

COMPREHENSIVE CATALOG

SHAWAHED

Shawahed Advanced Industrial Co.,ltd. شركة شواهد المتقدمة الصناعية

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01 3D Printer

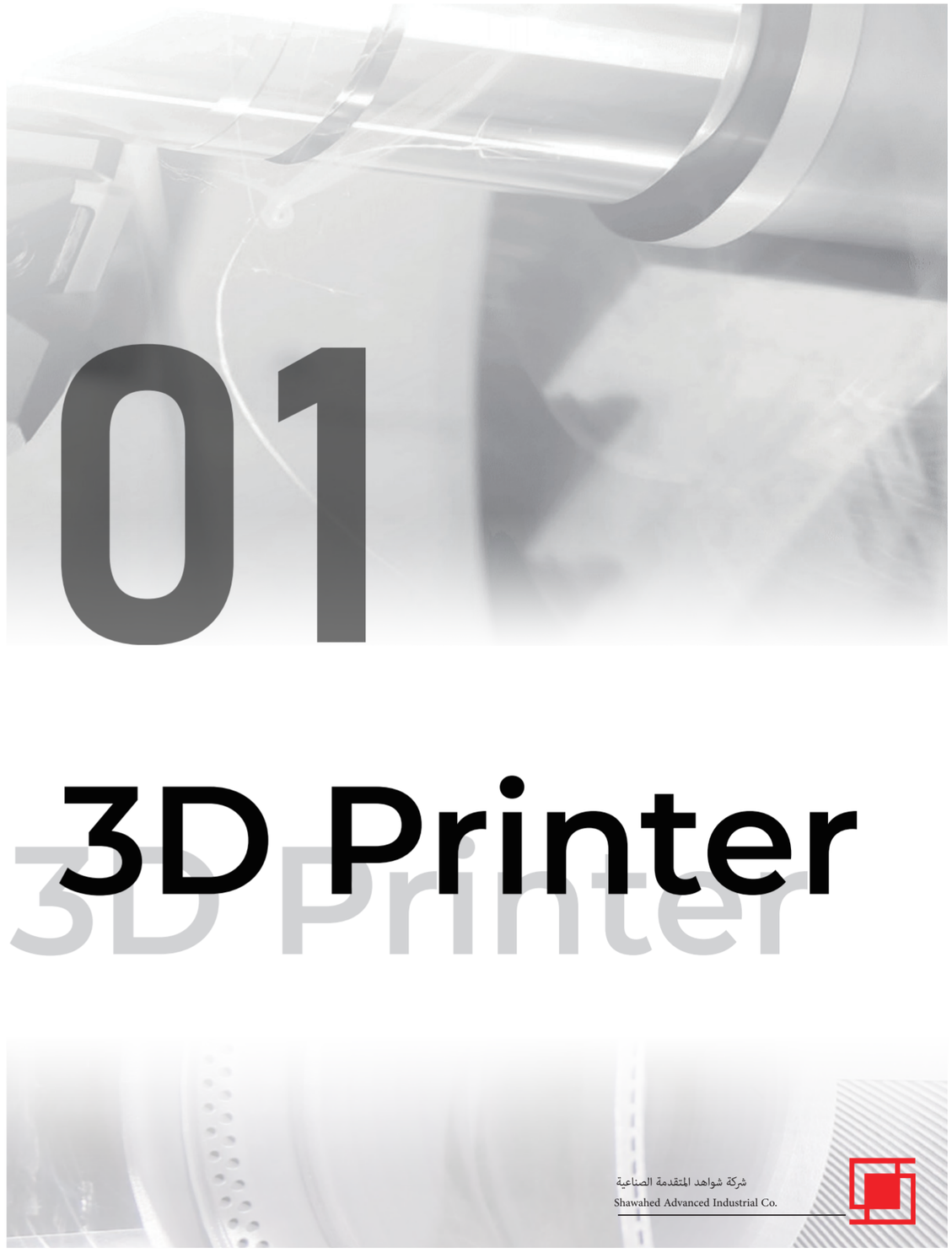
02 CNC Lathe

03 CNC Machining Center

04 5-axis Machining Center

05 Optical Grinding Machine

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01

3D Printer

3D Printer

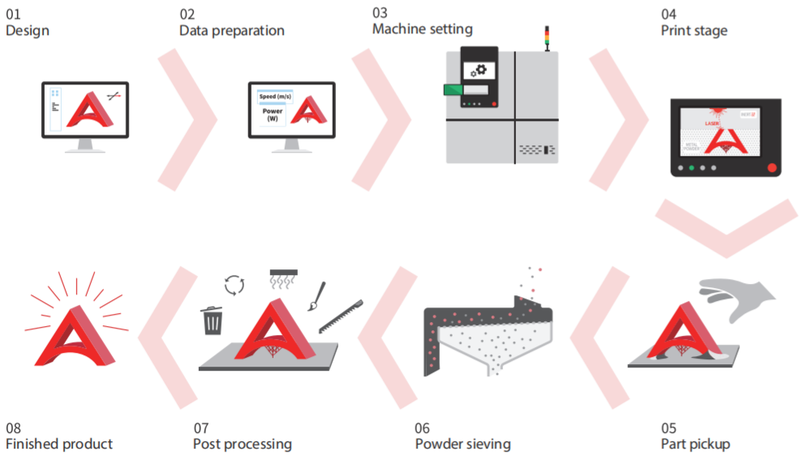
PRODUCTS & SERVICE

METAL POWDER BED FUSION MACHINES

Shawahed provides advanced metal additive manufacturing solutions to bring higher productivity, product quality and working efficiency for enterprises as well as small businesses, including aerospace, automotive, tooling, healthcare, education, and others.

Metal Powder Bed Fusion (MPBF™)

EP-M150	EP-M150Pro	EP-M260	EP-M300	EP-M400
EP-M400S	EP-M450	EP-M450H	EP-M4750	EP-M650
EP-M650H	EP-M825	EP-M1250	EP-M1550	EP-M2050



POLYMER POWDER BED FUSION MACHINES

Shawahed adopts polymer powder bed fusion (PPBF™) technology to ensure you the capability for customized products and production. These machines can be applied in aerospace, automotive, consuming goods, machinery and healthcare industries, etc.

Polymer Powder Bed Fusion (PPBF™)

EP-P280	EP-P420



EP-M150

Compact & Entry System

Parameter

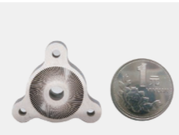
Build Volume (X x Y x Z)	Φ 150 x 140 mm (Φ 5.91 x 5.51 in) (height incl. build plate)
Optical System	Fiber Laser 200 W (single or dual-laser optional)
Spot Size	40 - 60 µm
Max Scan Speed	8 m/s
Theoretical Printspeed	Up to 35 cm^3/h
Layer Thickness	20 - 50 µm
Material	Titanium Alloy, Nickel Alloy, Maraging Steel, Stainless Steel, Cobalt Chrome, etc.
Power Supply	220 V, 50 / 60 Hz, 3 / 4 kW
Gas Supply	Ar / N_2
Oxygen Content	≤100 ppm
Dimension (W x D x H)	1750 x 799 x 1828 mm
Weight	900 kg
Software	EPControl, EPHatch
Input Data Format	STL or other Convertible File

Application Area

Industrial, Healthcare, Education, Scientific Research









EP-M150Pro

Industrial Production System

Parameter

Build Volume (X x Y x Z)	Φ 150 x 240 mm (Φ 5.91 x 9.45 in) (height incl. build plate)
Optical System	Fiber Laser 500 W / 700 W (single or dual-laser optional)
Spot Size	70 µm
Max Scan Speed	8 m/s
Theoretical Printspeed	Up to 55 cm^3/h
Layer Thickness	20 - 100 µm
Material	Titanium Alloy, Aluminum Alloy, Nickel Alloy, Maraging Steel, Stainless Steel, Cobalt Chrome, Copper Alloy, etc.
Power Supply	380 V, 50 / 60 Hz, 12 / 13.5 kW
Gas Supply	Ar / N_2
Oxygen Content	≤100 ppm
Dimension (W x D x H)	2120 x 980 x 2250 mm
Weight	1500 kg
Software	EPControl, EPHatch
Input Data Format	STL or other Convertible File

Application Area

Industrial, Healthcare, Education, Scientific Research









EP-M260

Flexible Production System

Parameter

Build Volume (X x Y x Z)	260 x 260 x 390 mm (10.24 x 10.24 x 15.35 in) (height incl. build plate)
Optical System	Fiber Laser 500 W / 700 W (single or dual-laser optional)
Spot Size	70 - 100 µm
Max Scan Speed	8 m/s
Theoretical Printspeed	Up to 55 cm^3/h
Layer Thickness	20 - 120 µm
Material	Titanium Alloy, Aluminum Alloy, Nickel Alloy, Maraging Steel, Stainless Steel, Cobalt Chrome, Copper Alloy, etc.
Power Supply	380 V, 50 / 60 Hz, 5 / 6 kW
Gas Supply	Ar / N_2
Oxygen Content	≤100 ppm
Dimension (W x D x H)	2800 x 1300 x 2410 mm
Weight	2300 kg
Software	EPControl, EPHatch
Input Data Format	STL or other Convertible File

Application Area

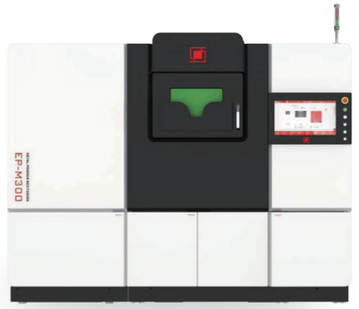
Aerospace, Automotive, Energy, Healthcare, Tooling, Machinery, Electronics







Shawahed Advanced Industrial CO.



EP-M300

Highly Productive System

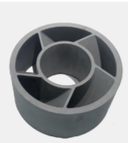
Parameter

Build Volume (X x Y x Z)	300 x 300 x 450 mm (11.81 x 11.81 x 17.72 in) (height incl. build plate)
Optical System	Fiber Laser 500 W / 700 W / 1000 W (single or dual-laser optional)
Spot Size	70 - 120 µm
Max Scan Speed	8 m/s
Theoretical Printspeed	Up to 95 cm^3/h
Layer Thickness	20 - 120 µm
Material	Titanium Alloy, Aluminum Alloy, Nickel Alloy, Maraging Steel, Stainless Steel, Cobalt Chrome, Copper Alloy, etc.
Power Supply	380 V, 50 / 60 Hz, 5 / 8 kW
Gas Supply	Ar / N_2
Oxygen Content	≤100 ppm
Dimension (W x D x H)	2990 x 1320 x 2590 mm
Weight	2900 kg
Software	EPControl, EPHatch
Input Data Format	STL or other Convertible File

Application Area

Aerospace, Automotive, Energy, Healthcare, Tooling, Machinery, Electronics









EP-M400

High Speed & Cost-effective System

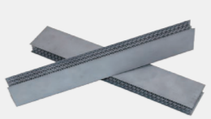
Parameter

Build Volume (X x Y x Z)	400 x 400 x 450 mm (15.75 x 15.75 x 17.72 in) (height incl. build plate)
Optical System	Fiber Laser 1 / 2 / 3 / 4 x 500 W (700 W and 1000 W are optional)
Spot Size	70 - 120 µm
Max Scan Speed	8 m/s
Theoretical Printspeed	Up to 190 cm^3/h
Layer Thickness	20 - 120 µm
Material	Titanium Alloy, Aluminum Alloy, Nickel Alloy, Maraging Steel, Stainless Steel, Cobalt Chrome, Copper Alloy, etc.
Power Supply	380 V, 50 / 60 Hz, 12.5 ~ 18 kW
Gas Supply	Ar / N_2
Oxygen Content	≤100 ppm
Dimension (W x D x H)	3925 x 1690 x 2780 mm
Weight	5900 kg
Software	EPControl, EPHatch
Input Data Format	STL or other Convertible File

Application Area

Aerospace, Automotive, Energy, Healthcare, Tooling, Machinery, Electronics







Shawahed Advanced Industrial CO.



EP-M400S

High Speed & Cost-effective System

Parameter

Build Volume (X x Y x Z)	400 x 400 x 450 mm (15.75 x 15.75 x 17.72 in) (height incl. build plate)
Optical System	Fiber Laser 1 / 2 / 3 / 4 x 500 W (700 W and 1000 W are optional)
Spot Size	70 - 120 µm
Max Scan Speed	8 m/s
Theoretical Printspeed	Up to 190 cm^3/h
Layer Thickness	20 - 120 µm
Material	Titanium Alloy, Aluminum Alloy, Nickel Alloy, Maraging Steel, Stainless Steel, Cobalt Chrome, Copper Alloy, etc.
Power Supply	380 V, 50 / 60 Hz, 12.5 ~ 18 kW
Gas Supply	Ar / N_2
Oxygen Content	≤100 ppm
Dimension (W x D x H)	3530 x 1700 x 2800 mm
Weight	5500 kg
Software	EPControl, EPHatch
Input Data Format	STL or other Convertible File

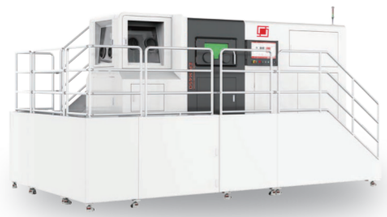
Application Area

Aerospace, Automotive, Energy, Healthcare, Tooling, Machinery, Electronics









EP-M450

Highly Stable & Productive System

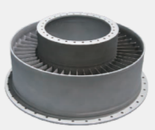
Parameter

Build Volume (X x Y x Z)	450 x 450 x 550 mm (17.72 x 17.72 x 21.65 in) (height incl. build plate)
Optical System	Fiber Laser 1 / 2 / 4 x 500 W (700 W and 1000 W are optional)
Spot Size	70 - 120 µm
Max Scan Speed	8 m/s
Theoretical Printspeed	Up to 190 cm^3/h
Layer Thickness	20 - 120 µm
Material	Titanium Alloy, Aluminum Alloy, Nickel Alloy, Maraging Steel, Stainless Steel, Cobalt Chrome, Copper Alloy, etc.
Power Supply	380 V, 50 / 60 Hz, 14 ~ 22 kW
Gas Supply	Ar / N_2
Oxygen Content	≤100 ppm
Dimension (W x D x H)	5670 x 3700 x 3325 mm
Weight	10000 kg
Software	EPControl, EPHatch
Input Data Format	STL or other Convertible File

Application Area

Aerospace, Automotive, Energy, Healthcare, Tooling, Machinery, Electronics







Shawahed Advanced Industrial CO.



EP-M450H

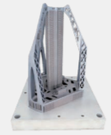
Large Format Production System

Parameter

Build Volume (X x Y x Z)	450 x 450 x 1080 mm (17.72 x 17.72 x 42.52 in) (height incl. build plate)
Optical System	Fiber Laser 1 / 2 / 4 x 500 W (700 W and 1000 W are optional)
Spot Size	70 - 120 µm
Max Scan Speed	8 m/s
Theoretical Printspeed	Up to 190 cm^3/h
Layer Thickness	20 - 120 µm
Material	Titanium Alloy, Aluminum Alloy, Nickel Alloy, Maraging Steel, Stainless Steel, Cobalt Chrome, Copper Alloy, etc.
Power Supply	380 V, 50 / 60 Hz, 14 ~ 22 kW
Gas Supply	Ar / N_2
Oxygen Content	≤100 ppm
Dimension (W x D x H)	6410 x 3670 x 4850 mm
Weight	15000 kg
Software	EPControl, EPHatch
Input Data Format	STL or other Convertible File

Application Area

Aerospace, Automotive, Energy, Healthcare, Tooling, Machinery, Electronics









EP-M4750

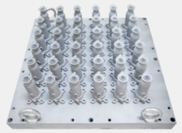
Quad Laser Metal AM System

Parameter

Build Volume (X x Y x Z)	450 x 750 x 530 mm (17.72 x 29.53 x 20.87 in) (height incl. build plate)
Optical System	Fiber Laser 2 / 4 x 500 W (700 W and 1000 W are optional)
Spot Size	70 - 120 µm
Max Scan Speed	8 m/s
Theoretical Printspeed	Up to 140 cm^3/h
Layer Thickness	20 - 120 µm
Material	Titanium Alloy, Aluminum Alloy, Nickel Alloy, Maraging Steel, Stainless Steel, Cobalt Chrome, Copper Alloy, etc.
Power Supply	380 V, 50 / 60 Hz, 18.5 kW
Gas Supply	Ar / N_2
Oxygen Content	≤100 ppm
Dimension (W x D x H)	6400 x 4070 x 3585 mm
Weight	12000 kg
Software	EPControl, EPHatch
Input Data Format	STL or other Convertible File

Application Area

Aerospace, Automotive, Energy, Healthcare, Tooling, Machinery, Electronics







Shawahed Advanced Industrial CO.



