

專注航太·品質·創造未來
Aiming At Aerospace Solutions

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MEMBER OF
TT GROUP
2023/08

MOULD



Series
Large Die & Mold
Complete Machining Solutions

AIMING AT AEROSPACE SOLUTIONS



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.



TIMS

- Production management
- Intelligent monitoring
- RFID tool management
- Workpiece management
- Order management



TLM

- Machine status
- Utilization analysis
- Alarm history
- Operation history
- Program upload/download



AGA key components

- Spindle
- Milling Head
- Trunnion Table



Aerospace Gebert APEC is a brand which provide key components of aerospace processing. It is developed by APEC and Dr.Gebert's team from Germany.AGA provides the brilliant components such as high power high speed Spindle, Milling Head and Trunnion Table which are especially designed for APEC machines. This allows us to provide after-sales service more effcently and accurately.



Large Die & Mold

Complete Machining Solutions

• Excellent surface quality

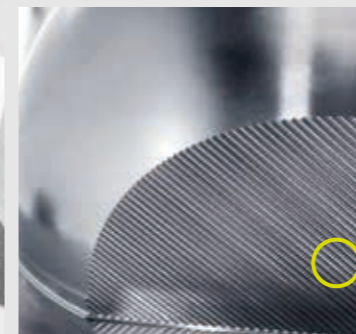
Flawless parts are critical in die and mold machining. Thanks to the features of 5-axis machinery with linear motor driving system and shorter tools applied, the surface finishes are generally very glossy and product surfaces remain flat.



Traditional Gantry Machine

Large pitch is applied to compensate long machining time which is caused by low-speed machining. Rough machined surface is the consequence.

Finishing
Pitch: 0.5-0.7 mm
Rough surface
(Not consistent tool marks)



APEC High Speed 5-axis Machine

Small pitch can be applied with high speed machining so that excellent surface quality could be achieved.

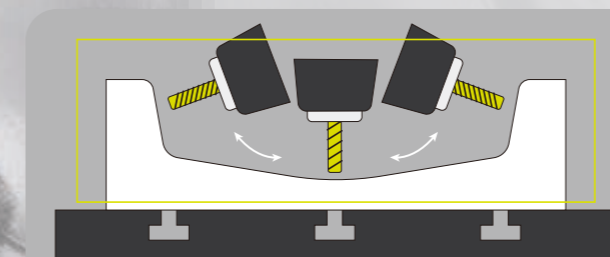
Finishing
Pitch: 0.3-0.5 mm
Excellent surface
(Consistent tool marks)



• Superior contour accuracy

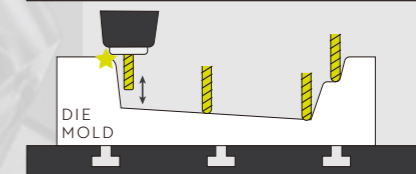
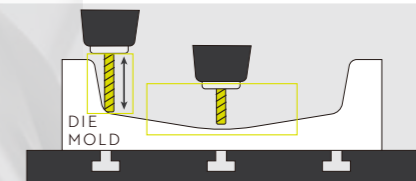
Excellent dynamic characteristics of 5-axis machining produces small servo errors and leads to high quality surface finish of the core and cavity of mold.

• Comparison of machining



5-axis machining

Five-axis simultaneous machining with the best smooth die surface.



3-axis machining

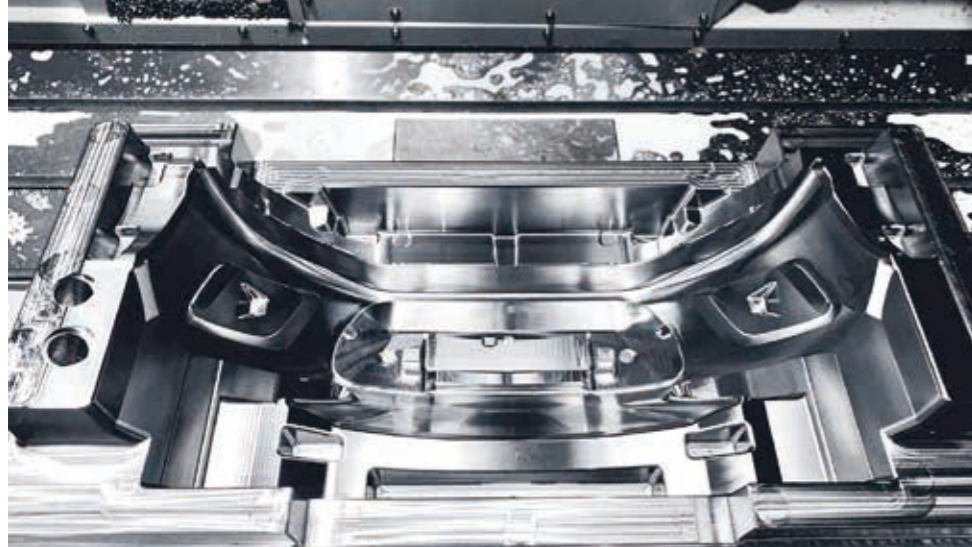
Long tool used leads to cutting interference and worse cutting quality.

