APEC
ASIA PACIFIC ELITE CORP

Asia Pacific Elite Corp.

Add：No.7，Jingke N. Rd., Nantung，Taichung,
40852 Taiwan
TEL : +886-4-2358 9313
FAX : +886-4-2358 9311
www.apeccnc.com
sales@apeccnc.com

東台集團
TONGTAI GROUP

2016.08.2000

APEC
ASIA PACIFIC ELITE CORP

G series

5-Axis High Speed Gantry Machining Center

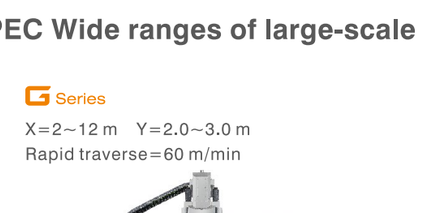
- Two-axis head with direct drive motor
- Spindle speed 24,000 rpm
- U-frame structure
- Rapid traverse 60 m/min

APEC Wide ranges of large-scale machining centers

G Series
X=2~12 m Y=2.0~3.0 m
Rapid traverse=60 m/min

GF Series
X=6.0~30.0 m Y=4.0~5.0 m
Rapid traverse=40 m/min

GM Series
X=4.0~6.0 m Y=2.7~3.7 m
Rapid traverse=60 m/min



MT Series
X=3.2~6.2 m Y=1.5~3.4 m
Rapid traverse=12~20 m/min

MDU Series
X=2.0~2.5 m Y=2.0~2.5 m
Rapid traverse=10 m/min

Auto attachment heads

5 face machining

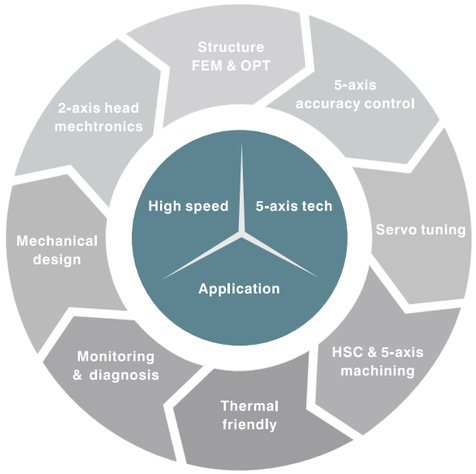
Heavy duty 5 face machining

5 axis continuous machining

5 axis heads

About Asia Pacific Elite Corp.

Creating benchmarks of large-scale 5-axis expert for high speed gantry machining center



Excellent products and services

APEC Ltd. affiliated with the TTG (Tongtai Group) which is the biggest machine tool building group in Taiwan, is the first company working on manufacturing the large gantry High-speed 5-axis machine in Asia area. To provide the most professional and complete products and service, we adopt the European main components design and manufacturing technology, designed for gantry type and high-end processing.

Since 2003 . we have been successfully selling our products in wide range of industry of automotive and aerospace ,and we also win the repeat orders in the Well-known enterprises all over the world and continue to build the excellent reputation.

Perfect application supporting and customer training

The most perfect application supporting and customer training
APEC is the company that specializes in machining for Aerospace and Automobile industries.
APEC team, by analyzing the processing demand from customers, not only recommends the suitable equipment but also provide the complete solutions. It helps the improving of machining efficiency and accuracy, and it upgrades the processing.

G Series

High Speed Gantry Machining Center

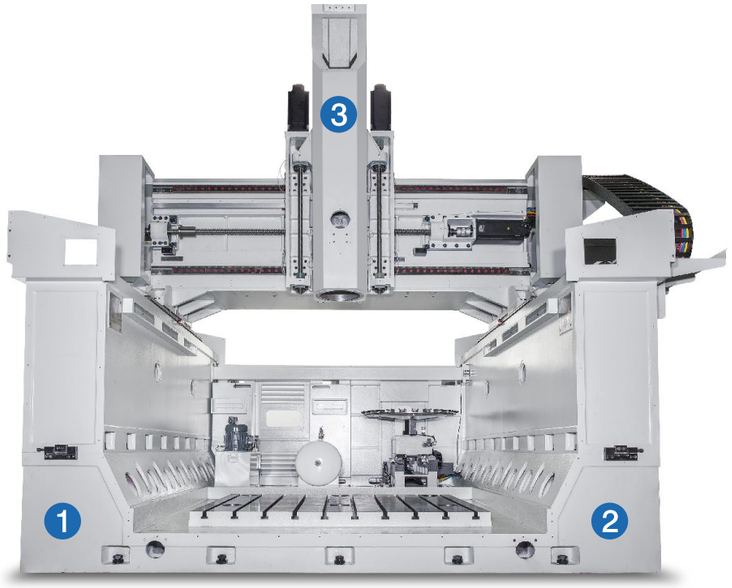
- Gantry type structure could save up 50% working area compared with conventional double column type machining center.
- With 24,000 rpm high speed and high accuracy built-in spindle.
- The full enclosed loop structural design could increase the cutting rigidity and stability significantly.

