct drive spindles or built-in motorized spindles to provide flexibility for different working conditions.
- + The Z-axis is directly driven by a high level servo motor employing a large diameter ball screw to achieve excellent accuracy and dynamic motions.
- + New generation high rigidity machine base with special reinforced ribbing, anti-vibration design, and greatly enhanced chip removal capabilities.
- + The one-piece, high rigidity crossbeam casting is made of MEEHANITE, offering abundant rigidity to support the headstock.
- + X / Y / Z roller type linear guide ways offer both, heavy cutting capability, and fast movements.

Brand new Z-axis drive system



Due to the powerful servo motor and the strengthened ball screw the Z-axis does not require a counter balance system. The design significantly improves the dynamic response and makes the VP-HS Series ideal for high precision mold making.

VP-HS vs. Previous Models

↑ 15 %

Dia. of the Z-axis ball screw

↑ 20 %

Power of the Z-axis servo motor

High profile spindle configuration

Taper	Direct-driven spindle	Built-in spindle
BBT50	10,000 / 12,000 rpm	12,000 rpm
BBT40	15,000 rpm	20,000 rpm

BBT Type Spindle Taper

The VP-HS series features BBT Dual Contact Spindle to meet the needs of long time high speed cutting accuracy. The BBT Dual Contact Spindle ensures both taper and face of the tool holder and spindle are securely coupled to maintain high speed cutting rigidity.

- Increases machining accuracy and reliability
- Improves the roundness when boring and drilling
- Ensures tool change accuracy
- Extends tool life

Long Nose Spindle

The optional long nose spindle combined with a shorter tool will increase rigidity and accuracy significantly. Recommended for groove milling and boring.



VP-HS series		
X-axis travel	mm	1,600 ~ 6,000
Y-axis travel	mm	1,200
Z-axis travel	mm	760
Table size (X x Y)	mm	1,600 ~ 6,000 x 1,100
Table load capacity	kg	3,000 ~ 8,000
Spindle speed	rpm	Direct-driven spindle 10,000
Spindle motor	kW	22 / 26 (cont. / 30 min.)
ATC	T	32 (24 / 40 Opt.)

Specifications are subject to change without notice.

VP SERIES

Bridge Type Machining Centers



- + More than 1,500 units sold worldwide.
- + One-piece casting high rigidity cross beam.
- + One-piece base with vibration dampening capacity.
- + Modular gear / direct-driven spindle designs to meet heavy-duty and precision cutting demands.
- + Roller type linear guide ways : X / Y axes, high rigidity box way : Z-axis

New model
VP-6012



(X-axis rack and pinion drive system)

