

JOURNAL 10

- » AWEA 40th anniversary
- » High-Speed 5-Axis Machining Centers & Automation Solutions
- » The AWH Series AWEA Two Axes Milling Head, now available
- » ESG Sustainability Milestones



AWEA®

THE ULTIMATE MACHINING POWER

AWEA MECHANTRONIC CO., LTD.



40TH ANNIVERSARY OF AWEA'S FOUNDING

At this significant moment, we must extend our sincere gratitude to our global customers and distributors. Your support has helped us overcome all challenges, allowing AWEA to reach where it is today. More importantly, we must thank the 3,500 colleagues who have worked with us over the years. The foundation you laid has made today's AWEA possible. As we take the baton, we will continue to build upon these 40 years of success, striving for excellence and looking toward the future.



EST. 1986

Factory Exterior (1989)

In response to the rapidly growing market demand, we have relocated to our current site in Xinpu Township, Hsinchu County.



The Gantry Family (1998)

Obtained the "Gantry Family" trademark, solidifying Awea's position in the large-scale machining equipment sector.



Delivery of the Ultra-Large Gantry Machine (2009)

Delivery of the LG-20070, the largest machining center ever in Taiwan at the time.



1986

Founded in Hukou Township, Hsinchu County, with a paid-in capital of USD 130,000.



1989

Expanded into the European market and participated in the EMO first time.



1992

Expanded into the American market and participated in the IMTS first time.



2000

AWEA stock is listed and traded under the ticker symbol 1530. TW.



2007

Mr. Yang was elected as the founding chairman of TMBA*1



2008

The CTSP branch was completed and positioned as operations headquarters.



2014

The Wujiang branch (Suzhou) was completed and inaugurated.



2018

The Chiayi branch was completed and inaugurated.



2024

President Yang awarded an doctorate in engineering from NCHU.



2025

Release of 2025 Sustainability Report



*1 Taiwan Machine Tool & Accessory Builder's Association

The honor belongs to all our partners

To recognize Chairman Yang's contributions to social engagement and the machine tool industry, National Chung Hsing University awarded him an honorary Doctorate of Engineering in January 2024. Prior to this, only one person in the university's century-long history had received this honor, making this distinction even more valuable.



Responsibility, Commitment

Practicing ESG Sustainability

In the face of turbulent geopolitical currents and rapid industrial transformations, the global economic framework is encountering unprecedented challenges. Almost all businesses must respond appropriately to the tests of this era, especially regarding "ESG sustainability," which symbolizes responsibility and the future. This is a universal mission that we must prioritize and act on with urgency.

For AWEA, ESG is not only about fulfilling corporate social responsibility and environmental commitments, but also an

opportunity for progress. It allows us to examine areas where our concepts and systems may be lacking, while assessing whether we have the necessary resources to face future challenges. To date, we have made significant achievements in the sustainable development of our business, environment, and society. I must take this opportunity to express my gratitude to our colleagues and the strong support from all sectors of society.

Human civilization over the past century has contributed to extreme climate conditions,

altering the planet's landscape in a remarkably short period of time. Similarly, we must act swiftly to heal the wounds caused by civilization. As such, AWEA has transformed its slogans into concrete actions, including continuous adherence to environmental regulations and standards, implementing energy-saving and carbon-reduction measures as core business principles, and maintaining an active response to environmental initiatives, all in collaboration with others to protect our precious home.

AWEA places great importance on social security and diverse values. Starting with

internal management, we continuously build a safe working environment and foster a friendly workplace culture. Additionally, through the charitable foundation I established, we organize various public welfare activities, promote filial piety culture, and support local tourism development. While the power of AWEA may only light a small candle, I promise to keep it shining brightly.

(Excerpt from the preface of AWEA's Sustainability Report.)

AWEA MECHANTRONIC CO., LTD.
EDWARD YANG,PRESIDENT



5-axis simultaneous machining

DO MORE WITH LESS

Awea's full range of 5-axis machining centers offers a complete series of specifications and control functions. With core components such as the two axis head and trunnion table, AWEA is one of the few manufacturers with in-house research and development capabilities. As a result, our machines outperform similar models in the market with superior performance and reliability. They easily handle complex workpieces such as aircraft engine blades and reflective patterns for lighting fixtures. Any challenging machining task can be solved with AWEA's 5-axis machining centers.



TAIWAN EXCELLENCE
(FCV-620S)



CIRCULAR ECONOMY
(AU-680)

5 AXES MACHINING



MEGA5 SERIES



RG5 SERIES



AU-680 SERIES



FCV-620 SERIES

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Sustainable Development Continuously Practicing the Core Values of ESG

While striving to generate maximum profit for our shareholders, we place greater emphasis on enhancing the interests of stakeholders such as employees, customers, suppliers, society, and the environment. This is not only a necessary condition for corporate sustainability but also an inescapable responsibility as global citizens.



National Chung Hsing University Smart Machinery Technology R & D Center



Blood donation and lifesaving initiative



Capstone Competition for Precision Machine Tools and Intelligent Manufacturing Technology



International Beach Cleanup Day event



Material support for the Turkey earthquake disaster

Industry-academia Collaboration

"Precision Machine Tools " competition

In order to encourage students to join the machine tools industry. The competition has been held in cooperation with NCHU every year since 2012. An accumulation of more than 800 teams and 3,000 participants from home and abroad to participate. The final day in October every year has become a major event between the departments of universities.

Donating funds to establish the NCHU Smart Machinery Technology R & D Center



Cultivate industrial technical talents :

- 》 Set up a classes for cooperative education.
- 》 Open house visit for students to experience the workplace.
- 》 Donate machine tools to schools for education.

Social Participation

Yang Wenxu charity foundation

In 2008, Chairman Mr. Yang established the "Yang Wenxu Charity Foundation" in his father's name to express his gratitude to his parents. The foundation is dedicated to take care of the disadvantaged, spreading Chairman Yang's ambition to give back to society.

Promote filial piety

Sponsor FM97.7 Classical Music Station to produce and broadcast the album, which mainly promotes the virtue of gratitude and kindness for the family and has received positive respond from the audience.

Assisting out-of-school youth

Organized a "Charity Fundraising Concert" to help "dropout students return to school and their families."

Fulfilling Workplace

Human resource is the key to a progressive enterprise. AWEA believes in treating our employees as everlasting partners, other than improving wages and benefits, we are committed to building an equal, friendly, and collaborative workplace environment.

- 》 Modern work environment
- 》 Staff family day
- 》 Employee shareholding trusts
- 》 Regular health checks
- 》 Company trip
- 》 Free lunch
- 》 Earnings dividends
- 》 In-service training

Environmental Sustainability

Solar power generation system

By 2026, all the roofs of AWEA's factories will be installed with solar panels, providing 4 million kilowatts of green electricity for the company every year, reducing carbon emissions by about 2,600 tons per year, which is equivalent to seven Taipei Da-an Forest Park of carbon absorption every year.



Green machine tools

- 》 Topology optimization analysis.
- 》 Energy-saving LED lighting
- 》 NC screen automatic hibernate modelighting
- 》 Precise lubrication to reduce oil consumption
- 》 Intelligent chip conveyor
- 》 Application of variable-frequency motor

Operation Centers

There are operation centers located in Hsinchu, Taichung, Chiayi, and Suzhou cities in East Asia. The marketing and service network covers 40 countries around the world, with more than 60 professional agents, including YAMA SEIKI, our North America sales and service center established by the group. AWEA's goal is to ensure immediate and effective technical support and warranty maintenance for all our end users through our complete sales system. We hold this standard to all our agents, as promised to our customers.

HEADQUARTERS



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

CTSP BRANCH



TAICHUNG · TAIWAN
Manufacturing of 5-axis, vertical and horizontal machining centers
Area : 26,600 m²

CHIAYI BRANCH



CHIAYI · TAIWAN
Manufacturing of VMC
Area : 56,000 m²

YAMA SEIKI USA, INC.



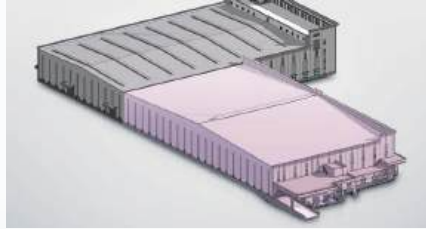
LOS ANGELES · CALIFORNIA
Sales and service
Area : 24,000 m²

SUZHOU BRANCH



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

CHIAYI BRANCH PHASE II



CHIAYI · TAIWAN
Assembly of key components
Area : 18,000 m²

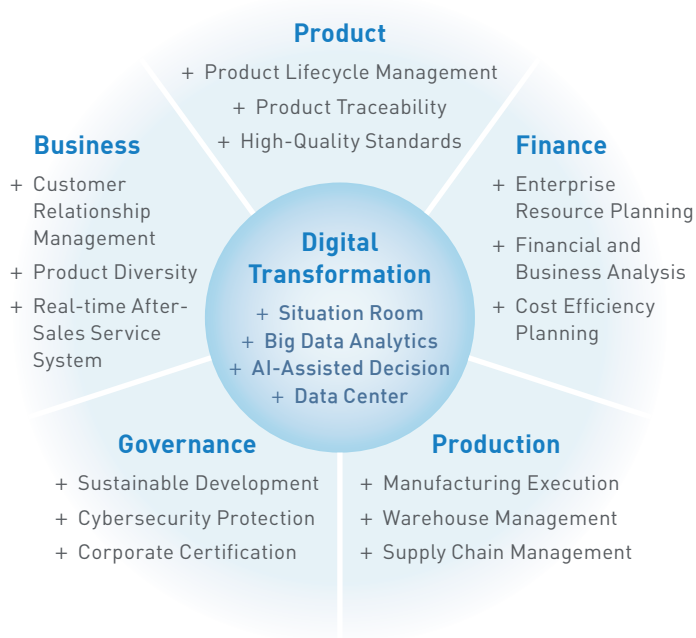


Global Sales Network

America	Africa	Europe			Asia	Oceania
U.S.A	Egypt	Türkiye	U.K.	Portugal	Korea	Australia
Canada	South Africa	Denmark	France	Hungary	Malaysia	
Chile		Finland	Germany	Czech	Indonesia	
Brazil		Switzerland	Luxembourg	Poland	Thailand	
Argentina		Sweden	Belgium	Bulgaria	Vietnam	
		Ireland	Italy	Slovenia	India	
		Netherlands	Spain	Croatia	Singapore	
					Israel	

Digital Transformation

In response to rapidly changing market demands, small-batch and diverse needs, cross-platform data flow, and the transfer of information from product design to manufacturing, AWEA emphasizes the importance of a closed-loop digital transformation. We have created solutions that meet information security standards while supporting corporate sustainability, delivering high-quality, high-precision, and high-performance products.



By subscribing to AWEA's official YouTube and Instagram accounts, you can stay updated with the latest news, videos, and occasional promotional offers. Additionally, the newly launched official website features comprehensive product information and a user-friendly interface. Feel free to scan the QR code below to experience it now.

Website



Instagram



YouTube



Smart Manufacturing

In the foreseeable future, smart manufacturing will be one of the key factors in measuring a company's competitiveness. In the face of challenges, AWEA is partnering with you to embrace smart manufacturing and connect with the future through our self-developed "AiLINC."

AiLINC Intelligent Information Control System



Machine Diagnosis	Machining Information	Preparation	Edit	Production Management
» Spindle	» Manual MST	» Compensation	» G code guide	» DRV monitor
» Servo system	» Coordinate	» Login	» M code information	» Production traceability
» Tool magazine	» Program restart	» Measurement	» File transfer	» Utilization rate analysis
» Hydraulic	» Workpiece coordinate	» Tool list		» measurement
» Pneumatic	» Variable	» Workpiece measurement		
» Railway lubrication	» Counting			

Intelligent Operation

For accessories that previously could only perform "On" or "Off", the function provides you the flexibility to adjust the accessory to the best performance, ensuring the required efficacy and avoiding resource waste.

- » Spindle curtain
- » Chip disposal system
- » Lubrication oil
- » Alarm light
- » Work light
- » Buzzer



Artificial Intelligence



Spindle Thermal Compensation with Neural Network Technology

Using deep learning technology to compensate the spindle thermal displacement constantly and timely during spindle rotation and temperature changing.



Intelligent Tapping

By analyzing acceleration / deceleration parameter of tapping and data of linear velocity, spindle load, Z-axis load, tapping inaccuracy, and tapping time to get the optimal tapping time, and then through deep learning in neural network with genetic calculation to establish a set of tapping automatic modulation technology.



Automatic Neural Adaption

The weight of work piece automatically detected online and the feed condition can be calculated by gain parameter prediction model of machine tool based on the neural network to provide the appropriate gain parameter for machine. It can effectively maintain the dynamic accuracy of the machine verified with circular test and meet the accuracy specified by the international standard ISO 10791-6.

i Console Intelligent Software Enhancement System



Parameter optimization

After selecting the cutting mode and the allowable error value, the system will automatically generate corresponding cutting condition for machining so as to optimize accuracy, efficiency and roughness.



Adoptive Feed Control

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



Tool loading monitor

Each tool can be set with an appropriate value for monitoring to fulfill the broken tool detection function during machining process, thus reducing possible damage on work piece.



Spindle thermal compensation

Opt.

Detect temperature of spindle, casting and environment via precise sensors, and automatically compensate for temperature change to ensure optimal machining accuracy.

Smart InformaTion APP

(Must be used with a Smart Digital Communication Box)

Powerful Function

Machining information	Real-time image
» Machining progress	» Real-time state of work piece
» Motor loading	» Real-time tool information
» Operating time	» Video storage
Utilization rate analysis	Alarm History
» Operation time statistics	
» Utilization rate statistics	

Mobile in hand **AiLINC** applied anywhere



More Instant · More Convenient

Online manual

Contact and support

Alarm message notice

Smart Digital Communication Box

Easy connection setting with plug and play, and support multiple network connectivity methods.

Remote Monitoring and Operation

Besides monitor real-time image remotely, it's capable of remote operation.

Remote Program Transfer

By downloading machining program remotely, operator can timely optimize or debug the program.



Support Various Controller

FANUC, MITSUBISHI, SIEMENS, or HEIDENHAIN controller can be monitored remotely.

Remote Diagnosis

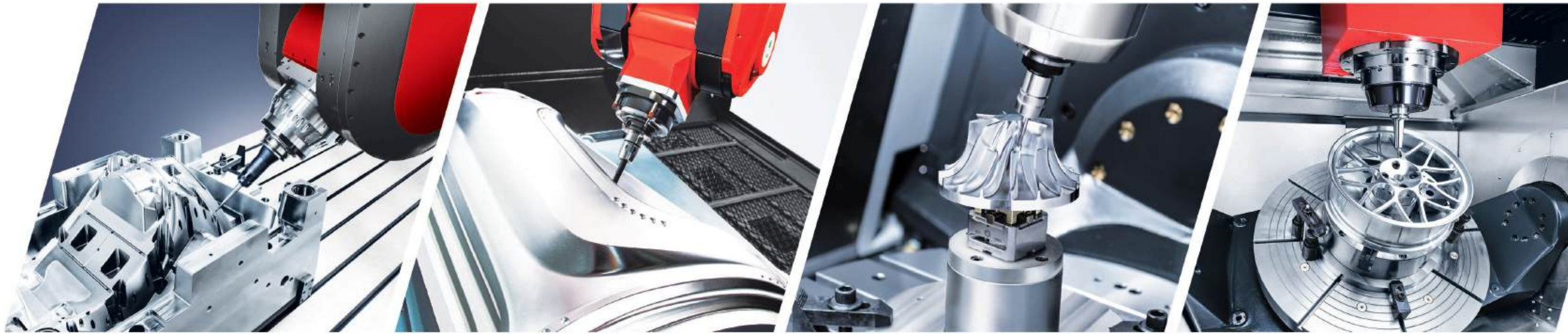
Remotely receive the machine alarm and troubleshoot in time.