EP-M650

Large Size Metal AM System

Parameter

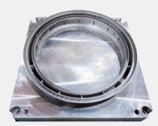
Build Volume (X x Y x Z)	650 x 650 x 800 mm (25.59 x 25.59 x 31.49 in) (height incl. build plate)
Optical System	Fiber Laser 4 / 6 / 8 x 500 W (700 W and 1000 W are optional)
Spot Size	70 - 120 µm
Max Scan Speed	8 m/s
Theoretical Printspeed	Up to 320 cm^3/h
Layer Thickness	20 - 120 µm
Material	Titanium Alloy, Aluminum Alloy, Nickel Alloy, Maraging Steel, Stainless Steel, Cobalt Chrome, Copper Alloy, etc.
Power Supply	380 V, 50 / 60 Hz, 18 ~ 23 kW
Gas Supply	Ar / N_2
Oxygen Content	≤100 ppm
Dimension (W x D x H)	6800 x 3945 x 3785 mm
Weight	15000 kg
Software	EPControl, EPHatch
Input Data Format	STL or other Convertible File

Application Area

Aerospace, Automotive, Energy, Healthcare, Tooling, Machinery, Electronics









EP-M650H

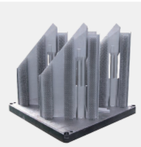
Large Size Metal AM System

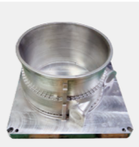
Parameter

Build Volume (X x Y x Z)	650 x 650 x 1080 mm (25.59 x 25.59 x 42.52 in) (height incl. build plate)
Optical System	Fiber Laser 4 / 6 / 8 x 500 W (700 W and 1000 W are optional)
Spot Size	70 - 120 µm
Max Scan Speed	8 m/s
Theoretical Printspeed	Up to 320 cm^3/h
Layer Thickness	20 - 120 µm
Material	Titanium Alloy, Aluminum Alloy, Nickel Alloy, Maraging Steel, Stainless Steel, Cobalt Chrome, Copper Alloy, etc.
Power Supply	380 V, 50 / 60 Hz, 18 ~ 23 kW
Gas Supply	Ar / N_2
Oxygen Content	≤100 ppm
Dimension (W x D x H)	7200 x 3950 x 4900 mm
Weight	20000 kg
Software	EPControl, EPHatch
Input Data Format	STL or other Convertible File

Application Area

Aerospace, Automotive, Energy, Healthcare, Tooling, Machinery, Electronics







Shawahed Advanced Industrial CO.



EP-M825

10-Laser Large Format Metal AM System

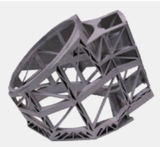
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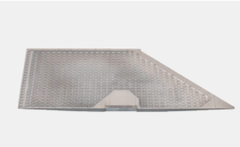
Build Volume (X x Y x Z)	825 x 825 x 1100 mm (32.48 x 32.48 x 43.31 in) (height incl. build plate)
Optical System	Fiber Laser 4 / 6 / 8 / 10 x 500 W (700 W and 1000 W are optional)
Spot Size	70 - 120 µm
Max Scan Speed	8 m/s
Theoretical Printspeed	Up to 410 cm^3/h
Layer Thickness	20 - 120 µm
Material	Titanium Alloy, Aluminum Alloy, Nickel Alloy, Maraging Steel, Stainless Steel, Cobalt Chrome, Copper Alloy, etc
Power Supply	380 V, 50 / 60 Hz, 29.5 ~ 40 kW
Gas Supply	Ar / N_2
Oxygen Content	≤100 ppm
Dimension (W x D x H)	8290 x 4690 x 5470 mm
Weight	35000 kg
Software	EPControl, EPHatch
Input Data Format	STL or other Convertible File

Application Area

Aerospace, Automotive, Energy, Healthcare, Tooling, Machinery, Electronics









EP-M1250

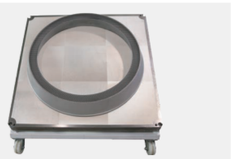
9-Laser Large Format Metal AM System

Parameter

Build Volume (X x Y x Z)	1250 x 1250 x 1350 mm (49.21 x 49.21 x 53.15 in) (height incl. build plate)
Optical System	Fiber Laser 9 x 500 W (700 W and 1000 W are optional)
Spot Size	70 - 120 µm
Max Scan Speed	8 m/s
Theoretical Printspeed	Up to 370 cm^3/h
Layer Thickness	20 - 120 µm
Material	Titanium Alloy, Aluminum Alloy, Nickel Alloy, Maraging Steel, Stainless Steel, Cobalt Chrome, Copper Alloy, etc
Power Supply	380 V, 50 / 60 Hz, 38.5 kW
Gas Supply	Ar / N_2
Oxygen Content	≤100 ppm
Dimension (W x D x H)	9000 x 4800 x 6300 mm
Weight	50000 kg
Software	EPControl, EPHatch
Input Data Format	STL or other Convertible File

Application Area

Aerospace, Automotive, Energy, Healthcare, Tooling, Machinery, Electronics









EP-M1550

16-Laser Large Format Metal AM System

Parameter

Build Volume (X x Y x Z)	1550 x 1550 x 1100 mm (61.02 x 61.02 x 43.31 in) (height incl. build plate)
Optical System	Fiber Laser 16 / 25 x 500 W (700 W and 1000 W are optional)
Spot Size	70 - 120 µm
Max Scan Speed	8 m/s
Theoretical Printspeed	Up to 650 cm^3/h
Layer Thickness	20 - 120 µm
Material	Titanium Alloy, Aluminum Alloy, Nickel Alloy, Maraging Steel, Stainless Steel, Cobalt Chrome, Copper Alloy, etc
Power Supply	380 V, 50 / 60 Hz, 77 kW
Gas Supply	Ar / N_2
Oxygen Content	≤100 ppm
Dimension (W x D x H)	10180 x 5690 x 5650 mm
Weight	70000 kg
Software	EPControl, EPHatch
Input Data Format	STL or other Convertible File

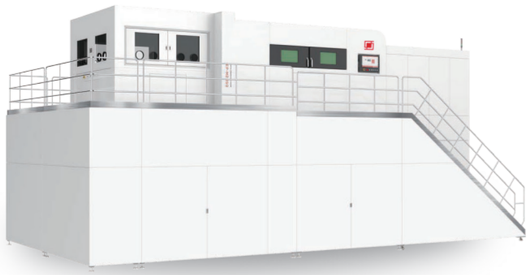
Application Area

Aerospace, Automotive, Energy, Healthcare, Tooling, Machinery, Electronics









EP-M2050

36-Laser Large Format Metal AM System

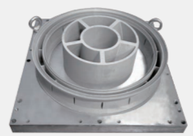
Parameter

Build Volume (X x Y x Z)	2050 x 2050 x 1100 mm (80.71 x 80.71 x 43.31 in) (height incl. build plate)
Optical System	Fiber Laser 36 / 49 / 64 x 500 W (700 W and 1000 W are optional)
Spot Size	70 - 120 µm
Max Scan Speed	8 m/s
Theoretical Printspeed	Up to 1080 cm^3/h
Layer Thickness	20 - 120 µm
Material	Titanium Alloy, Aluminum Alloy, Nickel Alloy, Maraging Steel, Stainless Steel, Cobalt Chrome, Copper Alloy, etc
Power Supply	380 V, 50 / 60 Hz, 117 kW
Gas Supply	Ar / N_2
Oxygen Content	≤100 ppm
Dimension (W x D x H)	12685 x 7185 x 6530 mm
Weight	145000 kg
Software	EPControl, EPHatch
Input Data Format	STL or other Convertible File

Application Area

Aerospace, Automotive, Energy, Healthcare, Tooling, Machinery, Electronics

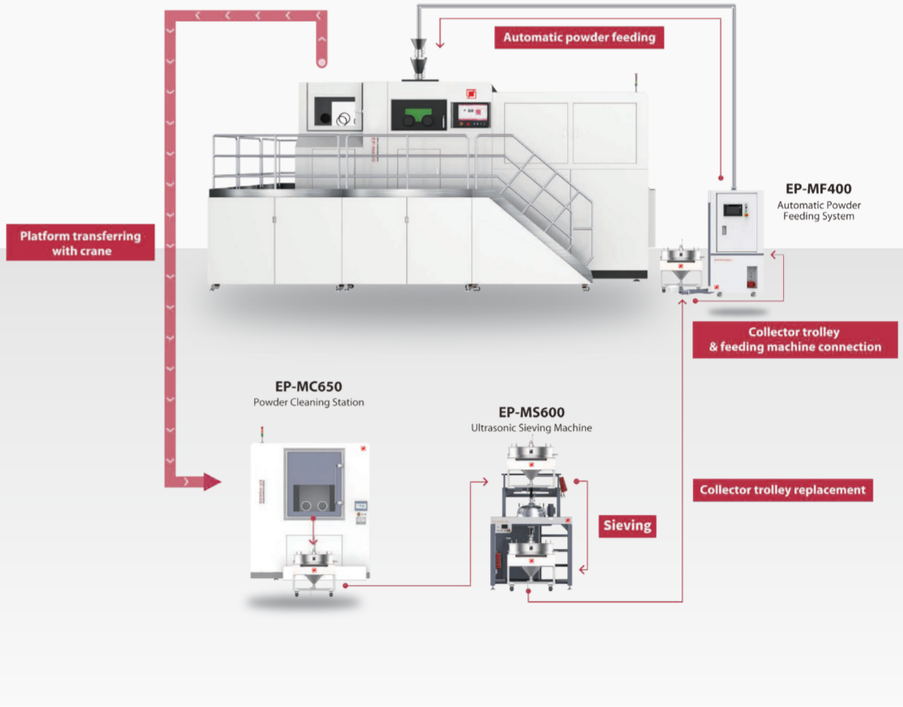




POWDER MANAGEMENT WORKFLOW FOR MPBF MACHINES

Eplus3D powder management workflow for MPBF machines efficiently integrates various powder handling procedures, encompassing powder recycling, storage, sieving, and refreshed powder supply. The entire workflow is executed in a fully enclosed atmosphere to ensure optimal performance and material integrity.

EP-M650 Workflow



MPBF ACCESSORIES



• Powder Dry Oven

The powder may gain moisture when the storage condition is of high humidity, this may affect the powder flowability then lead to the degradation of printing quality. The powder dry oven is used to dry the metal powder in a small vacuum.



• Nitrogen Generator

The nitrogen generator is for producing nitrogen gas in order to inert the atmosphere in the metal printer.



• Vacuum Cleaner

The vacuum cleaner is used for cleaning the build chamber as well as any dust and waste powder. The vacuum cleaner works as a wet separator and is ATEX approved.



• Powder Conveying Machine EP-MVS320

The powder-collecting machine is used to collect the metal powder from the printing platform as well as from the powder collecting tank of the metal printer.



• Powder Conveying Machine EP-MVS320S

The powder-collecting machine is used to collect the metal powder from the printing platform as well as from the powder collecting tank of the metal printer.



• Ultrasonic Sieving Machine EP-MS400

The sieving machine is used for powder sieving. After sieving, the metal powder can be reused in the next printing job.



• Ultrasonic Sieving Machine EP-MS600

This product is mainly used for sieving all metal powder, the sieving process will filter out the big particles like weld splatters and fumes generated in the printing process, the powder can be reused after sieving.



• Automatic Powder Feeding System EP-MF400

It is mainly used for automatic powder feeding for large-size metal 3d printer.



• Closed Loop Sieving Tower EP-MC500

It is used to collect, sieve and feed the powder to realize the closed loop.



• Powder Cleaning Station EP-MC650

The parts that are still fixed on the build plate after removing them from the machine can be cleaned in this equipment. It is usually used for parts from large-size machinery.



02

CNC Lathe

CNC Lathe

شركة شواهد المتقدمة الصناعية
Shawahed Advanced Industrial Co.

OUR SERVICE

FULL SERVICE

pre-sale

Process Optimization
Equipment selection

sale

Tool design
Fixture Design
Turnkey projects
Intelligent Data Acquisition

after sales

Personnel training
Software application
Technical Support

INGENIOUS MANUFACTURING UNIQUE PATENT

1. Integrated gantry structure positive Y-axis power cutting head
2. Inclined bed, stepped, flat rail structure (base)
3. Integrated mechanical arm (truss)
4. Internal waste separation structure of the base (bed)
5. CNC turning and milling composite machine
6. Appearance of CNC lathe

FANUC CNC

Easier to use & more powerful

- Comprehensive design upgrade
- Match with personalized functions
- Equipped with iHMI
- Expand memory capacity
- Equipped with FANUC's latest CNC & servo technology



Ease of Use

Prevent sudden shutdown of machine tools through preventive maintenance

- Abundant fault prediction functions

Easily lock the fault location and shorten the recovery time

- Diagnosis/maintenance functions

High processing performance



Shorten cycle time

- Efficient processing technology

Achieve high-grade processing

- Fine surface treatment technology

High operating rate



Always support various operations on the processing site

- FANUC INMI

Personalized scenes are easier to use

- Standard personalization function

Initiatives in the Internet of Things

- Support rich on-site network

Shawahed Advanced Industrial CO.

SPECIAL TURRET DESIGN FEATURES

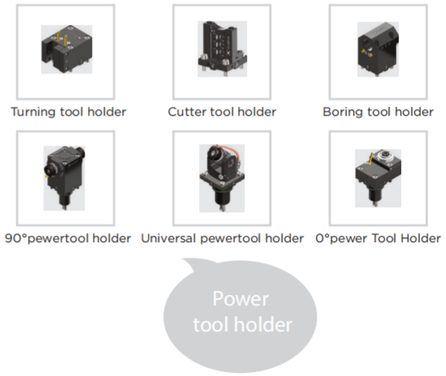
The one-piece positive Y-axis structure belongs to high rigidity, heavy cutting, and its performance is better than interpolation Y-axis

- Single Y-axis movement for heavy cutting is better than interpolation Y-axis, which is perpendicular to the X-axis
- Flat contour processing is smoother and flatter
- More convenient for compound curved surfaces and contour processing

Positive Y" axis turning and milling compound equipment has obvious advantages in processing plane milling compared with "interpolation Y" turning and milling compound equipment. The "positive Y" axis Y axis is perpendicular to the X axis, which is a single-axis movement. The "interpolated Y" Y axis interpolates a straight line through the simultaneous movement of the X axis and Y. The flatness of the milling plane is brighter and smoother than the "positive Y" turning and milling composite.

High rigidity and high precision turret system

3 unparalleled innovations bring you huge efficiency improvements



Independent research and development

100mm



Can withstand 70kg high-pressure hydraulic

Power tool holder adopts BMT interface

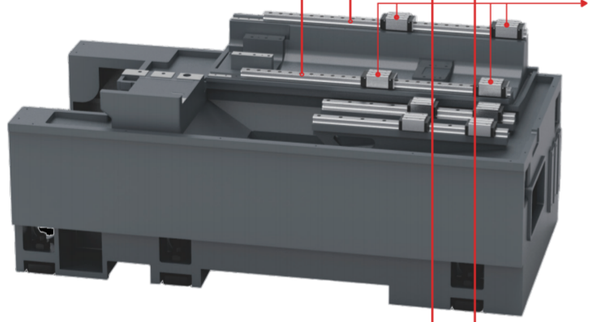
One-piece positive Y-axis /Gantry structure /Super rigid

The HT 300 castings are treated with secondary tempering and several months of natural aging to reduce the amount of deformation of the machine tool, and the large-scale processing machine completes the finishing at one time, so that the accuracy of the bed is more stable and the maintenance time is longer.

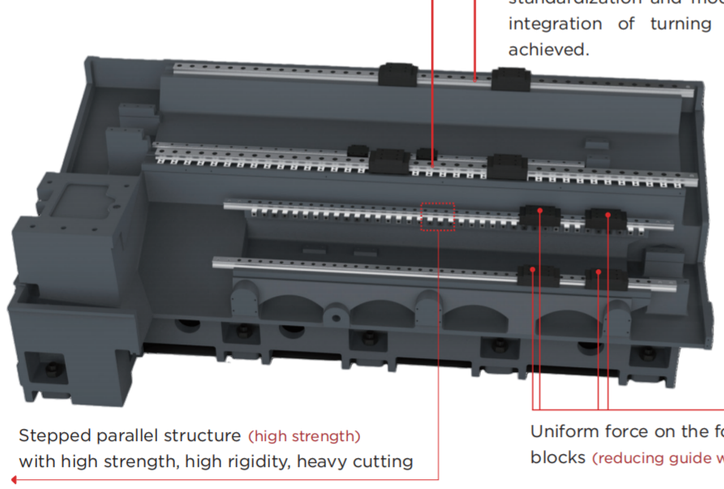
The accuracy and life span are more guaranteed. The stepped flat rail structure design has high strength, high rigidity and is suitable for heavy cutting.

The integrated 30° inclined bed and the four sliders of the inclined saddle bear even force. Make the stroke smoother and reduce the wear of the balls of the guide rail slider, which can withstand long-term wear and prolong the life of precision.

Uniform force on the four sliding blocks (reducing guide wear)



Based on the design concept of standardization and modularization, the integration of turning and milling is achieved.



