VMC TECHNOLOGIES, INC.

PINNACLE MACHINE TOOL INC.

AEROSPACE
Machine Tool Catalogue

TAPEC
ASIA PACIFIC ELITE CORP

VISION WIDE

HONOR

CNC Vertical Turning Experts!

248.786.3000 info@vmctech.com

Aiming At Aerospace Solutions

About APEC

Asia Pacific Elite Corp. (APEC) is a subsidiary of TTGroup, the biggest machine tools group in Taiwan.

APEC aims at "**Aerospace manufacturing process**" and defines ourselves as a resources integrator, solutions provider and customers' best strategic partner of OEM, Tier1 to Tier3.

APEC has the world's most complete medium and large aerospace structure and engine parts processing solutions.

Besides, we also have 20 years of professional practical experience in die & mold and precision machining.

Our clients are all over the world, like Canada, the USA, Germany, Japan, Mainland China and Taiwan, etc.

Furthermore, we offer comprehensive customer services including factory planning, intelligent manufacturing, technical training, process upgrades and Turnkey solutions.

Our strong technical team could provide state-of-the-art 5-axis large-scale machining centers that satisfy the requirement of our global clients.

TT APEC
ASIA PACIFIC ELITE CORP

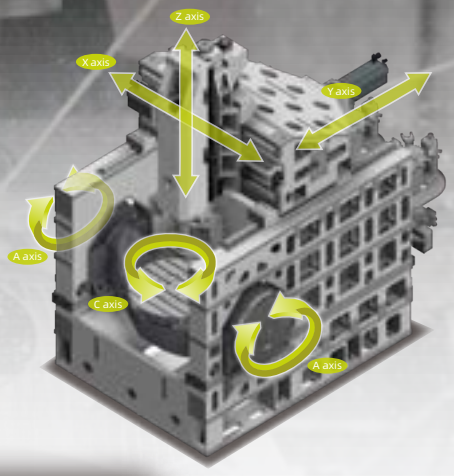
Aerospace Complete Machining Solutions

CFRP Structure					CM3040	CM3050~90		CM30100	
AERO Engine Parts	G800-TR	HS-1400	MT15RT MT20RT	MDU-2000W					
Titanium Structural Parts	G800-TR		MT15RT MT20RT	MTH1530	MDU2842-Titan				
Aluminum Structural Parts			SK3020	MT1530	SK2540	SK3060	SKM3060		MC30200-Dual SKM30200-Twin
Travel (mm)	800-1,000		2,000		3,000-4,000	5,000-9,000		10,000-19,000	20,000

Aerospace Structural Parts

Engine Parts

Landinng Gear



G800-TR

Ultra Precision & Ultra Dynamic

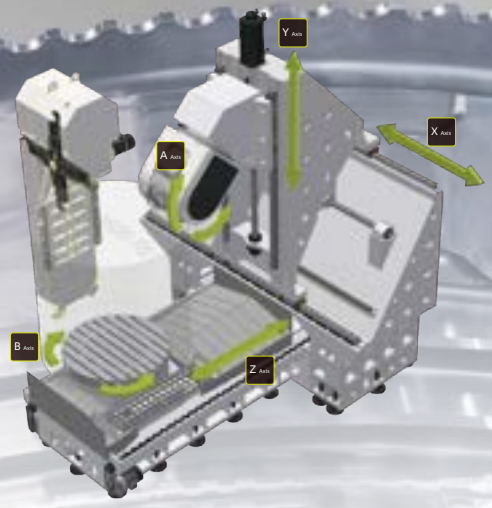
Specification	Unit	G800-TR					
X-axis	mm	800					
Y-axis	mm	830					
Z-axis	mm	560					
A-axis	deg	±120					
C-axis	deg	±360					
A-axis torque(S1/max)	Nm	4,268/7,554					
C-axis torque(S1/max)	Nm	2,134/3,777					
Rapid traverse	m /min	XYZ=48					
X.Y.Z axis acceleration	m/sec²	5					
Spindle taper		HSK63A	HSK63A	HSK63A	HSK100A	HSK100A	HSK100A
Spindle speed	rpm	20,000	24,000	24,000	15,000	12,000	12,000
Spindle power(S 1 / S6)	kW	20/24	35/42	60/75	45/54	50/76	50/78.5
Spindle torque(S 1 / S6)	Nm	45.5/55	55/67	48/60	119/143	200/302	318/500