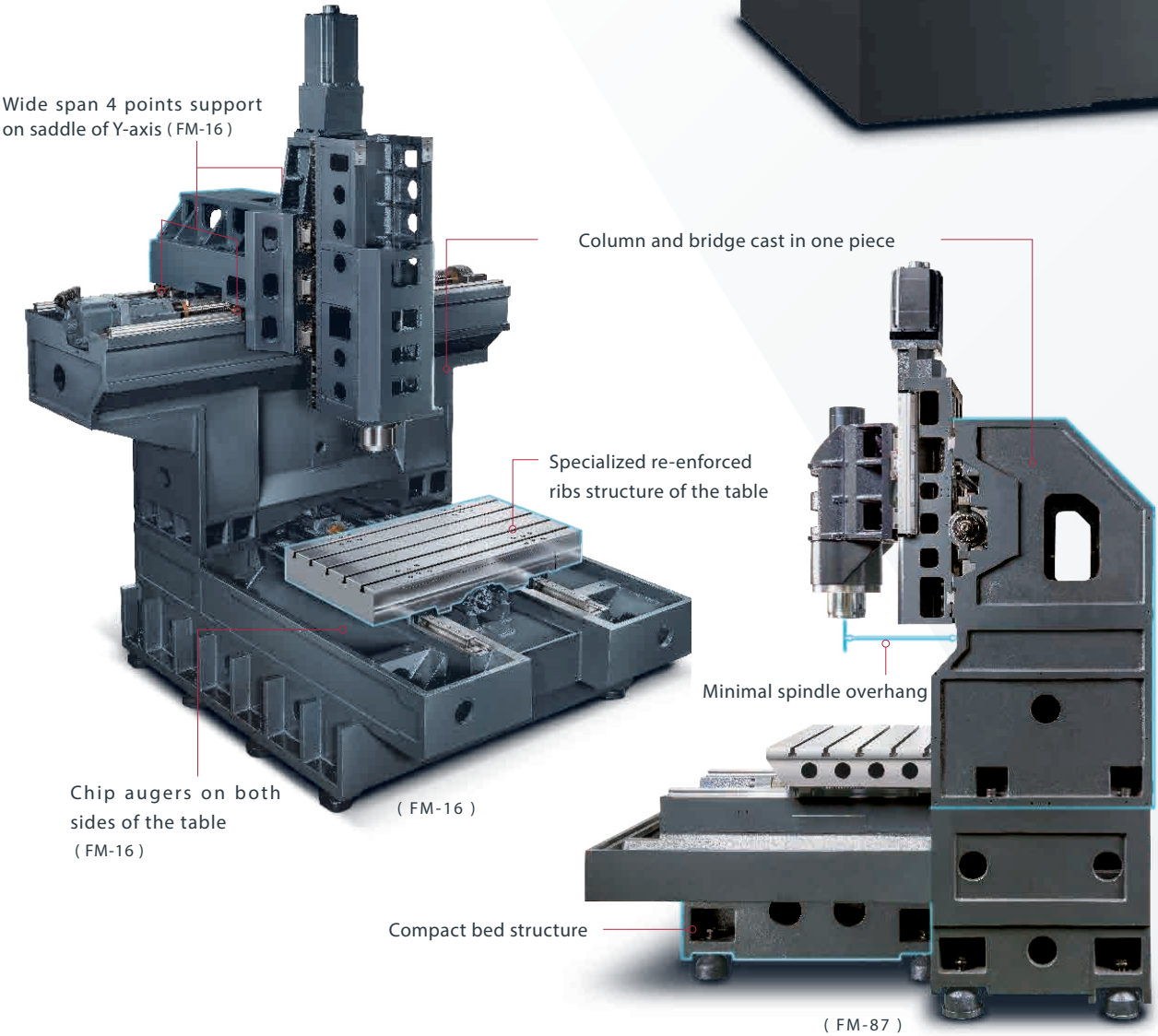
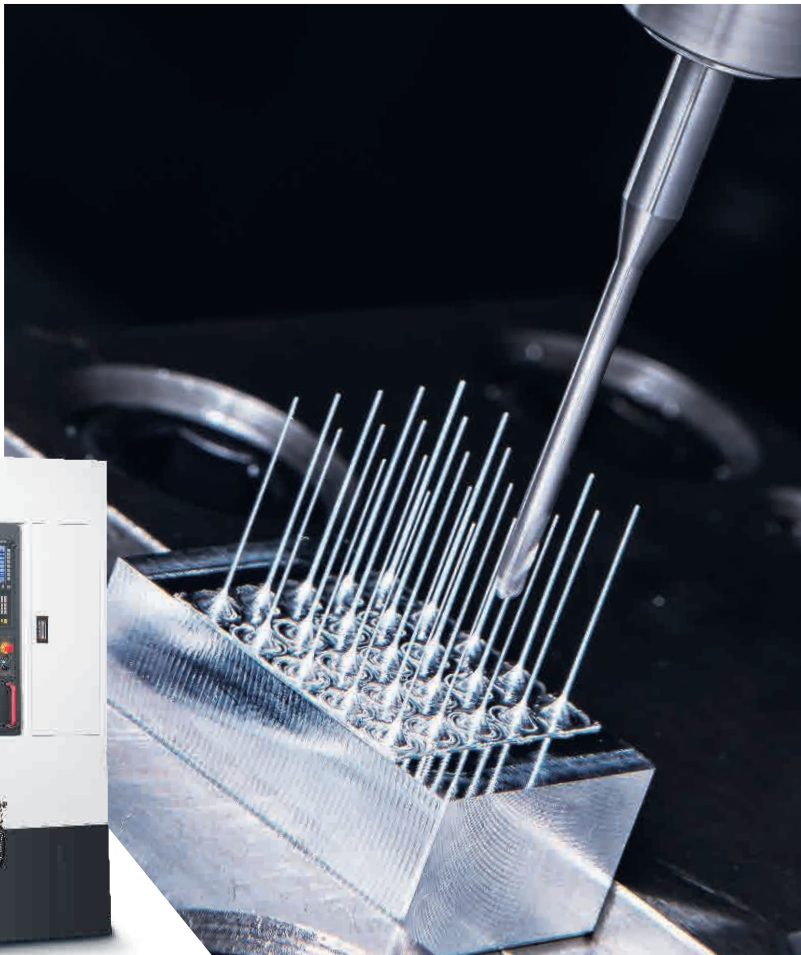
VP series		
X-axis travel	mm	1,600 ~ 6,000
Y-axis travel	mm	1,200
Z-axis travel	mm	760
Table size (X x Y)	mm	1,600 ~ 6,000 x 1,100
Table load capacity	kg	3,000 ~ 8,000
Spindle speed	rpm	6,000
Spindle motor	kW	11 / 15 (cont. / 30 min.)
ATC	T	32 (24 / 40 Opt.)