Remote Upgrade and Maintenance

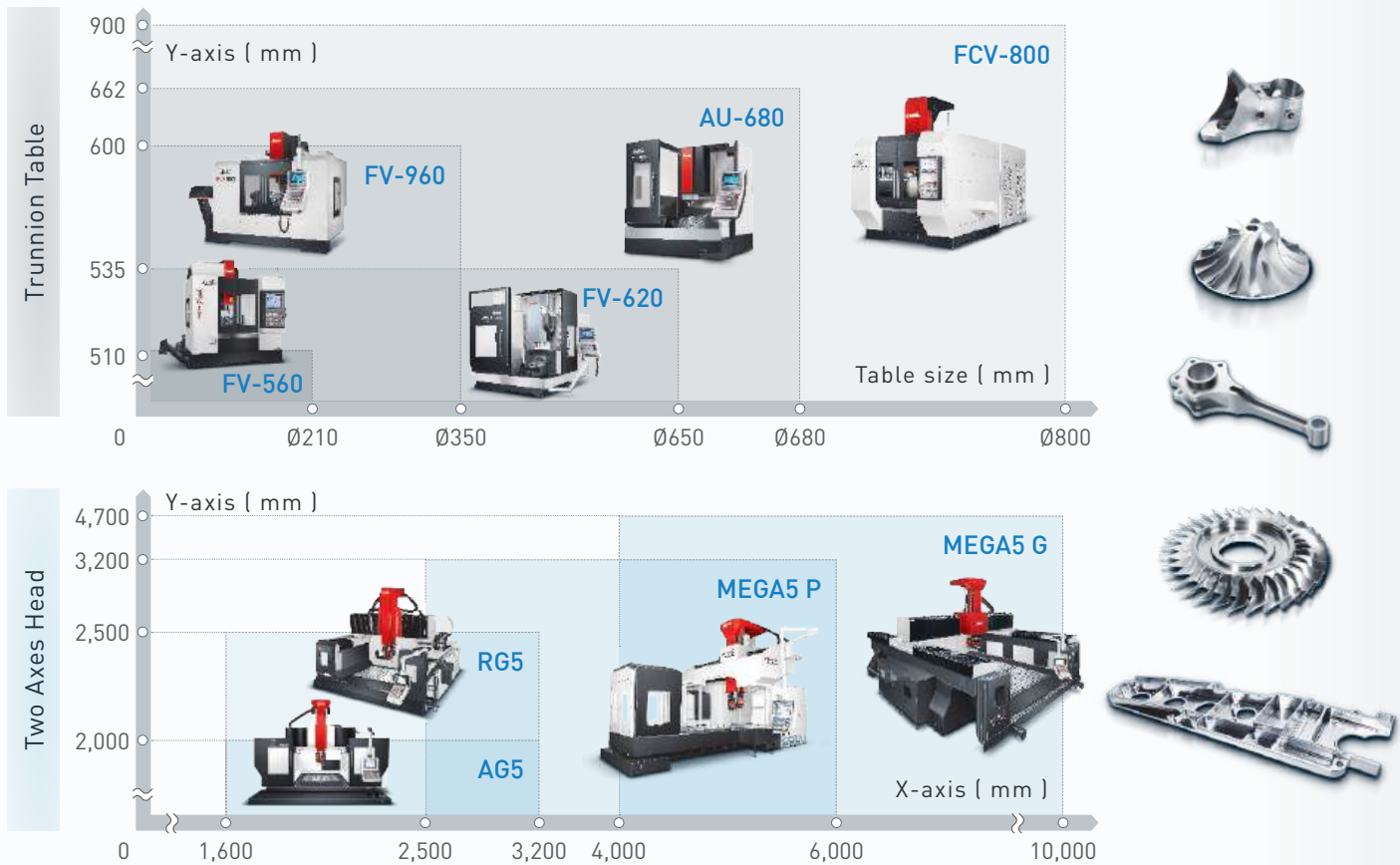
NC software version can be remotely upgraded and maintained.

5-axis Machining

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



AWEA 5-axis Machining Centers Line-up

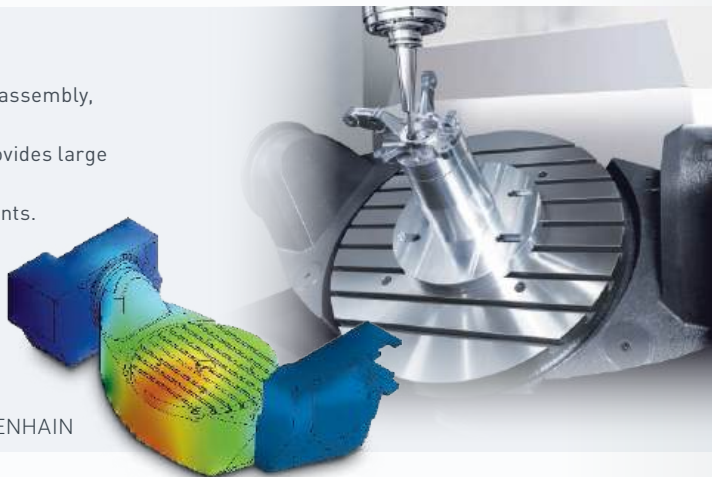


AWEA TRUNNION TABLE

- AWEA's in-house research and development, along with precision assembly, offers you the most comprehensive technical support.
- A / C axes adopt the design of servo motor drive reducer, which provides large axial torque output.
- Absolute position encoder meets the extreme precision requirements.

	A-axis	C-axis
Rotary angle	± 120°	± 360°
Spindle speed	20 rpm	50 rpm*1
Table load capacity	1,000 kg	
Table diameter	Ø 680 mm	

*1 : HEIDENHAIN



AWEA TWO AXES MILLING HEAD

AWEA is one of the machine tools manufactures who is able to design and produce the core components like two axes head and trunnion table. Hence, we have the utmost processing abilities and immediate, reliable aftersales service.



HSK-A100 Spindle*2

Max. spindle speed	15,000 rpm
Spindle motor (S1 / S6 40%)	50 / 65 kW
Max. torque output	314 Nm

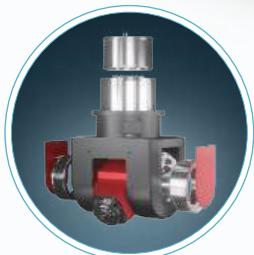
*2 : Opt. HSK-A63 / 24,000 rpm spindle.

	B-axis	C-axis
Rotary angle	± 100°	± 360°
Max. torque output	1,420 Nm	1,560 Nm
Clamping torque	5,000 Nm	5,000 Nm
Position accuracy	± 3"	± 3.6"



The symmetric fork structure

Fork-type structure design and integrally casted with high-grade cast iron ensure sufficient structural rigidity and provide stable machining accuracy.



Direct drive motor

The B&C axes are direct-driven by 3 high-torque, zero-backlash torque motors (Bx2, Cx1), which can endow the axes with ultra-high dynamic performance.



Thermal expansion countermeasure

Complete cooling circuit design forcibly cools down the motors of the spindle, B&C axes, effectively inhibits thermal expansion and ensures the machining accuracy.

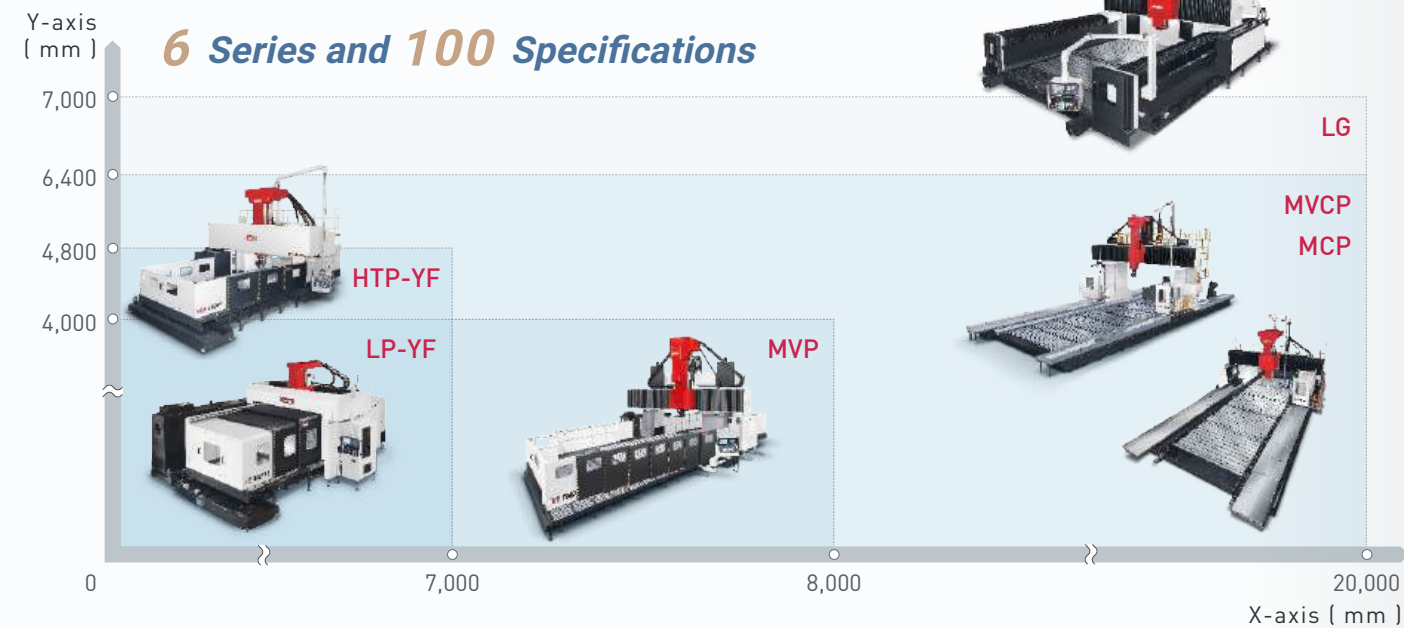


Multi-face Machining

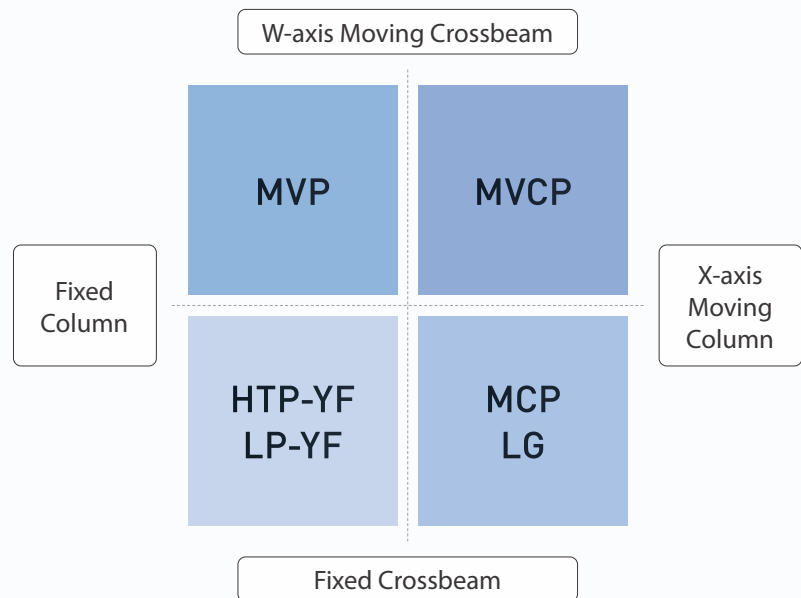
Self-developed vertical / horizontal ATC, automatic head exchange system and attachment heads to accomplish the ultimate performance of the AWEA multi-face machining centers.



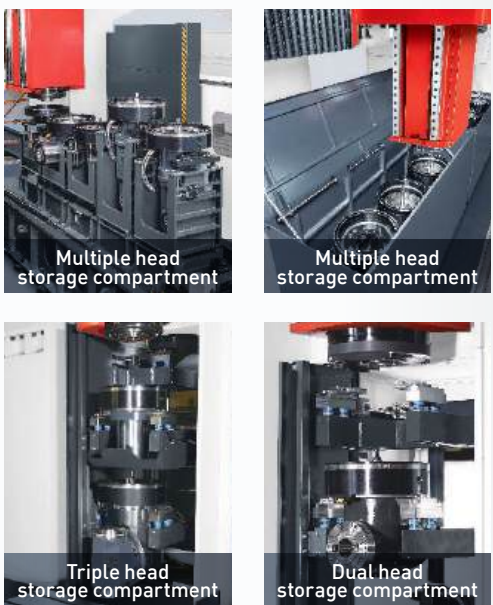
AWEA Gantry-type Multi-face Machining Centers Line-up



X & W axes



Auto. Head Changer Series



AWEA Complete Series of Attachments

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



Highlights



The whole series is equipped with automatic head clamping, tool clamping, and automatic indexing.



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



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 head.

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

More Than 90 Heads Combination Among 4 Series



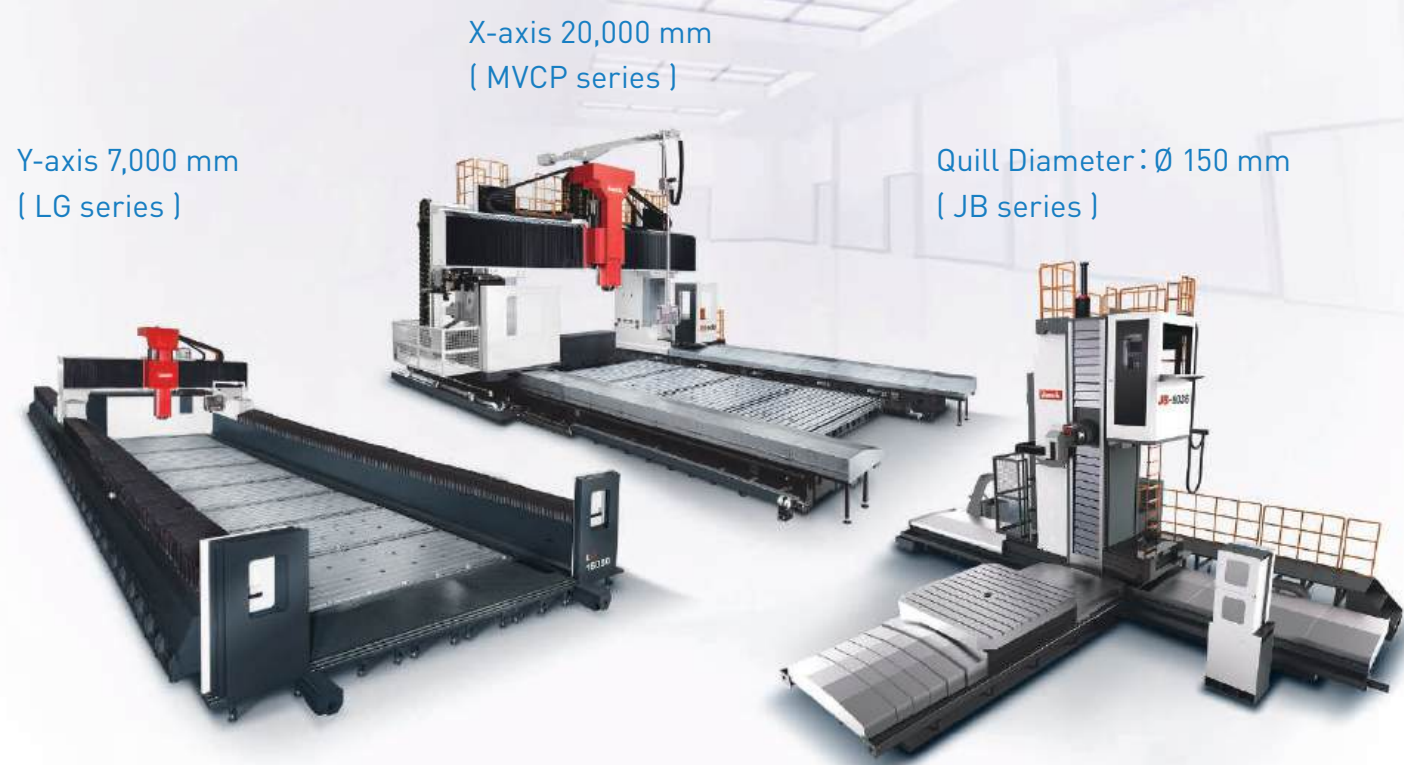



		Max. speed	A-axis indexing	C-axis indexing	Coolant through spindle	Coolant nozzle around spindle	
Universal Head	Auto.	3,000 / 4,500	5° / 2.5° / 1°	5° / 2.5° / 1°	√	○	Nose + 100 mm Z-axis + 200 mm Nose + 100 mm Z-axis + 200 mm
	Semi-auto.	3,000			—	○	
	Manual				—	○	
90° Head	Auto.	3,000 / 4,500	—	5° / 2.5° / 1°	√	Coolant at side of spindle	Nose + 100 mm Z-axis + 200 mm
	Semi-auto.	3,000			—	Coolant at side of spindle	
	Manual				—	—	
35° Head	Auto.	3,000 / 4,500	—	5° / 2.5° / 1°	√	○	
	Semi-auto.	3,000			—	Coolant at side of spindle	
	Manual				—	—	
Extension Head (Z-axis + 350)	Auto.	3,000	—		√	○	Z-axis + 600 mm
		6,000			√	○	
	Manual	3,000			√	—	

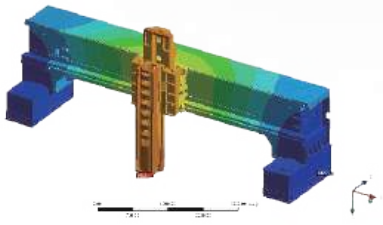
○ : Standard √ : Option — : Not available

Leader for Large Equipment

Since the first bridge type machine installation in 1990, 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.