G800-TR

G800-TR series

5-Axis Gantry Vertical Machining Center

-Rapid traverse could reach 48m/min
-High rigidity U-frame structure
-Three axis driven at center of gravity(DCG)



HS1400

Aerospace Super Alloy Structural Parts

Specification	Unit	HS1400
X-axis	mm	1,450
Y-axis	mm	1,200
Z-axis	mm	1,300
Rapid traverse	m /min	XYZ=50
Spindle taper		HSK100A
Spindle speed	rpm	12,000
Spindle power(S 1 / S6)	kW	50/76
Spindle torque(S 1 / S6)	Nm	200/302

* Diversity of spindle specifications available *

HS1400 AERO Series

HS-1400

5-axis Horizontal Machining Center

-Double-wall and symmetrical structure design to increase the structure rigidity.
-Suitable for aerospace engine parts processing
-XYZ axes are drove by precious ball screw

MOLD Series

G series

5-Axis High Speed Gantry Machining Center

-U-shaped force flow structure with die casting saddle, ram and base
-X/Y axis driven by linear motor
-Z-axis driven by double ball screws with innovative hollow water cooling technology

G — Die & Mold / Precision & Industrial Parts

Specification	Unit	2520/40/50/60/80	3020/40/50/60/80
X-axis	mm	2,000/4,000/5,000/6,000/8,000	2,000/4,000/5,000/6,000/8,000
Y-axis	mm	2,500	3,000
Z-axis	mm	1,000	
Rapid traverse	m /min	XY=60 / Z=40	
X.Y.Z axis acceleration	m/sec²	5	
Spindle taper		HSK63A / HSK100A	
Spindle speed	rpm	12,000 ~ 24,000	
Spindle power	kW	42 ~ 78	
Spindle torque	Nm	67 ~ 302	

MOLD Series

GM series

5-Axis High Speed Gantry Machining Center

-Box-in-Box structure design enhances machine rigidity and ensures the best accuracy performance for high-speed processing
-X/Y/Z-axis driven by linear motor
- Heightened column design for optimized working area

GM — Die & Mold / Precision & Industrial Parts

Specification	Unit	2530/40/50/60/80	3240/50/60/80	4050/60/80/100+
X-axis	mm	3,000/4,000/5,000/ 6,000/8,000	4,000/5,000/6,000/ 8,000	5,000/6,000/8,000 /10,000+
Y-axis	mm	2,500	3,200	4,000
Z-axis	mm	1,200/1,500/2,000		
Rapid traverse	m /min	XYZ=60		
X.Y.Z axis acceleration	m/sec²	5-8		
Spindle taper		HSK63A / HSK100A		
Spindle speed	rpm	12,000 ~ 24,000		
Spindle power	kW	42 ~ 78		
Spindle torque	Nm	67 ~ 302		

MT 15
AERO Series

MT series

5-Axis High Speed Double Column Machining Center

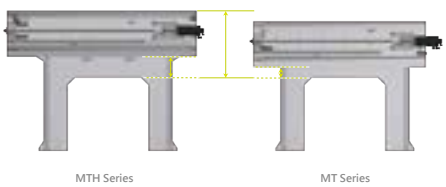
-Duo block structure design
- X/Y/Z-axis driven by high-speed ball screw
-Larger machining area

MT Aerospace Structural Parts

Specification	Unit	MT1520/30
X-axis	mm	2,000/3,000
Y-axis	mm	2,000
Z-axis	mm	850
Rapid traverse	m /min	XYZ=30
X.Y.Z axis acceleration	m/sec²	5
Spindle taper		HSK63A
Spindle speed	rpm	24,000
Spindle power(S 1 / S6)	kW	35/42
Spindle torque(S 1 / S6)	Nm	55.7/67.2