1. The ram of Z-axis, made of ductile cast iron with appropriate damping feature, supplies high anti-bending strength and stable cutting condition for large Z-axis ranges.

2. Double column and driving at center of mass design has increased the working stability. Linear guides on both side walls are designed with optimized span to ensure the excellent dynamic and static rigidity.

3. Thanks to B and C axis with direct-driven motors and XYZ motions dedicating to a high speed 5-axis synchronization in precious free surface machining.

G series structure ensures long-term machining stability



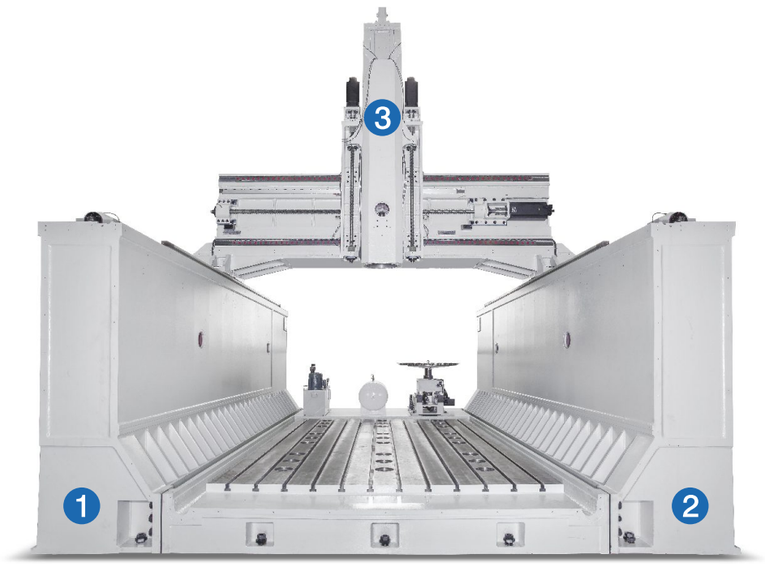
1 U-shape base adopted to brings the shortest force and cutting stress could be more evenly distributed for M / C with X-2000mm travel.