3+2-axis machining

It can't process continuously which causes problems with steps and tool marks.

• Significantly reduced cycle times

5-axis high speed machining and single setup with high accuracy could shorten the processing time and eliminate the need for post machining processes such as EDM and hand bench work.



Plastic injection mould for bumper

Material	P20
Size	612.5 X 187 X 300 mm
High-speed roughing	
Tool	D52R4.4
Spindle speed	1,800 rpm
Cutting feedrate	5,000 mm/min
Cutting width(AE)	26 mm
Corner finishing	
Tool	R6 / R4 / R2
Spindle speed	6,631 rpm
Cutting feedrate	1,326 mm/min
Cutting width(AE)	0.5 / 0.3 / 0.15 mm
Total machining time	90h 34m



Plastic injection mould for bumper

Material	P20
Size	1,600 X 1,200 X 730 mm
High-speed roughing	
Tool	D50
Spindle speed	2,420 rpm
Cutting feedrate	6,000 mm/min
Cutting depth(AP) / width(AE)	0.9mm / 80% (40 mm)
Corner finishing	
Tool	R1
Spindle speed	12,732 rpm
Cutting feedrate	2,546 mm/min
Cutting depth(AP) / Width(AE)	0.1 mm / 5% (0.1 mm)
Total machining time	31h 42m



Car Bodywork Cover Mold

Material	Nodular cast iron
Size	1,550 X 860 X 310mm
High-speed roughing	
Tool	D50
Spindle speed	3,643 rpm
Cutting feedrate	8,000 mm/min
Cutting depth(AP) / width(AE)	0.6mm / 80% (40 mm)
3D projection finishing	
Tool	R5
Spindle speed	8,000 rpm
Cutting feedrate	10,000 mm/min
Pitch	0.5 mm
Total machining time	21h 14m



Car Fender Cover Mold

Material	Nodular cast iron
Size	1,300 X 910 X 350mm
High-speed roughing	
Tool	D50
Spindle speed	2,420 rpm
Cutting feedrate	6,000 mm/min
Cutting depth(AP) / width(AE)	0.9mm / 80% (40 mm)
3D projection finishing	
Tool	R10
Spindle speed	10,000 rpm
Cutting feedrate	8,000 mm/min
Pitch	0.5 mm
Total machining time	21h 18m

Injection Mold



G800-TR
For Small to Medium-sized Injection Mold
5-axis Gantry Vertical Machining Center

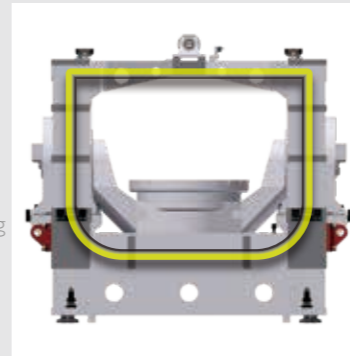
The Direct Drive Motor directly drives the rotary table to provide high-precision machining.

The A/C-axis are driven by direct drive motor. The power can be completely transmitted and provides high-precision machining capabilities.



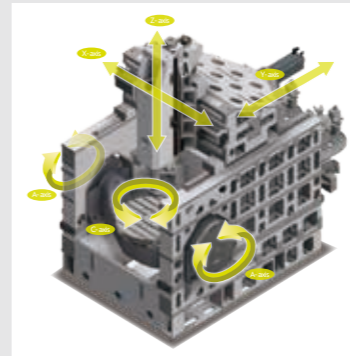
High rigidity U-frame structure

The saddle and column form a closed structure. High rigidity machine can reduce vibration effectively, increase processing stability and improve machining accuracy.



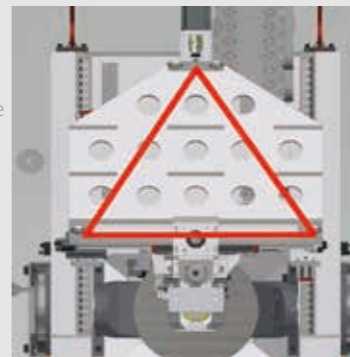
Three axis driven at center of gravity(DCG)

The driven centers of three axis are all on these gravity centers, which greatly improves the dynamic stability of the structure.



Compact trunnion rotary table

X/Y/Z axis movement and table rotation work individually to make sure machining is free from 3 axis inertia influences. Perfect servo driven design gives excellent machining stability.