* Diversity of spindle specifications available *

Specially designed saddle and ram for heavy duty machining



Duo Block structure design

MTH
AERO Series

MTH series

5-Axis Heavu Duty Double Column Machining Center

-Suitable for aerospace Titanium alloy processing -Heavy-duty structural design
-high-efficiency processing of high-strength high-temperature alloys, steel alloys, and aluminum alloys

MTH Aerospace Super Alloy Structural Parts

Specification	Unit	MTH1520/30	MTH2442/52	MTH2842/52
X-axis	mm	2,000/3,000	4,200/5,200	4,200/5,200
Y-axis	mm	2,000	2,500	3,000
Z-axis	mm	850	1,000	1,000
Rapid traverse	m /min	XYZ=30	XYZ=20	XYZ=20
Spindle taper		HSK100A	HSK100A	HSK100A
Spindle speed	rpm	12,000	12,000	12,000
Spindle power(S 1 / S6)	kW	50/78.5	50/78.5	50/78.5
Spindle torque(S 1 / S6)	Nm	318/500	318/500	318/500

- Cross beam flushing system
- Dual type chip conveyor
- Automatic top-roof cover
- High capacity coolant system
- High quality chip flushing system

SK AERO Series

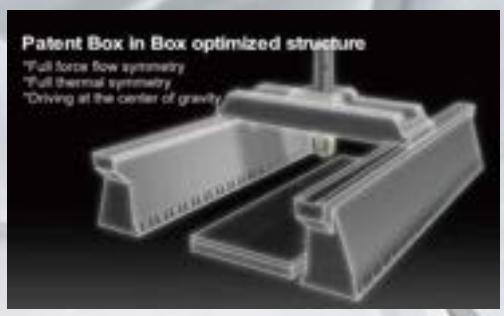
SK series

5-Axis High Speed Gantry Machining Center

- U-shape structure
-X/Y axis driven by linear motor
-Z-axis driven by double ball screws
-Space saving due to gantry structure

SK	Aerospace Structural Parts		
Specification	Unit	2530/40/50/60/80	3020/40/50/60/80
X-axis	mm	3,000/4,000/5,000/6,000/8,000	2,000/4,000/5,000/6,000/8,000
Y-axis	mm	2,500	3,000
Z-axis	mm	1,000	
Rapid traverse	m /min	XY=60 / Z=40	
X.Y.Z axis acceleration	m/sec²	5	
Spindle taper		HSK63A	
Spindle speed	rpm	24,000	
Spindle power(S 1 / S6)	kW	60/75	
Spindle torque(S 1 / S6)	Nm	48.2/60.5	

* Diversity of spindle specifications available *



- Cross beam flushing system
- Dual type chip conveyor
- Automatic top-roof cover
- High capacity coolant system
- High quality chip flushing system

MSK AERO Series

SKM series

5-Axis High Speed Gantry Machining Center

-Symmetrical design with Box-in-Box structure
-Lowest gravity center in the world
-Symmetrical force flow provide precision machining
-X/Y/Z-axis driven by linear motor
- Equipped with AGA ultra-high speed & power spindle

SKM	Aerospace Structural Parts		
Specification	Unit	2540/50/60/80	3240/50/60/80
X-axis	mm	4,000/5,000/6,000/8,000	
Y-axis	mm	2,500	3,200
Z-axis	mm	1,000	
Rapid traverse	m /min	XYZ=60	
X.Y.Z axis acceleration	m/sec²	5 ~ 8	
Spindle taper		HSK63A / HSK100A	
Spindle speed	rpm	15,000 ~ 30,000	
Spindle power	kW	45 ~ 120	
Spindle torque	Nm	48.2 ~ 119	

* Diversity of spindle specifications available *

Automatic long pallet change system

MC
AERO Series

MC30200

5-axis Extra Large Scale High Speed Double Column Machining Center

-Suitable for processing long and narrow workpieces , e.g.,spar, stringer.

-Asia's first design of single-beam with double 2-axis heads, spindles and tool magazines.