Specifications are subject to change without notice.

High Speed Bridge Type Machining Center

FM SERIES

- + More than 15 years of commercial success, the industry's most comprehensive high speed bridge type machining center.
- + High-speed direct-drive / built-in spindle design to meet the rigorous surface accuracy requirements of precision mold milling.
- + High profile, high rigidity cast structure and core components. 40 % higher in structural strength and 50 % higher in heavy cutting capacity than comparable vertical machining centers.
- + The one-piece, high rigidity crossbeam casting is made of MEEHANITE, offering abundant rigidity to support the headstock.
- + The three axes use roller type linear guide ways and precision ball screws, driven directly by high power servo motors to achieve cutting feed rates up to 30 m/min, which is specifically beneficial for the mold & die industry.



High speed, high precision spindle



	Max. speed	Max. Output
Built-in Spindle	30,000 rpm	9 kW
	24,000 rpm	18 kW
	24,000 rpm	29 kW
	20,000 rpm	22 kW
	20,000 rpm	24 kW
Direct-driven Spindle	16,000 rpm	29 kW
	15,000 rpm	18.5 kW
	12,000 rpm	18.5 kW

		FM-87	FM-16
X-axis travel	mm	800	1,000
Y-axis travel	mm	700	600
Z-axis travel	mm	420	500
Table size (X x Y)	mm	850 x 700	1,160 x 600
Table load capacity	kg	800	1,000
Spindle speed	rpm	Built-in 20,000	Direct-driven 12,000
Spindle motor	kW	18.5 / 22 (cont. / 30 min.)	15 / 18.5 (cont. / 30 min.)

Specifications are subject to change without notice.

Vertical Machining Centers

BM SERIES

- + High torque spindle and box guide way on all 3 axes, provide optimal heavy-duty cutting capabilities.
- + AWEA craftsmanship, evident in precisely hand scraped contact surfaces, ensures best assembly precision and structural strength.
- + Complete product portfolio, spindle taper sizes # 40 and # 50 available.
- + The quantity of chip augers depends on the size of the machine, to provide optimal chip removal solution.
- + 24T (standard) / 30T / 36T / 60T arm type tool magazine. High speed servo ATC is optionally available.
- + Automatic Pallets Changer (Opt.)^{*1}

^{*1} : Also available for the AF series.



High rigidity base with 6 guide ways

The base of the BM-2100/BM-2500 is equipped with 6 guide ways, providing full support without overhang for the table to avoid eliminate deflection and ensure the enhance table rigidity.

- A Gear spindle**
The gear spindle combined with a High-Low 2 step gear box design, provides a large torque output and fulfill to match heavy cutting requirements (optional belt-driven and direct-driven spindles are also available)
- B High rigidity box guide way**
Three axes box guide way are precision ground after heat treatment, meeting the rigid requirements for heavy cutting applications.
- C Hand scraped craftsmanship**
The contact surfaces of between the machine base and the column, as well as the ball screw holders of table, saddle, and headstock are hand scraped to provide excellent assembly precision and load distribution, ensuring long term accuracy.
- D Δ (Delta) wide span column structure**
The rigid Δ (Delta) column structure provides an excellent basis for the distribution of heavy loads and offers superior cutting stability.