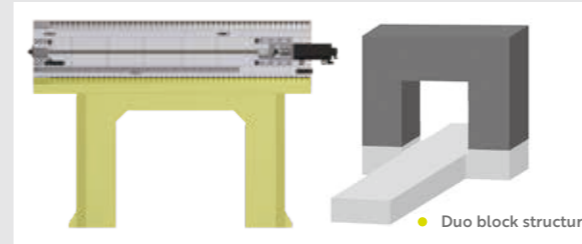
Specification	Unit	G800-TR
Travel		
X-axis	mm	800
Y-axis	mm	830
Z-axis	mm	560
A-axis	deg	±120
C-axis	deg	±360
Distance from spindle end to table	mm	210-770 (with std. spindle)
A/C-axis		
Drive type		DD Motor
Torque for A-axis(SI/max)	Nm	4,240/6,920
Torque for C-axis(SI/max)	Nm	2,120/3,460
Brake torque(A/C)	Nm	8,000/8,000
T-slot size	mm	14H11
Disk diameter	mm	Ø800
Load	tons	1.3
Feedrate		
Rapid traverse	m/min	XYZ=48
X.Y.Z axis acceleration	m/sec ²	4
Accuracy		
Positioning (VDI3441)	mm	X/Y/Z=0.008
Repeatability (VDI3441)	mm	X/Y/Z=0.005
Spindle (Std.)		
Spindle taper		HSK63A
Spindle speed	r.p.m	20,000
Spindle power(SI/S6)	kW	20/24
Spindle torque(SI/S6)	Nm	45.5/55
Automatic tool changer (Std.)		
Tool shank	pcs	32
Max. tool length	mm	300
Max. tool diameter with adjacent tool	mm	Ø75
Max. tool diameter without adjacent tool	mm	Ø120
Others		
Machine weight	tons.	15.5

● Standard accessories ○ Optional accessories

Item	Specification	
Controller	HEIDENHAIN TNC640 MPG HR510	●
	HEIDENHAIN TNC640 MPG HR520 / HEIDENHAIN TNC640 MPG HR550	○
	SIEMENS SINUMERIK ONE	○
Spindle	AGA HSK63A 20,000rpm 20/24 kW	●
	AGA HSK63A 24,000rpm 35/42 kW / AGA HSK63A 24,000rpm 60/75 kW	○
	AGA HSK100A 15,000rpm 45/54 kW	○
Drive system	XYZ axis with high speed ball screw driving / AC axis with direct drive motor	●
Automatic tool changer	HSK63A-32T	●
	HSK63A-64T / HSK100A-24T / HSK100A-60T	○
Chip removal system	Complex chip conveyer / Coolant tank	●
Cutting coolant	Coolant through spindle 20bar	○
	Coolant through spindle 70bar	○
System coolant	Chiller for spindle / Chiller for A/C axis / Air conditioner for electrical cabinet	●
Workpiece measurement system	BLUM workpiece measurement system-TC-60+RC66	○
	Renishaw workpiece measurement system-RMP600	○
Tool measurement system	BLUM tool measurement system-NT-A4	○
	Renishaw tool measurement system-NC4-F230	○
Smart factory	TIMS system	○
	TLMsystem	○
Others	Security door interlocks / Fully enclosure splash guard / Oil mist around spindle	●
	Oil mist collecting system / Air dryer / Isolation transformer Stabilizer	○



MT 1520/30-5S
For Medium-sized Injection Mold
5-axis High Speed
Double Column Machining Center



Duo block structure design

Machine rigidity and working stability could be enhanced via duo block structure design.

High dynamics

Because the axis has excellent high acceleration and deceleration, the machine can reduce the cutting time.

X/Y/Z-axis driven by high-speed ball screw

X/Y/Z-axis are driven by double ball screws which could ensure concentricity of the moving part center and the weight center so that the vibration could be eliminated.

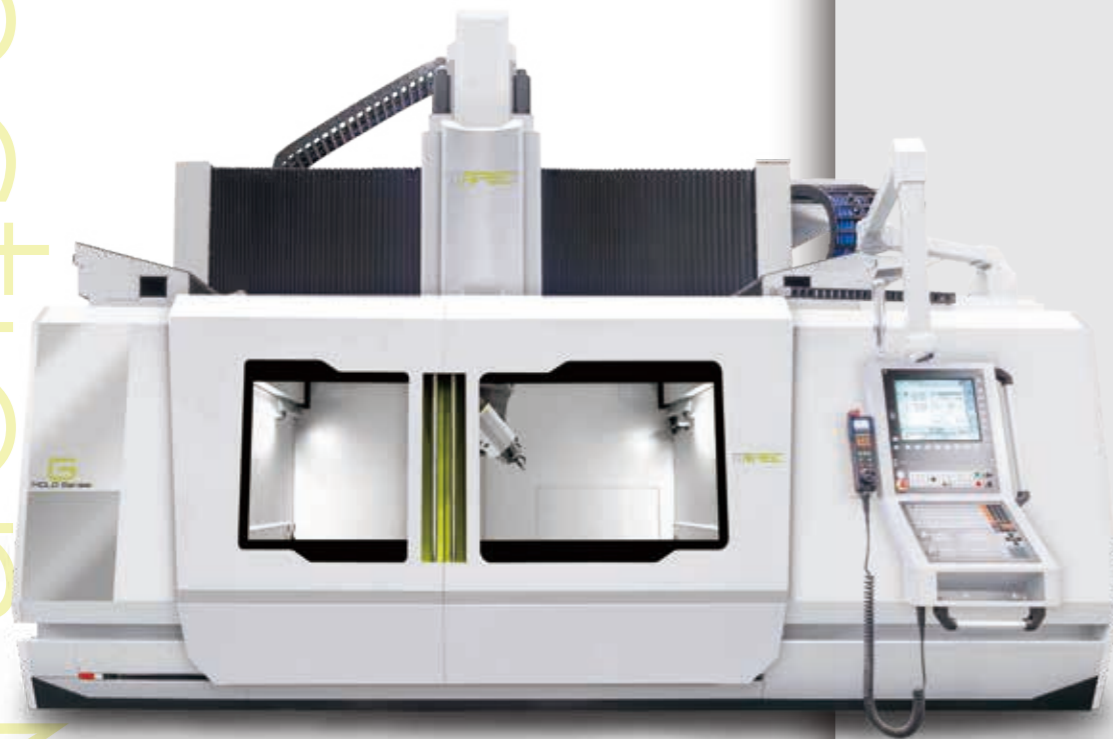
Two-axis head driven by direct drive motor