-Equipped spindle could reach up to 30,000 rpm, 124kW and 62Nm

MC30200 Aerospace Structural Parts

Specification	Unit	MC30200-Dual
X-axis	mm	20,000
Y-axis	mm	1,200+1,200
Z-axis	mm	700
Rapid traverse	m /min	XYZ=40
Spindle taper		HSK63A
Spindle speed	rpm	24,000
Spindle power(S 1 / S6)	kW	60/75
Spindle torque(S 1 / S6)	Nm	48.2/60.5

* Diversity of spindle specifications available *

- Cross beam flushing system
- Dual type chip conveyor
- Automatic top-roof cover
- High capacity coolant system
- High quality chip flushing system

MSK
AERO Series

SKM30200-Twin

5-axis Extra Large Scale High Speed Double Beam Machining Center

SKM30200-Twin Aerospace Structural Parts

Specification	Unit	SKM30200-Twin
X-axis	mm	20,000
Y-axis	mm	3,200
Z-axis	mm	1,000
Rapid traverse	m /min	XYZ=60
X.Y.Z axis acceleration	m/sec²	5
Spindle taper		HSK63A
Spindle speed	rpm	30,000
Spindle power(S 1 / S6)	kW	100/111
Spindle torque(S 1 / S6)	Nm	60/76

* Diversity of spindle specifications available *

MT 15/20 - RT

5-axis Aircraft Turbine Engine Casing Machining Center

- 5-axis Simultaneous Machining
- Duo Black Rigidity Structure Design
- High Torque Fork Type Swivel Head And Spindle
- Auto Pallet Change System
- High Efficiency Machining Of Aerospace Components

MT15/20-RT Aerospace Super Alloy Structural Parts

Specification	Unit	MT15-RT	MT20-RT
X-axis	mm	2,100	2,800
Y-axis	mm	2,000	
Z-axis	mm	850	
Rapid traverse	m /min	XYZ=20	
Spindle taper		HSK100A	
Spindle speed	rpm	12,000	
Spindle power(S 1 / S6)	kW	50 / 78.5	
Spindle torque(S 1 / S6)	Nm	318 / 500	

* Diversity of spindle specifications available *

Aiming At Aerospace Solutions

Aerospace Gebert APEC

AGA (Aerospace Gebert APEC), the core component of processing equipment for the APEC Airline processing equipment series

APEC and Dr. Gebert team from Germany are strategic partners. With advanced R&D technology, AGA provides the brilliant components such as：

-High Speed Spindle
-Two-axis Milling Head
-Trunnion Table

Features

Designed for aerospace machining

We have designed a variety of key components with reference to aerospace processing characteristics which makes APEC machine more powerful.

Shorten service time

APEC can provide immediate service suggestions and make adjustments according to customer needs.

High-quality customization available

According to customer needs, provide the most suitable solution could be provided.

VISION WIDE

HIGH Performance 5-Axis Machining Centers

WIDEN YOUR CUTTING VISION

FA 5-Axis Bridge

GSF 3-5-Axis Gantry

ASM 5-Axis Mill/Turn

GSF-TC 5-Axis Gantry Mill/Turn

ADM 5-Axis Composite

FA SERIES

5-axis Double Column Machining Center

Achieve Excellent Accuracy Performance of 5-Axis Synchronization Motion. Dynamic Accuracy Reaches 0.04mm(TCPM).

- B axis rotation positioning accuracy ± 5".
- C axis rotation positioning accuracy ± 3".
- B/C axis IDD motor design without backlash.
- Embedded spindle vibration sensor : limited to 1 mm/sec.