Stepped parallel structure (high strength) with high strength, high rigidity, heavy cutting

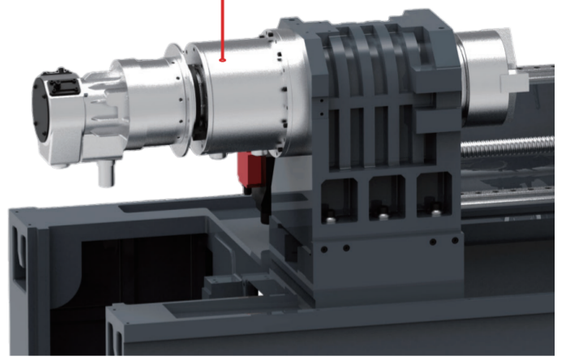
Uniform force on the four sliding blocks (reducing guide wear)

Heavy cast iron base and components

- All main components of the machine tool are made of HT300 with extremely strong shock absorption capability.
  All parts are optimized using finite element analysis (FEA) to reduce distortion and
- The castings of various series of lathes are equipped with reinforcing ribs to enhance the rigidity and thermal stability.
  The compact and symmetrical headstock and tailstock castings further improve the rigidity and ensure high positioning accuracy and repeat positioning accuracy

Direct drive synchronous electric spindle

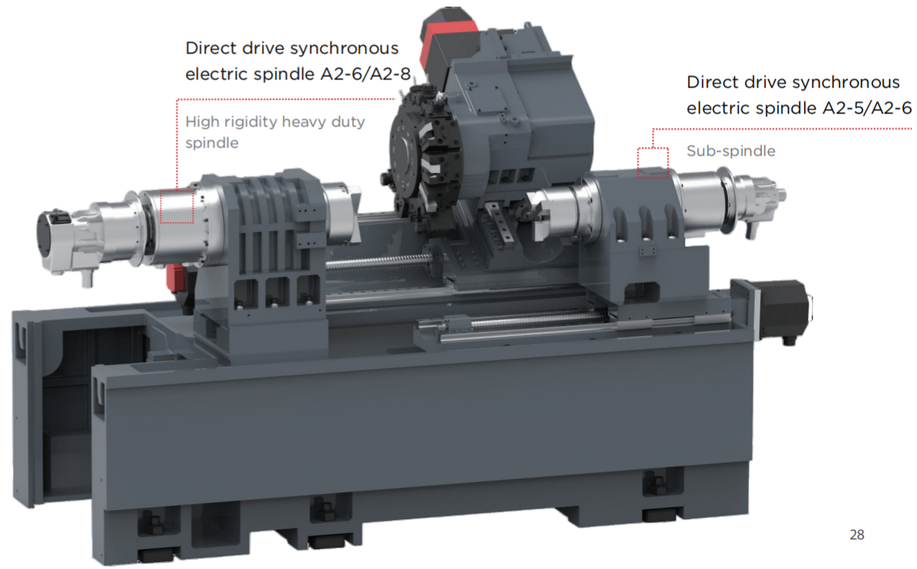
1. High rigidity and high torque
2. More efficient
3. Better finish
4. More accurate index



Features of machine tools equipped with direct drive electric spindle

- Magnetic ring incremental encoder (sine and cosine) positioning accuracy: 20 arc seconds
  C-axis indexing accuracy: 40 arc seconds
- The start-stop response speed is fast, saving machine tool processing time and effectively increasing production capacity.
- Smaller cutting load, energy saving, better protection of machine tools and longer service life
- Effectively eliminate spindle vibration, good balance effect, good finish, and improve the surface finish of the workpiece (Advantages of turning instead of grinding, hard turning performance, surface roughness Ra 0.2Um)

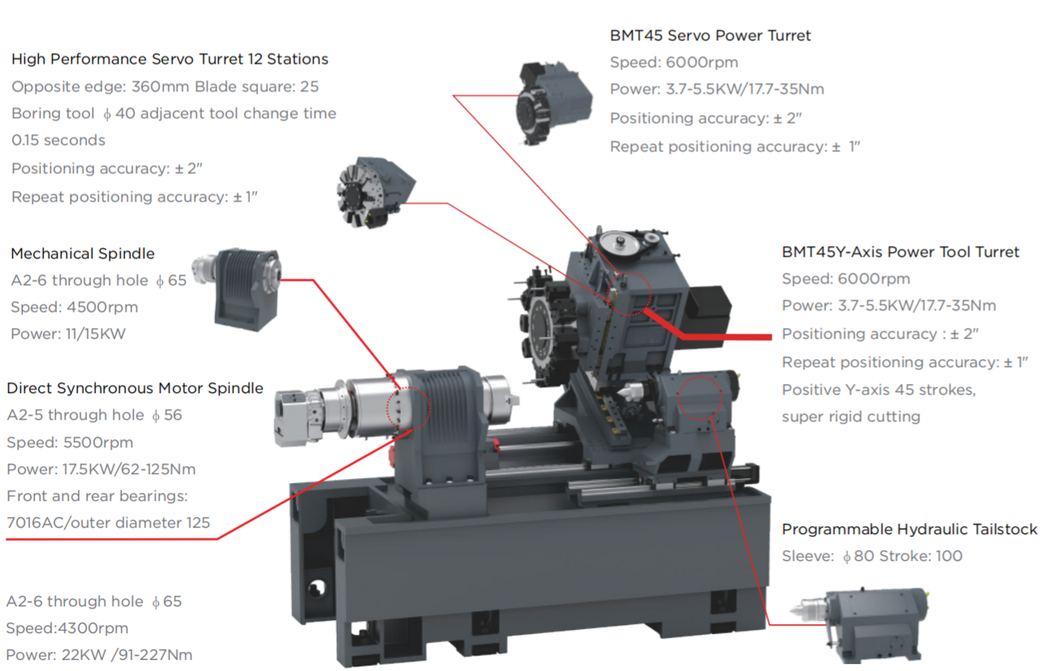
- The spindle motor is equipped with a cooling system to suppress the influence of thermal changes and ensure that the spindle continues to work at a constant temperature (the nose end deflection accuracy is within 0.002mm, ensuring more stable accuracy)
- Rear-mounted straight-body synchronous spindle makes installation and maintenance more convenient
- A2-5:7016AC-front two and back two
- A2-6: front NN3020+100BAR10S, rear NN3018
- A2-8: front NN3024+BT022B*2 rear NN3022



SUPER RIGIDITY/EXCELLENT THERMAL STABILITY

The new generation of turning centers at super high cost performance





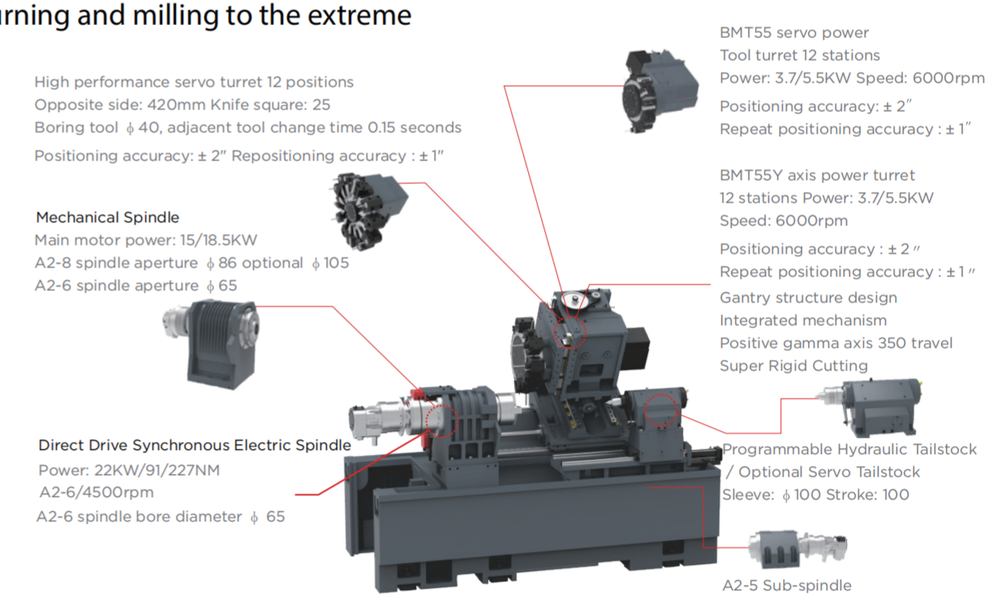
HIGH PRECISION/HIGH COMPOUND

Future high-grade turning and milling machine

Model	106	106M	106MY	108	108M	108MY
Max rotation diameter (mm)	Φ600	Φ600	Φ600	Φ600	Φ600	Φ600
Max processing diameter (mm)	Φ360	Φ300	Φ300	Φ360	Φ300	Φ300
Max processing length (mm)	360	300	220	350	290	210
Spindle nose	A2-5	A2-5	A2-5	A2-6	A2-6	A2-6
Chuck model	6″	6″	6″	8″	8″	8″
Max speed(rpm)	5500	5500	5500	4500	4300	4300
Direct drive synchronous electric spindle power (KW)	17.5	17.5	17.5	11/15	18/22	18/22
Servo Turret	Servo Turret 12T	BMT45	BMT45	Servo Turret 12T	BMT45	BMT45

HIGH-RIGIDITY

Turning and milling to the extreme



Model	208	208M	208MS	208MY	208MSY
Max rotation diameter (mm)	Φ600	Φ600	Φ600	Φ680	Φ680
Max processing diameter (mm)	Φ500	Φ400	Φ350	Φ400	Φ370
Max processing length (mm)	550	400	400	360	400
Spindle nose	A2-6	A2-6	A2-6	A2-6	A2-6
Chuck model	8″	8″	8″	8″	8″
Max speed(rpm)	4300	4300	4300	4300	4300
Direct drive synchronous electric spindle power (kw)	15/18.5	18/22	18/22	18/22	18/22
Servo Turret	Servo Turret 12T	BMT45	BMT45	BMT45	BMT55

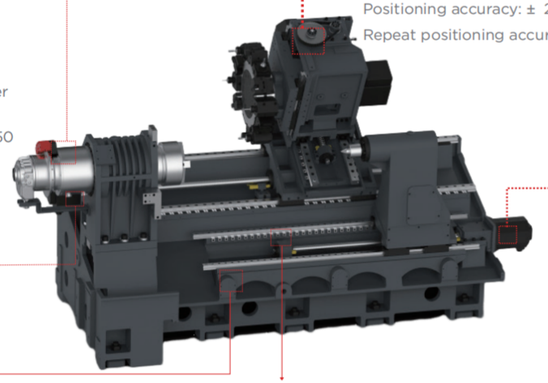
EXCELLENT DESIGN



Direct Drive Synchronous Electric Spindle
A2-6 through hole ϕ65
Speed: 4300rpm
Power:18/22KW
Torque: 91-227Nm
Big trough hole: ϕ79
Front bearing: NN3022+110BAR10S/outer diameter 170
Rear bearing: NN3020/outer diameter 150

BMT55 Servo Power Turret
Power: 37/5.5KW
Speed: 6000rpm
Positioning accuracy: ± 2”
Repeat positioning accuracy: ±1”

Gantry Structural Design
Super rigid cutting
Positive Y axis : ± 60



Program hydraulic tailstock
Optional servo tailstock

With Cooling Device

Hydraulic Steady Rest

1. Stepped parallel structure (high strength).
2. It has high strength, high rigidity and is suitable for heavy cutting.
3. The integrated 30° inclined bed is matched with an inclined saddle, and the four sliders are evenly stressed.
4. The stroke is smoother and the ball wear of the guide rail slider is reduced.
5. It can withstand long-term wear and tear, and its precision and life are more guaranteed.

Model	800	800M	800MS	800MY
Max rotation diameter (mm)	Φ680	Φ680	Φ600	Φ680
Max processing diameter (mm)	Φ600	Φ600	Φ600	Φ600
Max processing length (mm)	770	600	660	600
Spindle nose	A2-6	A2-6	A2-6	A2-6
Chuck model	8″	8″	8″	8″
Max speed(rpm)	4300	4300	4300	4300
Direct drive synchronous electric spindle power (KW)	18/22	18/22	18/22	18/22
Servo Turret	Servo Turret12T	BMT55	BMT55	BMT55

POWERFUL PERFORMANCE

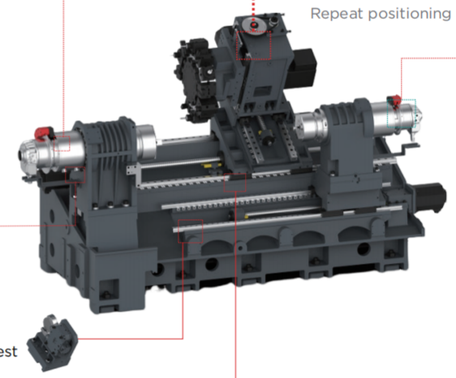


Direct Drive Synchronous Electric Spindle
A2-8 through hole ϕ 120
Speed: 2100rpm
Power: 23KW
Torque: 160-390Nm

BMT65 Servo Power Turret
Power: 7.5KW
Speed: 6000rpm
Positioning accuracy: ± 2”
Repeat positioning accuracy: ± 1”

Gantry Structural Design
Super rigid cutting
Positive Y axis : ± 60

Sub-Spindle
Direct drive synchronous electric spindle
A2-8 through hole ϕ 65
Speed: 4300rpm
Power:18/22KW
Torque: 91-227Nm



With Cooling Device

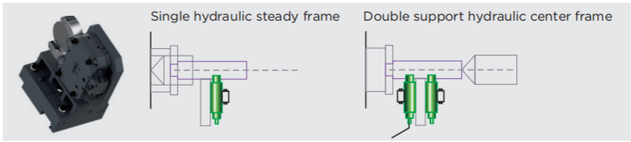
Hydraulic Steady Rest

1. Stepped parallel structure (high strength).
2. With high strength, high rigidity, heavy cutting.
3. The integrated 30° inclined bed is matched with an inclined saddle, and the four sliders are evenly stressed.
4. The travel is smoother.
5. Reduce guide rail slider ball wear.
6. It can withstand long-term wear and tear, and the precision life is more guaranteed.

Model	1200/1600	1200/1600M	1200/1600MY	1200MS	1200MSY
Max rotation diameter (mm)	Φ680	Φ680	Φ680	Φ680	Φ680
Max processing diameter (mm)	Φ600	Φ560	Φ560	Φ560	Φ560
Max processing length (mm)	1100/1500	1000/1400	1000/1400	1000	1000
Spindle nose	A2-8	A2-8	A2-8	A2-8	A2-8
Chuck model	10″	10″	10″	10″	10″
Max speed(rpm)	3000	2100	2100	2100	2100
Direct drive synchronous electric spindle power (kw)	26	23	23	23	23
Servo Turret	Servo Turret12T	BMT65	BMT65	BMT65	BMT65

HIGH RIGIDITY AND HIGH STABILITY STRUCTURE





Hydraulic Steady rest (Optional)

For turning longer parts, various types of hydraulic steady rests are available

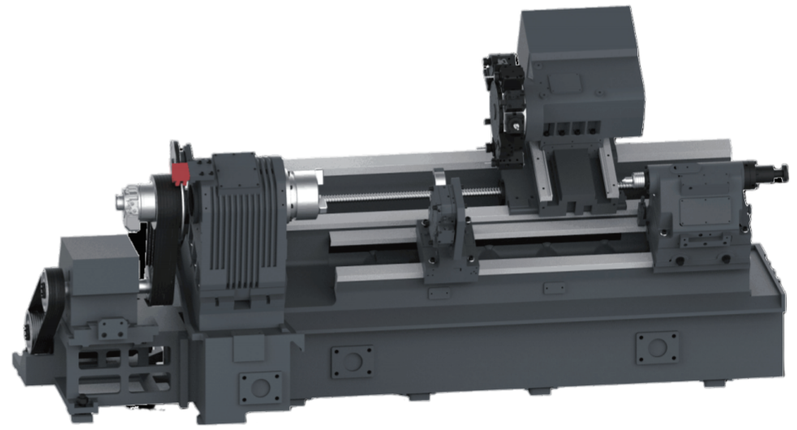
(single, double-support or double)

- Large hard-rail type high-load machine with large-diameter, low-speed and heavy-duty cutting capabilities.
- Highly rigid square rails, the slide surface is designed through professional production procedures and precision oil guide grooves, and the transmission efficiency is excellent.
- The bed has a 30-degree slant integrated box structure, low center of gravity, and stable accuracy.
- The tailstock bed has strong rigidity and good vibration suppression.
- The Z-axis saddle can be driven by program, and the tailstock displacement is automatically controlled by program.
- Optional rotary spindle increases the wearing capacity.

The medium and large horizontal turning center with a maximum processing length of 3m, gear box spindle and full hard rail structure are suitable for heavy-duty cutting!



- PLC control of reducer can automatically change gears
- The high speed gear ratio is 1:1
- The medium gear ratio is 1:4
- The low gear ratio is 1:11
- Reducer to spindle transmission ratio 1:1.4
- 15/18.5Kw and 100-196Nm
- The maximum torque at low speed can be reached; 1540-3018NM



Model	250L10	250LM10	250LMY10	250L15	250LM15	250LMY15	250L20	250LM20	250LMY20	250L30	250LM30	250LMY30
Max rotation diameter (mm)	Φ730	Φ730	Φ900	Φ730	Φ730	Φ900	Φ730	Φ730	Φ900	Φ730	Φ730	Φ900
Max processing diameter (mm)	Φ600	Φ550	Φ600	Φ600	Φ550	Φ600	Φ600	Φ550	Φ600	Φ600	Φ550	Φ600
Max processing length (mm)	1000	930	830	1640	1530	1430	2240	2130	2030	3240	2960	2960
Spindle nose	A2-8	A2-8	A2-8	A2-8	A2-8	A2-8	A2-11	A2-11	A2-11	A2-11	A2-11	A2-11
Chuck model	10″	10″	10″	10″	10″	10″	12″	12″	12″	12″	12″	12″
Max speed (rpm)	2500	2500	2500	2500	2500	2500	1800	1800	1800	1800	1800	1800
Direct drive synchronous electric spindle power (KW)	15/18.5	15/18.5	15/18.5	15/18.5	15/18.5	15/18.5	15/18.5	15/18.5	15/18.5	15/18.5	15/18.5	15/18.5
Servo turret	Servo Turret12T	BMT65	BMT65	Servo Turret12T	BMT65	BMT65	Servo Turret12T	BMT65	BMT65	Servo Turret12T	BMT65	BMT65

EXTREMELY EFFICIENT TURNING CAPABILITIES

High-speed and high-precision

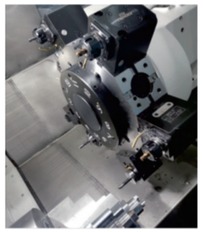


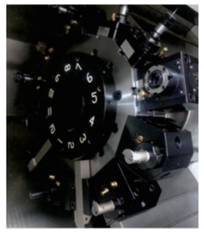
Emphasis on cost-effectiveness, streamlining, and thoroughly meeting customer needs.
High-precision, High-speed, High-gloss

Turning and milling complex workpieces and performing multiple machining operations increases throughput
Reduce manual operations and improve accuracy

The leading quality of seiko

Achieve a quick-tool change of 8s within 1-12 (one rotation), with better torque output. It has a more stable tool clamping method, repeatability/positioning accuracy of ±0.002mm/±0.005mm, and the power tool spindle speed can reach 5000 rpm. The tool turret's open/lock/tool change time is 30s. Select a 12-station power tool turret (only the tool at the working position rotates) to become a turning and milling center, enabling compound processing such as turning, milling, drilling, and tapping.