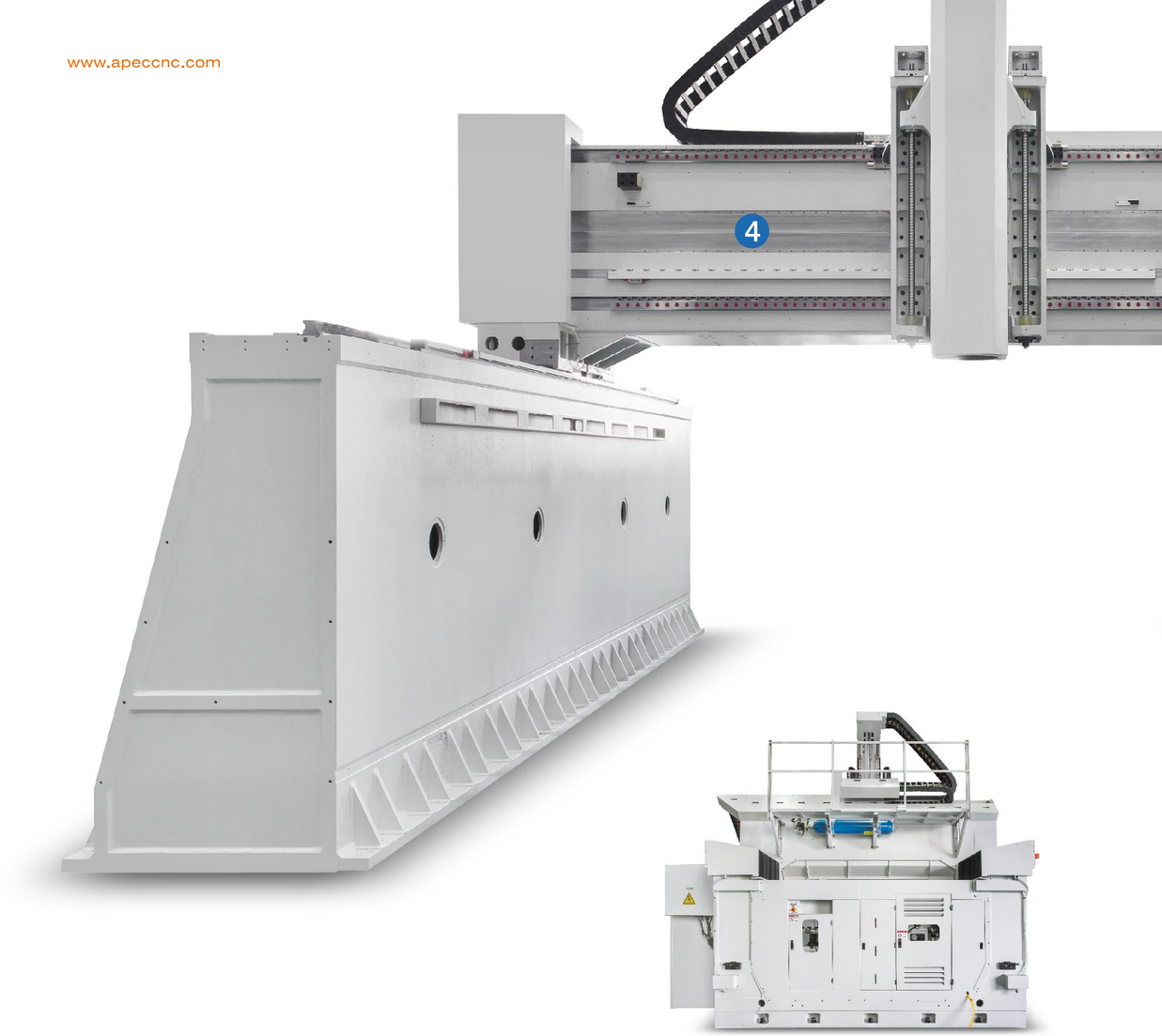
2 U-shape can be completely shipped with one container without disassembly, it will reduce the rework time when installing the machine.

3 Double ball screws in Z axis and twin servo motor driving provide high dynamic and stable cutting accuracy.

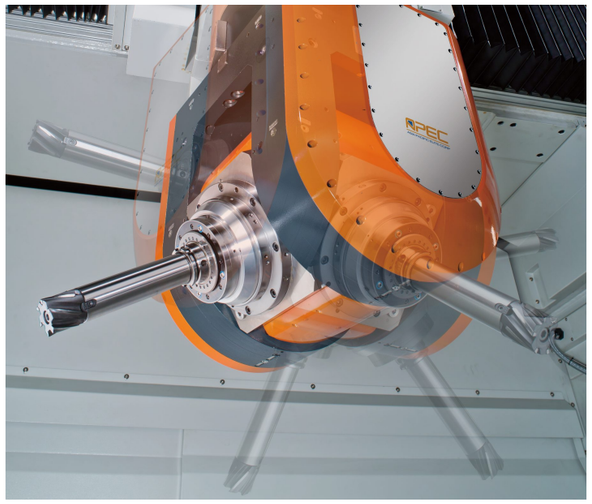
4 X-Y-axis Maglev series driven by linear motor, Linear motors provide no backlash, no wear out, high accuracy, rapid federate and acceleration, simple structure and maintenance-fee for long service life

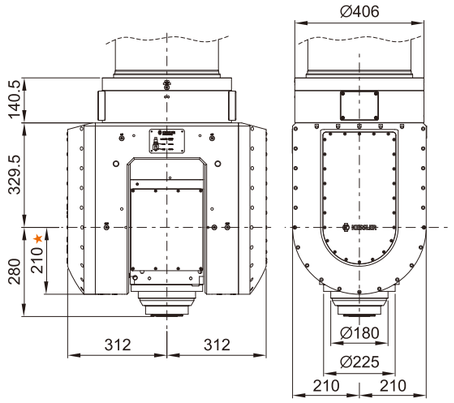
5 Gantry type machines with fixed table (with Y-3000mm above travel) offer much more table load, and offer the same dynamic behavior though with different weight loading.