Excellent surface finish contour could be enhanced thanks to the high torque direct drive motor system of two-axis heads. Small size appearance is suitable for complex curved surface machining and the advantages include low error, high resolution and high speed.

Specification	Unit	MT1520-5S	MT1530-5S
Travel			
X-axis	mm	2,000	3,000
Y-axis	mm	2,000	
Z-axis	mm	850 / 1,000(opt.)	
Distance between two columns	mm	1,500	
Distance from spindle end to table	mm	100-950	
Table			
T-slot size	mm	20 X 125	
Table size	mm	2,100 X 1,200	3,100 X 1,200
Load	tons	5	5
Feedrate			
Rapid traverse	m/min	XYZ=30	
X,Y,Z axis acceleration	m/sec ²	5	
Accuracy			
Positioning (VDI3441)	mm	X=0.030, Y=0.010, Z=0.008	
Repeatability (VDI3441)	mm	X=0.025, Y=0.008, Z=0.005	
Spindle(Std.)			
Spindle taper		HSK63A	
Spindle speed	rpm	24,000	
Spindle power(S1/S6)	kW	35/42	
Spindle torque(S1/S6)	Nm	55.6/67.2	
Two-axis head (Std.)			
Type		Mono Support Milling Head	
Swivel/Rotation torque	Nm	A=529/869	
	Nm	C=783/1,300	
Swivel/Rotation speed	rpm	A=C=30(cont)/60(max)	
Swivel/Rotation angle	deg	A=±125° C=±360°	
Clamping torque	Nm	A=4,000 C=4,000	
Automatic tool changer (Std.)			
Tool shank	pcs	32T	
Max. tool length	mm	300	
Max. tool diameter with adjacent tool	mm	Ø75	
Max. tool diameter without adjacent tool	mm	Ø130	
Others			
Machine weight	tons.	20	24

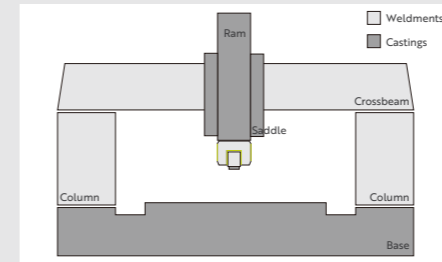
● Standard accessories ○ Optional accessories

Item	Specification	
Controller	HEIDENHAIN TNC640 MPG HR510	●
	HEIDENHAIN TNC640 MPG HR520 / HEIDENHAIN TNC640 MPG HR550	○
	SIEMENS SINUMERIK ONE	○
Spindle	AGA HSK63A 24,000rpm 35/42 kW	●
	AGA HSK100A 15,000rpm 45/54 kW	○
Drive system	XYZ axis with high speed ball screw driving	●
Chip removal system	Complex chip conveyer / Coolant tank	●
Cutting coolant	Coolant around spindle	●
	Coolant through spindle 20bar / Coolant through spindle 70bar	○
System coolant	Chiller for spindle / Air conditioner for electrical cabinet	●
Workpiece measurement system	BLUM workpiece measurement system-TC-60+RC66	○
	Renishaw workpiece measurement system-RMP600	○
Tool measurement system	BLUM tool measurement system-NT-A4	○
	Renishaw tool measurement system-NC4-F230	○
Smart factory	TIMS system	○
	TLMsystem	○
Others	Security door interlocks / Fully enclosure splash guard / Air dryer / Isolation transformer / Oil mist collecting system / Oil mist around spindle	●
	Oil mist collecting system / Stabilizer	○



G2520/3020-5L

For large Injection Mold
5-Axis High Speed Gantry Machining Center



Die casting saddle, ram and base

With extremely high body stability, the machine has the best rigidity to ensure machining accuracy.

Ductile-iron-made ram

The ram is made by ductile iron for high rigidity and vibration damping. The machining accuracy and stability could be increased.



U-shaped force flow structure

One-piece U-shaped and high rigidity structure enhances long-term accuracy and stability thanks to the shortest transmission of the force flow and evenly distributed cutting force.

X/Y axis driven by linear motor

Linear motor provides excellent dynamics and static rigidity. The rapid feedrate of the axis is up to 60m/min and the acceleration is up to 0.5G ~ 0.7G. The structure is simple and easy to maintain without transmission power loss.