High-Performance Servo Turret With 12 Positions
Opposite side: 40mm
Tool size: 25
Boring tool: ϕ 40
Adjacent tool change time 0.15 seconds
Positioning accuracy 32″ Repeat positioning accuracy 31



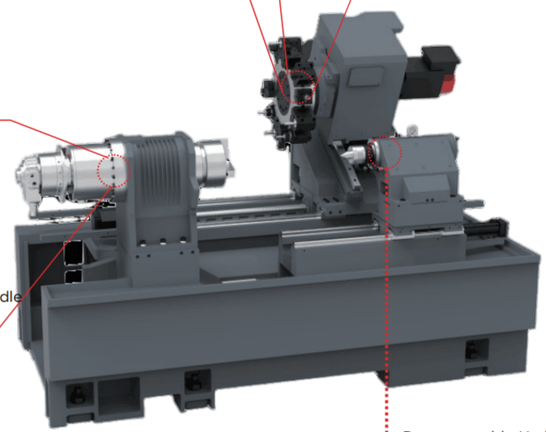
BMT55 Servo Power Turret 12 Stations
Speed: 6000pm
Power: 3.7-5.5KW/17.7-35Nm
Positioning accuracy : ± 2″
Repeat positioning accuracy: ± 1″



BMT55 Y-Axis Work Force Turret
Speed: 6000rpm
Power:3.7-5.5KW/17.7-35Nm
Positive Y-axis travel : ± 50

Mechanical Spindle
A2-6 through hole ϕ 65 optional ϕ 79
A2-8 through hole ϕ 86
Speed: 4500/3000rpm
Power: 11/15/18.5KW





Direct Drive Synchronous Electric Spindle
A2-5 through hole ϕ 56
Speed: 5500rpm
Power: 17.5kW/62-125Nm
Front and rear bearings: 7016AC/outer diameter 125

A2-6 through hole ϕ 65
Speed: 4300rpm
Power: 22KW/91-227Nm
High rigidity heavy duty spindle
Front bearing: NN3020+100BA108/outer diameter 150
Rear bearing: NN3018/outer diameter 95

Big hole diameter ϕ 79
Front bearing: NN3022+110BA10S/ outer diameter 170
Rear bearing: NN3020/outer diameter 150

Programmable Hydraulic Tailstock / Optional Servo Tailstock
Sleeve: ϕ 100 Stroke: 100



A2-5 through hole ϕ 56
Speed: 5500pm
Power: 5KW/62-125Nm
Front and rear bearings: 7016AC/outer diameter 125



Model	200LA	200M	200MY	200MS	200MSY	750LA	750M	750MY
Max rotation diameter (mm)	Φ600	Φ600	Φ600	Φ600	Φ600	Φ580	Φ580	Φ580
Max processing diameter (mm)	Φ500	Φ400	Φ380	Φ300	Φ300	Φ500	Φ400	Φ400
Max processing length (mm)	500	400	400	200	200	750	600	600
Spindle nose	A2-6	A2-6	A2-6	A2-5/A2-6	A2-5/A2-6	A2-6	A2-6	A2-6
Chuck model	8″	8″	8″	6″/8″	6″/8″	8″	8″	8″
Max speed (rpm)	4300	4300	4300	5500/4300	5500/4300	4200	4300	4300
Direct drive synchronous electric spindle power (KW)	11/15(18/22)	18/22	18/22	17.5/(18/22)	17.5/(18/22)	11/15	18/22	18/22
Servo turret	Servo Turret12T	BMT55	BMT55	BMT55	BMT55	Servo Turret12T	BMT55	BMT55

MULTIPLE PERFORMANCES

150MS-II/III
150MSY-II/III

Double spindle, double turret
Multifunctional turning center



The machine is equipped with dual spindles and turrets, and there are 8 tool positions available in the back-end processing space . allowing the total tool capacity of the machine to reach 20T,which can support a variety of different unique processing tool method accurate.

Processing efficiency

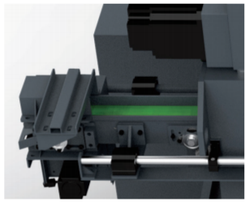
We have built this high-end, high-efficiency turning center machine so that you can complete complex workpiece processing in one piece of equipment with extremely high accuracy.

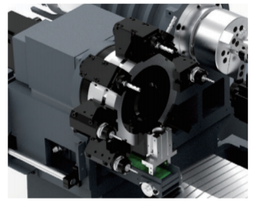
Model	150MS-III	150MS-II	150MSY-III	150MSY-III
Max rotation diameter over bed (mm)	Φ380	Φ380	Φ380	Φ380
Max processing diameter (mm)	Φ100	Φ100	Φ100	Φ100
Max processing length (mm)	150	150	150	150
Spindle nose	A2-5	A2-5	A2-5	A2-5
Chuck model	5″	5″	5″	5″
Max speed (rpm)	5500	5500	5500	5500
Rated power /max torque (kw/Nm)	17.5/125	17.5/125	17.5/125	17.5/125
Spindle servo power turret	BMT45	BMT45	BMT45+Y	BMT45+Y

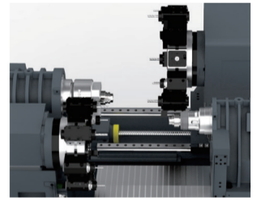
LOWER TURRET

Unloader lower turret clamp (standard configuration) + discharge conveyor belt
Automation of the gripper jaws by the lower turret

Size	Diameter range	mm	15-51
	length range	mm	30-100
	weight range	kg	0.1-1.5



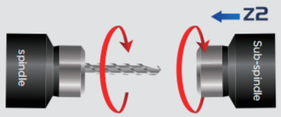




SYSTEM FUNCTIONS

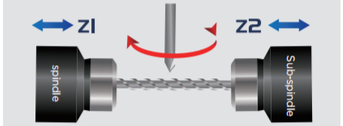
Fast processing, fast debugging, fast programming compound processing machine

Spindle synchronization, same phase



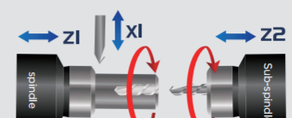
The main spindle and sub-spindle can run synchronously to facilitate the connection of circular or polygonal workpieces.

Servo axis synchronization control



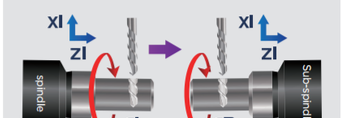
It is used for processing long workpiece clamps, such as turning teeth, just tapping, and knurling.

Servo axis weight tube



When the positive spindle continues to run, the side milling axis can be superimposed on the rigid attack, reducing the spindle stop time.

Mix control



Program instructions can be used to exchange servo axes that control other paths.

AUTOMATED PRODUCTION LINE

Smart Manufacturing Unit



Multifunctional combined production line high-precision three-axis rack manipulator

- After adding truss automation, silo, online cleaning, online detection and other functions, a multi-functional turning production line is formed.
- Remote monitoring and data collection functions can be added to seamlessly connect with the factory's ERP and MES intelligent systems.



- Flexible joint robot hand
- Ground rail traveling axis
- Safety limit to prevent derailment
- Adjustable anchor bolts
- Can meet uneven ground conditions
- Fast moving speed and high precision

What can we provide for customers

A complete set of intelligent flexible processing solutions from blank to finished product



FIXTURE DESIGN



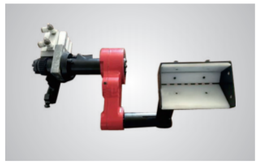
THE MAIN COMPONENTS



Automatic bar feeder (optional)

- The feeder has a heavy-duty, automated design that significantly increases productivity and simplifies turning operations

Simple installation and easy operation



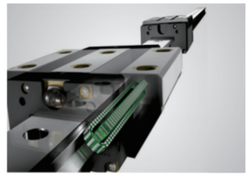
Parts catcher (optional)

- The workpiece catcher is designed with the principle of mechanical linkage, which can quickly pick up the finished product after processing.



Tool setter

- Drop-down tool setter with high precision repetition.
- There are many different sizes to meet various industrial needs.
- A variety of standard specifications can be provided, and can also be customized.
- Steel measuring arm with low expansion coefficient.
- Using solid oxide probe.
- Occupies very little machine space when idle.



THK Roller Linear Guide

- The flexible guide rail has zero clearance, arc cutting and bevel cutting, and the surface texture is relatively uniform. It is suitable for high-speed operation and greatly reduces the driving horsepower required by the machine.
- The flexible guide rail uses rolling instead of sliding, with small friction loss, sensitive response and high positioning accuracy. It can withstand loads in the up, down, left and right directions at the same time, and under load, the track contact surface is still in multi-point contact, and the cutting rigidity will not be reduced.
- The assembly is easy and interchangeable, and the lubrication structure is simple; the wear of the flexible guide rail is very small and the service life is long.



THK ball screw

- Using high-precision ball screw, combined with nut preloading and screw pretensioning, the backlash and temperature rise elongation are eliminated in advance, and excellent positioning and repeatability are exhibited. Drive directly by servo motor to reduce backlash error.



Bearing/oil injection machine

03

CNC
Machining Center

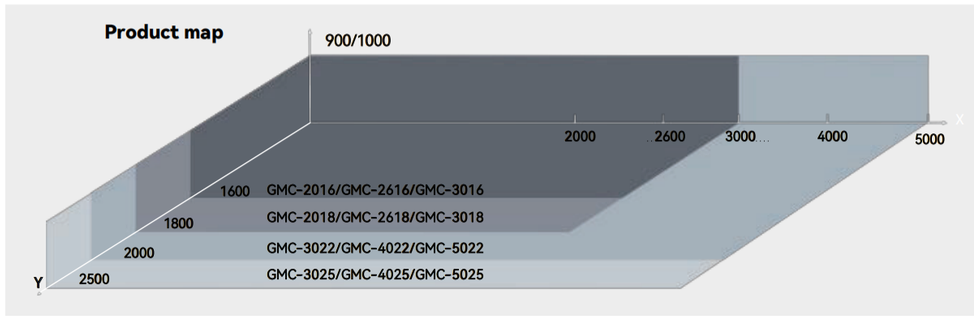
شركة شواهد المتقدمة الصناعية
Shawahed Advanced Industrial Co.

HIGH-PERFORMANCE GANTRY MACHINING CENTER

Products with high horsepower, high rigidity structure, combined with high quality, automation, etc. and complete system specifications and dimensions, to provide you with high-performance, high-productivity machining countermeasures for various types of mold and die industry, automotive industry, aerospace industry and other fields of demand.

The three axes are equipped with roller guide rails of international famous brands, with strong rigidity and good dynamic accuracy; the three-axis drive is equipped with large-diameter grinding ball screws made in Taiwan, with compact structure, smooth movement, low thermal extension and high accuracy. The spindle supports form a stable and high rigidity mechanical transmission system; the high precision spindle enables the spindle bearings to get constant and reliable lubrication; the spindle oil cooling system is equipped as standard to keep the spindle in a stable working condition for a long time.





HIGH RIGIDITY AND LONG TERM ACCURACY RETENTION

Main components of the machine tool: base, worktable, column, spindle box, and saddle are all designed with FEA finite element analysis, featuring design, lightweight mechanism, and high rigidity.

The distance from the spindle center to the guide surface is short, the overturning moment is small, and the stability of machining is improved. The is made of high-quality resin sand, high-strength cast iron, and has a perfect heat treatment process to eliminate residual stress, and the contact surface is precisely handraped to ensure the best structural rigidity of the whole machine.

The product line with complete specifications, together with highly flexible automated headstock and vertical/horizontal tool changer system, provides automation, energy and high productivity machining performance. The spindle design provides different cutting characteristics to meet diversified machining needs.

The Y-axis adopts an ultra-high rigidity roller type linear slide, which combines the heavy cutting rigidity of a hard rail with the fast movement and low wear of a linear slide, resulting in a significant increase in rigidity and controllability.

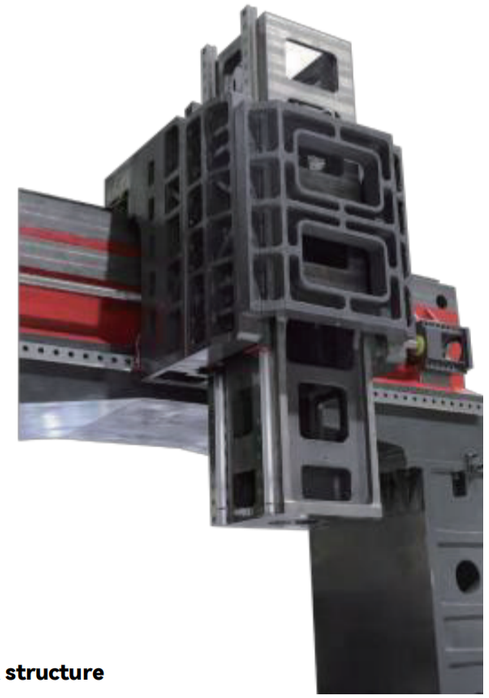


HIGH RIGIDITY AND LONG TERM ACCURACY RETENTION

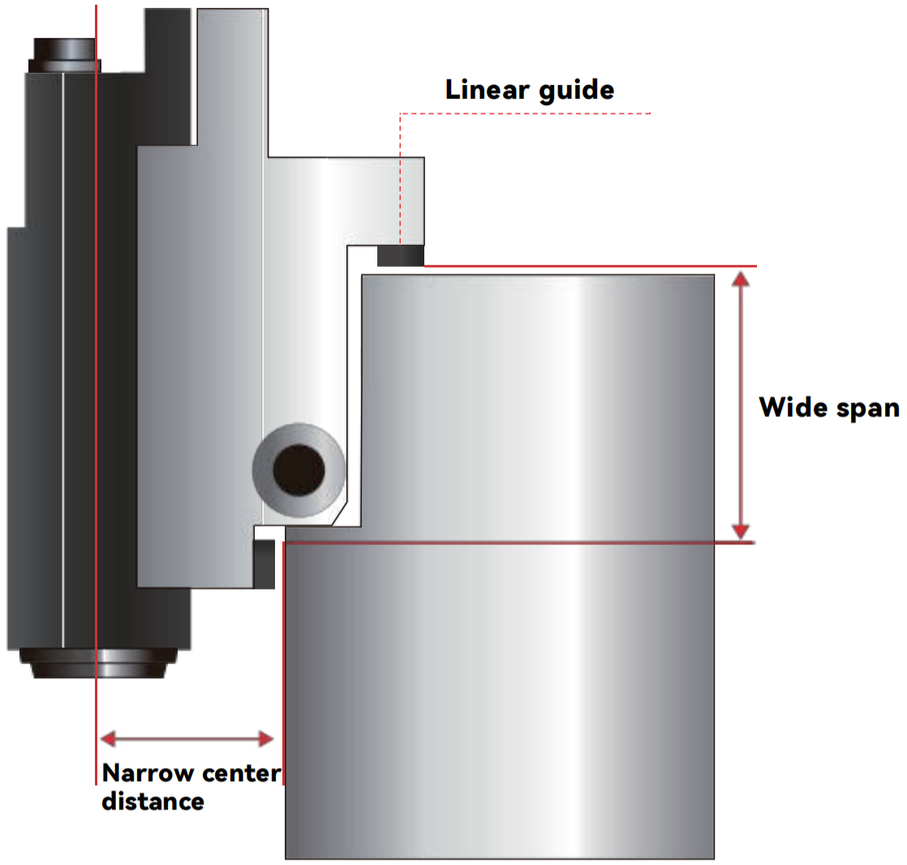


Precise flat surface scraping of the spindle end face

The quality of the product is the result of a sophisticated spatula process, in which all contact surfaces are precisely hand spatulaed.



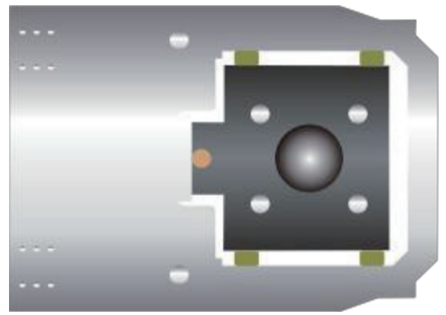
High rigidity four-track structure



Y-axis Differential Roller Type Linear Guideway Design

The head adopts an internal hard-rail design for high rigidity, good force-flow effect, and reduction of cutting overhang and vibration, while the Y-axis adopts a differential roller-type linear slide design to enhance the overall structural rigidity of the spindle head, saddle, and crossrail, and to shorten the distance between the tool contact point and the crossrail to improve cutting capability.

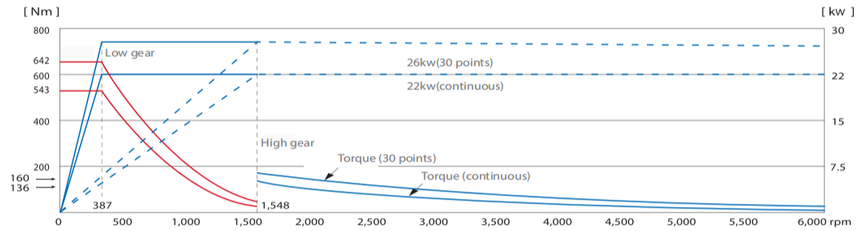
OPTIMIZED SPINDLE SYSTEM



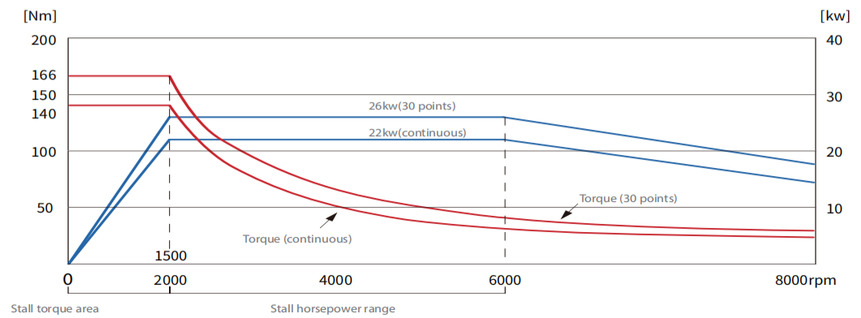
Center symmetrical spindle system design

The spindle, motor, ball screw, double counterweight hydraulic rigid and gearbox are optimized for space allocation, effectively suppressing thermal displacement and reducing unbalanced torque, ensuring machining accuracy and heavy cutting capability.