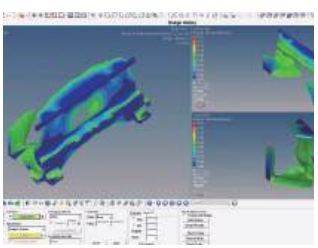
Core Technology



Crossbeam Adjustable Mechanism

The mechanism design significantly reduces the deformation of the large-span crossbeam and permits ultra-long Y-axis travel.

After adjusting, deformation is close to **0mm**



Topology Analysis

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



High Quality Key Components

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

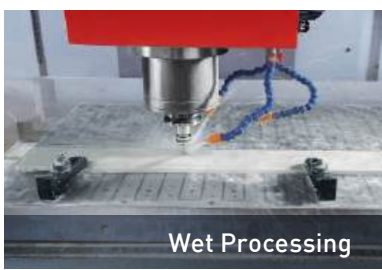


Simultaneous Servo Driven Technology

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

Application Development

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



- 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.



- 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.



- 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.



- More than 15 years of experience in Turn-key projects; whether loading / unloading systems, automatic and manual work-piece clamping systems, or precision measuring devices, we can tailor it to customer needs.



HPC Systems (High Pressure Coolant Systems)

- » Cutting speeds can be increased up to 20% or more.
- » Reduce machining cycle time up to 70%.
- » Improved cutting accuracy with excellent surface finishes.
- » Excellent in deep-hole machining capability.
- » Extend tool life up to 25% to 400%.



R series

Max. Pressure: 100 Bar
Max. Flow Rate: 53 LPM



SP series

Max. Pressure: 140 Bar
Max. Flow Rate: 19 LPM



SE series

Max. Pressure: 70 Bar
Max. Flow Rate: 22 LPM



MB series

Max. Pressure: 35 Bar
Max. Flow Rate: 26 LPM



V series

Max. Pressure: 70 Bar
Max. Flow Rate: 25 LPM



Hydraulic Power System



AS series

Max. power: 7.5 HP
Max. tank capacity: 120 L



AE series

Max. power: 7.5 HP
Max. tank capacity: 40 L

(The above specifications require a power supply of 220V, 60Hz.)

Emphasis on Quality

The key to AWEA’s reliable brand image lies in our strict standard production procedures, well-trained engineers, modern thermostatic workshops, and more importantly, our unswerving requirements for quality.

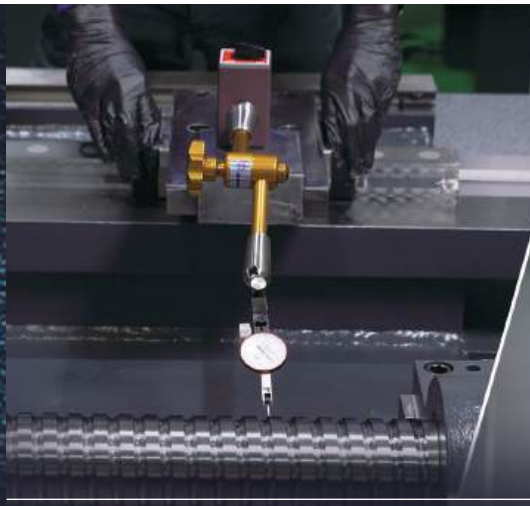


Hand Scraping Rubbing Data Sheet

The hand scraping rubbing record is AWEA’s standard accessory, because we ensure quality even in details where customers are seldom aware of.



Every contact surface undergoes precise hand scrapping to ensure maximum assembly accuracy, structure rigidity, and balanced load.



Core components such as gear box, attachment head and tool magazine are all assembled in thermostatic room in our factory.

Cast Processing

Final machining is done in-house by high-end equipment including YASDA horizontal machining centers and ZEISS 3D coordinate measuring systems.

Casting Aging



After high-temperature casting, the cast later goes through a complete cooling process that takes up to 3~6 months to ensure maximum rigidity and precise repeatability.

Horizontal Boring Mills



High Precision HMC (JPN)



Horizontal Machining Center (Japan)



High-Precision Vertical Grinding Machine (Japan)



3D coordinate measuring machine (German)



Core Unit Assembly

The key core units are produced and manufactured at AWEA's precision assembly facility, allowing us to have better control over quality and ensure on-time delivery. This is a key distinction between AWEA's products and other machines.



Spindle bearing precision test



Gear box run-in test



Dynamic balance running test

Quality Control

- » Key components will have to be checked by the 3D measuring system, 3D profiler, Projection comparator and other advanced equipment quality inspection before entering assembly line.
- » The machine will have to pass laser calibration, ball bar testing, running-in test and cutting test.



Components quality detection



Simultaneously accuracy of 5 axes



Ball bar detection for 3 axes



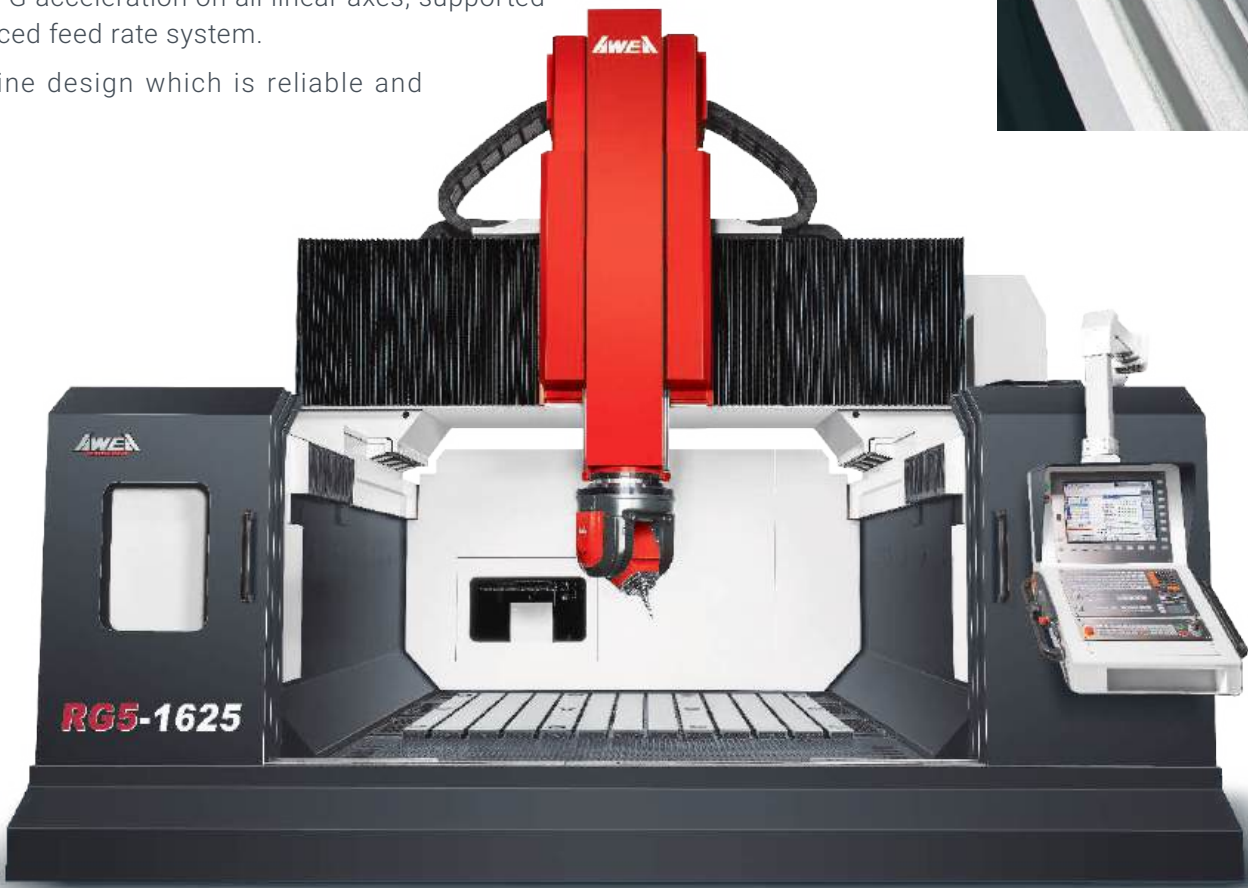
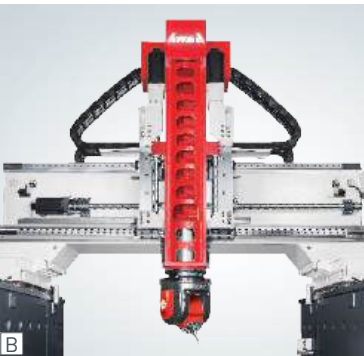
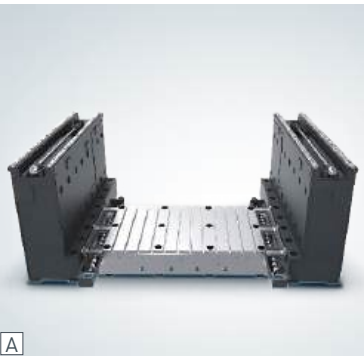
Laser detection of accuracy

RG5 SERIES

GANTRY TYPE HIGH SPEED 5 AXES MACHINING CENTERS

24,000 rpm	2,500 kg/m ²	3,500 mm
Max. spindle speed	Table load capacity	Dist. between columns

- + The Gantry type structure design provides the space usage 40 % less than bridge models.
- + All axial movements are executed by the cutting tool instead of the work-piece, causing less load on the axes and thus improving dynamic accuracy.
- + Available for 24,000 rpm high speed or 124 Nm high torque two-axis head to meet different machining demands.
- + Superior dynamic response with 0.3 G acceleration on all linear axes, supported by rigid structural design and advanced feed rate system.
- + 24T / 32T drum type tool magazine design which is reliable and capable with speedy tool change.



A Four guide ways on a U-shaped base

The rigid U-shaped base with dual linear guide ways on each side provides a solid basis for the cross beam.

B Symmetrical dual servo drive

The Z-axis is driven by dual ball screws and servo motors without hydraulic counterweight system for superior dynamic response and inhibit thermal expansion and minimizing deflection.

C High performance drive system on all linear axes

- Direct-drive servo motors on all linear axes deliver ample thrust and dynamic responses.
- Equipped with linear scale to ensure utmost accuracy.



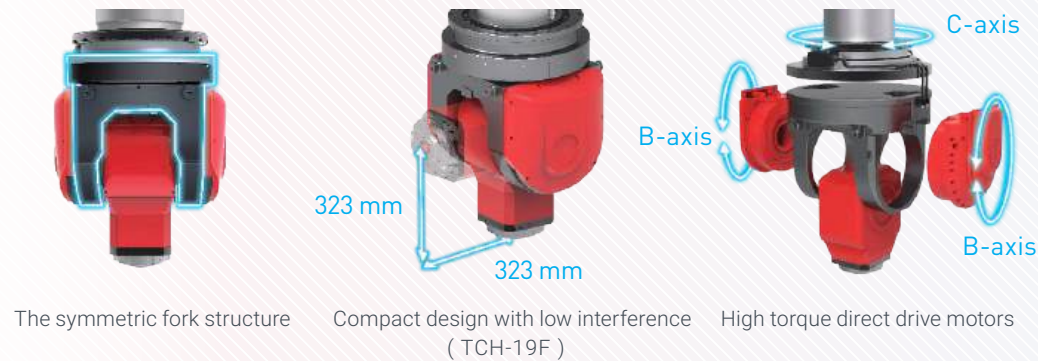
RG5 Series - Two Axes Head

Model	TCH-19F	TCH-19F-A
Spindle taper	HSK-A63	HSK-A100
Spindle speed	24,000 rpm	15,000 rpm
Spindle motor*1	42 / 55 kW	50 / 65 kW

*1 : S1 / S6 40%

// High Performance BC Axes Structure

- Driven by three direct drive motors that provide high rotation speed, high torque output and zero backlash.
- Equipped with cross roller bearings to sustain axial and radial loads from all directions.
- Disk type hydraulic clamping system featuring agile response and better heat dissipation to accommodate frequent clamping demands.
- High resolution absolute encoders ensure optimal machining accuracy.



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

Specifications are subject to change without notice.

MEGA5[®] SERIES

BRIDGE TYPE 5 AXES MACHINING CENTERS

10,000 mm	2,500 kg/m ²	5,800 mm	
Max. X-axis travel	Table load capacity	Dist. between columns	[MEGA5 G]

- + The complete specifications of series easily handle machining tasks for any workpiece size.
- + Available for 24,000 rpm high speed or 314 Nm high torque two axes head to meet different machining demands.
- + X, Y, and Z axes are equipped with closed-loop linear scales to ensure ultimate axial positioning accuracy.
- + HEIDENHAIN / FANUC 5 axes controller is selected by demand.

Bridge Type Structure

MEGA5 P SERIES

- 4 guide ways bed design for maximum structural support and to reduce work table over hang.
- Max. spindle speed can reach up to 24,000 rpm. (TCH-19F)
- 40 T drum type tool magazines.
- Fully enclosed splash guard with roof (Opt.)

Gantry Type Structure

MEGA5 G SERIES

- High rigidity double column structure
- Heavy load floor type working table
- Max. spindle torque can reach up to 314 Nm. (TCH-30F)
- 20T / 40T drum type ATC.
- X-axis stainless steel telescopic cover. (Opt.)



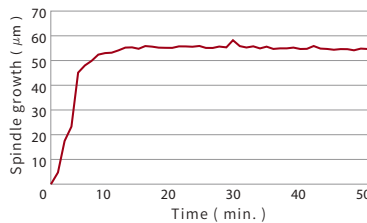
[MEGA5 G6040]



[MEGA5 P3026]

// Thermal Stability of The Spindle

The spindle reaches thermal stability within 10 minutes from a cold start; afterwards thermal expansion is limited to less than 0.01 mm, even during long time machining.



// MEGA5 Series - Two Axes Head

Type	TCH-19F	TCH-19F-A	TCH-30F
Model	All Series		
Spindle taper	HSK-A63	HSK-A100	HSK-A100
Spindle speed	24,000 rpm	15,000 rpm	12,000 rpm
Spindle motor*1	55 kW	65 kW	50 kW
Spindle torque	87 Nm	124 Nm	314 Nm

*1 : S6 40%



MEGA5 P SERIES

X-axis travel	mm	2,500 ~ 6,000
Y-axis travel	mm	2,620 / 3,200 / 4,000
Z-axis travel	mm	1,000 / 1,200
Table load capacity	kg	8,000 ~ 20,000
Max. work-piece size	L (X)	mm 2,310 ~ 6,020
	W (Y)	mm 1,500 / 2,400
	H (Z)	mm 850

MEGA5 G SERIES

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 / m ²	2,500
Max. work-piece size	L (X)	mm 4,000 ~ 10,000
	W (Y)	mm 3,700 / 4,700
	H (Z)	mm 1,050

Specifications are subject to change without notice.

AU-680

HIGH SPEED 5 AXES MACHINING CENTERS SERIES

Ø680 mm
Table size

1,000 kg
Table load capacity

18,000 rpm
Max. spindle speed



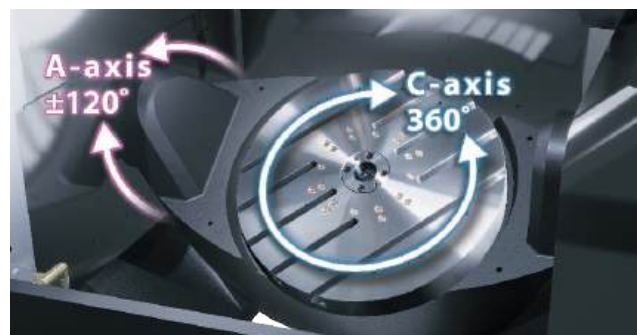
- + The base and the Y-axis saddle are cast as especially thick rib re-enforced structures, to easily match the rigidity requirements for high speed cutting.
- + 16,000 / 20,000 rpm high speed built-in spindle for ultimate surface finish and accuracy.
- + Completed cooling system design includes X-axis ball screw, all axial linear guide way, connecting board of motor and Z-axis bearing bracket to inhibit thermal expansion and ensure the accuracy after long-time machining.
- + Optional drum-type conveyor is equipped with filter and backwash device to reduce the demand of cleaning coolant tank.