		BM-850	BM-1020	BM-1200	BM-1460	BM-1400	BM-1600	BM-1800	BM-2100	BM-2500
X-axis travel	mm	850	1,020	1,200	1,400	1,400	1,600	1,800	2,100	2,500
Y-axis travel	mm	600				800			1,000	
Z-axis travel	mm	600				700	800		1,000	
Table size (X x Y)	mm	1,050 x 600	1,120 x 600	1,300 x 600	1,500 x 650	1,500 x 800	1,700 x 800	2,000 x 800	2,300 x 1,000	2,700 x 1,000
Table load capacity	kg	850	1,000	1,200	1,400	1,800	2,000	2,200	3,000	4,000
Spindle speed	rpm	Gear spindle 8,000					Gear spindle 6,000			
Spindle taper		BBT40 (BBT50 Opt.)					BBT50 (BBT40 Opt.)		BBT50	

Specifications are subject to change without notice.

Vertical Machining Centers

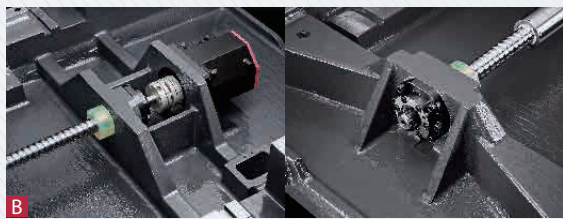
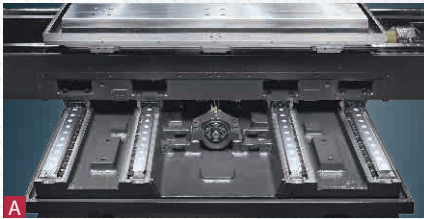
AF SERIES

- + High rigidity Δ (Delta) body structure provides the foundation of heavy load and powerful cutting.
- + Three axes adopt linear guide ways to provide the optimum control and efficient movement, rapid feed rates are up to 48 m/min.*1
- + Z-axis could adopt with heat treated box way structure with gear spindle. Very suitable for heavy cutting requirements.
- + The quantity of chip augers depends on size of machine, which provides the most effective chip removal solution.
- + 24 / 30 / 32 / 40T arm type ATC. High speed servo ATC is option.

*1 : Different between models.



- A 4 Linear Guide Ways**
4 linear guide ways design on bed effectively eliminates the overhang problem of working table and ensure the optimal support rigidity. (AF-1400 / 1600 / 1800)
- B High Performance Axial System**
One-piece ball screw driving motor support and bearing support enable cutting force to spread evenly into casting body, so it efficiently enhances axial system of entire rigidity and prevents deformation of ball screw.



The modular spindle design provides cutting flexibility for various machining needs.

Solution for Precision Parts		
Spindle	Taper	Speed Range
Belt-drive	BT40	8,000 ~ 10,000 rpm

Solution for Precision Mold		
Spindle	Taper	Speed Range
Direct-drive	BT40 / BT50	8,000 ~ 15,000 rpm

Solution for Heavy Cutting		
Spindle	Taper	Speed Range
Gear	BT40 / BT50	8,000 / 6,000 rpm

AF series		
X-axis travel	mm	510 ~ 1,800
Y-axis travel	mm	400 ~ 800
Z-axis travel	mm	330 ~ 800
Table size (X x Y)	mm	610 ~ 1,900 x 400 ~ 800
Table load capacity	kg	250 ~ 1,800
Spindle speed	rpm	Direct-driven 8,000 ~ 15,000*1
Spindle taper		BBT40 / BBT50*1

*1 : Individual models may vary, please contact AWEA. Specifications are subject to change without notice.

AE SERIES

Vertical Machining Centers



- + High rigidity Δ (Delta) body structure
- + Compact structure design, floor space only need 6.5 m²
- + 10,000 rpm high speed, high power belt-driven spindle
- + High speed, high precision linear guide ways on 3 axes.
- + 24T disk type magazine with ATC system.