Z-axis driven by double ball screws with innovative hollow water cooling technology

Z-axis is driven by double ball screws which could ensure concentricity of the moving part center and the weight center so that the vibration could be eliminated. Moreover, it is equipped with hollow water cooling system for precise temperature control and thermal deformation control.

Optimized working area

Heightened column design provides larger Z-axis travels which is perfect for mold makers.

Two-axis head driven by direct drive motor

Excellent surface finish contour could be enhanced thanks to the high torque direct drive motor system of two-axis heads. Small size appearance is suitable for complex curved surface machining and the advantages include low error, high resolution and high speed.

Specification	Unit	G2520-5L	G3020-5L
Travel			
X-axis	mm	2,000	
Y-axis	mm	2,500	3,000
Z-axis	mm	1,000 / 1,200(opt.)	
Distance from spindle end to table	mm	370 - 1,370	
Table			
T-slot size	mm	28	
Table size	mm	2,000 X 2,500	2,000 X 3,000
Load	tons/m ²	8	
Feedrate			
Rapid traverse	m/min	XY=60, Z=40	
X.Y.Z axis acceleration	m/sec ²	5	
Accuracy			
Positioning (VDI3441)	mm	X=0.010, Y=0.012, Z=0.008	
Repeatability (VDI3441)	mm	X=0.008, Y=0.008, Z=0.005	
Spindle(Std.)			
Spindle taper		HSK63A	
Spindle speed	rpm	24,000	
Spindle power(S1/S6)	kW	35 / 42	
Spindle torque(S1/S6)	Nm	55.6/67.2	
Two-axis head (Std.)			
Type		Mono Support Milling Head	
Swivel/Rotation torque	Nm	A=529/869	
	Nm	C=783/1,300	
Swivel/Rotation speed	rpm	A=C=30(cont)/60(max)	
Swivel/Rotation angle	deg	A=±125° C=±360°	
Clamping torque	Nm	A=4,000 C=4,000	
Automatic tool changer (Std.)			
Tool shank	pcs	30T	
Max. tool length	mm	300	
Max. tool diameter with adjacent tool	mm	Ø100	
Max. tool diameter without adjacent tool	mm	Ø130	
Others			
Machine weight	tons.	35-65	

● Standard accessories ○ Optional accessories

Item	Specification	
Controller	HEIDENHAIN TNC640 MPG HR520	●
	HEIDENHAIN TNC640 MPG HR550	○
	SIEMENS SINUMERIK ONE	○
Spindle	AGA HSK63A 24,000rpm 35/42 kW	●
	AGA HSK100A 15,000rpm 45/54 kW #1	○
Drive system	XY axis with linear motor drive / Z axis with ball screw drive	●
Automatic tool changer	30T	●
	40T / 60T	○
Chip removal system	Complex chip conveyer / Coolant tank	●
	Coolant around spindle	●
Cutting coolant	Coolant through spindle 20bar / Coolant through spindle 70bar	○
	Chiller for spindle / Air conditioner for electrical cabinet	●
System coolant	Chiller for spindle / Air conditioner for electrical cabinet	●
	BLUM workpiece measurement system-TC-60+RC66	○
Workpiece measurement system	Renishaw workpiece measurement system-RMP600	○
	BLUM tool measurement system-NT-A4	○
Tool measurement system	Renishaw tool measurement system-NC4-F230	○
	TIMS system	○
Smart factory	TLMSystem	○
	Security door interlocks / Air dryer / Isolation transformer / Oil mist around spindle	●
Others	Oil mist collecting system / Stabilizer	○
	Automatic open/close top roof sliding cover	○

#1 If HSK 100A spindle is chosen, ATC standard would be 20T.Opt. would be 40T/60T



For stamping die
5-Axis High Speed Gantry Machining Center

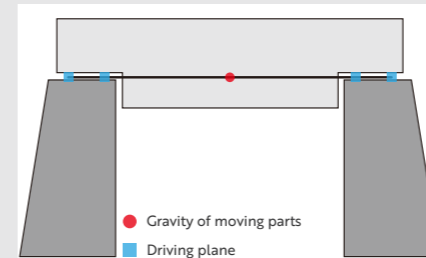
Box-in-Box structure design enhances machine rigidity and ensures the best accuracy performance for high-speed processing

The crossbeam and saddle are designed as box-in-box thermal symmetrical structure which gives good force flow transmission and prevents deflection. With perfect structural rigidity, the machine gives the best accuracy performance of high-speed machining and reduces thermal deformation and weight deformation greatly.



The lowest gravity center in the world

Zero distance between gravity of the moving parts and the driving plane makes the gravity center closer to the driving plane. The machine stability could then be improved and the best machine rigidity could be ensured.



Symmetrical force flow design

X/Y/Z axis are designed with symmetric force structure. Dual driving units and equivalent uniform force at gravity center can ensure optimal surface quality and prolong tool life.



X/Y/Z axis driven by linear motor

X/Y/Z axis driven by linear motor provides excellent dynamics and static rigidity. The rapid feedrate of the axis is up to 60m/min and the acceleration is up to 0.5G ~ 0.7G. The structure is simple and easy to maintain without transmission power loss.