[Optional Front Door Trim AU-680]

// A / C Axes Trunnion Table

- A-axis is adopted with dual servo-driven and advanced brake system design to achieve better dynamic and braking capacity. Max. table load is 1,000 kg.
- A / C axes are driven by over-sized servo motor with gear reducer, and the mechanical preload eliminates the backlash during operation.
- Standard with high resolution absolute encoder to provide high position accuracy..



AU-680		
X / Y / Z axes travel	mm	740 / 662 / 560
A-axis swiveling range		-120° ~ +120°
C-axis rotary range		360°
Table size	mm	Ø 680
Table load capacity	kg	1,000
Spindle speed	rpm	16,000 / 18,000
Spindle motor (S1/S6 40%)	kW	18 / 26
Spindle taper		HSK-A63
Tool magazine	T	40 / 60

Specifications are subject to change without notice.

FCV-800 II

GANTRY TYPE 5 AXES MACHINING CENTERS SERIES

Ø850 mm
Table size

1,400 kg
Table load capacity

24,000 rpm
Max. spindle speed



- + 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, significant improvement in dynamic performance and 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.
- + A variety of diversified and modular tool magazine configurations are available.



// A / C Axes Trunnion Table

- The design features a high rigidity, high precision roller cam drive mechanism, with a maximum table load capacity of up to 1,400kg.
- The roller cam offers high rotational accuracy, near-zero backlash, and exceptional torque resistance, making it especially suitable for heavy workpiece machining applications.



FCV-800 II		
X / Y / Z axes travel	mm	800 / 900 / 660
A-axis swiveling range		110° ~ -40°
C-axis rotary range		360°
Table size	mm	Ø 800
Table load capacity	kg	(0°) : 1,400 / (90°) : 1,000
Spindle speed	rpm	16,000 / 24,000
Spindle motor (S1/S6 40%)	kW	25 / 29
Spindle taper		BBT40
Tool magazine	T	32 / 40 / 64 / 80

Specifications are subject to change without notice.

FCV-620 SERIES

HIGH SPEED 5 AXES MACHINING CENTERS

Ø650 mm

Table size

300 kg

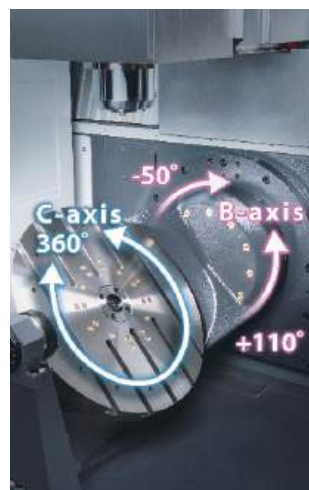
Table load capacity

20,000 rpm

Max. spindle speed

- + 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 point support design provided 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 excellent dynamic response and braking capacity.
- + X / Y / Z axes are equipped with direct drive servo motors and heavy duty roller type linear guide ways.
- + The 32T / 40T / 60T / 90T / 120T chain-type tool magazine, combined with an arm-type tool changing system, offers rapid tool change capability.

// B / C Axes Trunnion Table



FCV-620 SERIES

- Worm gear transmission driven by servo motor.
- Equipped with HEIDENHAIN angular scale.
- B / C axes adopt with full circular brake system, providing excellent braking capacity.
- Table size: Ø 500 / Ø 650 mm
- Table load capacity: 300 kg

FCV-620S SERIES

Designed for high load machining requirements, the drive mechanism uses a high-precision roller cam, offering exceptional rigidity and transmission performance with almost zero backlash.

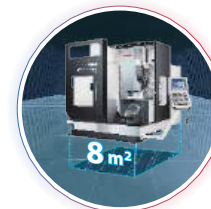
- Table size: Ø 650 mm
- Table load capacity: 500 kg



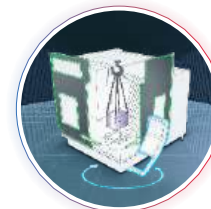
5-axis simultaneous machining



Abundant working area



Compact floor space



Convenient operating space

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
Tool magazine	T	32 (40 / 60 / 90 / 120)

Specifications are subject to change without notice.



FCV-620 MPC FCV-620 Automation System

- + The three-axis robotic arm features a servo-driven design, with customizable X/Z axes travel based on requirements.
- + The control panel offers a conversational interface, allowing users to easily perform loading and unloading operations.
- + The carousel adopts an array design, and the number of worktables can be customized as needed.

15

Number of Tables

500 mm

Table Size

200 kg

Table Load Capacity

Ø450 x 350 mm

Max. Workpiece Size

FV SERIES

Floor Space

5.8 m²

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.
- + 5.8 m² compact floor space.



(FV-960)



FV-560

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°	360°
Table size	mm	Ø 210	620 x 360 (Ø 350)
Spindle speed	rpm	12,000 / 15,000	
Spindle taper		BBT40	
X / Y / Z axes rapid feed rate	m/min.	32 / 32 / 24	

Specifications are subject to change without notice.

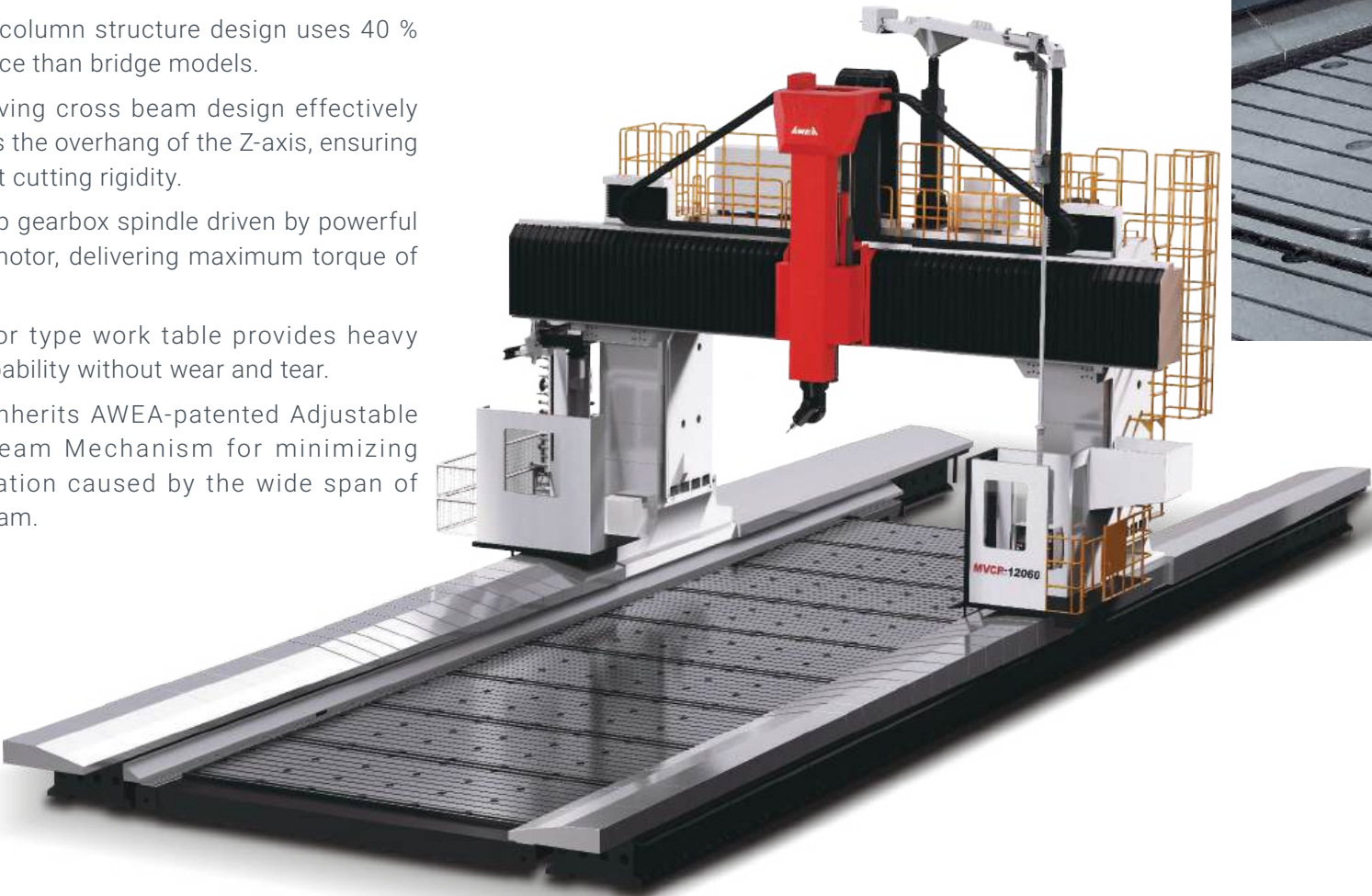
MVCP

SERIES

MOVING COLUMN & MOVING CROSS BEAM MULTI-FACE MACHINING CENTERS

20,000 mm	1,600 mm	2,500 kg/m ²
Max. X-axis travel	Max. W-axis travel	Table load capacity

- + Moving column structure design uses 40 % less space than bridge models.
- + The moving cross beam design effectively shortens the overhang of the Z-axis, ensuring excellent cutting rigidity.
- + Two-step gearbox spindle driven by powerful 26 kW motor, delivering maximum torque of 977 Nm.
- + The floor type work table provides heavy load capability without wear and tear.
- + Y-axis inherits AWEA-patented Adjustable Crossbeam Mechanism for minimizing deformation caused by the wide span of crossbeam.



X-axis feed rate system

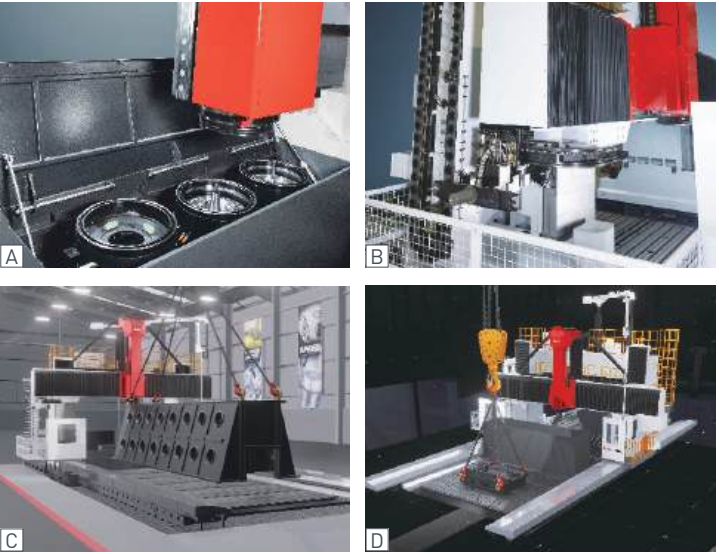


Y-axis feed rate system



W-axis feed rate system

- Rack & Pinion + roller type linear guide ways.
 - Electrical preloads to eliminate backlash.
 - Standard with high resolution full enclosed loop linear scale.
- Adopt with rack and pinion drive system and equipped with AWEA made mechanical preload design to eliminate backlash and make sure high-accuracy positioning.
- W-axis adopts twin hydraulic counterweight balancing and dual roller type linear guideway design to reach high rigidity and better support.



A Multiple Head Storage Compartment

- Installed two or three head storages between column to store sufficient quantity of angular head.
- Auto. cover by pneumatic system

B Vertical / Horizontal ATC System

- High efficiency servo-driven tool magazine.
- Movable with column along X-axis direction.
- Exchange tool at any position along W-axis.

C Convenient Loading / Unloading Area

Open machining area with low side structures make the loading / unloading more convenient.

D Dual Working Area Configuration

Two independent working area divided from one working table, while any of one is machining, the other one is available for loading / unloading safely.

MVCP		
X-axis travel	mm	8,000 ~ 20,000
Y-axis travel	mm	4,400 / 5,400 / 6,400
Z-axis travel	mm	1,400 (1,600 Opt.)
W-axis travel	mm	1,250 (1,600 Opt.)
Dist. between columns (X-axis cover)	mm	3,700 (3,500) / 4,700 (4,500) / 5,700 (5,500)
Table size (X x Y)	mm	8,000 ~ 20,000 x 2,800 / 3,800 / 4,800
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.)
Tool magazine	T	60

Specifications are subject to change without notice.

MCP SERIES

MOVING COLUMN BRIDGE TYPE MULTI-FACE MACHINING CENTERS

20,000 mm
Max. X-axis travel

6,400 mm
Max. Y-axis travel

1,600 mm
Max. Z-axis travel

X-axis
Moving Column

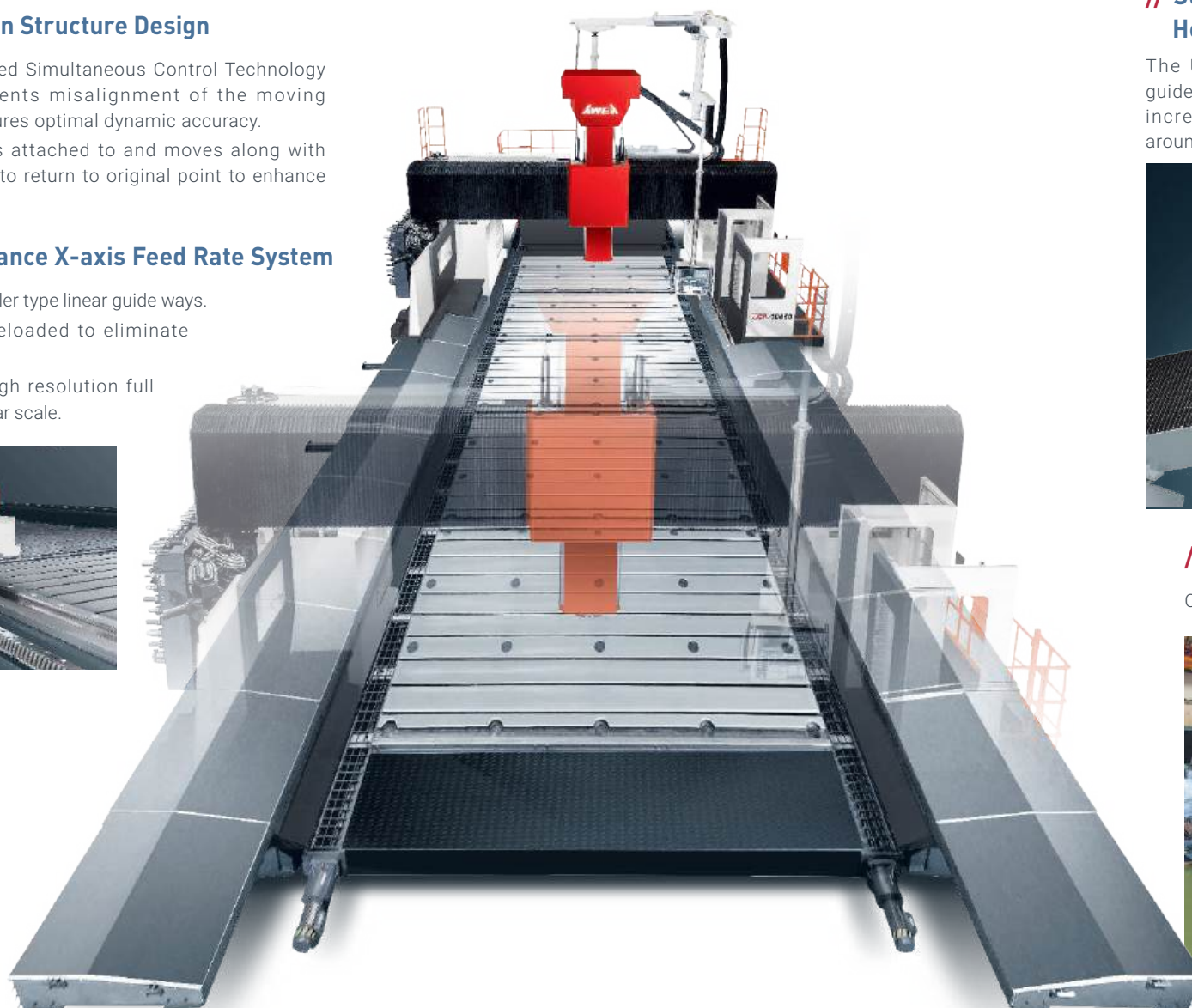
- + Moving Column type structure design uses 40 % less space than bridge models.
- + Three linear guide ways on the Y-axis and four linear guide ways on the Z-axis provide reliable heavy cutting capability.
- + The optimized design of two-step gearbox and short transmission shaft provide super large torque during low speed.
- + The floor type 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 side of the work table together with the chip conveyor provide efficient chip removal.