Fork type 2-axis head & spindle





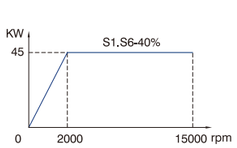
★ With HSK100A spindle, this value will be 340

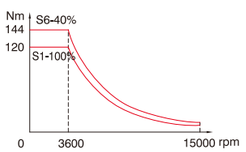
Spindle taper	HSK 63A	HSK 100A
Spindle speed	18,000 / 24,000 / 30,000 rpm	15,000 rpm
Spindle power	(56/70 kW)/18,000 (37/45 kW)/24,000 (38/48 kW)/30,000	45/ 45 kW
Spindle torque	(89/111 Nm)/18,000 (60/73 Nm)/24,000 (60/75 Nm)/30,000	120 / 144 Nm
Max. swivel / rotation speed	B=30rpm C=30rpm	B=30rpm C=30rpm
Swivel / Rotation angle	B=±105° C=±200°	B=±105° C=±200°

- The high torque clamping system supplies high rigidity machining.
- Fork type structure design, dual brake and double torque motor driven system offers the best stability.
- Direct torque motor provides high dynamic characteristic at high speed swiveling 30 rpm. (reduce non-machining time and increase the production efficiency)
- The ring-type optical linear scale in B and C axis offer the best stability instead of mechanical transmission mechanism to sure the accurate postion feedback and reduce the vibration.

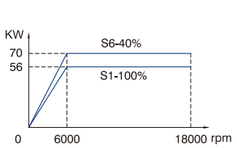
Spindle power and torque

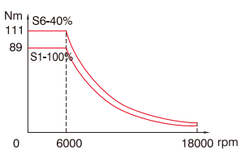
15,000 rpm / HSK 100A



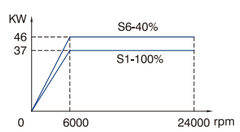


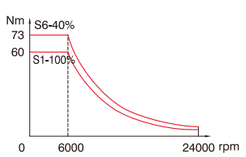
18,000 rpm HSK 63A



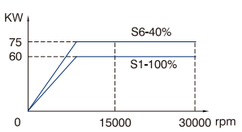


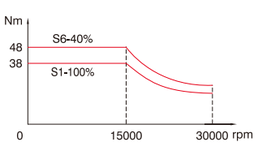
24,000 rpm HSK 63A



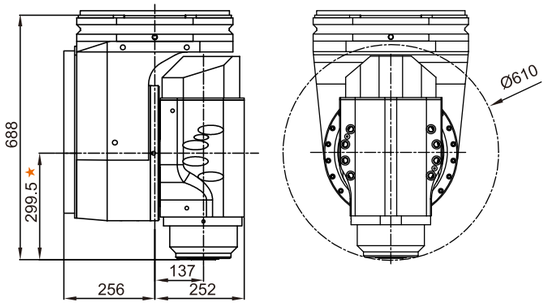


30,000 rpm HSK 63A





Mono support 2-axis head & spindle



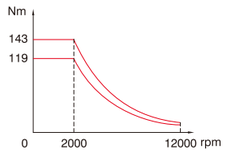
★ With HSK 100A spindle, this value will be 339.5

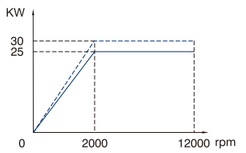
Spindle taper	HSK63A	HSK100A	
Tool clamping	Auto clamping		
Spindle speed	24,000 std.	12,000 opt.	15,000 opt.
Spindle power	35 / 42 kW	25 / 30 kW	
Spindle torque	56 / 67 Nm	119 / 143 Nm	
Indexing	continuous indexing		
Swivel/Rotating angle	A=±125° C=±200°		
Clamping torque	A=4,000Nm C=4,000Nm		