Optimized working area

Heightened column design provides larger Z-axis travels which is perfect for mold makers.

Counterbalance system

The counter balance system is designed with close-loop which include high pressure components. This system could compensate the gravity effect and minimize the load of the motor. Excellent static and dynamic rigidity could be ensured.

Two-axis head driven by direct drive motor

Excellent surface finish contour could be enhanced thanks to the high torque direct drive motor system of two-axis heads. Small size appearance is suitable for complex curved surface machining and the advantages include low error, high resolution and high speed.

Specification	Unit	GM3250-5L	GM3260-5L
Travel			
X-axis	mm	5,000	6,000
Y-axis	mm	3,200	
Z-axis	mm	1,000	
Distance from spindle end to table	mm	260 ~ 1,260	
Table			
T-slot size	mm	28 X 250	
Table size	mm	5,000 X 3,000	6,000 X 3,000
Load	tons/m ²	8	
Feedrate			
Rapid traverse	m/min	XYZ=60	
X.Y.Z axis acceleration	m/sec ²	5	
Accuracy			
Positioning (VDI3441)	mm	X=0.025 , Y=0.012 , Z=0.008	
Repeatability (VDI3441)	mm	X=0.012 , Y=0.008 , Z=0.005	
Spindle (Std.)			
Spindle taper		HSK100A	
Spindle speed	rpm	15,000	
Spindle power(S1/S6)	kW	45/54	
Spindle torque(S1/S6)	Nm	119/143	
Two-axis head (Std.)			
Type		Fork Type Milling Head	
Swivel/Rotation torque	Nm	B=1,192/1,980	
		C=1,050/1,740	
Swivel/Rotation speed	rpm	B=C=30(contl)/60(max)	
Swivel/Rotation angle	deg	HSK63A : B=±120° C=±360° HSK100A : B=±115° C=±360°	
Clamping torque	Nm	B=4,000 C=4,000	
Automatic tool changer (Std.)			
Tool shank	pcs	20T	
Max. tool length	mm	300	
Max. tool diameter with adjacent tool	mm	Ø150	
Max. tool diameter without adjacent tool	mm	Ø180	
Others			
Machine weight	tons.	84	

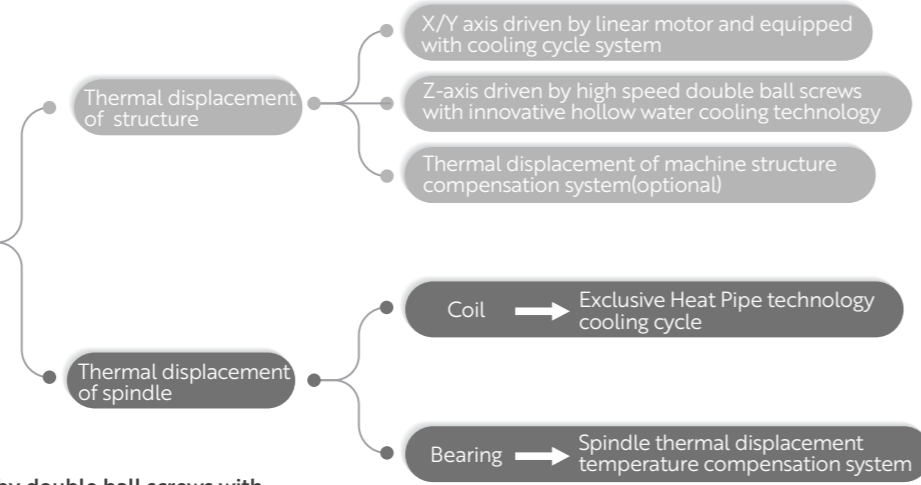
● Standard accessories ○ Optional accessories

Item	Specification	
Controller	HEIDENHAIN TNC640 MPG HR520	●
	HEIDENHAIN TNC640 MPG HR550	○
	SIEMENS SINUMERIK ONE	○
Spindle	AGA HSK100A 15,000rpm 45/54 kW #1	●
	AGA HSK63A 24,000rpm 35/42 kW	○
Drive system	XYZ axis with linear motor drive	●
Automatic tool changer	20T (HSK100A) / 30T (HSK63A)	●
	40T / 60T	○
Chip removal system	Complex chip conveyer / Coolant tank	●
Cutting coolant	Coolant around spindle	●
	Coolant through spindle 20bar / Coolant through spindle 70bar	○
System coolant	Chiller for spindle / Air conditioner for electrical cabinet	●
Workpiece measurement system	BLUM workpiece measurement system-TC-60+RC66	○
	Renishaw workpiece measurement system-RMP600	○
Tool measurement system	BLUM tool measurement system-NT-A4	○
	Renishaw tool measurement system-NC4-F230	○
Smart factory	TIMS system	○
	TLMsystem	○
Others	Security door interlocks / Air dryer / Isolation transformer / Oil mist around spindle	●
	Oil mist collecting system / Stabilizer	○
	Automatic open/close top roof sliding cover	○

#1 If HSK 100A spindle is chosen, ATC standard would be 20T. Opt. would be 40T/60T

Spindle Heat Pipe and 2 axis hollow water cooling technology could solve the issue of thermal displacement.