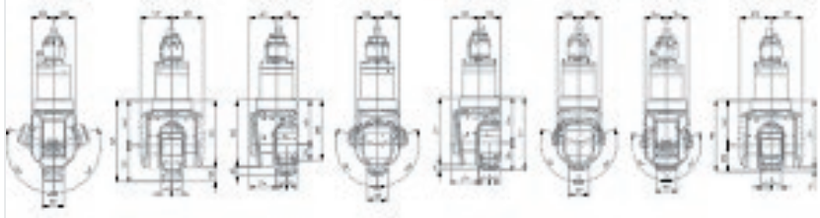
Model	Unit	FA-2123	FA-2623	FA-3123	FA-4123	FA-3127	FA-4127	FA-3233	FA-4233	FA-5233	FA-6233	FA-8233
X axis	mm	2,100	2,600	3,100	4,100	3,100	4,100	3,200	4,200	5,200	6,200	8,200
Y axis	mm	2,300				2,700		3,300				
Z axis	mm	800				1,000 / 1,200(Opt.)		1,000 / 1,200 (Opt.)				
Table dimension	mm	2,000 x 1,500	2,500 x 1,500	3,000 x1,500	4,000 x1,500	3,000 x 1,800	4,000 x 1,800	3,000 x 2,450	4,000 x 2,450	5,000 x 2,450	6,000 x 2,450	8,000 x2,450
Max. table load	kg	8,000	9,000	10,000	12,000	10,000	12,000	13,000	16,000	20,000	22,000	24,000
Spindle motor (cont./ 30 min rated)	kW	22 / 26				57 / 75 (34 / 43 Opt.)		57 / 75 (34 / 43 Opt.)				
Spindle speed	rpm	20,000				12,000 / 20,000 Opt		12,000 / 20,000 (Opt.)				
Cutting feed rate	mm/min	1-10,000				1-10		1-10				
Rapid traverse (X/Y/Z)	m/min	24 / 20 / 15			18 / 20 / 15	24 / 18 / 15	18 / 18 / 15	24 / 15 / 15	18 / 15 / 15	12.5 / 15 / 15	10 /15 /15	8 /15 /15

GSF SERIES

5 axis Gantry Type Machining Center

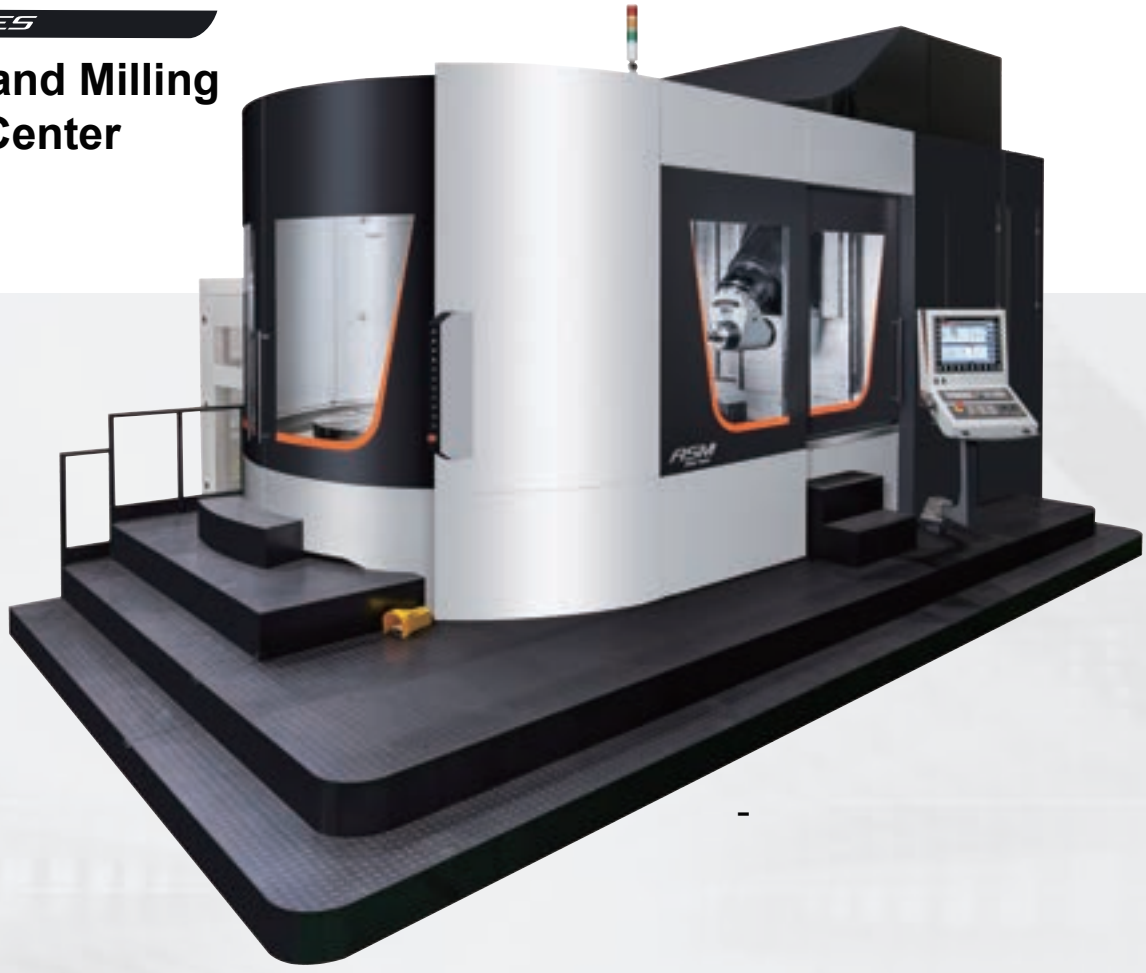
- Built-in Spindle Direct-Driven on B & C axis.
- Backlashless driving on B/C axis.
- The smallest interference between workpiece and machine head.
- Thermal protection in all motors and bearing.
- Vibration protection in all bearings.
- High-resolution feed back from B & C axis.
- 5-axis dynamic synchronization accuracy reaches 0.04mm(TCPM).
- Rotation positioning accuracy ±5" on B & C axis.