6000rpm gear type



Direct link 8000



	YMC-2016	YMC-2516	YMC-3016
Moving Range			
X-axis trave mm	2000	2500	3000
Y-axis travel mm	1600		
Z-axis travel mm	800		
Distance from spindle nose to table surface mm	200~1000		
Distance between columns mm	1660		
Worktable			
Worktable size (X direction) mm	2200	2700	3200
Worktable size (Y direction) mm	1480		
Maximum load capacity of the worktable kg	5000	7000	9000
Spindle			
Spindle motor (continuous / 30 min) kw	15/18.5		
Spindle speed rpm	6000		
Spindle inner hole specifications	BT50/Φ190		
Three-axis feed			
X/Y-axis rapid traverse rate mm/min	15		
Z-axis rapid traverse rate mm/min	10		
Cutting feed rate mm/min	10		
Tool magazine			
Tool magazine capacity T	24(32/40 optional)		
Max. tool diameter mm	∅ 125		
Max. tool length mm	400		
Max. tool weight kg	18		
General specifications			
Electricity demand KVA	380V		
Air pressure demand kg/cm²	5~8		
Machine weight kg	19000	21000	23000

	YMC-2018	YMC-2618	YMC-3018
Moving Range			
X-axis trave mm	2000	2500	3000
Y-axis travel mm	1800		
Z-axis travel mm	1000		
Distance from spindle nose to table surface mm	200~1200		
Distance between columns mm	1860		
Worktable			
Worktable size (X direction) mm	2200	2700	3200
Worktable size (Y direction) mm	1600		
Maximum load capacity of the worktable kg	6000	8000	10000
Spindle			
Spindle motor (continuous / 30 min) kw	15/18.5 (22/26 optional)		
Spindle speed rpm	6000		
Spindle inner hole specifications	BT50/Φ190		
Three-axis feed			
X/Y-axis rapid traverse rate mm/min	15		
Z-axis rapid traverse rate mm/min	10		
Cutting feed rate mm/min	10		
Tool magazine			
Tool magazine capacity T	24(32/40 optional)		
Max. tool diameter mm	∅ 125		
Max. tool length mm	400		
Max. tool weight kg	18		
General specifications			
Electricity demand KVA	380V		
Air pressure demand kg/cm²	5~8		
Machine weight kg	20000	22000	24000

	YMC-3022	YMC-4022	YMC-5022
Moving Range			
X-axis trave mm	3000	4000	5000
Y-axis travel mm	2000		
Z-axis travel mm	1000（Optional 1200）		
Distance from spindle nose to table surface mm	200-1200		
Distance between columns mm	2200		
Worktable			
Worktable size (X direction) mm	3200	4200	5200
Worktable size (Y direction) mm	2000		
Maximum load capacity of the worktable kg	10000	12000	14000
Spindle			
Spindle motor (continuous / 30 min) kw	22/26		
Spindle speed rpm	6000		
Spindle inner hole specifications	BT50/Φ190		
Three-axis feed			
X/Y-axis rapid traverse rate mm/min	15		
Z-axis rapid traverse rate mm/min	10		
Cutting feed rate mm/min	10		
Tool magazine			
Tool magazine capacity T	32(40 optional)		
Max. tool diameter mm	∅ 125		
Max. tool length mm	400		
Max. tool weight kg	18		
General specifications			
Electricity demand KVA	380V		
Air pressure demand kg/cm²	5~8		
Machine weight kg	30000	34000	38000

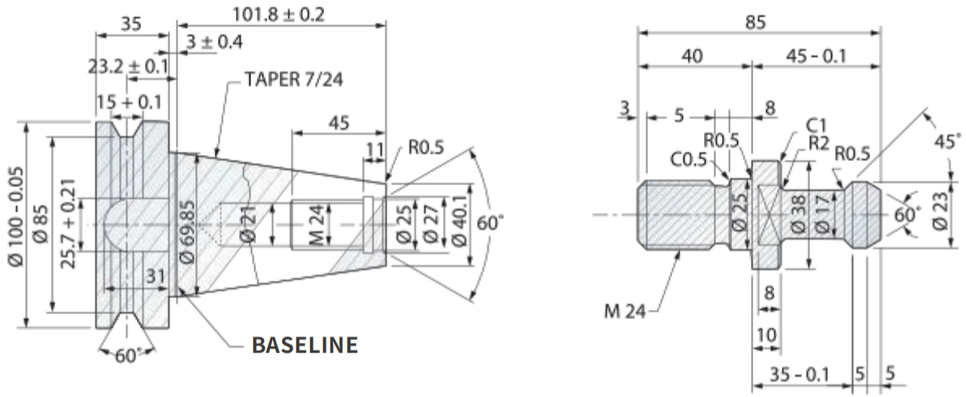
	YMC-3025	YMC-4025	YMC-5025
Moving Range			
X-axis trave mm	3000	4000	5000
Y-axis travel mm	2500		
Z-axis travel mm	1000（Optional 1200）		
Distance from spindle nose to table surface mm	200-1200		
Distance between columns mm	2500		
Worktable			
Worktable size (X direction) mm	3200	4200	5200
Worktable size (Y direction) mm	2200		
Maximum load capacity of the worktable kg	12000	15000	18000
Spindle			
Spindle motor (continuous / 30 min) kw	22/26		
Spindle speed rpm	6000		
Spindle inner hole specifications	BT50/Φ190		
Three-axis feed			
X/Y-axis rapid traverse rate mm/min	15		
Z-axis rapid traverse rate mm/min	10		
Cutting feed rate mm/min	10		
Tool magazine			
Tool magazine capacity T	32(40 optional)		
Max. tool diameter mm	∅ 125		
Max. tool length mm	400		
Max. tool weight kg	18		
General specifications			
Electricity demand KVA	380V		
Air pressure demand kg/cm²	5~8		
Machine weight kg	35000	39000	43000

SIZE SPECIFICATIONS

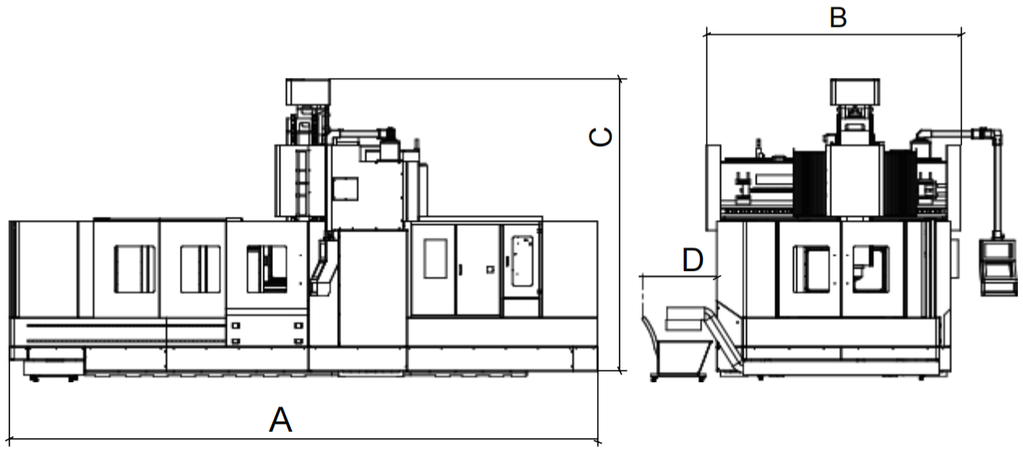
Tool handle and broach bolt dimensions

(Unit:mm)

BT50 (STANDARD)



Machine appearance dimension drawing



Specification	A(mm)	B(mm)	C(mm)	D(mm)
YMC-2016	6100	3000	3400	1400
YMC-2616	6900	3000	3400	1400
YMC-3016	8400	3000	3400	1400
YMC-2018	6100	3400	3600	1400
YMC-2618	6900	3400	3600	1400
YMC-3018	8400	3400	3600	1400
YMC-3022	8400	3800	3800	1400
YMC-4022	10600	3800	3800	1400
YMC-5022	13000	3800	3800	1400
YMC-3025	8400	4400	3800	1400
YMC-4025	10600	4400	3800	1400
YMC-5025	13000	4400	3800	1400

Due to technological upgrades, external dimensions are subject to change, consult your sales engineer for details.

POPULAR MODELS

F-50/60

It is most suitable for multi-process machining such as milling, drilling, boring, reaming, tapping, two-dimensional and three-dimensional curved surfaces of small parts with multiple working surfaces.

FMC-850

Advanced design concept, excellent mechanical structure. It is a high-speed, high-capacity model. Suitable for high-precision mold industry and precision metal product processing.



FMC-1580

The bed and herringbone column adopt densely baked castings with reinforcing ribs. This kind of casting still has excellent stability and good shock absorption characteristics even under heavy cutting conditions. The workbench is supported in all directions by an integral saddle without any suspension. The four-rail design of the base ensures long-term rigidity and accuracy. The guide rail has undergone induction hardening heat treatment and precision grinding. The plastic guide rail and strong lubrication reduce surface friction and reduce wear.

FMC-1890

All machine castings of the machine tool are made of high-quality Meehanite castings, which are annealed to eliminate internal stress. The structure of the machine bed is optimized and the mechanical dynamic rigidity is excellent.

FGS-1613L

The beam structure is as solid as the right, and it adopts a unique upper and lower ladder configuration, with strong rigidity. The door bridge and the base are integral molding castings. The overall structure provides the best rigidity through strict FEM analysis.
Standard 15000rpm direct-connected spindle (optional built-in spindle up to 30000rp0m); the centerline of the axle box has a short distance and strong rigidity



FMC-1370

All machine castings of the machine tool are made of high-quality Meehanite castings, which are annealed to eliminate internal stress. The structure of the machine bed is optimized and the mechanical dynamic rigidity is excellent.

HMC-630

The base is the foundation of the whole machine tool and the main supporting part of the saddle and the column. The base of this machine adopts an integral inverted "T" structure, and a considerable number of annular ribs are arranged on the inner wall of the base, thereby enhancing the rigidity of the base. Ensure the durability of rigidity.

FMC-855

High-speed, high-precision,high-rigidity; heavy-duty,heavy-cutting models, Y/Z axis adopts 45-wide rollerlinear rails.

FMC-1060

All mechanism designs are optimized with advanced COSMOS software to assist in optimal structure optimization, and FEA finite element analysis is used to simulate the dynamic rigidity of the machine to ensure continuous machining accuracy and anti-vibration effect during high-speed cutting.

PURSUIT OF PERFECTION

All mechanism designs are optimized with advanced COSMOS software to assist in the optimization of the structure. Ningbo Oturn Machinery Co., Ltd. is a high-tech enterprise with in-depth cooperation with Japanese machine tools. The company mainly produces and sells: high-end vertical machining centers, horizontal machining centers, gantry machining centers, drilling and tapping machines, high-speed machining centers, five-axis five-linkage and other series of CNC machines. The company has advanced production equipment and a group of outstanding Japanese technical engineers.

In the production process, we continue to cooperate with Japan in research and development and lean production technology experience, centering on the goal of "manufacturing high-quality machining centers", and also provide customers with product analysis, machine tool selection, tool holder selection, machine tool installation and debugging, Multi-faceted services such as control teaching, warranty maintenance, and regular inspections. Focus on services in the precision mold industry, automobile and motorcycle industry, electronic communication industry, precision parts processing industry, aerospace industry and education system industries. After more than ten years of unremitting efforts, Oturn has established a good reputation among users.

In the face of fierce market competition, the company will adhere to the operating principle of "integrity-based, customer first, create high-quality goods, and serve the public", relying on its own advantages, integrating external resources, optimizing internal management, and continuing to develop and innovate. The direction of specialization and diversification of operations is advancing in great strides.
We will continue to cooperate more precisely with Japan's Mitsubishi, FANUC, and Germany Xizi, and provide customers with "nanny-style" services. We look forward to working with new and old customers to create a better future, and strive to make the company a strong local One of the enterprises.







F-50/60

CNC TAPPING CENTER

F-50/60 drilling and tapping center is most suitable for multi-process machining of small parts with multiple working surfaces, such as milling, drilling, boring, reaming, tapping, two-dimensional and three-dimensional curved surfaces.

The three-axis adopts high-precision, high-load, high-speed, high-rigidity, and low-noise linear ball guides to provide perfect feed performance.
The three axes are directly driven by precision ball screws and servo motors, without backlash and servo hysteresis.
It provides double production efficiency and vibration-free rigid tapping, which can realize high-speed tapping.

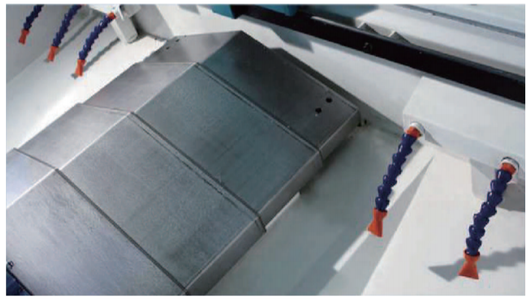
High rigidity ductile iron bed. The machine tool adopts a three-point support method, which is easy to install and ensures accuracy and stability.

The best spindle design provides the rigidity of the spindle head and spindle when cutting chips under heavy load, and ensures the geometric accuracy of the spindle.

The spindle motor and the spindle are designed to be directly connected, and the maximum speed can reach 15000/20000 rpm.



Features



The base chip removal design is rear chip removal type, providing the best chip removal angle, equipped with a high-pressure water pump chip flushing device, combined with the inclined base, so that iron chips can be smoothly discharged into the chip storage box.



All three axes of the machine adopt high-precision laser measurement and cyclic test inspection, so that each axis has good repeatability, accurate positioning and high accuracy of the machine.

F-50/60 CNC TAPPING CENTER

The large casting of the machine is a box-shaped structure, and the casting itself has the characteristics of high rigidity.

The three-axis motor and ball screw adopt direct drive, pre-tensioning, no backlash, and good accuracy.

The chassis and base are made of-body castings to ensure that the machine does not leak water and has excellent chip removal.

The special structure is adopted to effectively shorten the electronic induction time, and the exchange time of adjacent tools only needs 1 sec.

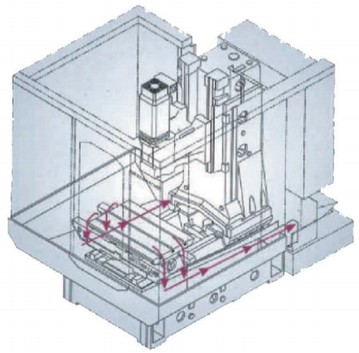
The machine is simple in design and adopts a beautiful and generous rear chip removal design. The overall area is small, which is beneficial to the best use of plant space.

The three-axis gauge adopts high-precision linear slides, and the fast moving speed can reach 48,48,48m/min.



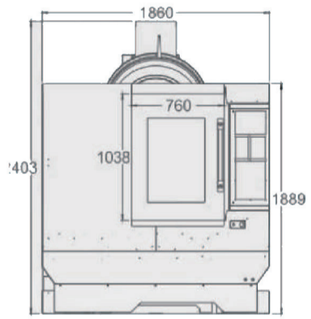


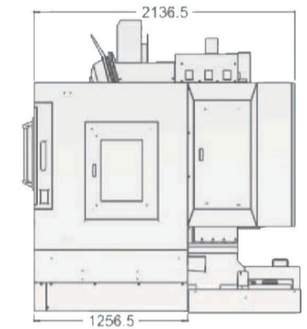
Direct spindle 15000-20000rpm

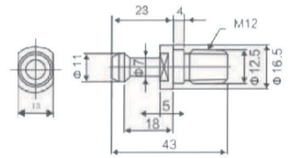


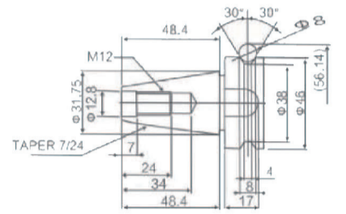


	Model	Unit	F-50	F-60
Spindle	Spindle taper		NO.30	
	Spindle drive mode		Direct	
	Spindle speed	rpm	15000/20000	
Worktable	Worktable size	mm	650x400	700x420
	Max. loading	kgs	250	300
	T-slot	mm	3x14x125	
Moving range / Rapid Speed	X axis travel	mm	500	600
	Y axis travel	mm	400	400
	Z axis travel	mm	300	350
	Distance from table surface to spindle end	mm	150-450	
	Distance from guide surface to spindle center	mm	420	
	Fast-moving	m	X/Y/Z 48	
	Cutting feed movement	m/min	1-12	
Tool	Handle type		BT-30	
	Latin taper		45°	
	Tool capacity	Pcs	16	
	Tool length	mm	200	
	Tool weight	kgs	3	
	Tool change(T/T)	sec	1.2	
	Tool change method			
Motor	Spindle motor (continuous/30 minutes)	Kw	5.5 Mitsubishi	
	Three axis motor X/Y/Z	Kw	1.5/Z: 3.0	
	Lubricate the motor	W	25	
	Cutting motor	w	460	
Others	Dimensions (Length)	mm	1680	
	Dimensions (Width)		2136	
	Dimensions (Heigh)		2403	
	Machine weight	kgs	2800	3000
			Japan Mitsubishi/FANUC	









- Due to our company's continuous research and improvement, our company has the right to change the mechanical specifications and characteristics shown in this catalog without prior notice.