Thermal displacement of machine



• X/Y axis driven by linear motor and equipped with cooling cycle system

Linear motor drives without contacting thus avoids the issue of thermal expansion and screws becomes hot.

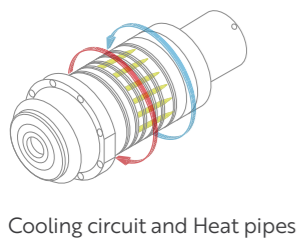
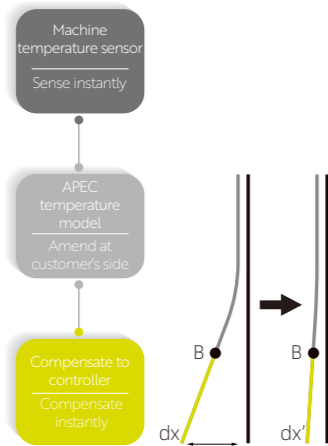
• Z-axis driven by double ball screws with innovative hollow water cooling technology

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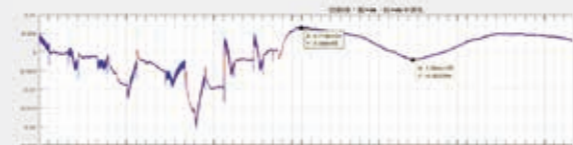
• Exclusive Heat Pipe coolant system

AGA Heat pipes have 1000x better heat conductivity than comparable sticks made of copper which also cause a homogenous temperature inside components.

• Thermal displacement of machine structure compensation system(optional)



The result of thermal displacement after compensated
The thermal displacement of the Z-axis after adjustment is under 0.02mm



Turn off the air conditioner and measure the thermal displacement. The following figure shows the displacement data of the axial Z, and it can be seen that all are within 0.02mm



Automatic two-axis head changer



NC controllable top roof sliding cover



Automatic attachment head changer



Attachment head tool changer



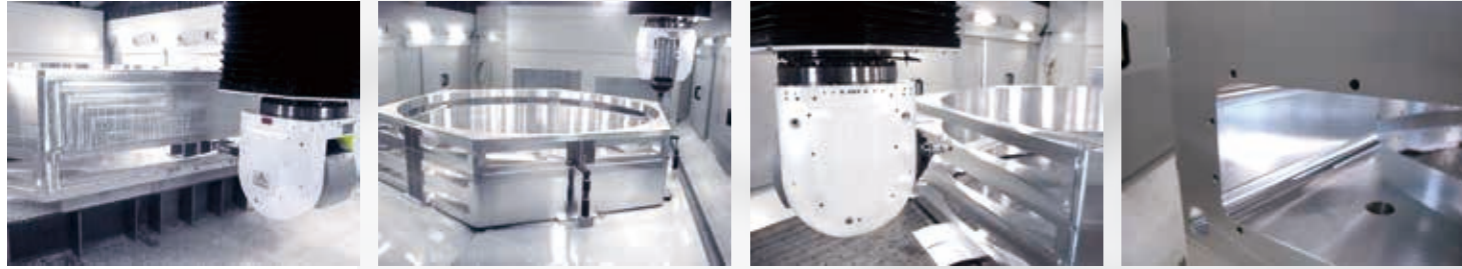
NC controllable telescopic suction hood around spindle