// Moving Column Structure Design

- Via AWEA-patented Simultaneous Control Technology effectively prevents misalignment of the moving columns and ensures optimal dynamic accuracy.
- Tool magazine is attached to and moves along with column, no need to return to original point to enhance efficiency.

// High Performance X-axis Feed Rate System

- Rack & Pinion + roller type linear guide ways.
- Mechanically preloaded to eliminate backlash.
- Standard with high resolution full enclosed loop linear scale.



// Super Rigid Spindle Headstock Structure

The U-shaped saddle with four linear guide ways and ten sliding blocks further increase the rigidity of the headstock around 30%~40%



// Automatic Head Storage Compartment

Installed two or three head storages between column to store sufficient quantity of angular head.



// Vertical / Horizontal ATC system

Sensors and sequence scanning ensure safety and reliability.



// Convenient Operation

Open machining area with low side structures make the loading / unloading more convenient.



MCP		
X-axis travel	mm	8,000 ~ 20,000
Y-axis travel	mm	4,400 / 5,400 / 6,400
Z-axis travel	mm	1,400 (1,600 Opt.)
Dist. between columns (X-axis cover)	mm	3,700 (3,500) / 4,700 (4,500) / 5,700 (5,500)
Table size (X x Y)	mm	8,000 ~ 20,000 x 2,800 / 3,800 / 4,800
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.)
Tool magazine	T	40 (60 Opt.)

Specifications are subject to change without notice.

MVP SERIES

MOVING CROSS BEAM BRIDGE TYPE MULTI-FACE MACHINING CENTERS

1,250 mm

Max. W-axis travel

8,000 mm

Max. X-axis travel

25,000 kg

Table load capacity

W-axis
Moving Cross Beam

- + 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.
- + 4 high rigidity compound guide ways provide full travel support for the table, effectively enhancing table load capacity and dynamic accuracy.
- + Standard with automatic dual head storage compartments and vertical / horizontal ATC system. Available for options with multiple head storage compartments to fulfill various machining demands.
- + The Multi-Face Coordinate Conversion System for automatic coordinate transformation, which saves considerable time in programming.



A Compound 4 guide ways base

The table is center driven and supported by 4 compound guide ways along its full travel, which eliminates overhang problems and ensures optimal work-piece support.

B Rack and pinion mechanism

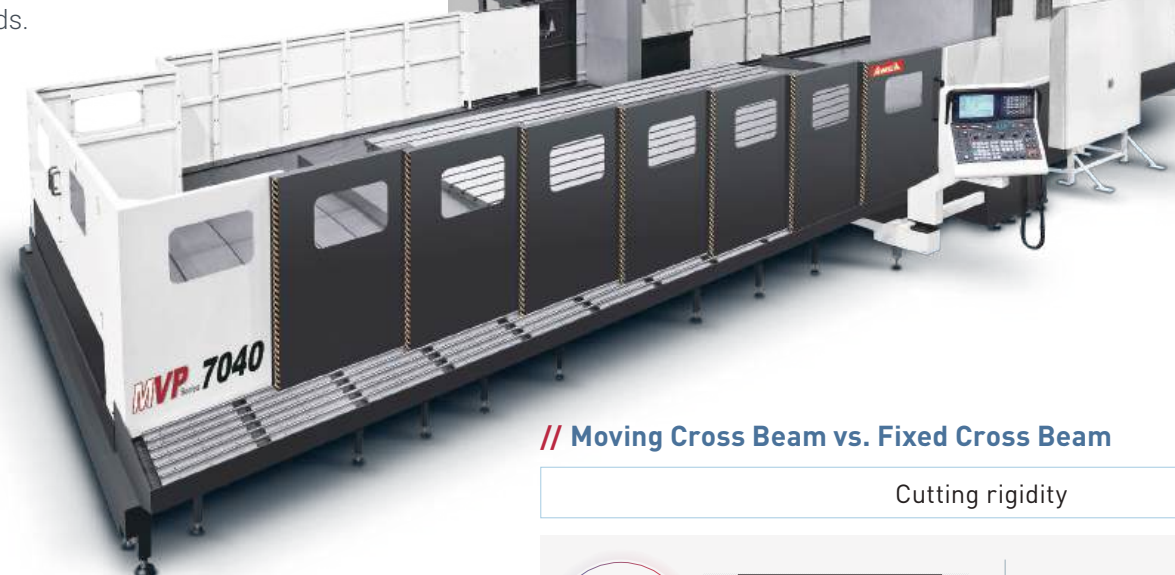
X-axis can be equipped with an optional rack and pinion drive system and high resolution linear scales. The dual servo motor design eliminates backlash and provides excellent dynamic accuracy for large machines. (MVP-8040)

C Multiple head storage compartment

Up to 6 head storages compartments can be provided to achieve high reliable and high efficiency head changer capability.

D Vertical / Horizontal ATC system

40T or 60T vertical / horizontal ATC with sensors and sequence scanning ensure safety and reliability.



// Advanced W-axis Structure

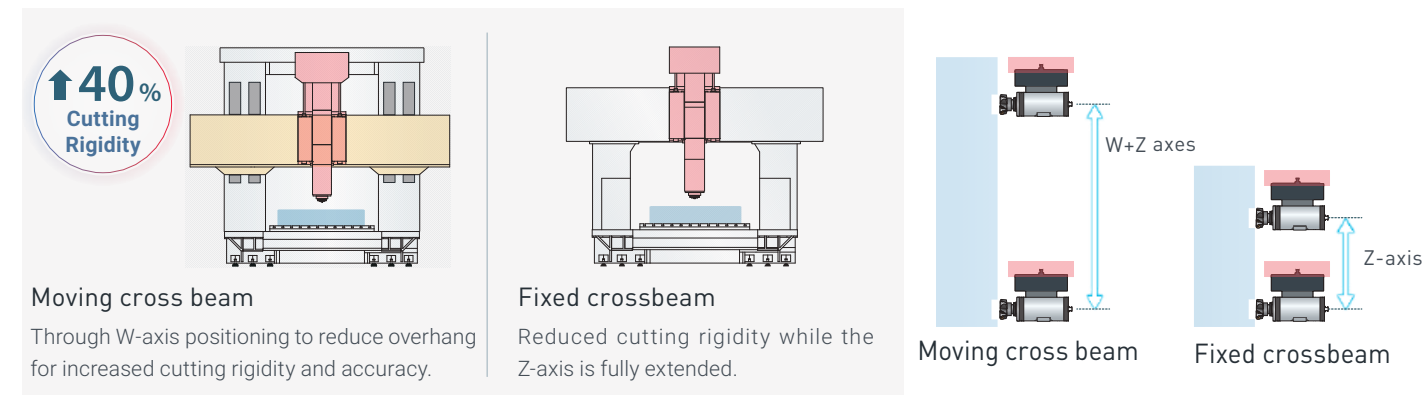
- W-axis adopts twin hydraulic cylinders for counterweight balancing.
- The "Synchronized - controlled technology" effectively reduces following error from both sides of W-axis movement which ensures the optimal dynamic accuracy.



// Moving Cross Beam vs. Fixed Cross Beam

Cutting rigidity

Machining range



		MVP-4032	MVP-5032	MVP-6032	MVP-7032	MVP-8032	MVP-4040	MVP-5040	MVP-6040	MVP-7040	MVP-8040
X-axis travel	mm	4,000	5,000	6,000	7,000	8,000	4,000	5,000	6,000	7,000	8,000
Y-axis travel	mm			3,200					4,000		
Z-axis travel	mm			1,000 (1,200 / 1,400 Opt.)					1,000 (1,200 / 1,400 Opt.)		
W-axis travel	mm			1,250					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	8,020 x 2,400	4,020 x 3,010	5,020 x 3,010	6,020 x 3,010	7,020 x 3,010	8,020 x 3,010
Table load capacity	kg	15,000	18,000	20,000	20,000	20,000	15,000	18,000	20,000	20,000	25,000
Spindle speed	rpm		4,000 (Vertical) ^{*1} / 3,000 (Horizontal) ^{*2}					4,000 (Vertical) ^{*1} / 3,000 (Horizontal) ^{*2}			
Spindle motor	kW		22 / 26 (cont. / 30 min.)					22 / 26 (cont. / 30 min.)			
Tool magazine	T			60					60		

*1 : Opt. 6,000 rpm gear spindle ; 8,000 / 10,000 / 12,000 rpm direct drive spindle.

*2 : Opt. 4,500 rpm

Specifications are subject to change without notice.

LP-YF SERIES

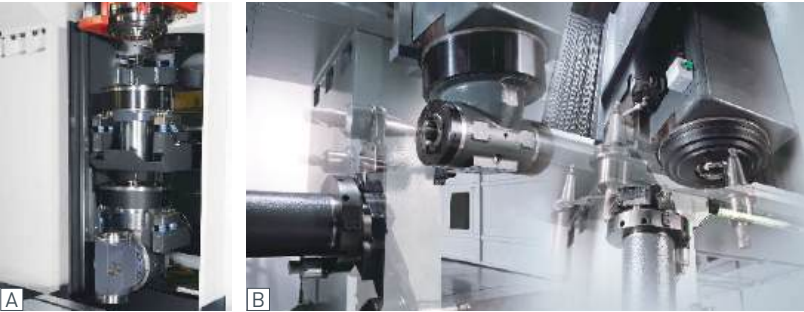
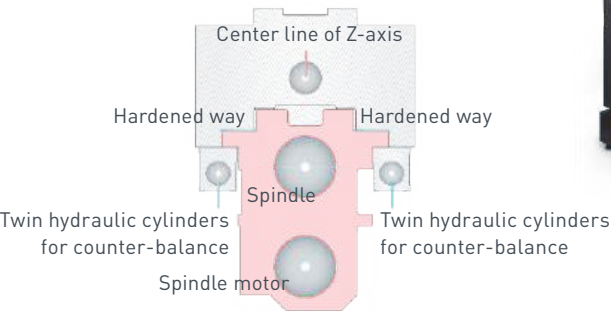
BRIDGE TYPE MULTI-FACE MACHINING CENTERS

7,000 mm	20,000 kg	12,000 rpm
Max. X-axis travel	Table load capacity	Max. spindle speed

- + Most affordable multi-face machining solution.
- + 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 Multi-Face Coordinate Conversion System for automatic coordinate transformation, which saves considerable time in programming.

// 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 twin hydraulic counterweight cylinders placed symmetrically, prevents from thermal expansion and minimizing deflection.



[A] Automatic head storage compartment

Providing high efficiency head changer capability.
(Two or three head storage can be chosen by demand.)

[B] Vertical / Horizontal ATC system

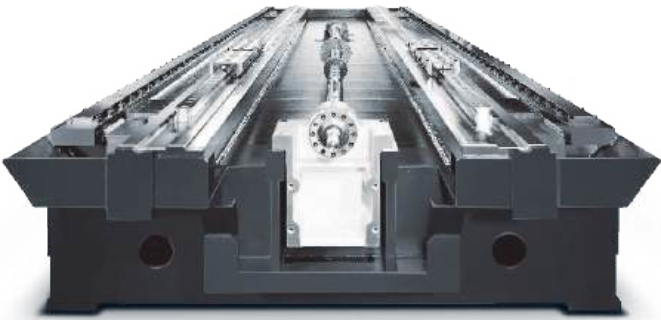
32T / 40T / 60T / 90T / 120T vertical / horizontal ATC system with excellent reliability and efficiency.

		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.)				760 (1,000 / 1,200 / 1,400 Opt.)			
Table size (X-axis)	mm	3,020	4,020	5,020	6,020	3,020	4,020	5,020	6,020	4,020	5,020	6,020	7,020
Table size (Y-axis)	mm	2,010	2,010	2,010	2,010	2,400	2,400	2,400	2,400	2,400	2,400	2,400	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(YF) / 4,000 (YZF) Vertical*1 : 3,000 Horizontal*2								6,000(YF) / 4,000 (YZF) Vertical*1 : 3,000 Horizontal*2			
Spindle motor	kW	22 / 26 (cont. / 30 min.)								22 / 26 (cont. / 30 min.)			
Tool magazine	T	32 (40 / 60 / 90 /120 Opt.)								32 (40 / 60 / 90 /120 Opt.)			

*1: Opt. 8,000 / 10,000 / 12,000 rpm direct drive spindle. *2: Opt. 4,500 rpm

// 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.



HTP-YF SERIES

Heavy Cutting

BRIDGE TYPE MULTI-FACE MACHINING CENTERS



		HTP-YF
X-axis travel	mm	4,000 ~ 7,000
Y-axis travel	mm	3,200 / 4,000 / 4,800
Z-axis travel	mm	1,000 (1,200 / 1,400 Opt.)
Table size (X-axis)	mm	4,020 ~ 7,020
Table size (Y-axis)	mm	2,400 / 3,000
Table load capacity	kg	15,000 ~ 20,000
Spindle speed	rpm	4,000 (6,000 ~ 12,000 Opt.)
Spindle motor	kW	22 / 26 (cont. / 30 min.)
Tool magazine	T	32 (40 / 60 / 90 / 120 Opt.)

Specifications are subject to change without notice.

EP-YF SERIES

High C/P Value

BRIDGE TYPE MULTI-FACE MACHINING CENTERS



		EP-YF
X / Y axes travel	mm	2,500 ~ 5,000 / 2,300 ~ 3,200
Z-axis travel	mm	760 / 1,000
Table size (X-axis)	mm	3,020 ~ 5,020
Table size (Y-axis)	mm	1,500 / 2,010
Table load capacity	kg	10,000 ~ 15,000
Spindle speed	rpm	6,000 (4,000 ~ 12,000 Opt.)
Spindle motor	kW	22 / 26 (cont. / 30 min.)
Tool magazine	T	32 (40 / 60 Opt.)

Specifications are subject to change without notice.

BL SERIES

HEAVY LOAD HORIZONTAL BORING MILLS

15,000 kg

Table load capacity

900 mm

Max. W-axis travel

Ø130*1 mm

Quill diameter

*1 : BL-S 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, ensuring optimal structural rigidity.
- + Modular quill or ram type spindle to meet the processing needs of high precision parts or mold.
- + B-axis work table is programmable 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 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 system.



// A Variety of Work Table Configuration



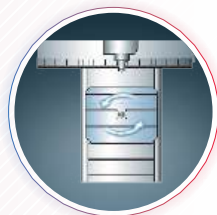
Rotary table
1,600 x 1,800 mm



Rotary table
1,600 x 1,800 mm
Fixed table
1,600 x 1,200 mm



Rotary table
1,600 x 1,800 mm
Fixed table
2,800 x 2,000 mm



Rotary table
2,500 x 2,300 mm



// Quill Type Spindle (BL-S)

- High precision quill type spindle Ø 130 mm.
- Two step gear box spindle.
- Spindle torque output can reach up to 1,300 Nm.

Applicable for workpiece machining.



// Ram Type Spindle (BL-FM)

- The cross section of ram is 480 x 470 mm.
- Motorized built-in spindle design.
- Max. spindle speed can reach up to 8,000 rpm.

Applicable for mold machining.



// Heavy Load Work Table

Work table equipped with super rigid slew ring bearing and fully supported by base along the travel range, providing maximum table load capacity up to 15,000 kg.

BL		
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 (900 Opt.)
Table size (X x Y)	mm	1,600 x 1,800
Boring spindle	mm	Ø 130 (Quill) / 480 x 470 (Ram)
Table load capacity	kg	15,000
Spindle speed	rpm	Gear 2,400 (BL-S) Built-in 8,000 (BL-FM)
Spindle motor	kW	22 / 26 (cont. / 30 min.)

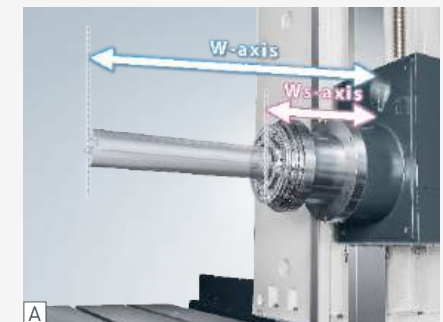
Specifications are subject to change without notice.

JB SERIES

Super
Size

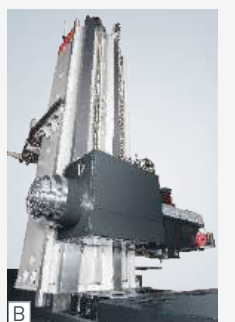
FLOOR TYPE HORIZONTAL BORING MILLS

- + X / Y / Z / W / B five axes control with four axes simultaneous processing.
- + 3-step geared spindle with a maximum torque output of 3,000 Nm.
- + The quill type spindle diameter Ø 150 mm / Ø 130 mm.
- + 4 guide ways bed design for maximum structural support and to reduce work table over hang.
- + Dual compartment head storage, 40T / 60T arm type tool magazine.