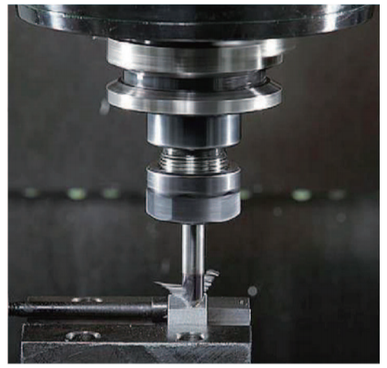
FMC-850

VERTICAL MACHINING CENTER

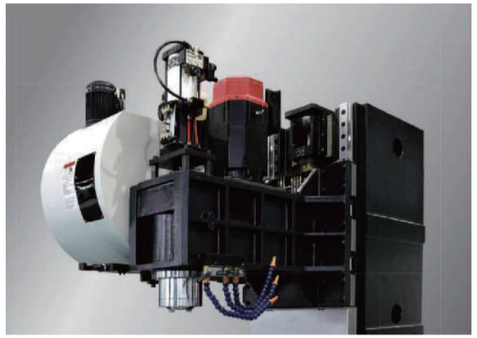
This series of vertical integrated processing machines show advanced design concepts and excellent mechanical structure balance. It is a high-speed, high-capacity model. Suitable for high precision mold industry and precision metal processing industry.

Using well-known brand high rigidity precision linear slides, the technology is like manufacturing bearings, with zero clearance and full load bearing characteristics. The linear slide has low consumption, high precision and fast moving speed, up to 48m/min.

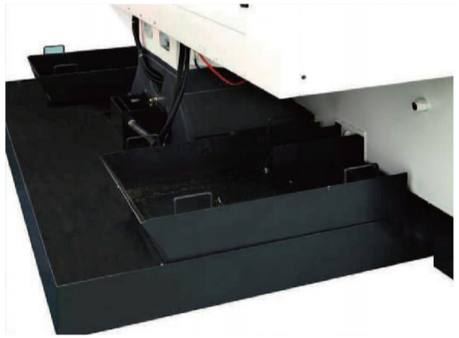
The servo motor is directly connected to the screw via a rigid coupling without backlash, which can ensure the machining accuracy. Even if it is a very complicated work, it can also process sharp corners to ensure the machining accuracy.



Features



Fast, simple, reliable and long-life tool exchange device provides smooth and reliable tool exchange action. Unique tool exchange device design.



The double screw chip removal device rushes to the screw chip conveyor on both sides of the machine, which can easily send the processed iron chips to the outside of the machine quickly, reducing the waste of non-processing time due to iron chip cleaning

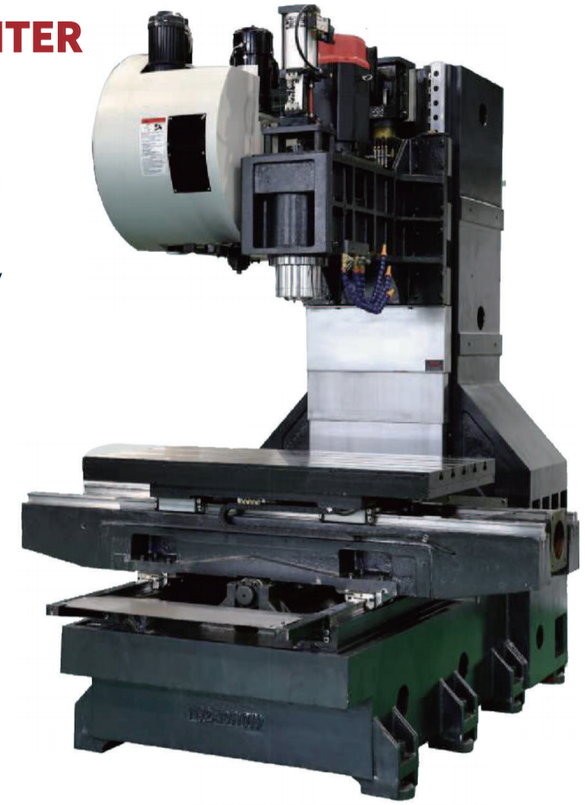


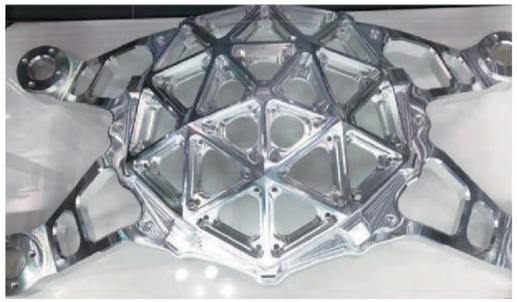
FMC-855

VERTICAL MACHINING CENTER

High-speed, high-precision, high-rigidity; heavy-duty, heavy-cutting models, the Y/Z axis adopts 45 wide roller linear rails, and the Z axis adopts a heavy-duty six-slider design. The servo motor is directly connected to the screw through a rigid coupling without backlash, which can ensure the machining accuracy. Even if it is a very complicated work, it can also process sharp corners to ensure the machining accuracy. Each machine tool has been tested with heavy-duty full tools to ensure smooth operation and reliable tool exchange even with heavy-duty tools.











FMC-1060

VERTICAL MACHINING CENTER

All mechanism designs are optimized with advanced COSMOS software to assist in optimal structure optimization, and FEA finite element analysis is used to simulate the dynamic rigidity of the machine to ensure continuous machining accuracy and anti-vibration effect during high-speed cutting.

High rigidity ductile iron bed, the machine tool adopts pyramid golden ratio design, excellent span and full stroke support, the machine maintains its original rigidity under high-speed movement, and provides displacement accuracy.



Features



All machines use laser measurement, cutting test, long-term running-in test and strict inspection in accordance with VDI 3441 standard, so that each axis has good repeatability, accurate positioning, and ensures machine accuracy.



Renishaw is used to calibrate the roundness and geometric accuracy of the machine to verify and ensure the vertical accuracy of the three-dimensional space.



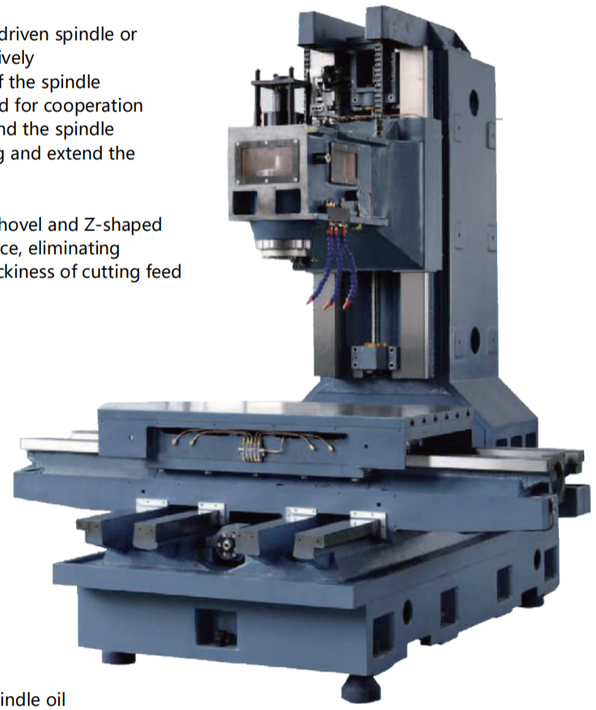
FMC-1370

VERTICAL MACHINING CENTER

The sleeve-type spindle design provides 6000/4500rpm gear-driven spindle or belt-type spindle, and the short nose spindle bearing is effectively supported by the bushing and head castings, so the rigidity of the spindle can be greatly improved, and high horsepower can be selected for cooperation The spindle motor can show the largest metal removal rate, and the spindle cooling system can reduce the temperature rise of the bearing and extend the life of the spindle.

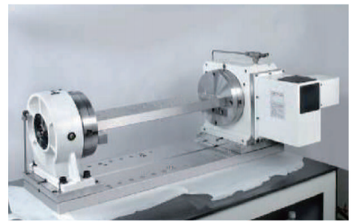
Japanese shovel technology combined with unique *shaped shovel and Z-shaped oil grooves can produce a uniform oil film on the sliding surface, eliminating foating phenomenon during rapid movement and starting stickiness of cutting feed

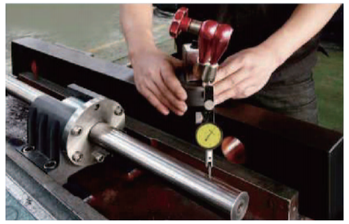




The spindle is equipped with spindle oil temperature control system, which can effectively achieve temperature effect.







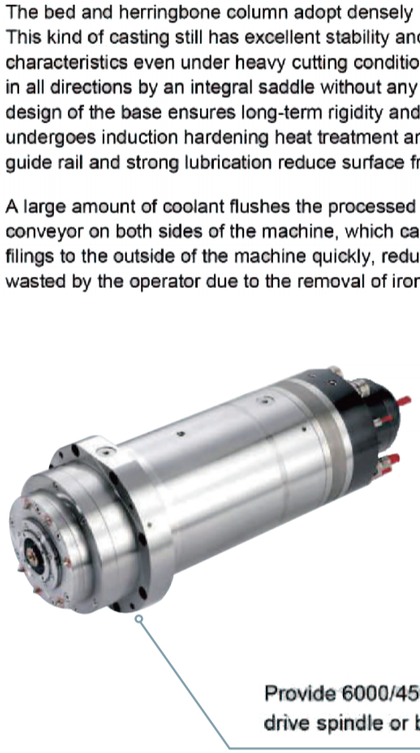


FMC-1580

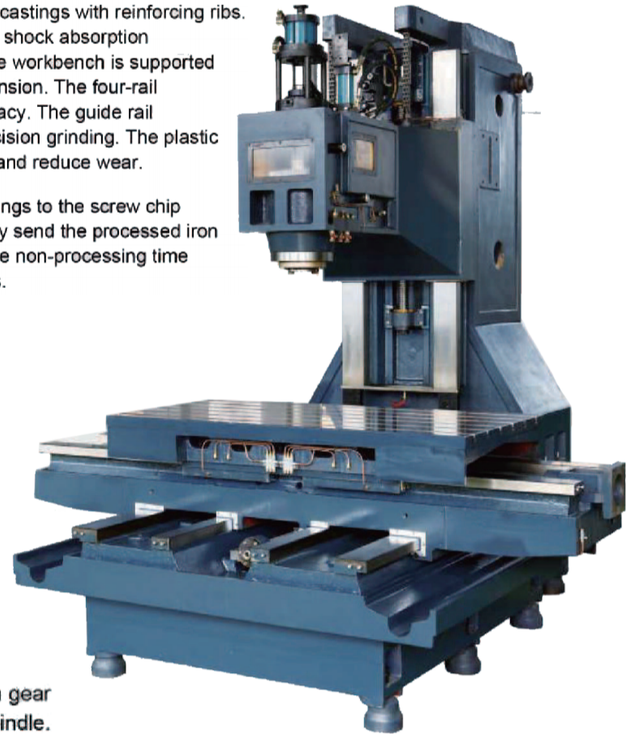
VERTICAL MACHINING CENTER

The bed and herringbone column adopt densely baked castings with reinforcing ribs. This kind of casting still has excellent stability and good shock absorption characteristics even under heavy cutting conditions. The workbench is supported in all directions by an integral saddle without any suspension. The four-rail design of the base ensures long-term rigidity and accuracy. The guide rail undergoes induction hardening heat treatment and precision grinding. The plastic guide rail and strong lubrication reduce surface friction and reduce wear.

A large amount of coolant flushes the processed iron filings to the screw chip conveyor on both sides of the machine, which can easily send the processed iron filings to the outside of the machine quickly, reducing the non-processing time wasted by the operator due to the removal of iron filings.



Provide 6000/4500rpm gear drive spindle or belt spindle.











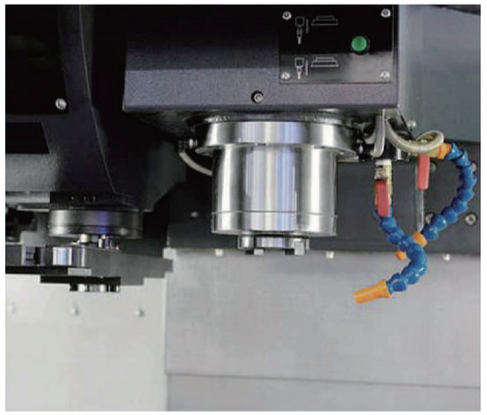
FMC-1890

VERTICAL MACHINING CENTER

All machine castings of the machine tool are made of high-quality Meehanite castings, which are annealed to eliminate internal stress. The structure of the machine bed is optimized and the mechanical dynamic rigidity is excellent.

The two-stage transmission gear design can make the main shaft horsepower more smoothly. The transmission gears are all imported from the original package. The chromium-molybdenum alloy steel material is hardened and precision ground. The main shaft runs quietly and smoothly.

A large amount of coolant will rush the processed iron filings to the screw chip conveyors on both sides of the machine, which can easily send the processed iron filings to the outside of the machine quickly, reducing the operator's wasted non-processing time due to the removal of iron filings. The customer needs to add a chain chip conveyor.



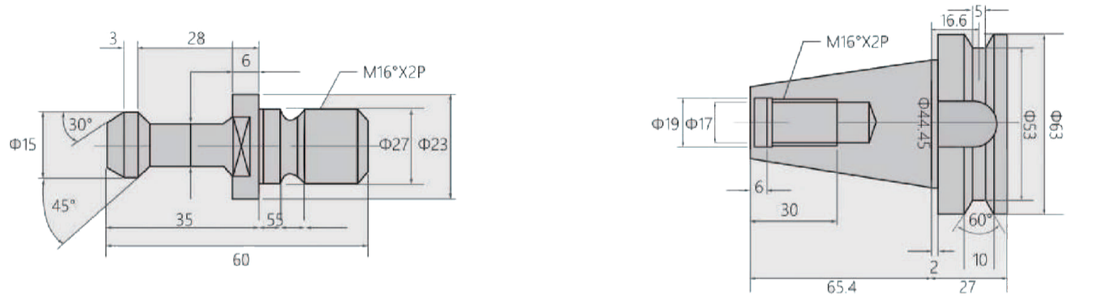
Internal details



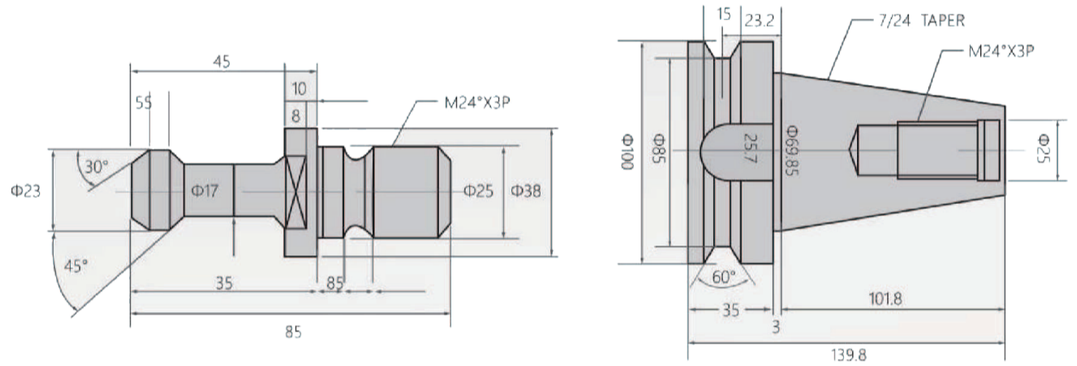


Features

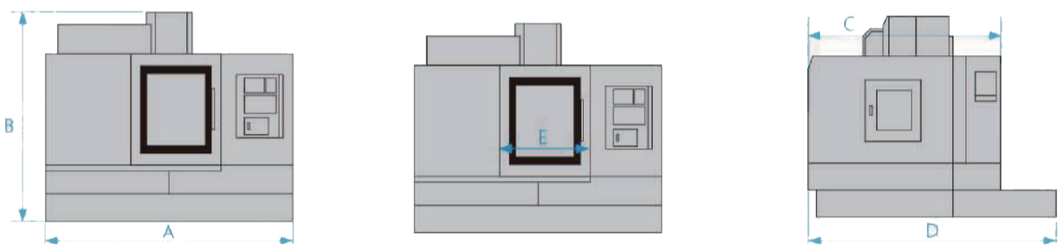
BT-40 Tool Holder Specification



BT-50 Tool Holder Specification



Dimension



Mechanical specifications

	FMC-850	FMC-1060	FMC-1165	FMC-1270	FMC-1370	FMC-1580	FMC-1690	FMC-1890
A	2608	3277	3130	3580	3380	4280	4700	5000
B	2373	2560	2360	2720	2720	3000	3000	3100
C	2230	2640	2600	2930	3020	3450	3450	3450
D	2710	3120	3100	3500	3350	4060	4200	4200
E	1262	1529	1430	1640	1640	1860	2160	2300

	Model	Unit	FMC-850	FMC-855	FMC-1060	FMC-1370	FMC-1580	FMC-1690	FMC-1890
Spindle	Spindle taper		BT-40			BT-50			
	Spindle diameter	mm	Ø 150			Ø 155		Ø 190	
	Spindle speed	rpm	8000/10000/12000			6000			
Worktable	Wortable size	mm	1000x500	1000x550	1200x600	1400x700	1700x800	1860x1000	1970x1000
	Max. loading	kgs	600	800	1000	1200	1500	1600	1800
	T-slot	mm	5x18x90	5x18x90	5x18x100	5x18x152.5	5x22x135	7x18x120	
	Three axis stroke	mm	800/500/500	800/550/530	1000-1100/600/600	1300/700/650	1500/800/700	1600-1800/900/800	
	Spindle nose to table	mm	150-650	120-670	120-720	150-800	170-870	210-1010	
	Spindle center to column	mm	550	595	650	785	800	970	
Rapid speed	Three-axis cutting feed rate	mm/min	1-1200	1-1000	1-1000	1-1200			
	Three-axis rapid movement X/Y/Z	m/min	48/48/48		36/36/30	15/15/12			
Accuracy	Latin taper		45°						
	Tool capacity	put	24						
	Tool length	mm	300			500			
	Tool weight	kgs	7			15			
	Tool change time (T/T)	sec	1.6			2.3			
	Tool change method		Shortest path selection tool						
Drive motor	Spindle drive motor (Continuous/30 minutes)	kw	11/15			18.5		15/18.5	18.5/22
	X/Y/Z drive motor	kw	3/3/3			3/3/3		7/4/4	
	X/Y/Z ball screw	mm	Ø 40			Ø 50			
	Cutting water motor	w	460						
Others	Protaction		Full protection						
	Total Weight	kgs	5300	5500	6300	10000	13500	14500	16000

- Due to our company's continuous research and improvement, our company has the right to change the mechanical specifications and characteristics shown in this catalog without prior notice.