Safety light curtain



Automatic pallet changer



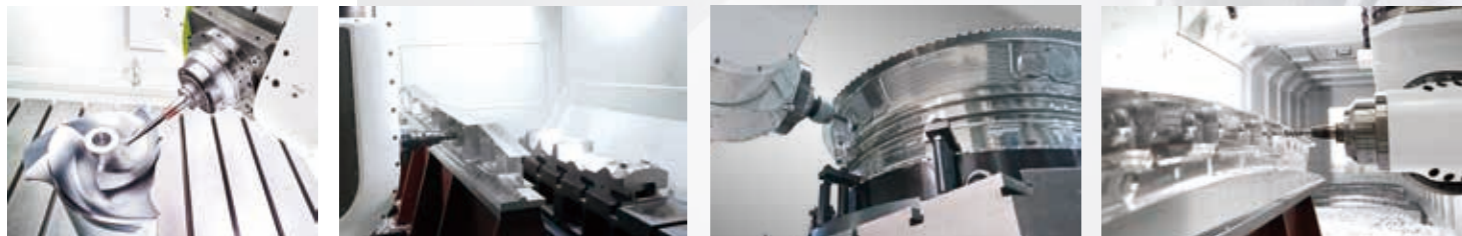
Aluminum vacuum chamber



Car Prototyping



Composite layup tooling for aerospace

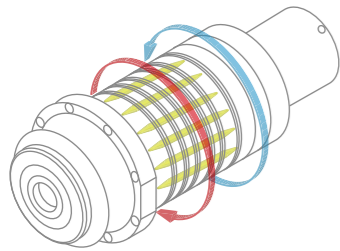


Precision 5-axis machining

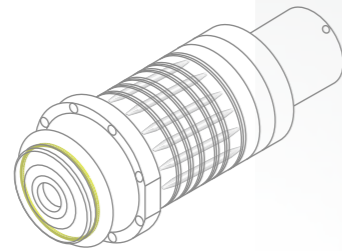
Specification of other industries

Specification	Unit	G25-5L	G30-5L	GM27-5L	GM32-5L	GM40-5L
		G2520/40/50/60/80	G3020/40/50/60/80	GM2720/40/50/60/80	GM3240/50/60/80	GM4050/60/70/80
Travel						
X-axis	mm	2,000/4,000/5,000/6,000/8,000		2,000/4,000/5,000/6,000/8,000	4,000/5,000/6,000/8,000	5,000/6,000/7,000/8,000
Y-axis	mm	2,500	3,000	2,700	3,200	4,000
Z-axis	mm	1,000		1,000#		
Distance from spindle end to table	mm	According to the selected model, the configuration will be different. Please contact our sales for more details.				
Table						
T-slot size	mm	28			28 X 250	
Length	mm	2,000/4,000/5,000/6,000/8,000		2,000/4,000/5,000/6,000/8,000	4,000/5,000/6,000/8,000	5,000/6,000/7,000/8,000
Width	mm	2,580/2,500/2,500/2,500/2,500	3,000	2,500	3,000	4,000
Load	tons/m ²	8				
Feedrate						
Rapid traverse	m/min	X/Y/Z=60/60/40			XYZ=60	
X.Y.Z axis acceleration	m/sec ²	5			5-8	
Spindle(Std.)						
Spindle taper		HSK63A				
Spindle speed	rpm	24,000				
Spindle power(S1/S6)	kW	35/42				
Spindle torque(S1/S6)	Nm	55.7/67.2				
Automatic tool changer						
Tool shank	pcs	30T				
Max. tool length	mm	300				
Max. tool diameter with adjacent tool	mm	Ø100				
Max. tool diameter without adjacent tool	mm	Ø130				
Max. tool weight	kg	7				
Others						
Machine weight	tons.	35-65		52	84	-

GM series Z axis travel options can be provided to 2000mm



Cooling circuit and Heat pipes



Labyrinth seal and Brush seal



Mono Support Milling Head



Fork Type Milling Head

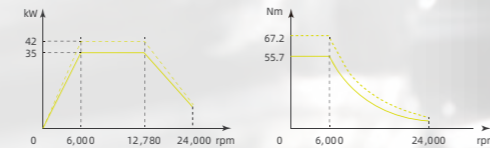
Spindle Taper	HSK63A/HSK100A	HSK63A/HSK100A
Swivel/Rotation Torque	A=529/869Nm C=783/1,300Nm	B=1,192/1,980Nm C=1,050/1,740Nm
Swivel/Rotation Speed	A=C=30(cont)rpm A=C=60(max)rpm	B=C=30(cont)rpm B=C=60(max)rpm
Swivel/Rotation Angle	A=±125° C=±360°	HSK63A:B=±120° C=±360° HSK100A:B=±115° C=±360°
Clamping Torque	A=4,000Nm C=4,000Nm	B=4,000Nm C=4,000Nm
Suitable models	MT1520/30(Std.) G2520/3020(Std.)	GM3250/60(Std.) MT1520/30 G2520/3020

AGA ultra-high speed & power spindle

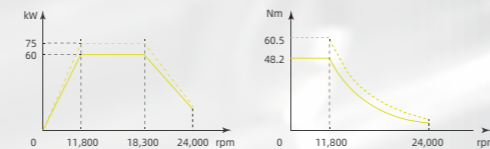
- **Heat pipes for efficient heat transfer**
AGA Heat pipes have 1000x better heat conductivity than comparable sticks made of copper which also cause a homogenous temperature inside components.
- **Dustproof and waterproof design : Use of brush seals for aircraft engines**
 - Maximal gap (≤0.003 mm) for best protection against fluid (≤ 10bar) and aggressive particles. (carbon fibers or ceramic materials)
 - Protection could be provided even if purge air fails or air is very humid.
 - Electrostatic discharge protection of the shaft could be provided if drive currents are not perfectly symmetric.
 - Damping of vibrations.

		Spindle			
		24,000rpm		15,000rpm	
Spindle taper	HSK-63A			Spindle taper	HSK-100A
Lubrication	Oil air			Lubrication	Oil air
Power(kW)	SI 35 60 S6 42 75			Power(kW)	SI 45 54 S6 54
Torque(Nm)	SI 55.7 48.2 S6 67.2 60.5			Torque(Nm)	SI 119 143 S6 143
Rated speed(rpm)	6,000 11,800			Rated speed(rpm)	3,600

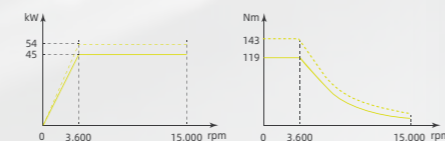
24,000rpm, HSK63A



24,000rpm, HSK63A



15,000rpm, HSK100A



- Please contact with our sales if you have special requirement.
- All specifications and design are subject to change without notice.