AE series		
X-axis travel	mm	600 / 800 / 1,020
Y-axis travel	mm	510
Z-axis travel	mm	510
Table size (X x Y)	mm	750 / 860 / 1,200 x 510
Table load capacity	kg	500 / 500 / 700
Spindle motor	kW	7.5 / 11 (cont. / 30 min.)
Spindle speed	rpm	10,000
Spindle taper		BT40
X / Y / Z rapid feed rate	m/min	32 / 32 / 24

Specifications are subject to change without notice.

5-AXIS MACHINING CENTERS

AG5 Series

Gantry Type 5-axis
Machining Centers P21



X : 1,600 ~ 3,200 mm
Y : 2,000 mm
Z : 1,000 mm
B : ±100° C : ±240° (TCH-19F)

RG5 Series

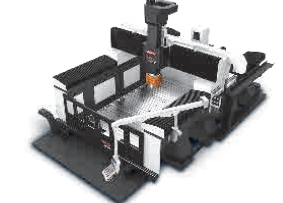
Gantry Type 5-axis
Machining Centers P22



X : 1,600 ~ 3,200 mm
Y : 2,500 mm
Z : 1,000 mm
B : ±100° C : ±240° (TCH-20F)

MEGA5 G Series

Gantry Type 5-axis
Machining Centers P23



X : 4,000 ~ 10,000 mm
Y : 3,700 ~ 4,700 mm
Z : 1,200 / 1,400 mm
B : ±110° C : ±240° (TCH-30F)

MEGA5 P Series

Bridge Type 5-axis
Machining Centers P23



X : 2,500 ~ 6,000 mm
Y : 2,620 / 3,200 mm
Z : 1,000 / 1,200 mm
B : ±110° C : ±240° (TCH-30F)

FCV-800 Series

Gantry Type 5-axis
Machining Centers P25



X : 800 mm
Y : 900 mm
Z : 660 mm
A : -120° ~ +30° C : ±360°

FCV-620 Series

High Speed 5-axis
Machining Centers P27



X : 635 mm
Y : 535 mm
Z : 460 mm
B : -50° ~ +110° C : ±360°

EH5 Series

Horizontal 5-axis
Machining Centers P29



X : 610 mm
Y : 610 mm
Z : 610 mm
A : -120° ~ +42° B : ±360°

FV Series

Vertical 5-axis
Machining Centers P28



X : 560 / 960 mm
Y : 510 / 600 mm
Z : 460 / 480 mm
A : -42° ~ +120° C : ±360° (FV-960)

Multi-FACE MACHINING CENTERS

MCP Series

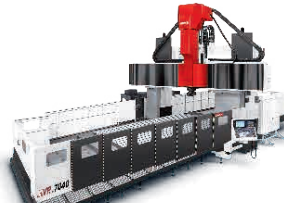
Moving Column Bridge Type
Multi-face Machining Centers P31



X : 8,000 ~ 20,000 mm
Y : 4,400 / 5,400 mm
Z : 1,200 mm

MVP Series

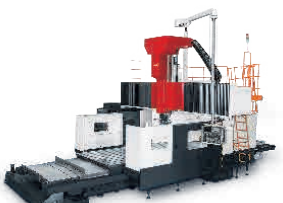
Moving Cross Beam Bridge Type
Multi-face Machining Centers P33