- Much smaller interference area (20% volume reduction)
- Rigid structure (ductile iron FCD600 and high stiffness rigid bearing inside)
- Invariant A-and C-axis positioning and axial accuracy (by ring brake design)
- Clean tech & environmental care (grease / oil-air)
- Wear-free torque motor in A-and C-axis (30 rpm)
- Germany maintenance-free re-greasing lubrication system in spindle
- A/C-axis with torque motor and Heidenhain high accuracy encoder

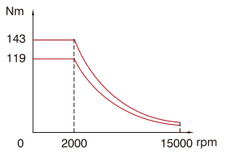
Spindle power and torque

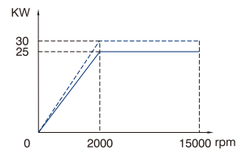
12,000rpm, HSK100A



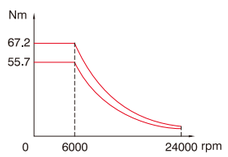


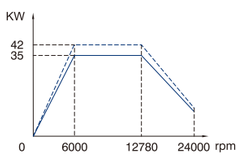
15,000rpm, HSK100A





24,000rpm, HSK63A





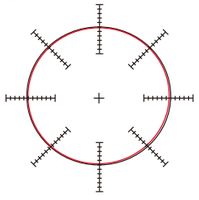
High speed, High accuracy linear motor

- Non-contact type, no backlash, no wear out.
- 100% direct-transmitted power, without loss.
- Simple structure, maintenance free, long life.
- Best dynamic / static rigidity.

Bosch Rexroth Lucar motor

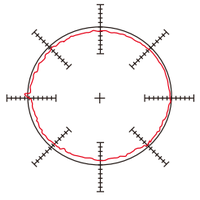
- Temperature control with cycling cooling system.
- Safty braking system on linear motor driving axes.

Benefit



Deviation : 0.4 μm

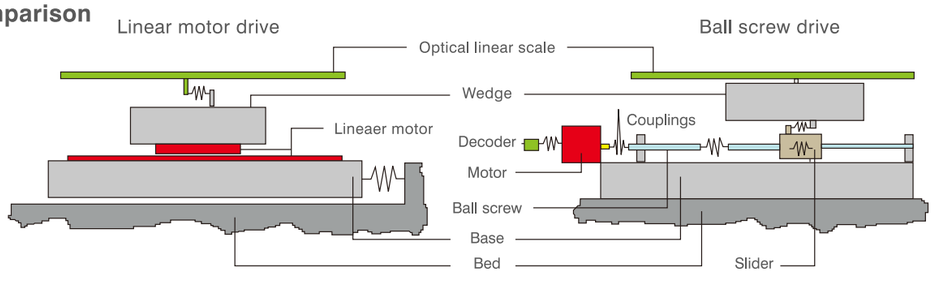
Circularity diagram with forward control	
Diameter	300 mm
Velocity	4 m/min
Mass	ca. 1.2t