A Quill Type Spindle

The spindle sleeve provides sufficient cutting rigidity for the spindle when the quill is extended.



B High Rigidity Box Ways

Y-axis adopts with high rigidity box-way design to fulfill heavy cutting requirement.



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

Specifications are subject to change without notice.

BT SERIES

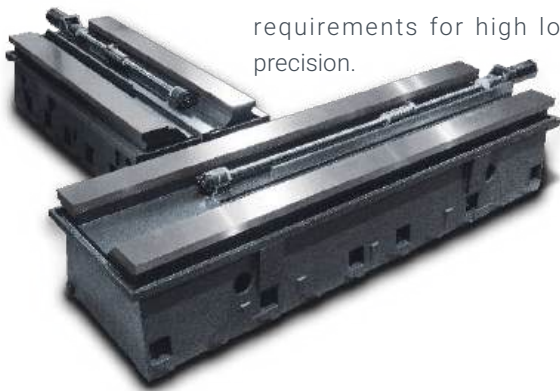
HORIZONTAL BORING MILLS

500 mm	10,000 kg	0.001°
Max. W-axis travel	Table load capacity	Minimum B-axis index

- + Moving column structure, X / Y / Z / W / B five axes control with four axes simultaneous processing.
- + With advanced B-axis driving and braking system, the work-piece could be completed on a multi-face processing by setting up once.
- + The operator working area with door and the full enclosed splash guard provide a safe and convenient operating environment.
- + Equipped with 60T chain type tool magazine and high reliability arm type ATC system.
- + Compact structural design with about 6,200 x 6,200 mm of footprint merely.

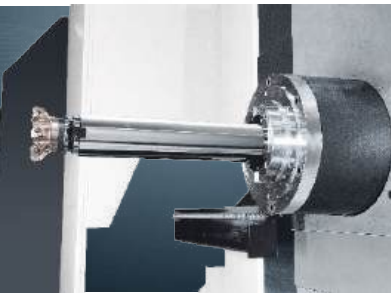
// High Rigidity Base

The independent design of the X-axis and Z-axis base structures provides full stroke support for the worktable and column, meeting the design requirements for high load capacity and high precision.



// High Torque Output Gear Spindle

- Ø110 mm quill type spindle and 500 mm travel of W-axis which is capable to process high precision parts demands.
- The spindle is driven by 2-step gear box with 4,000 rpm, with 3,400 Nm maximum torque output of when spindle speed is 84 rpm.
- The active oil mist lubrication bearing design, coupled with a high-performance spindle circulation cooling system, ensures that this series maintains optimal machining precision even during extended operation.



// B-axis Driven System

- B-axis is driven by two sets of gears, ensures efficient transmission rigidity and eliminates the backlash simultaneously.
- B-axis 0.001° indexing can be achieved through the absolute encoder.
- The 5 sets of hydraulic braking system provide sufficient braking capacity of the working table.



// Chain Type Tool Magazine

Arm type automatic tool change system with 60T chain type tool magazine, optional for 90T / 120T / 240T, meets various processing requirements.

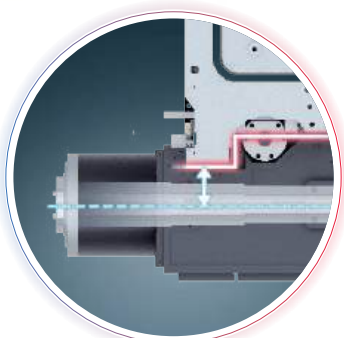
Tool magazine capacity: 60T
Max. tool diameter: Ø125 mm
(Ø240 mm, adj. pocket empty)
Max. tool length : 400 mm
Max. tool weight : 25 kg

// High rigidity box way

X / Y / Z axes are equipped with super rigid box ways that have been heat-treated and precision ground, for optimal heavy-duty cutting support.

// High efficiency feed rate system

Over-sized servo motors and large diameter ball screw equipped on X / Y / Z axes, the maximum rapid feed rate is 18 m / min.



// Y-axis guide ways with offset design

The Y-axis guide ways with offset design shortens the distance between the guide ways near cutting area and the spindle center line to eliminate cutting torque and reduce thermal expansion of headstock.

BT-2520

X-axis travel	mm	2,500
Y-axis travel	mm	2,000
Z-axis travel	mm	1,500
W-axis travel	mm	500
Table size (X x Y)	mm	1,400 x 1,800
Boring spindle size	mm	Ø 110
Table load capacity	kg	10,000
Spindle speed	rpm	4,000
Spindle motor	kW	22 / 30 (cont. / 30 min.)

Specifications are subject to change without notice.

AHM

SERIES

HORIZONTAL MACHINING CENTERS

Ø1,700 mm

Max. work-piece dia.

4,000 kg

Table load capacity

770 Nm

Spindle torque output

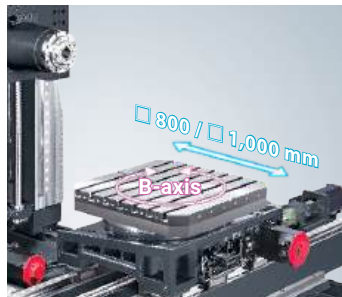
- + The superior rigid one-piece cast base and rib reinforced column provide a solid basis for heavy-duty cutting.
- + Heavy duty roller type linear ways on the three axes provide fast movement and high rigidity.
- + 26 kW spindle motor with a 2-step gear box supplies up to 770 Nm torque output.
- + AHM series table load capacity up to 4,000 kg, the highest in its class.
- + B-axis 1° indexing allows machining of complex shapes in a single setup.
- + The base is equipped with 4 chip augers; chips are quickly removed from the processing area to guarantee uninterrupted machining.

// High Torque Gear Spindle



The 2-step gear box is directly driven by a 26 kW FANUC αi series spindle motor with a maximum torque output of 770 Nm at 320 rpm, supplying ample power for heavy duty cutting.

// 1° Index Work Table (B-axis)



High-rigidity curved coupling, combined with a hydraulic brake system for index positioning, delivers superior heavy-duty cutting capabilities.

The clutch consists of two large diameter gears that provide more contact area, ensuring precise-positioning without play to ensure high positioning accuracy.



// Automatic Worktable Exchange System

The optional parallel type pallet exchanger increasing utilization by reducing non-cutting time due to loading and unloading of workpieces.



(Standard with fully enclosed splash guard for AHM-800)



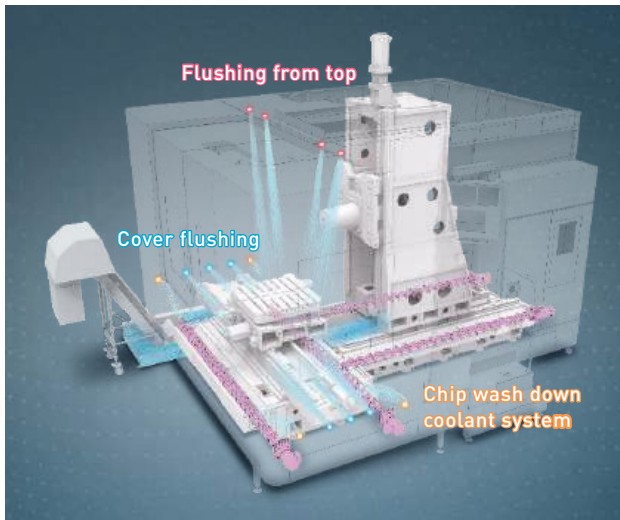
// High Reliable ATC System



The arm type ATC system is designed with a precision cam control for the entire tool change process, ensuring smooth and reliable tool exchanges.



Optional 40T or 60T chain type tool magazine by demand to fulfill various processing requirement.



// Chip Removal System

The advanced chip flushing system assists in maintaining ultimate accuracy, achieving long term machining reliability, and reducing downtime for manual chip removal by rapidly cooling down work-piece and tool while simultaneously removing chips.

(Optional with fully enclosed splash guard with roof for AHM-800)

		AHM-800	AHM-1000	AHM-800 / 1000 APC
X-axis travel	mm	1,700 (2,100 Opt.)		
Y-axis travel	mm	1,350	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 / 1,000 x 1,000
Table load capacity	kg	4,000	4,000	2,500 x 2
Max. work-piece dia. / height	mm	Ø 1,700/ 1,350	Ø 1,700/ 1,350	Ø 1,600/ 1,150
Spindle taper		BBT50		
Spindle speed	rpm	Gear 6,000		
Spindle motor	kW	22 / 26 (cont. / 30 min.)		

Specifications are subject to change without notice.

AH SERIES

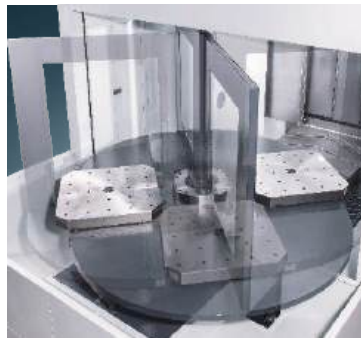
HORIZONTAL MACHINING CENTERS

□ 500 mm (AH-500) / □ 630 mm (AH-630)
Table size

- + Excellent chip removal capability, particularly suitable for processing tasks such as hollowing out cavities and other tasks that cause a lot of chips.
- + Based on processing demand to choose high speed direct-drive spindle or high torque gear spindle.
- + BBT dual-contact spindle design providing enhanced tool clamping rigidity 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 60 m/min.*1
- + User-friendly design allows for easy loading and unloading with an overhead crane or manual tool changes.

*1: Individual models may vary.

// The APC System



Servo motor drive the APC system to take only 16 seconds for the pallets exchange which effectively reduce non-cutting time and increase production.



The clamping mechanism uses a four hydraulic cylinder and cone seat design which provides stable machine accuracy and ample clamping force to the work table.



// 0.001° Index Work Table (B-axis)

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.

// 1° index Work Table (B-axis)

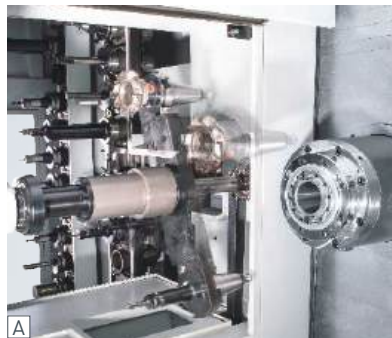
High rigidity clutch type indexing, positioning accuracy at 8", repeatability at 2", most suitable for heavy duty machining.



// High Torque Gear Spindle



Two-step gear box is direct-driven by FANUC *αi* series spindle motor with a maximum torque output of 770 Nm at 320 rpm, supplying ample power for heavy cutting.
(Opt. 10,000 rpm direct drive spindle)



A The ATC System

Arm type Automatic Tool Change system and 60T chain type tool magazine. (Maximum up to 240 tools)



B Coolant Flushing System

The coolant flushing system around the spindle and roof can effectively flush chips away from the working area.



C Screw type Chip Auger

The complete coolant chip removal system consists of two chip augers, chip conveyor and a large volume tank that can remove chips efficiently.

		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 (X x Y)	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 x 2	1,200 x 2
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.

LG SERIES

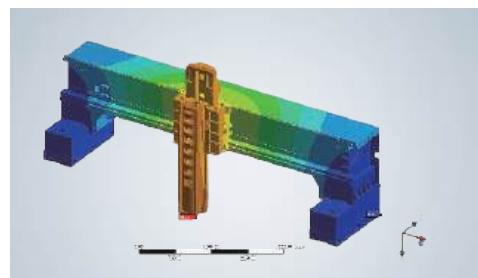
GANTRY TYPE MACHINING CENTERS

20,000 mm
Max. X-axis travel

7,000 mm
Max. Y-axis travel

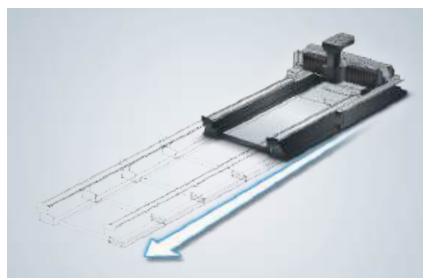
2,500 kg/m²
Table load capacity

- + Extreme large travel range: X-axis 20,000 mm, Y-axis 7,000 mm, Z-axis 1,400 mm.
- + High torque 977 Nm gear spindle and high speed 12,000 rpm built-in spindle can be chosen according to customer's operating requirement.
- + The floor type work table provides heavy load capability without wear and tear.
- + The X-axis utilizes the AWEA "Synchronized- controlled technology", which effectively eliminates following errors between X & U axes to ensure machining accuracy.
- + Optional automatic head storage compartment and vertical / horizontal ATC system enable the machine to perform highly efficient multi-face machining.



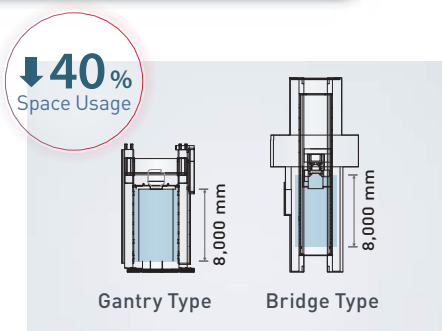
// Adjustable Cross Beam Structure

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.



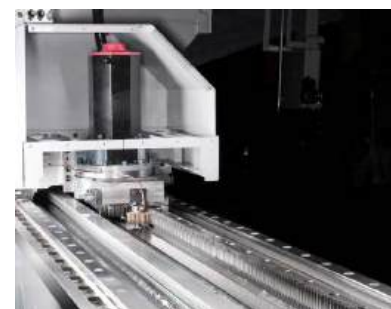
// Modular Design of The X-axis

The modular design of the side column and worktable allows the X-axis travel to be extended flexibly according to needs, meeting the machining requirements of various oversized workpieces.



// Gantry Type Structure Design

Gantry type structure use 40% less floor space than bridge type machines.



// High performance feed rate system

X / Y axes patented rack & pinion with anti-backlash design and 1 μ m high resolution linear scale to ensure long travel dynamic accuracy.

	Ball Screw	Rack & Pinion	Linear Scale
X-axis 4m / 5m	S	-	S
X-axis 6m and above	-	S	S
Y-axis 7m	-	S	S

S : Standard
- : Not available



// Multi-face machining capability (Opt.)

- **Automatic head storage compartment**
Installed two or three head storages between column to store sufficient quantity of attachment head.
- **Vertical / horizontal ATC system**
ATC system provides quick tool change with sensors and sequence scanning to ensure safety and reliability.

		LG-4030	LG-5030	LG-6030	LG-8030	LG-10030	LG-5040	LG-6040	LG-8040
X-axis travel	mm	4,000	5,000	6,000	8,000	10,000	5,000	6,000	8,000
Y-axis travel	mm			3,000				4,000	
Z-axis travel	mm				1,000 (1,200 / 1,400 Opt.)				
Table load capacity	kg/m ²				2,500				
Spindle speed	rpm			4,000 (6,000 / 8,000 / 10,000 / 12,000 Opt.)					
Tool magazine	T			32				32 (60 Opt.)	
Spindle motor	kW				22 / 26 (cont. / 30 min.)				

		LG-10040	LG-6050	LG-8050	LG-10050	LG-12050	LG-14050	LG-10070	LG-20070
X-axis travel	mm	10,000	6,000	8,000	10,000	12,000	14,000	10,000	20,000
Y-axis travel	mm	4,000			5,000				7,000
Z-axis travel	mm				1,000 (1,200 / 1,400 Opt.)				
Table load capacity	kg/m ²				2,500				
Spindle speed	rpm			4,000 (6,000 / 8,000 / 10,000 / 12,000 Opt.)					
Tool magazine	T			32 (60 Opt.)					
Spindle motor	kW			22 / 26 (cont. / 30 min.)					

Specifications are subject to change without notice.

HTP SERIES

HIGH RIGIDITY BRIDGE TYPE MACHINING CENTERS

7,000 mm
Max. X-axis travel

20,000 kg
Table load capacity

980 Nm
Spindle torque output

- + 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 sliding blocks which allow cutting force to be evenly distributed to both sides of headstock. This increases the vibration absorption and significantly enhances accuracy.
- + Optional high efficiency automatic dual head storage compartment and vertical / horizontal ATC system. Available for option with multiple heads compartment to fulfill various machining demands.

// Super Rigid Headstock Structure

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.