X : 4,000 ~ 8,000 mm
Y : 3,200 / 4,000 mm
Z : 1,000 ~ 1,400 mm
W : 1,250 mm

HVM Series

Bridge Type Multi-face
Machining Centers P34



X : 3,060 ~ 7,000 mm
Y : 2,500 ~ 4,500 mm
Z : 1,000 ~ 1,400 mm

LP-F Series

Bridge Type Multi-face
Machining Centers P35



X : 3,000 ~ 7,000 mm
Y : 2,800 / 3,200 / 4,500 mm
Z : 760 ~ 1,400 mm

VERTICAL MACHINING CENTERS

BM Series

Super Rigid
Vertical Machining Centers P57



X : 850 ~ 2,500 mm
Y : 600 / 1,000 mm
Z : 600 ~ 1,000 mm

AF Series

High Performance
Vertical Machining Centers P59



X : 510 ~ 1,800 mm
Y : 400 ~ 800 mm
Z : 330 ~ 800 mm

AE Series

High Performance
Vertical Machining Centers P60



X : 600 / 800 / 1,020 mm
Y : 510 mm
Z : 510 mm

GF Series

Graphite Milling
Machining Centers

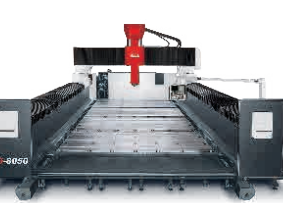


X : 650 ~ 1,400 mm
Y : 510 ~ 620 mm
Z : 510 ~ 620 mm

BRIDGE TYPE MACHINING CENTERS

LG Series

Gantry Type
Machining Center P45



X : 4,000 ~ 20,000 mm
Y : 3,000 ~ 7,000 mm
Z : 1,000 ~ 1,400 mm

HP Series

Super Rigid
Bridge Type Machining Center P48



X : 3,200 ~ 8,200 mm
Y : 2,100 ~ 4,900 mm
Z : 850 ~ 1,400 mm

HTP Series

Super Rigid
Bridge Type Machining Center P47



X : 4,000 ~ 8,000 mm
Y : 3,200 ~ 4,800 mm
Z : 1,000 ~ 1,400 mm

LP Series

Bridge Type
Machining Centers P49



X : 3,000 ~ 7,000 mm
Y : 2,100 ~ 4,800 mm
Z : 760 ~ 1,400 mm

EP Series

Bridge Type
Machining Centers P50



X : 3,000 ~ 5,000 mm
Y : 1,600 ~ 2,500 mm
Z : 760 / 1,000 mm

SP Series

Bridge Type
Machining Centers P51



X : 2,100 ~ 4,000 mm
Y : 1,600 mm
Z : 760 mm

VP Series

Bridge Type
Machining Centers P54



X : 1,600 ~ 6,000 mm
Y : 1,200 mm
Z : 760 mm

HD Series

Super Rigid
Bridge Type Machining Centers P52



X : 2,000 / 3,000 mm
Y : 1,200 mm
Z : 760 mm

HIGH SPEED BRIDGE TYPE MACHINING CENTERS

VP-HS Series

High Speed
Bridge Type Machining Centers P53



X : 1,600 ~ 6,000 mm
Y : 1,200 mm
Z : 760 mm

FM Series

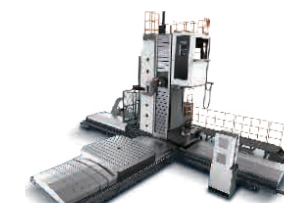
High Speed
Bridge Type Machining Centers P55



X : 800 / 1,000 mm
Y : 700 / 600 mm
Z : 420 / 500 mm

JB Series

Floor Type Horizontal
Boring Mills P38



X : 3,000 ~ 10,000 mm
Y : 1,800 ~ 3,600 mm
Z : 450 mm
V : 1,300 ~ 2,500 mm
W : 900 mm

BL Series

Heavy Load
Horizontal Boring Mills P37



X : 2,000 ~ 4,000 mm
Y : 1,800 ~ 2,400 mm
Z : 1,300 / 1,700 mm
W : 600 mm

HORIZONTAL MACHINING CENTERS

MB Series

High Precision
Horizontal Boring Mills P39



X : 1,500 / 2,000 mm
Y : 1,200 mm
Z : 900 mm
W : 500 mm

AH Series

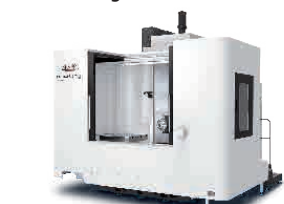
Horizontal
Machining Centers P43



X : 780 / 1,020 mm
Y : 670 / 900 mm
Z : 650 / 900 mm

AHM Series

Horizontal
Machining Centers P41



X : 1,700 mm
Y : 1,350 / 1,150 mm
Z : 1,200 mm

EH Series

Horizontal Machining Centers



X : 510 / 610 mm
Y : 510 / 610 mm
Z : 510 / 610 mm