Synchronized 2-Axis Head	12,000 rpm HSTB10+BS10 Double Sided		15,000 rpm/ 24,000 rpm HSTB10+BS10 Single Sided		24,000 rpm HSTB10+BS05 Double Sided	
	B-axis	C-axis	B-axis	C-axis	B-axis	C-axis
Rotation range	±110°	±270°	±110°	±270°	±110°	±270°
Positioning accuracy	±4"	±4"	±4"	±4"	±5"	±4"
Rotation speed	30 rpm	30 rpm	30 rpm	30 rpm	30 rpm	30 rpm
Rotation torque(Cont.)	1,414 Nm	1,250 Nm	707 Nm	1,250 Nm	480 Nm	680 Nm
Clamping torque	4,000 Nm	4,000 Nm	2,000 Nm	4,000 Nm	1,000 Nm	2,000 Nm

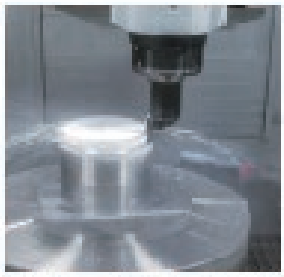


Model	Unit	GSF-1627	GSF-2227	GSF-3027	GSF-4027	GSF-5027	GSF-6027	GSF-2232	GSF-3032	GSF-4032	GSF-5032	GSF-6032
X axis	mm	1,600	2,200	3,000	4,000	5,000	6,000	2,200	3,000	4,000	5,000	6,000
Y axis	mm	2,700						3,200				
Z axis	mm	1,000/1,200(Opt.)						1,000/1,200(Opt.)				
Table dimension	mm	1,,600×2,700	2,200×2,700	3,000×2,700	4,000×2,700	5,000×2,700	6,000×2,700	2,200×3,200	3,000×3,200	4,000×3,200	5,000×3,200	6,000×3,200
Max. table load	kg/m^2	3,000						3,000				
Spindle motor(S1/S6)	kW	50 / 65						50 / 65				
Spindle speed	rpm	15,000						15,000				
Cutting feed rate	m/min	20						20				
Rapid traverse (X/Y/Z)	m/min	32/32/20						32/32/20				