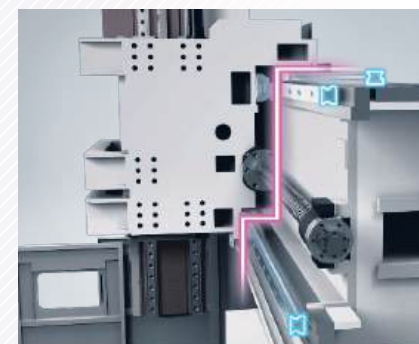
// Multi-face Machining Capability

- Optional automatic head storage compartment and vertical / horizontal ATC system enable the machine to perform highly efficient in multi-face machining.
- New generation AWEA attachment heads series have comprehensive specifications and enhanced performance.



4 guideways on base (X-axis)

Compound 4 guideways design for maximum structural support and to reduced work table over hang.



3 guideways cross beam (Y-axis)

The stepped offset three guideways design of the Y-axis further enhance the rigidity. The new design effectively reduces the distortion due to headstock weight and significantly improves the rigidity for heavy cutting.



HD SERIES

SUPER RIGID BRIDGE TYPE MACHINING CENTERS

- + 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.

↑42
%

Base and Column
Contact Area

↑24
%

Column
Cross-section

↑22
%

Max. Table Load



Multiple head storage
compartment (Opt.)



HTP		
X-axis travel	mm	4,000 ~ 7,000
Y-axis travel	mm	2,500 / 3,300 / 4,100
Z-axis travel	mm	1,000 (1,200 / 1,400 Opt.)
Table size (X-axis)	mm	4,020 ~ 7,020
Table size (Y-axis)	mm	2,400 / 3,000
Table load capacity	kg	15,000 ~ 20,000
Spindle speed	rpm	4,000 (6,000 ~ 12,000 Opt.)
Spindle motor	kW	22 / 26 (cont. / 30 min.)
Tool magazine	T	32 (40 / 60 / 90 / 120 Opt.)

Specifications are subject to change without notice.

		HD-2012	HD-3012
X-axis travel	mm	2,000	3,000
Y-axis travel	mm	1,200	
Z-axis travel	mm	760	
Table size (X x Y)	mm	2,000 x 1,100	3,000 x 1,100
Table load capacity	kg	4,500	5,500
Spindle speed	rpm	6,000	
Spindle motor	kW	22 / 26 (cont. / 30 min.)	
Tool magazine	T	32 (40 Opt.)	

Specifications are subject to change without notice.

LP BRIDGE TYPE MACHINING CENTERS

SERIES

7,000 mm	4,800 mm	1,400 mm
Max. X-axis travel	Max. Y-axis travel	Max. Z-axis travel



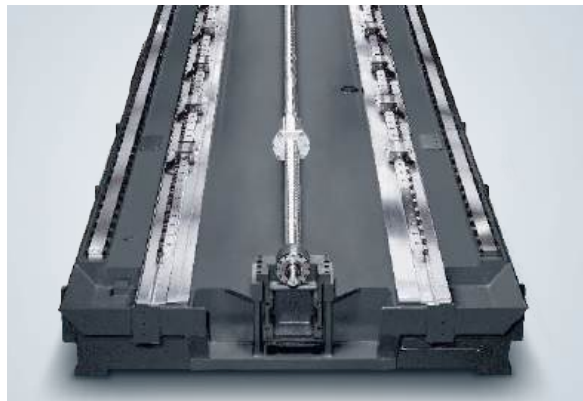
- + LP series can be customized the most suitable functions and specification according to your processing requirements.
- + High rigidity 4 linear guide ways on bed with full travel support of table, effectively avoids table deflection and guarantees optimal dynamic accuracy.
- + High rigidity roller 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.
- + Optional automatic head storage compartment and vertical / horizontal ATC system enable the machine to perform highly efficient multi-face machining.

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



// High Rigidity 4 Guide Ways Base

Compound 4 guide ways design for maximum structural support and to reduce work table over hang.



LP		
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-axis)	mm	3,020 ~ 7,020
Table size (Y-axis)	mm	2,010 ~ 3,000
Table load capacity	kg	10,000 ~ 20,000
Spindle speed*1	rpm	6,000 (YF) / 4,000 (YZF)
Spindle motor	kW	22 / 26 (cont. / 30 min.)
Tool magazine	T	32 (40 / 60 / 90 / 120 Opt.)

*1: Opt. 8,000 / 10,000 / 12,000 rpm direct drive spindle.
Specifications are subject to change without notice.

EP BRIDGE TYPE MACHINING CENTERS

SERIES

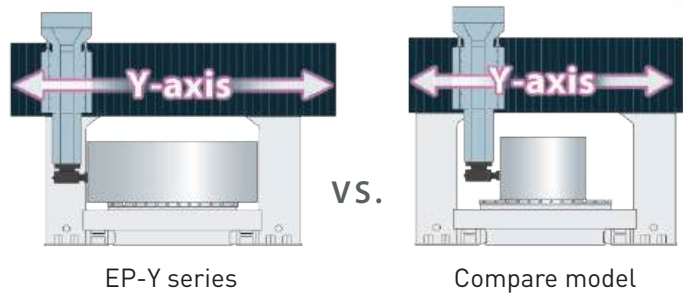
5,000 mm	3,200 mm	1,000 mm
Max. X-axis travel	Max. Y-axis travel	Max. Z-axis travel



- + Super large Y-axis cross beam design, the machining range exceeds comparable models by 20 % . (EP-Y series)
- + Modular geared or direct spindle to meet heavy-duty or precision cutting demands.
- + X / Y axes with roller linear guide ways featuring both heavy duty cutting and fast movement.
- + Optional 32T / 40T / 60T arm type ATC tool magazine.
- + Optional automatic head storage compartment and vertical / horizontal ATC system enable the machine to perform highly efficient multi-face machining.



// Super Large Y-axis Travel (EP-Y Series)



Y-axis extended travel to increase the permissible machining range.

Work-piece size is limited due to interference from the milling head when multi-face cutting is required.

EP		
X-axis travel	mm	2,500 ~ 5,000
Y-axis travel	mm	1,600 ~ 3,200
Z-axis travel	mm	760 / 1,000
Table size (X-axis)	mm	2,310 ~ 5,020
Table size (Y-axis)	mm	1,500 / 2,010
Table load capacity	kg	8,000 ~ 18,000
Spindle speed	rpm	6,000 (4,000 ~ 12,000 Opt.)
Spindle motor	kW	22 / 26 (cont. / 30 min.)
Tool magazine	T	32 (40 / 60 Opt.)

Specifications are subject to change without notice.

SP SERIES

BRIDGE TYPE MACHINING CENTERS

4,000 mm	1,600 mm	760 mm
Max. X-axis travel	Max. Y-axis travel	Max. Z-axis travel

- + The modular spindle design offers cutting flexibility for various working conditions.
- + The bridge and base are cast in one-piece each to provide the highest rigidity.
- + 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 precision ground super rigid box guide ways, which are optimal for heavy-duty cutting conditions. (The Z-axis will be adopted with roller type linear guide ways if equipped with high speed direct drive spindle.)



[SP-3016 shown with optional enclosed splash guard with roof.]

// One-piece Casting Structure

The bridge and the base are all 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.



// High Torque Gear Spindle

The powerful gearbox with shorter transmission shaft design provides large torque output and meets extremely heavy cutting processing requirement.



// Meticulously Hand Scraped

All contact surfaces are meticulously hand scraped to ensure maximum precision and rigidity.



SP-II SERIES

BRIDGE TYPE MACHINING CENTERS

- + Y-axis travel can reach up to 2,300 mm.
- + High flexibility multi-face machining capability.
- + Head storage is able to equip any type of AWEA attachment head.*1
- + Inherits high rigidity design by SP series.
- + Modular structure design lowers the sea freight cost significantly.

*1 : A / C automatic universal head is unavailable.



Head storage compartment



Vertical / Horizontal ATC system



[A] 32T side mounted chain type tool magazine and 60T / 90T / 120T grounded type tool magazine (Opt.) meet any machining requirement.



[B] The optional side-mounted manual head magazine upgrades this series to a multi-face machining center. (Both head locking and tool clamping operations are manual.)

SP		
X-axis travel	mm	2,100 / 3,060 / 4,000
Y-axis travel	mm	1,600
Z-axis travel	mm	760
Table size (X-axis)	mm	2,310 / 3,260 / 4,200
Table size (Y-axis)	mm	1,500
Table load capacity	kg	8,000 / 10,000 / 12,000
Spindle speed	rpm	6,000 (4,000 ~ 12,000 Opt.)
Spindle motor	kW	22 / 26 (cont. / 30 min.)
Tool magazine	T	32 (40 / 60 / 90 / 120 Opt.)

Specifications are subject to change without notice.



SP-II		
X-axis travel	mm	2,100 / 3,060 / 4,060 / 5,060
Y-axis travel	mm	1,600 / 2,300
Z-axis travel	mm	760 (1,000 Opt.)
Table size (X-axis)	mm	2,310 / 3,260 / 4,200 / 5,000
Table size (Y-axis)	mm	1,500
Table load capacity	kg	8,000 / 10,000 / 12,000 / 14,000
Spindle speed	rpm	6,000 (4,000 ~ 12,000 Opt.)
Spindle motor	kW	22 / 26 (cont. / 30 min.)
Tool magazine	T	32 (40 / 60 / 90 / 120 Opt.)

Specifications are subject to change without notice.

VP SERIES

BRIDGE TYPE MACHINING CENTERS

5,000 mm	1,200 mm	760 mm
Max. X-axis travel	Max. Y-axis travel	Max. Z-axis travel

- + More than 1,600 units were sold worldwide with its small footprints and good value.
- + The bridge and base are cast in one-piece each to provide the highest rigidity.
- + 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 precision ground super rigid box ways, which are optimal for heavy-duty cutting conditions. (The Z-axis will be adopted with roller type linear guide ways if equipped with direct drive spindle.)
- + Rib reinforced work table restrains vibration while increasing machining stability.

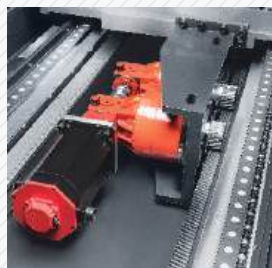
// Long Nose Spindle

For use of shorter tools enhances cutting rigidity, making it suitable for machining thin workpieces or deep hole milling applications (opt.)



VP-6012	6,000 mm	40 m/min.	26 kW
	Max. X-axis travel	X-axis rapids feed rate	Spindle motor output

- + The X-axis uses high thrust servo motor and rack & pinion drive system, the rapid feed rate is up to 40 m/min.
- + Y / Z axes use direct-drive servo motor has excellent dynamic response.



// Rack & Pinion Mechanism

- Double gear reducer with mechanical preload eliminates the backlash to ensure the ultra-high axial rigidity.
- The gear reducer is equipped with temperature monitoring sensor for overheat protection which stops the machine automatically.



VP-HS SERIES

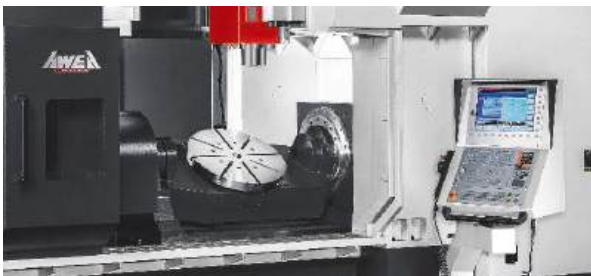
High Speed Bridge Type Machining Centers

- + 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.



// Z-axis Feed Rate System

The Z-axis adopts the servo motor direct drive design, which has excellent dynamic response and is especially suitable for the processing requirements of precision molds



Optional A / C axes trunnion table and advanced controller, VP series can update to be a 5-axis machining center. Table dimension Ø630 mm and table loading capacity 500 kg are able to complex workpieces processing.

VP		
X-axis travel	mm	1,600 ~ 6,000
Y-axis travel	mm	1,200 / 1,600*1
Z-axis travel	mm	760
Table size (X-axis)	mm	1,600 ~ 6,000
Table size (Y-axis)	mm	1,100 / 1,500
Table load capacity	kg	3,000 ~ 8,000
Spindle speed	rpm	6,000
Spindle motor	kW	11 / 15 (cont. / 30 min.)*2
Tool magazine	T	32 (24 / 40 Opt.)

*1 : When Y-axis travel is 1,600 mm, only 2,000 / 3,000 mm X-axis travel for option.

*2 : The VP-6012, VP-2016, and VP-3016 are equipped with 22/26 kW. Specifications are subject to change without notice.



VP-HS		
X-axis travel	mm	1,600 ~ 6,000
Y-axis travel	mm	1,200 / 1,600*1
Z-axis travel	mm	760
Table size (X-axis)	mm	1,600 ~ 6,000
Table size (Y-axis)	mm	1,100 / 1,500
Table load capacity	kg	3,000 ~ 8,000
Spindle speed	rpm	10,000
Spindle motor	kW	22 / 26 (cont. / 30 min.)
Tool magazine	T	32 (24 / 40 Opt.)

Specifications are subject to change without notice.

FM SERIES

HIGH SPEED BRIDGE TYPE MACHINING CENTERS

30,000 rpm
Max. spindle speed

24 m/min.
Cutting feed rate (FM-87)

Best Choice
For Small Mold
Processing

- + Bridge type structural design allows the worktable to move only along the X-axis, enhancing the dynamic performance of this series compared to vertical machining center.
- + Oversized high-rigidity cast structure and core components provide a 40% increase in structural strength and a 50% improvement in heavy-duty cutting capability compared to vertical machining centers with the same travel range.
- + The three axes use roller type linear guide ways and precision ball screws, direct drive by high power servo motors to achieve cutting feed rates up to 30 m/min, which is specifically beneficial for the mold & die industry.