FGS-1613L

HIGH-SPEED MACHINING CENTER

Rock-solid beam structure, and adopts unique up and down ladder configuration, strong rigidity:

Pre-tensioned design of precision ball screw provides high-speed operation and transmission efficiency;

The Z-axis adopts high-end roller linear guides, with a three-slider design to improve the rigidity of the B-axis and ensure the overall processing progress of the machine tool;

Three-axis reservation can add high-precision grating ruler according to customers. Such as: German Heidenhain or Spain Fagor grating ruler

Standard 15000rpm direct-connected spindle (optional built-in spindle up to 30000rpm), the distance between the center line of the spindle box is short and the rigidity is strong

The door bridge and the base are integral molding castings, and the overall structure has undergone strict FEM analysis to provide the best rigidity;

The main casting is made of Guanghanna cast iron and has been treated with natural aging.



Samples







FGS-1613L

HIGH-SPEED MACHINING CENTER

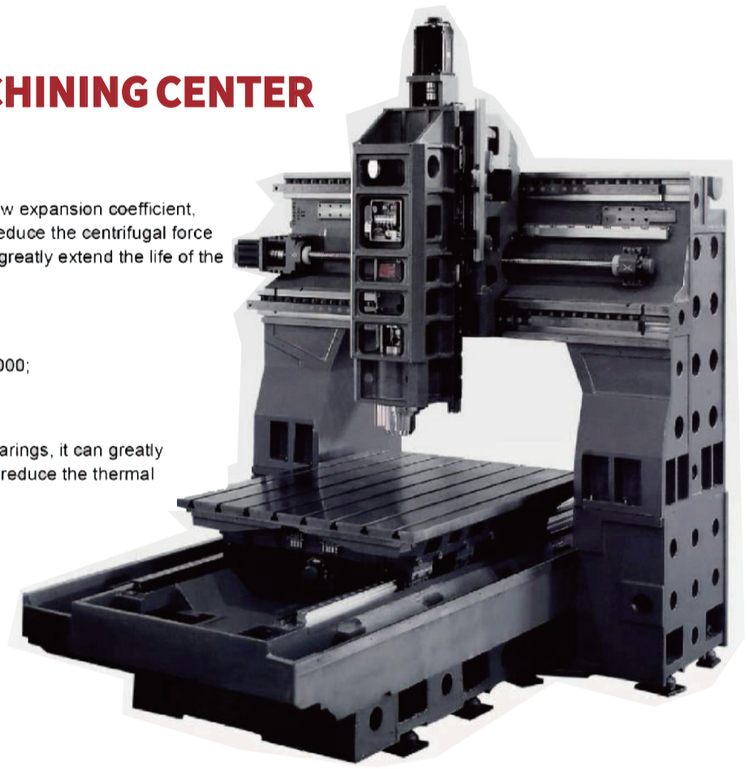
It has the characteristics of light weight, low expansion coefficient, strong hardness, etc., which can greatly reduce the centrifugal force of heat temperature and high speed, and greatly extend the life of the spindle;

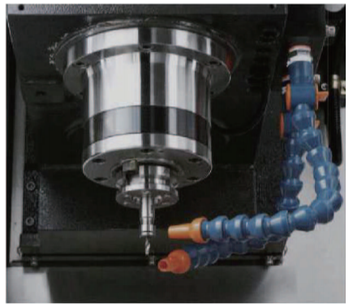
BT40 direct-coupled speed 12000/15000;

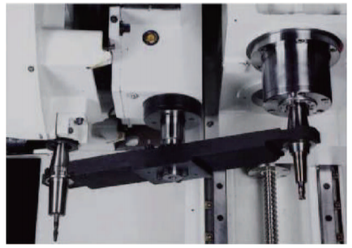
HSK-A63 direct-coupled speed 12000/15000;

Built-in spindle HSK-A63/1 5000~30000;

If the spindle adopts precision ceramic bearings, it can greatly reduce the heat generated by friction and reduce the thermal expansion of the spindle.









SHK-A63 Direct 12000~15000

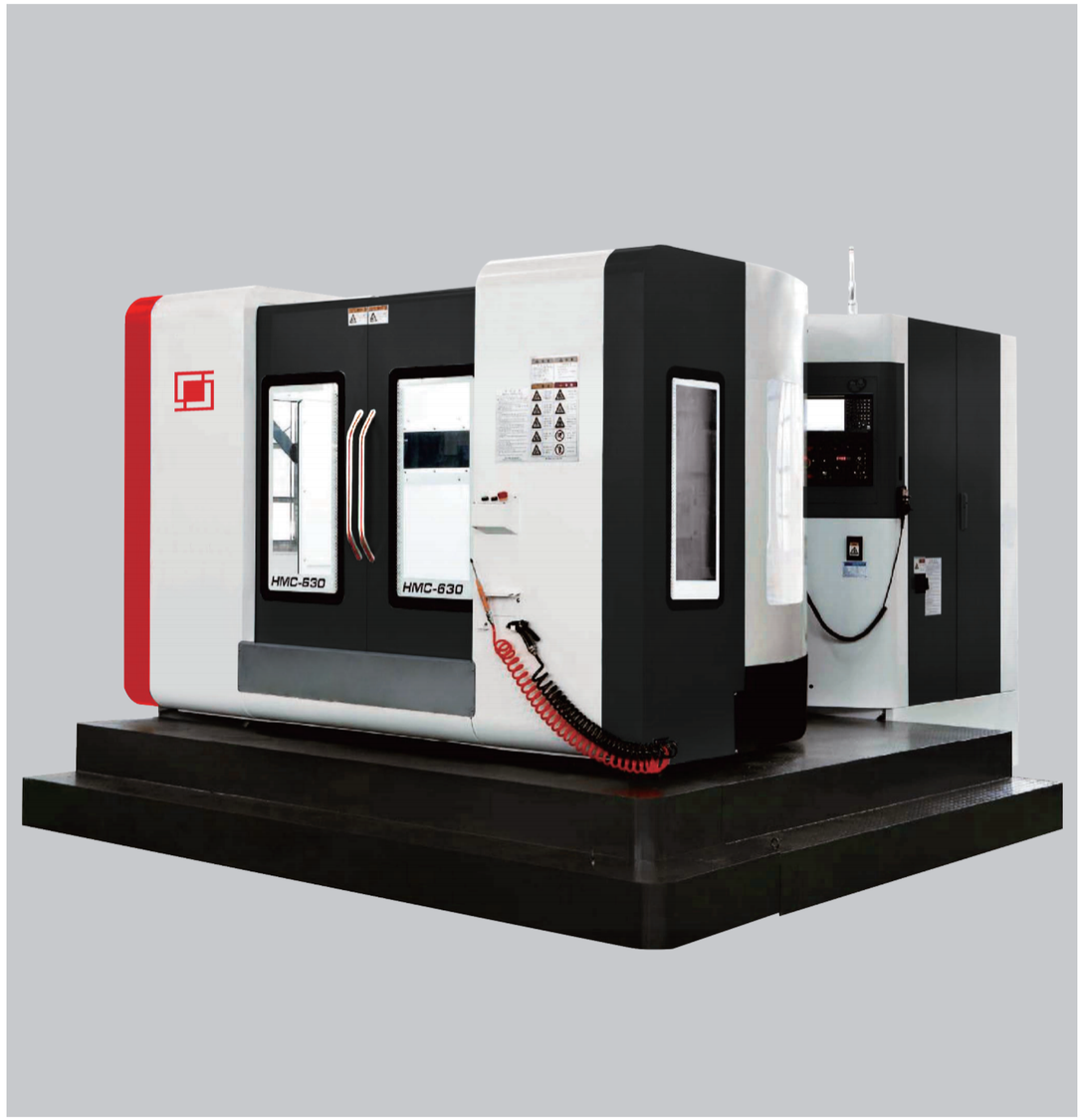


SHK-A63 Built-in 18000~30000

FGS High-speed Machining Center Technical Information

			FGS-1080	FGS-1510	FGS-1613L	FGS-2015	FGS-2515
Travel	X-axis travel	mm	800	1500	1600	2000	2500
	Y axis travel	mm	1000	1000	1300	1500	1500
	Z axis travel	mm	600	600	600	760	760
	Distance from spindle nose to worktable	mm	150-750	200-750	200-800	200-960	
	Gantry width	mm	1000	1000	1400	1525	
Worktable	Working desk size	mm	820*1020	1550*900	1700*1200	2200*1300	2700*1300
	Distance from table to spindle nose	mm	875	900	900	1000	
	Maximum loading	Kg	1000	2500	3000	6000	
	T slot	mm	18*5*90	18*5*165	18*7*150	22*8*150	
Spindle	Spindle bore		BT-40/ HSK-A63/ Built-in HSK-A63				
	Spindle motor power	mm	10.6	18		18	
	Three-axismotor power	Kw	4.3 * 4.3 * 3.1	5.2 * 4.3 * 5.2		10.5 * 4.3 * 5.2	
	Spindle drive mode	Kw	Direct-connected/electric spindle				
Linear guide and screw	Three axis width	mm	45	45		55B	
	Three-axis screw	mm	Ø 40	X:Ø 50 Y/Z/Ø40	Ø 50	Ø 50	X:Ø 63 Y/ZØ 50
ATC	Tool magazine		Umbrella/Arm type				
	Capacity	tool	16 / 24				
	Tool change time	sec	2.5				
Three-axis feeding	Three-axis rapid feed	m/min	24 / 30				
	Drive mode		Direct connection				
Dimensions	Length*Width*Height	mm	4200 * 3000 *3500				
	Machine weight	Kg	8000	12000	14000	20000	22000

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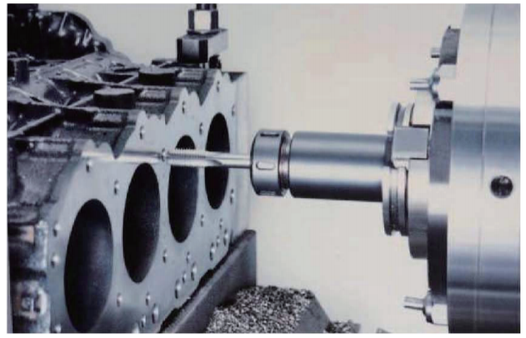
HMC-630

HORIZONTAL MACHINING CENTER

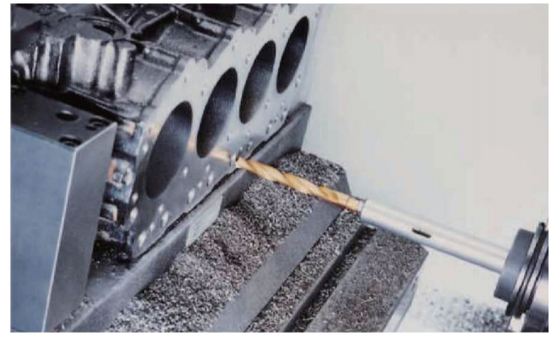
- It adopts high-torque spindle drive and powerful shaft drive device with high cutting rate.
- The base is the foundation of the whole machine tool and the main supporting part of the saddle and the column. The base of this machine adopts an integral inverted "T" structure, and a considerable number of annular ribs are arranged on the inner wall of the base, thereby enhancing the rigidity of the base. Ensure the durability of rigidity.
- The base casting is made of high-precision pentahedral gantry in one clamping process, which reduces the clamping error and improves the accuracy of the base.
- The column is the supporting part of the headstock, which not only has to bear the cutting force in all directions, but also bear the relevant overturning moment. Therefore, the column adopts a double-column closed frame structure, and the cavity is provided with longitudinal and transverse ring ribs, so that the column has high torsion and bending rigidity; the use of heavy-duty roller guides greatly improves the movement accuracy and rigidity.



Features



The Z-axis adopts a brake-type servo motor with a non-counterweight design to improve the Z-axis drive performance and achieve the best speed when performing 3D processing. The Z-axis power-off rise function ensures that the machine and work are not damaged.

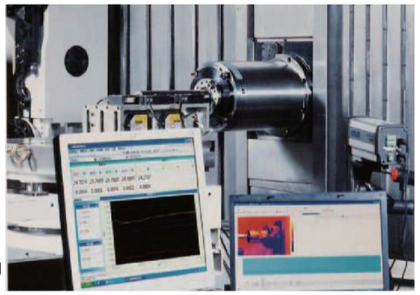


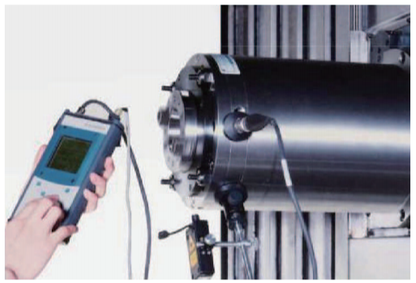
All three axes adopt 45# wide heavy-duty linear guide, which greatly improves the heavy-duty and machining stability of the machine tool and ensures the cutting rigidity. The X/Z axis adopts the design concept of 6 sliders.

CHARACTERISTICS OF HMC SERIES HORIZONTAL MACHINING CENTER

The inverted T-shaped large-span bed structure has extremely high rigidity. The main structural parts are all high-grade Meehanite castings, using resin sand casting, with high precision retention.

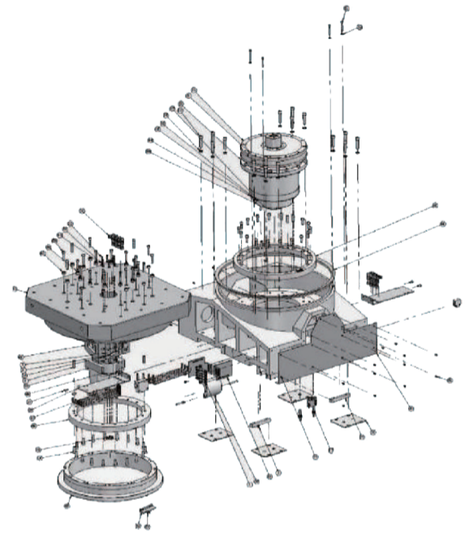
The standard belt type BT50 spindle has an oil cooling function, which reduces the thermal deformation of the head and improves the processing accuracy. It is equipped with a ZF two-speed gear box to achieve low speed, high torque, high speed and high power.

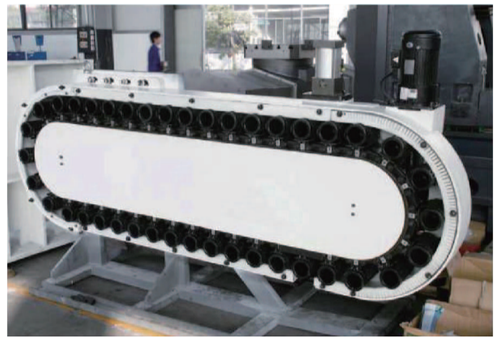




HIGH RIGIDITY,STABLE ACCURACY

- 1° rotary table, using clutch gear positioning, positioning accuracy does not shift, suitable for load and heavy cutting, 0.001° rotary table, adopts a fully closed loop design, the center point is not easy to shift, and can be cut simultaneously.
- The Y-axis is equipped with 3 groups (6) ball linear rail sliders, which can increase the rigidity of the spindle head, reduce vibration, and ensure the highest processing capacity and precision.
- The lead screw adopts a group of 60° angular contact ball bearings, double supports and pre-stretched to ensure transmission accuracy. Imported heavy-duty high-precision roller guides are used. The pre-loading is V3 grade, which can withstand large negative cutting and has stable accuracy.
- Optional 26KW high-horsepower direct-drive spindle or 846Nm (53%) high-torque geared spindle, 180° bidirectional rotation automatic worktable exchange, worktable exchange time only takes 16 seconds, symmetrical mechanism design, high rigidity, stable accuracy.



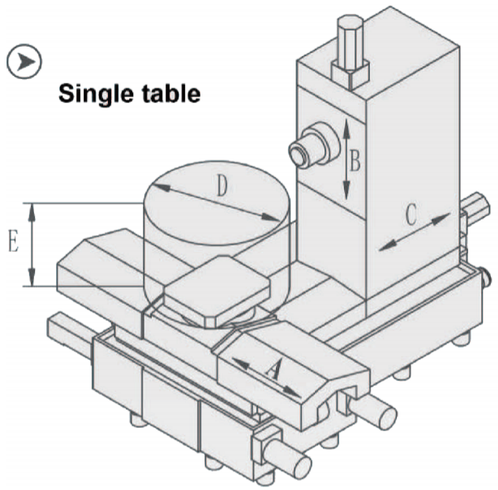


The storage capacity of the tool magazine is 24 tools (optional: 40/60/90/120). The automatic tool changer is composed of the tool magazine and the tool arm mechanism. The automatic tool changer and the machine-body design effectively prevent the machine from using the tool magazine for a long time. Time has an adverse effect on the accuracy of the machine tool.