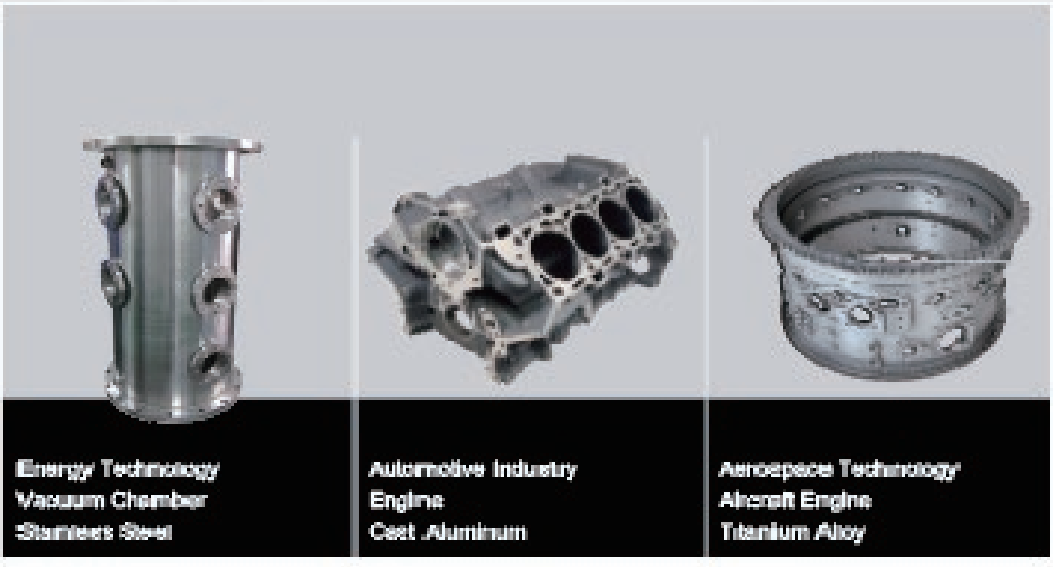
5 axis Turning and Milling Machining Center



Built-in Motor with IDD Driven



High Speed Turning Function

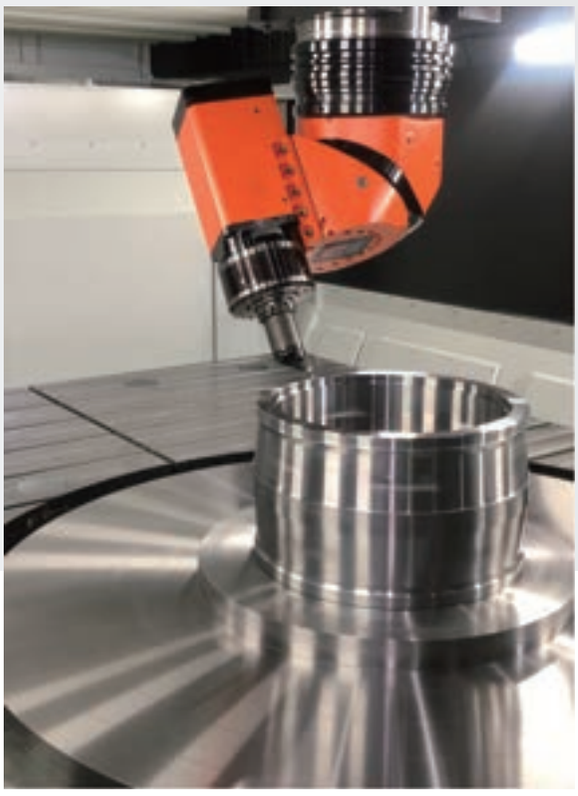


Model	單位	ASM-1012	ASM-1212	ASM-1612	ASM-1612G	ASM-1012 FD	ASM-1212 FD	ASM-1612 FD	ASM-1612G FD
X axis	mm	1,000	1,250	1,620	1,620	1,000	1,250	1,620	1,620
Y axis	mm	1,260				1,260			
Z axis	mm	1,050				1,050			
Table diameter	mm	Ø1,000	Ø1,200	Ø1,500	Ø1,500	Ø1,000	Ø1,200	Ø1,500	Ø1,500
Max. table load (center)	kg	2,000	2,000	3,000	3,000	2,000	2,000	3,000	3,000
Spindle speed	rpm	10,000			7,000	10,000			7,000
Cutting feed rate	m/min	1~24,000				1~24,000			
Rapid traverse (X/Y/Z)	m/min	40 / 40 / 40			40 / 40 / 24	40 / 40 / 40			40 / 40 / 24

GSF-TC SERIES

5 axis Gantry Type Machining Center with Rotary Table

- X axis travel : 1,600 / 2,200 / 3,000 / 4,000 / 5,000 / 6,000 mm
- Y axis travel : 2,700 / 3,200 mm



Features

- Built-in motor with IDD driven on B axis.
- Hi-acceleration rotation
- 45° universal driven direction :
  - The smallest distance between spindle nose and bearing support of B axis to reach the best rigidity.
  - The smallest conflict between workpiece and head outline.
- Protection of thermal detection for built-in motor.
- High-resolution feed back from B-axis.