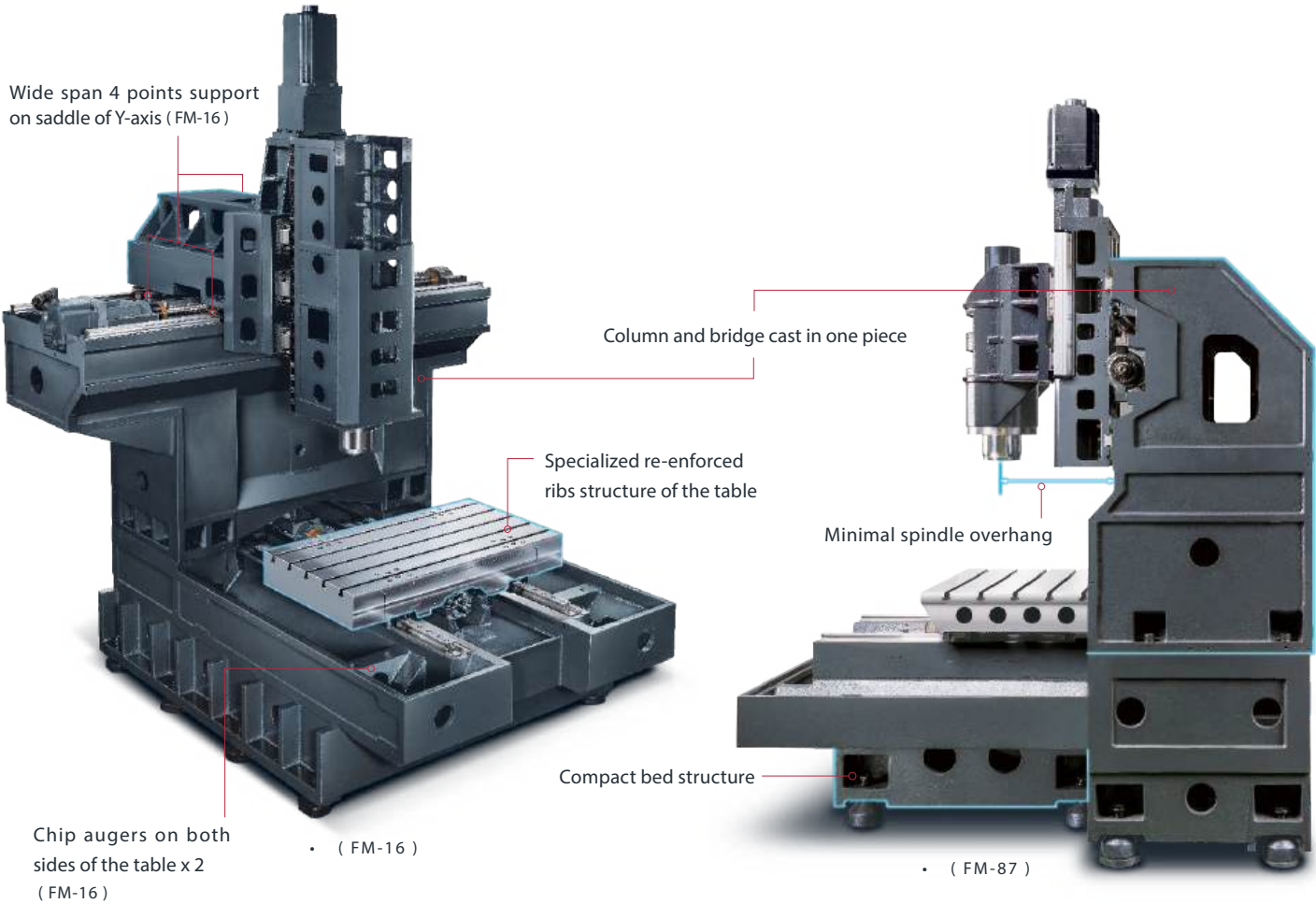
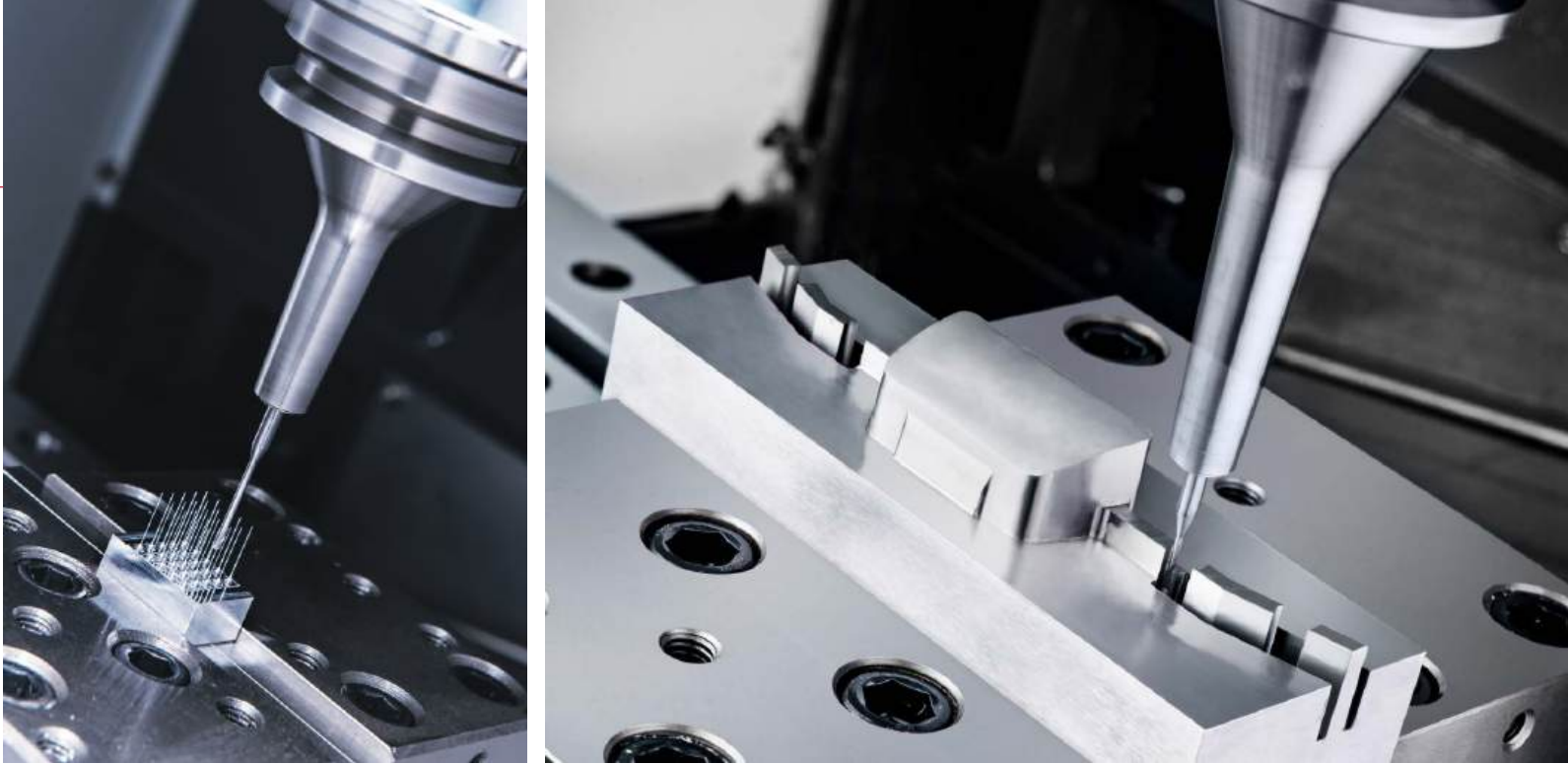
// Work Table is Full-travel Supported by The Base



// Twin Chip Augers



// 20T Umbrella-Type Tool Changer



		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*1	Direct drive 12,000*1
Spindle motor	kW	18.5 / 22	15 / 18.5

*1: 30,000 rpm built-in spindle is the highest specification can be chosen.

Specifications are subject to change without notice.

AF-II SERIES

VERTICAL MACHINING CENTERS

1,800 mm

Max. X-axis travel

1,800 kg

Table load capacity

15,000 rpm

Max. spindle speed

- + High rigidity Δ (Delta) structure provides the foundation of heavy load and powerful cutting.
- + High speed direct-drive spindle design*1 reduces the thermal expansion and keeps high accuracy after long-time machining.
- + High rigidity roller type linear guide ways on the X, Y and Z axes provide heavy-duty cutting, fast movement and low friction capabilities.
- + Standard 24T disk type tool magazine and optional 30T / 40T / 60T chain type tool magazine.
- + Optional APC system significantly reduces non-cutting time, thereby improving machine uptime and productivity.

*1: Some models are optional; please refer to the specification chart.



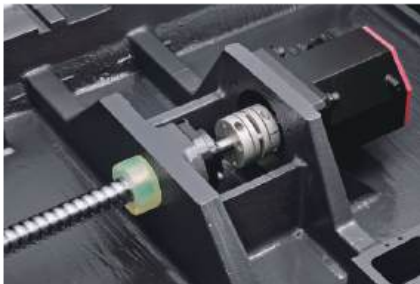
// Compound Guide ways (Opt.) // Automatic Pallets Change System (Opt.)

Rigid cutting and fast dynamic movement are presented well by both roller type linear guideway (X / Y axes) and high rigidity of box way (Z-axis).

Table size: 800 x 460 mm. The table exchange process is precisely positioned through a tapered locating seat, with sufficient clamping force provided by a hydraulic cylinder to ensure optimal repeatability accuracy.

7 sec.
Pallet exchange time.

0.02 mm
Repeatability accuracy.



The servo motor directly drives the C3 accuracy grades ball screw to meet the dynamic performance of the mold processing needs.



The four linear guideway substructure is for machines with 1,400 mm and larger X-axis travel, to prevent working table from overhang and ensure the optimum rigidity.



All series are equipped with 1 / 3 screw type chip auger according to the X travel, thus to provide high chip remove efficiency.

		AF-650 II	AF-800 II	AF-860 II	AF-1000	AF-1060 II	AF-1250 II	AF-1400 II	AF-1600 II	AF-1400MAX	AF-1600MAX	AF-1800MAX	
X-axis travel	mm	650	800	860	1,020	1,060	1,250	1,400	1,600	1,400	1,600	1,800	
Y-axis travel	mm		510	650	550	650	650	740			800		
Z-axis travel	mm		510	610	635	610	610	610	610		800		
Table size (X-axis)	mm	750	860	1,000	1,200	1,200	1,350	1,500	1,700	1,500	1,700	1,900	
Table size (Y-axis)	mm		510	650	550	650	650	740			800		
Table load capacity	kg		500		700	700	1,000	1,000	1,450	1,200	1,500	1,800	
Spindle speed	rpm			Belt-drive 10,000				Belt-drive 10,000		Direct drive 12,000		Direct drive 12,000	
Spindle taper		BBT40		BBT40	BBT40	BBT40 (BBT50 Opt.)				BBT50			

Specifications are subject to change without notice.

BM-II SERIES

VERTICAL MACHINING CENTERS

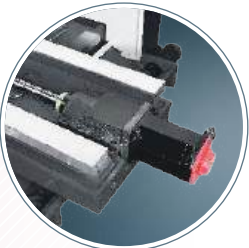
2,500 mm	4,000 kg	470 ^{*1} Nm
Max. X-axis travel	Max. table load capacity	Spindle torque output

- + Box way on X / Y / Z axes fulfill reliable and stable heavy-duty cutting requirement.
- + AWEA craftsmanship, evident in precisely hand scraped contact surfaces, ensures best assembly precision and structural strength.
- + The complete spindle specification with high torque motor can meets any requirement for customer's need.
- + The quantity of chip augers depends on the size of the machine, to provide optimal chip removal solution.
- + Standard 24T disk type tool magazine and optional 30T / 40T / 60T chain type tool magazine.

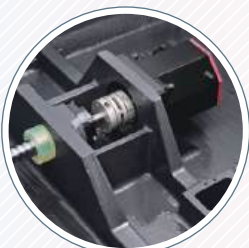
*1 : BT50, 6,000 rpm gear spindle



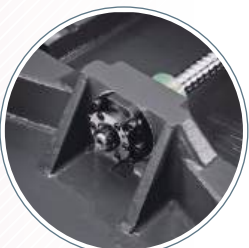
Dual-nuts Secured Ball Screw



Direct Drive Servo Motor



Integrated Ball Screw Servo Motor Base

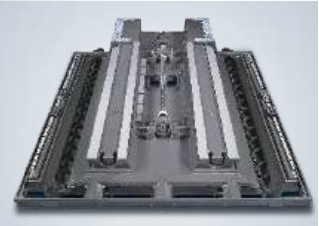


Integrated Ball Screw Bearing Base



// △ (Delta) Wide Span Column Structure

The rigid (Delta) column structure provides an excellent basis for the distribution of heavy loads and offers superior cutting stability.



// High Rigidity Base with 6 Guide Ways

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



// Hand Scraped Craftsmanship

The contact surfaces between the machine base and column, as well as the ball screw holders , saddle, and headstock are hand scraped to provide excellent assembly precision and load distribution.



// Screw Chip Auger

All series are equipped with 1 / 3 / 5 screw type chip auger according to the X travel, thus to provide high chip remove efficiency.



// APC System

APC with 800 x 460 mm twin working table, pallet changing time is less than 8 seconds. (Optional for BM-850II)

		BM-850II	BM-1020II	BM-1200II	BM-1400II	BM-1500II	BM-1400MAX	BM-1600MAX	BM-1800MAX	BM-2100MAX	BM-2500MAX
X-axis travel	mm	850	1,020	1,200	1,400	1,500	1,400	1,600	1,800	2,100	2,500
Y-axis travel	mm			650		740		800		1,000	
Z-axis travel	mm			610		610	700	800	800	1,000	
Table size (X-axis)	mm	1,050	1,120	1,300	1,500	1,600	1,500	1,700	2,000	2,300	2,700
Table size (Y-axis)	mm			650		700		800		1,000	1,000
Table load capacity	kg	850	1,000	1,200	1,400	1,450	1,800	2,000	2,200	3,000	4,000
Spindle speed	rpm		Belt-drive 10,000				Belt-drive 10,000		Geared 6,000		Geared 6,000
Spindle taper			BBT40 (BT50 Opt.)				BBT40 (BBT50 Opt.)		BBT50 (BT40 Opt.)		BBT50

Specifications are subject to change without notice.

// 5-AXIS MACHINING CENTERS



R65 SERIES

Gantry Type 5-axis
Machining Centers

X : 1,600 / 3,200 mm
Y : 2,500 mm
Z : 1,000 mm
B : $\pm 100^\circ$ C : $\pm 240^\circ$ (TCH-20F)



A65 SERIES

Gantry Type 5-axis
Machining Centers

X : 1,600 / 3,200 mm
Y : 2,000 mm
Z : 1,000 mm
B : $\pm 100^\circ$ C : $\pm 240^\circ$ (TCH-19F)



MEGA5 G SERIES

Gantry Type 5-axis
Machining Centers

X : 4,000 ~ 10,000 mm
Y : 3,700 / 4,700 mm
Z : 1,200 / 1,400 mm
B : $\pm 110^\circ$ C : $\pm 250^\circ$ (TCH-30F)



MEGA5 P SERIES

Bridge Type 5-axis
Machining Centers

X : 2,500 ~ 6,000 mm
Y : 2,620 / 3,200 / 4,000 mm
Z : 1,000 / 1,200 mm
B : $\pm 110^\circ$ C : $\pm 250^\circ$ (TCH-30F)



FCV-800 SERIES

Gantry Type 5-axis
Machining Centers

X : 800 mm
Y : 900 mm
Z : 660 mm
A : $-120^\circ \sim +30^\circ$ C : $\pm 360^\circ$



AU-680 SERIES

High Speed 5-axis
Machining Centers

X : 740 mm
Y : 662 mm
Z : 560 mm
A : $-120^\circ \sim +120^\circ$ C : $\pm 360^\circ$



FCV-620 SERIES

High Speed 5-axis
Machining Centers

X : 635 mm
Y : 535 mm
Z : 460 mm
B : $-50^\circ \sim +110^\circ$ C : $\pm 360^\circ$



FV SERIES

Vertical 5-axis
Machining Centers

X : 560 / 960 mm
Y : 510 / 600 mm
Z : 460 / 480 mm
A : $-100^\circ \sim +100^\circ$ C : $\pm 360^\circ$ (FV-560)
A : $-42^\circ \sim +120^\circ$ C : $\pm 360^\circ$ (FV-960)

// BRIDGE TYPE MACHINING CENTERS



LG SERIES

Gantry Type
Machining Center

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



HTP SERIES

Super Rigid
Bridge Type Machining Center

X : 4,000 ~ 7,000 mm
Y : 2,500 ~ 4,800 mm
Z : 1,000 ~ 1,400 mm



LP SERIES

Bridge Type
Machining Centers

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



EP SERIES

Bridge Type
Machining Centers

X : 2,500 ~ 5,000 mm
Y : 1,600 ~ 3,200 mm
Z : 760 / 1,000 mm



SP-II SERIES

Bridge Type
Machining Centers

X : 2,000 ~ 5,000 mm
Y : 1,600 / 2,300 mm
Z : 760 / 1,000 mm



SP SERIES

Bridge Type
Machining Centers

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



VP SERIES

Bridge Type
Machining Centers

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



HD SERIES

Super Rigid
Bridge Type Machining Center

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

// MULTI-FACE MACHINING CENTERS



MVCP SERIES

Moving Column & Moving Cross Beam
Multi-Face Machining Centers

X : 8,000 ~ 20,000 mm
Y : 4,400 / 5,400 / 6,400 mm
Z : 1,400 / 1,600 mm
W : 1,250 / 1,600 mm



MCP SERIES

Moving Column Bridge Type
Multi-Face Machining Centers

X : 8,000 ~ 20,000 mm
Y : 4,400 / 5,400 / 6,400 mm
Z : 1,400 ~ 1,600 mm



MVP SERIES

Moving Cross Beam Bridge Type
Multi-Face Machining Centers

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



LP-YF SERIES

Bridge Type Multi-face
Machining Centers

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

// HIGH SPEED BRIDGE TYPE MACHINING CENTERS



VP-HS SERIES

High Speed
Bridge Type Machining Centers

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



FM SERIES

High Speed
Bridge Type Machining Centers

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



JB SERIES

Floor Type
Horizontal Boring Mills

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



BL SERIES

Heavy Load
Horizontal Boring Mills

X : 2,000 / 3,000 / 4,000 mm
Y : 1,800 / 2,400 mm
Z : 1,300 / 1,700 mm
W : 600 mm



BT SERIES

High Precision
Horizontal Boring Mills

X : 2,500 mm
Y : 2,000 mm
Z : 1,500 mm
W : 500 mm



AHM SERIES

Horizontal
Machining Centers

X : 1,700 / 2,100 mm
Y : 1,350 / 1,150 (APC) mm
Z : 1,200 mm



AH SERIES

Horizontal
Machining Centers

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

// VERTICAL MACHINING CENTERS



BM-II SERIES

Super Rigid
Vertical Machining Centers

X : 850 ~ 2,500 mm
Y : 650 ~ 1,000 mm
Z : 610 ~ 1,000 mm



AF-II SERIES

High Performance
Vertical Machining Centers

X : 650 ~ 1,800 mm
Y : 510 ~ 800 mm
Z : 510 ~ 800 mm



APC SERIES

Vertical Machining Centers
with APC System

Box Ways	Linear Ways
X : 850 mm	X : 860 mm
Y : 600 mm	Y : 600 mm
Z : 600 mm	Z : 600 mm



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