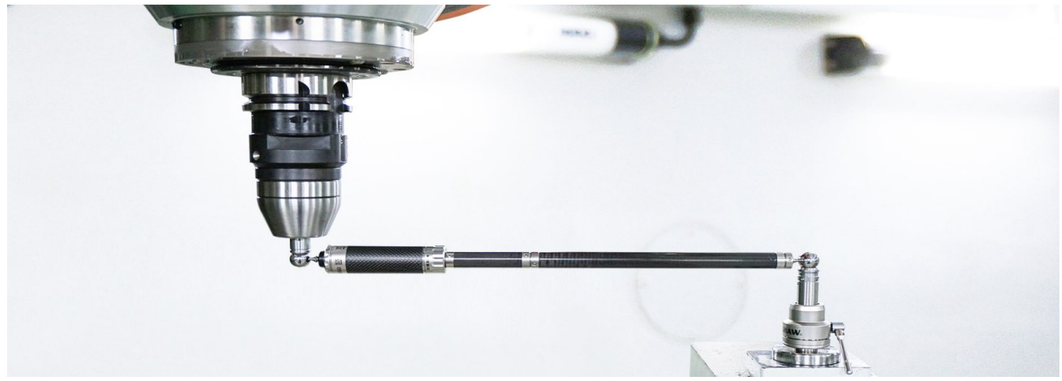
Deviation : 5 μm

Source : Siemens Laboratory

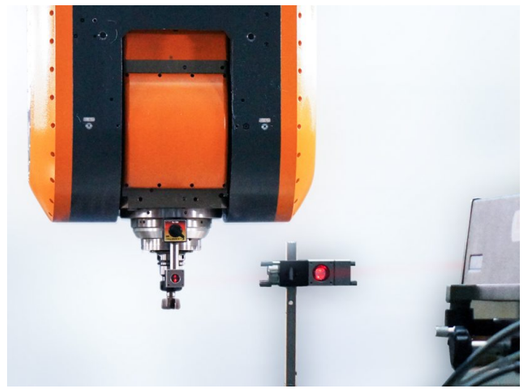
Comparison



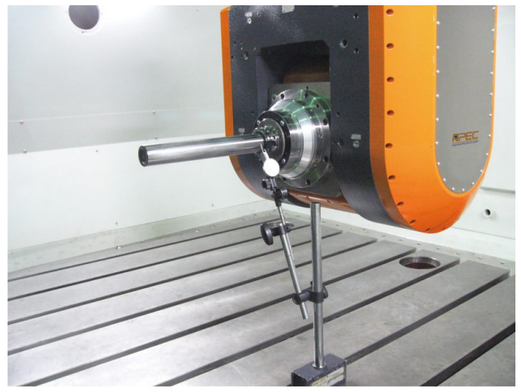
Accuracy Measurement



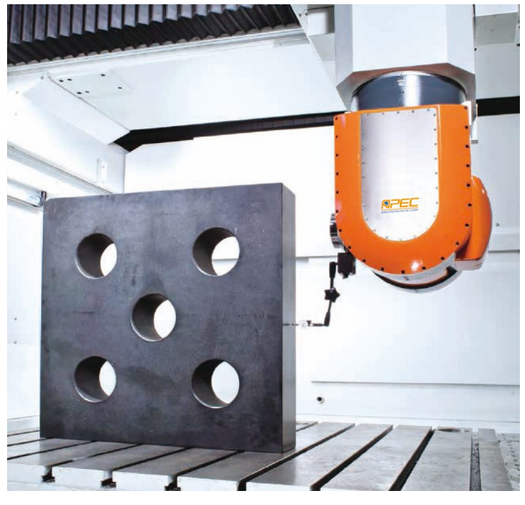
- Ballbar using ∅600 as a standard measurement.



Repeat positioning accuracy using standard VDI3441.



Spindle center and X,Y,Z axis parallelism measure.



1m x 1m granite square, geometric accuracy test to ensure the static spatial geometric accuracy for XY, XZ, and YZ planes.

3D examination TCPM (within the travel range C ± 180°, B ± 90°, at the center of working table.)

Accessories

Top roof sliding cover (opt.)

- The working area cover prevents mist and dust leakage out of work zone to protect operator health.

- Dust suction hood on spindle
- Working zone dust collection &filtering system

Attaching equipment

- The complete peripheral units are placing at the side of machine ,and according to the site space constraints, the placed position could be adjusted.

- **Long term reliability :**

  Linear motor cooling by independent cooler, equipped with temperature sensor to monitor motor temperature to maintain machine service life and reliability.

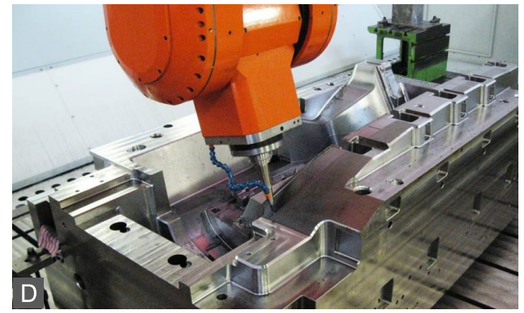
- **Accuracy & power saving :**

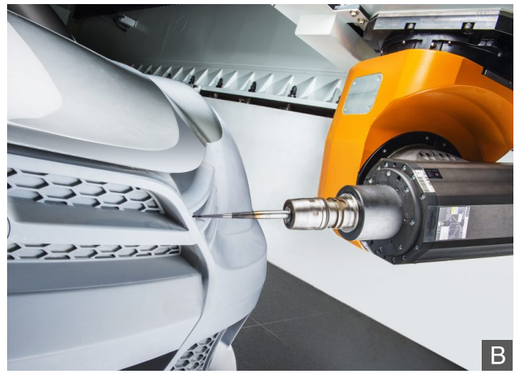
  Spindle equipped with temperature sensor to monitor spindle bearing temperature ±0.1°c for protection, this is to ensure accuracy and service life at high speed.