ADM SERIES

5 axis Composite Material Machining Center

Aerospace Parts / Large Composite Workpiece Focus on CFRP / GFRP Machining

ADM is a 5-axis machining center to process composite materials with high speed, precision and automation.

ADM is aimed at processing materials such as Carbon Fiber Reinforced Polymer (CFRP), Fiberglass, Plastic and Aluminum.

- High Speed Spindle.
- Dual ATC Magazines.
- Synchronize 5-Axis Machining.
- Ultra-Low Temperature Spiral Tube Cooler.
- Single Working Table / Dual Working Table.
- Dust Suction Device.

Spindle	HSK-A63
Max. Speed(rpm)	24,000
Torque S1/S6 (Nm)	15.9/19.1
Power S1/S6 (Kw)	15/18
B axis swivel	±120°
C axis swivel	±245°

Model	Unit	ADM-2638
X axis	mm	2,600
Y axis	mm	3,800
Z axis	mm	1,000
Table dimension (LxWxNumber)	mm	2,500 x 1,500 x 2 pcs
Max. table load	kg/m^2	3,000
Spindle motor(cont./ 30 min rated)	kW	15 / 18
Cutting feed rate	m/min	XY : 40 Z: 20
Rapid traverse	m/min	20

■ Honor Seiki continuous to develop quality machines to meet the highest standards in precision, efficiency and reliability.

With 30 years' experience in machine tool design and manufacturing, HONOR SEIKI is the most professional and largest machine tool maker in CNC Vertical Lathe, Vertical Turning Center and Gantry type Turning/Milling/Grinding Center in Taiwan. Honor Seiki brand is internationally recognized and sold over 50 countries with many repeated orders. Unlike others who over diversify, Honor Seiki focuses solely on vertical turning lathe, with an undivided aim to perfect our product line and bring about greatest customer satisfaction. We are very proud of providing our machines to many leading companies around the world. The industrials we provide include aerospace, automotive, railway, high speed rail, mining, oil and gas, wind power…etc. From outer space rockets to deep ocean submarines, all utilize Honor Seiki vertical lathe to maximize their machining potential. We are proud of our accomplishments in bringing accolades to Taiwan. Our business model is based on cooperation, lasting partnership and mutual benefits in order to best serve our clients and help them reap their greatest gain, with special emphasis on Quality, Efficiency, Accuracy, Honest and Responsibility. We always fulfill our promises to our customers. Honor Seiki LTD is your best partnership to prosper and grow your business.

HONOR

CNC Vertical Turning Experts!

Honor Seiki Company, Ltd.

VL SERIES

VL-125C/CM
VL-160C/CM
VL-200C/CM
VL-250C/CM

CNC SYSTEMS INC
THE POWER OF PRECISION

Machine Models & Sizes

Heavy Duty Ram
Small-Medium Series

VL-66C/CM
VL-86C/CM
VL-100C/CM

VL SERIES

VL-160 CM

- VL — CNC Vertical Lathe
- 160 — Table diameter
- C — Turning
- M — C-Axis

Heavy Duty Ram
Medium-Large Series

VL-125C/CM
VL-160C/CM
VL-200C/CM
VL-250C/CM
VL-300C/CM
VL-400C/CM
VL-500C/CM
VL-600C/CM

Y-Axis with Turning
PL Specialty Series

PL-160CM
PL-200CM
PL-350CM

HONOR

Turnkey Solutions

Heavy Duty Ram Series

APC-Automatic or Manual Type Pallet and Work Changers.

Diverse Fields of Applications:

- ***Aerospace***
- ***Wind Power***
- ***Oil & Gas***
- ***Defense***
- ***Rail***
- ***Large Valves***
- ***Agricultural***
- ***Automotive***
- ***Power Generation***
- ***Gears***
- ***Marine***
- ***Machine Tool***

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