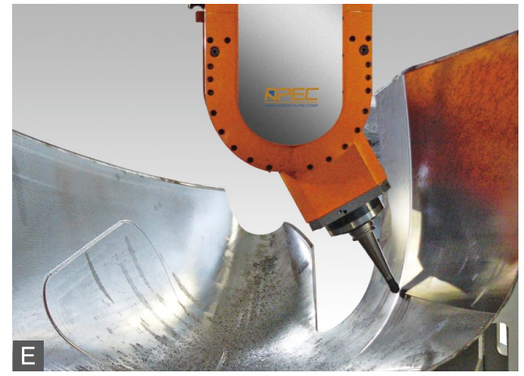
- **Longer electronics lifetime :**

  Electrical cabinet providing with air conditioner to maintain cabinet at a constant temperature for avoiding inner electrical device damaging.

Wide range of applications



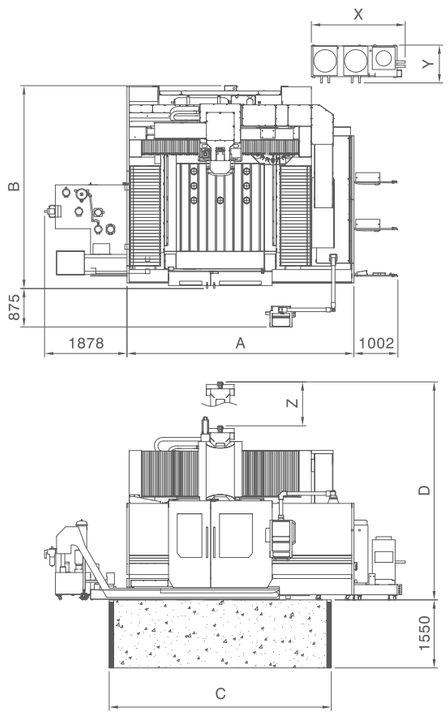




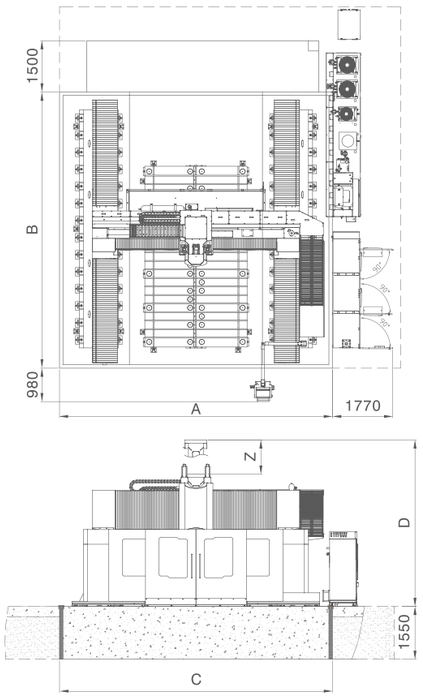
A. Aerostructure rib
B. Rapid prototyping & modeling
C. Automotive stamping die
D. Automotive plastic injection mold
E. Aerostrucuture invar mold
F. Automotive stamping die
G. Impeller

Machine Dimensions

G20 / 25 / G3020



G30 / 35 / 40 (except G3020)



Machine Layout

Unit : mm

Type	A	B	C	D	Z
2020	5240	4550	5060	4965 / 5582	1000 / 1200
2040	5240	6280	5060	5025 / 5642	1000 / 1200
2050	5240	7820	5060	5025 / 5642	1000 / 1200
2060	5240	8820	5060	5025 / 5642	1000 / 1200
2520	5740	4550	5560	4965 / 5582	1000 / 1200
2530	5740	5820	5560	5025 / 5642	1000 / 1200
2540	5740	6820	5560	5025 / 5642	1000 / 1200
2550	5740	7820	5560	5025 / 5642	1000 / 1200
2560	5740	8820	5560	5025 / 5642	1000 / 1200
3020	6240	4550	6060	4965 / 5582	1000 / 1200
3030	6240	5820	6060	4930 / 5255	1000 / 1200
3040	6240	6820	6060	4930 / 5255	1000 / 1200
3050	6240	7820	6060	4930 / 5255	1000 / 1200
3060	6240	8820	6060	4930 / 5255	1000 / 1200

- Other sizes please contact our sales staff

Standard accessories

- Heidenhain iTNC530 CNC controller
- 2-Axis head with HSK 63A 24,000 rpm
- Automatic tool magazine 24 tools
- Full-enclosure splash guard (without roof)
- (A) X / Y-axis with linear motor drive (B) X / Y-axis with ball screw drive
- X / Y-axis with chillers (for linear motors)
- X / Y / Z-axis with Heidenhain linear scale (for linear motors)
- X / Y / Z-axis with roller linear guideways
- X / Y / Z-axis with brake system (for linear motors)
- Chiller for spindle
- Spindle lubrication system
- Counter balance system
- Manual pulse generator
- Air conditioner for electrical cabinet
- Chip conveyer
- Transformer
- Security door interlocks
- Waterproof working lamps

Machine Specifications

Specifications	Unit	G Maglev	G Dyna
Travel			
X-axis	mm	2,000 / 2,500 / 3,000 / +EXTENSION 1,000	
Y-axis	mm	2,000 / 2,500 / 3,000 / 3,500 / 4,000	
Z-axis	mm	1,000 / 1,200 (option : 1,500 / 2,000)	
Distance from spindle nose to table surface	mm	20~20+ z axis stroke *1	
Table			
Table length	mm	2,000 / 3,000 / +EXTENSION 1,000	
Table width	mm	2,000 / 2,500 / 3,000 / 3,500	
T-slot size	mm	28	
max. table load	kg / m²	8,000	
Spindle			
Spindle taper		HSK 63	
Spindle speed	rpm	24,000	
Spindle power (S1 / S6)	kW	37 / 46	
Spindle torque (S1 / S6)	Nm	60 / 73	
2-Axis Head (Kessler)			
Max. swivel / rotation speed	rpm	B = 30	C = 30
Max. swivel / rotation torque (S1-100%)	Nm	B = 760	C = 800
Clamping torque	Nm	B = 2,100	C = 3,000
Swivel / rotation angle	degree	B = ±105°	C = ±200°
Traverse		Linear motor drive *2	Ball screw drive *3
Rapid traverse	m/min	X=60, Y=60 , Z=40	X=20, Y=20 , Z=20
X / Y / Z-axis acceleration	m/sec²	5	4
Accuracy		Maglev	Dyna
Positioning (VDI3441)	mm	3000≤L≤6000 / 0.015~0.025	
Repeatability (VDI3441)	mm	3000≤L≤6000 / 0.010~0.012	
Ball bar circulartiy	mm	XY / 0.015 XZ / 0.025 YZ / 0.025	XY / 0.025 XZ / 0.035 YZ / 0.035
Automatic Tool Changer			
Tool shank		HSK 63A	
Tool capacity		24	
Max. tool length	mm	300	
Max. tool diameter-with adjacent tool	mm	Ø100	
Max. tool diameter-without adjacent tool	mm	Ø180	
Max. tool weight	kg	7	
Others			
Machine weight	kg	35,000~65,000 (AND OVER)	

*1 the distance from spindle nose to table can be customized

*2 Meglev models : If X travel ≧ 6,000 mm, X-axis motion is driven by rack & pinion

*3 Dyna models : If X travel ≧ 6,000 mm, X-axis motion is driven by rack & pinion, and YZ-axis motion driven by ball screw.

※ All specifications and designs are subjected to change without notice.

Optional accessories

- Siemens 840D CNC controller
- HEIDENHAIN iTNC 640
- 2-axis head with HSK 63A 18,000 rpm
- 2-axis head with HSK 100A 15,000 rpm
- Automatic tool changer 40 / 60 / 80 / 120 tools
- Air dryer
- Coolant through spindle 20 / 70 bar
- Coolant around spindle nose
- External coolant supply unit
- Tool measuring system
- Workpiece measurement system
- Automatic voltage regulator
- Coolant tank with pumps
- Chip cart
- Auto measurement and compensation for 5 axes