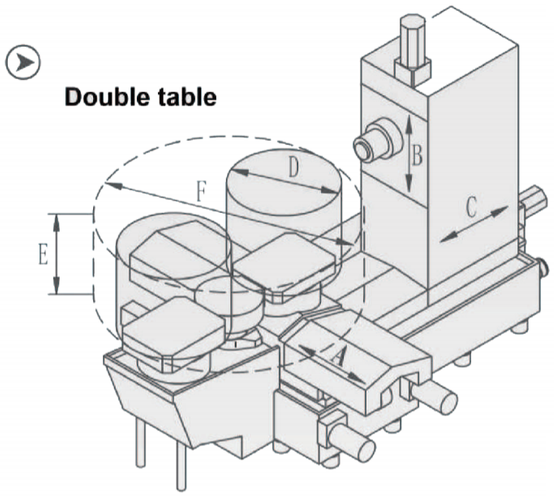
Generally, arbitrary tool selection is used, or a fixed location can be selected. The tool library program has an M code restoration function, which effectively prevents the collision of large tools

Single table



■ Min. indexing of B axis (1°)
The high rigidity squirrel-tooth structure is adopted with a positioning accuracy of 10" and a repeat positioning accuracy of 6"

Double table



■ Minimum indexing of B axis (0.001°) (optional)
Adopt high-precision turbine worm structure to improve machining accuracy and achieve four-axis simultaneous machining.

Single table

Model	X-axis Travel	Y-axis Travel	Z-axis Travel	Max. working diameter	Max. working height
HMC-450	600	540	550	700	500
HMC-500	740	680	650	1000	700
HMC-630	1050	750	900	1100	800
HMC-800	1300	1000	1000	1600	1000

Double table

Model	X-axis Travel	Y-axis Travel	Z-axis Travel	Max. working diameter	Max. working height	Maximum slewing mechanism of exchange mechanism
HMC-450	600	540	550	700	500	1300
HMC-500	740	680	650	1000	700	1860
HMC-630	1050	750	900	1100	800	1930
HMC-800	1300	1000	1000	1600	1000	2515

■ Technical Information

			1075	1290	1814
Travel	X axis travel	mm	1000	1200	1800
	Y axis travel	mm	750	900	1400
	Z axis travel	mm	600	700	900
	X.Y.Z axis rapid speed	mm/min	X:15/Y:15/Z:12	X:12/Y:12/2:12	X:12/Y:12/2:12
	X.Y.Z axis ball screw		X:4010/Y:5010/2:4010	X:5010/Y:5010/Z:5010	X:5508/Y:5010/Z:5508
Worktable	Workbench size (X*Z)	mm	1300x600	1360x700	2000x900
	T slot size of worktable (Quantity * size * spacing)	mm	5*18*120	5*18*152.5	5*22*165
	Distance from spindle center to table surface	mm	190-940	150-1050	160-1560
	Distance from spindle end to center of worktable	mm	500-800	120-820	200-1100
	Workbench loading	kg	1200	1800	2200
Spindle	Spindle specifications		BT50	BT50	BT50
	Spindle speed	rpm	6000	6000	6000
	Spindle motor power	kw	15	18.5	18.5/22
	X,Y, Z motor connection mode		Direct-type	Direct-type	Direct-type
	X.Y.Z three-axis motor	kw	3/3/3	3/3/3	4/7/4
Accuracy	Cutting feed rate	m/min	10-15000	10-15000	10-15000
	positioning accuracy	mm	±0.005/300	±0.005/300	±0.005/300
	Repeatability	mm	0.003	0.003	0.003
Others	Weight	kg	9000	11000	15000
	Machine size (length*width*height)	mm	3400*2900*2600	3600*3300*3000	4800*3700*3300

■ **Controller optional: Mistubishi / FANUC**

■ **Standard**

1. Electrical box heat exchanger
2. Abnormal three-color warning light
3. Three-proof fluorescent lamp
4. RS-232C transmission interface
5. Spindle blowing device
6. Central automatic lubrication device
7. MITSUBISHI controller
8. Automatic power-off device
9. Rigid tapping
10. Full-face cutting protective cover
11. Toolbox and basic adjustment block
12. Mechanical and electrical operating instructions
13. Transformer (220/380v)
14. Spindle oil cooler
15. Y-axis chip removal device
16. X axis chain conveyor

■ **Optional**

1. FANUC controller
2. Right Angle Board
3. Oil path tool handle device
4. Three-axis optical ruler device
5. Water from the spindle center
6. Rotating table
7. Arm type ATC
8. Electric disk

■ Technical Information (Single worktable)

			HMC-450	HMC-500	HMC-630	HMC-800
Travel	X axis travel	mm	600	740	1050	1300
	Y axis travel	mm	550	650	900	1000
	Z axis travel	mm	540	680	750	1000
	Distance from spindle center to table surface	mm	100-640	120-800	120-870	120-1120
	Spindle end to center of worktable	mm	60-610	130-780	130-1030	200-1200
	Maximum workpiece rotation diameter	mm	Ø 700	Ø 750	Ø 1100	Ø 1600
Worktable	Worktable size	mm	450x450	500x600	630x700	800x800
	Number of worktable		1	1	1	1
	Worktable indexing	deg	1° x360	1° x360	1° x360	1° x360
	Screw hole on worktable		24xM16	24xM16	24xM16	24xM16
	Maximum loading	kg	500	600	1000	1500
Spindle	Spindle taper			BT-40	BT-50	BT-50
	Spindle speed	rpm	8000	6000	6000	6000
Rapid speed	Three axis rapid speed	M/min	36	36	36	36
	The fastest speed of the turntable	R/min	15	10	10	10
ATC	Tool magazine capacity	把	24 PCS			
	Tool selection method		随机 random			
	Maximum tool size	mm	125x350（相邻刀）			
	Tool weight	kg	7	25	25	25
	Tool change time (Tool to Tool)	sec	2.5	5.5	5.5	5.5
Others	Machine weight	kg	7000	10000	12000	18000
	Positioning accuracy	mm	0.01（全程）			
	Repeatability	mm	0.006（全程）			
	Dimensions	mm	3550x2800x2400	4550x3200x2600	5000x3600x2600	5950x4300x2950

■ Technical Information (Double worktable)

			HMC-450x2	HMC-500x2	HMC-630x2	HMC-800x2
Travel	X axis travel	mm	600	740	1050	1300
	Y axis travel	mm	550	650	900	1000
	Z axis travel	mm	540	680	750	1000
	Distance from spindle center to table surface	mm	0-640	0-680	0-750	0-1000
	Spindle end to center of worktable	mm	60-610	130-780	130-1030	200-1200
	Maximum workpiece rotation diameter	mm	Ø 700	Ø 750	Ø 820	Ø 1600
Worktable	Worktable size	mm	450x450	500x600	630x700	800x800
	Number of worktable		2	2	2	2
	Worktable indexing	deg	1° x360	1° x360	1° x360	1° x360
	Screw hole on worktable		24xM16	24xM16	24xM16	24xM16
	Maximum loading	kg	500	600	1000	1500
	Worktable exchange time	s	18	20	24	50
Spindle	Spindle taper			BT-40	BT-50	BT-50
	Spindle speed	rpm	8000	6000	6000	6000
	Spindle power	kw	15	15	26	26
Rapid speed	Three axis rapid speed	M/min	36	36	36	36
	The fastest speed of the turntable	R/min	15	10	10	10
ATC	Tool magazine capacity	把	24 PCS			
	Tool selection method		随机 random			
	Maximum tool size	mm	125x350（相邻刀）			
	Tool weight	kg	7	25	25	25
	Tool change time (Tool to Tool)	sec	5	5	5	5
Others	Machine weight	kg	7800	11000	13000	18000
	Positioning accuracy	mm	0.01（全程）			
	Repeatability	mm	0.006（全程）			
	Dimensions	mm	4000x3000x2400	5700x3400x2600	6000x3600x2600	7400x4400x2950

■ Standard

1. Transformer
2. Full cover sheet metal
3. Automatic lubrication system
4. Toolbox and tools
5. Horizontal adjustment screws and washers
6. Operation and maintenance manual
7. Mitsubishi or Fanuc controller
8. 1° split rotary table
9. Crawler type chip conveyor and chip car
10. 24 tool arm type tool magazine
11. Spindle ring cooling system
12. Spindle oil cooling system
13. Electrical box heat exchanger

■ Optional

1. 6 hydraulic power interface
2. Electric box air conditioner cooler
3. Automatic tool length measuring device
4. Automatic work measuring device
5. Oil path tool holder cooling system (not including tool holder)
6. ZF gear box
7. 0.001 or 50 split rotary table
8. 32 tool, 40 tool, 60 chain tool magazine
9. Pneumatic spindle head balance system
10. Water outlet from spindle center (20/50bar)
11. Three-axis optical ruler
12. Oil-water separator



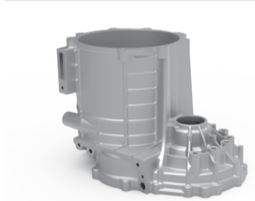
04

5-axis Machining Center

شركة شواهد المتقدمة الصناعية
Shawahed Advanced Industrial Co.

INTELLIGENT 5-AXIS MACHINE TOOL BENCHMARKING

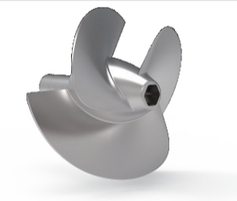
1.Universal milling/turning/planing/grinding/hobbing/metal 3D printing.
2.Machine tools are widely used in high-end manufacturing industries such as new energy vehicles, aerospace, medical equipment, and semiconductors.
3.High precision, high-speed, efficient, and stable intelligent manufacturing equipment technology machine tools



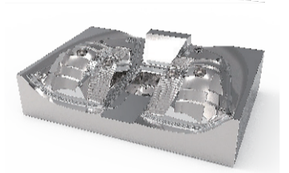
New energy



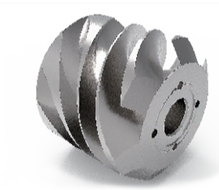
Medical equipment



Ship industry



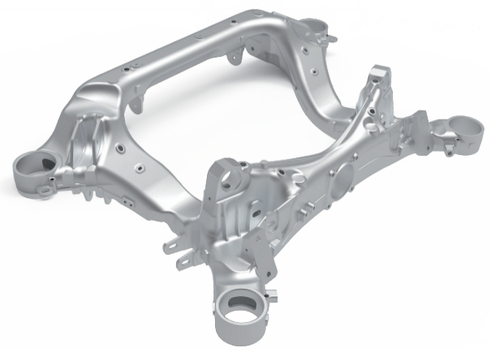
Mold industry

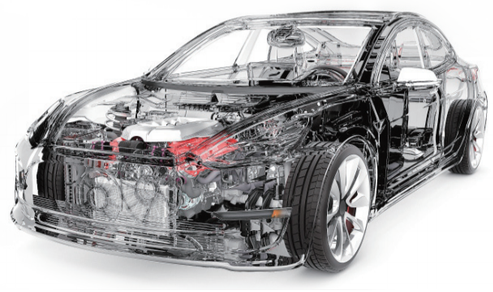


Machinery manufacturing



Aerospace

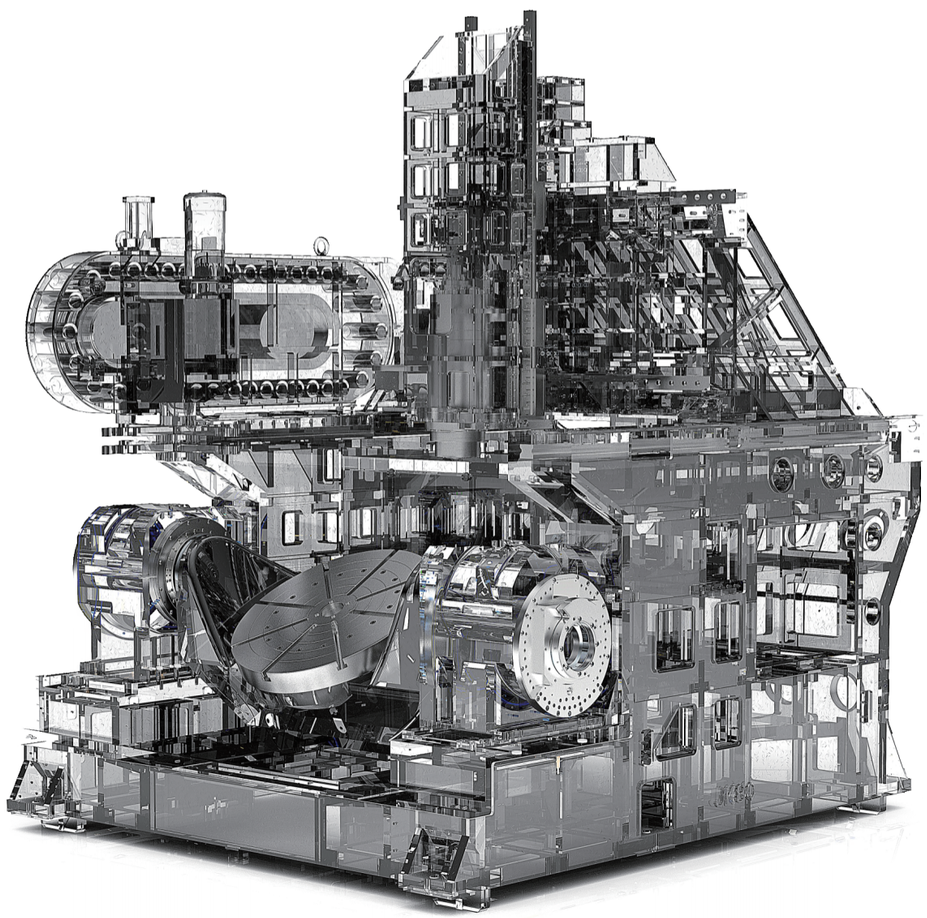




Automobile industry

EXCELLENT PROCESSING EFFECT

The integral casting bed + moving beam Y axis + high rigidity cradle constitute a new generation of high-end five-axis machine tools. The five-axis CNC machine tool achieves maximum milling efficiency, highest processing performance and extreme precision, while being extremely rigid and stable. Such powerful performance comes from its highly stable body and meticulous FEM analysis.



BRING UNPARALLELED STABILITY AND CONTINUOUS ACCURACY

The overall casting bed has unparalleled stability; the moving beam Y-axis + high-rigidity cradle makes the machine have extraordinary cutting rigidity; the weight of the moving parts of the fuselage is optimized to achieve extremely high dynamic performance.



Tk20
2.3T





Tk80
18.5T

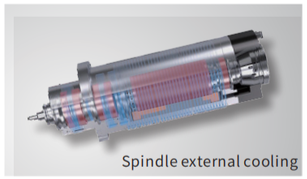


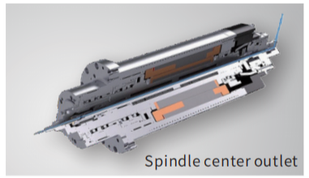
Tk10
0.9T

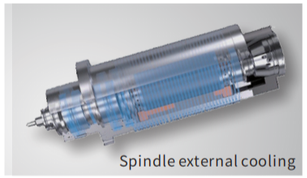
DIVERSIFIED COLLOCATION TO MEET VARIOUS NEEDS

Spindle


Spindle

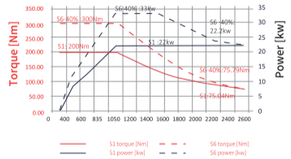

Spindle external cooling


Spindle center outlet

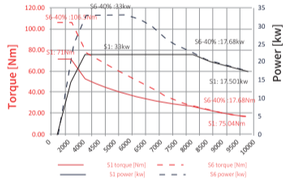

Spindle external cooling

10000 rpm HSK A100 22KW electric spindle
Rated torque 200Nm Maximum torque 300Nm

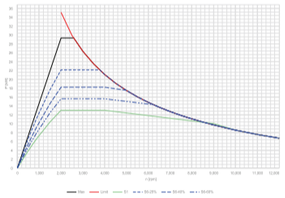
Y connection characteristic curve



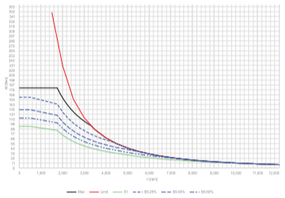
△ connection characteristic curve

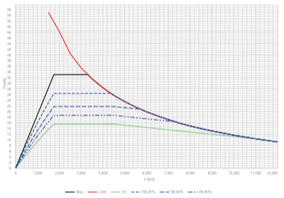


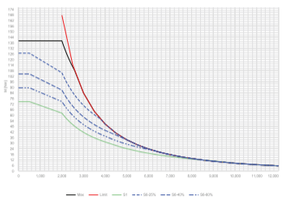
12000 rpm HSK A63 13KW mechanical spindle
Rated torque 62Nm Maximum torque 140Nm

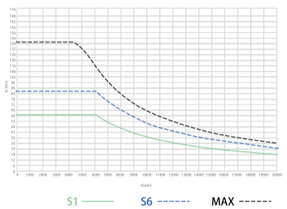


12000 rpm HSK A63 14KW mechanical spindle
Rated torque 89Nm Maximum torque 180Nm



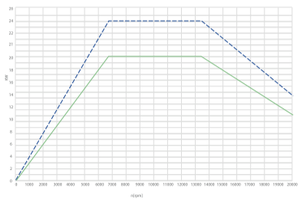




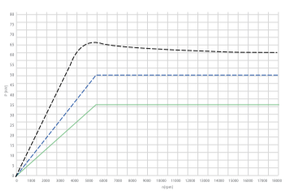


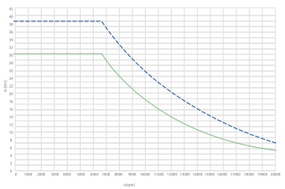
S1 S6 MAX

20000 rpm HSK A63/20KW electric spindle
Rated torque 31Nm Maximum torque 36.8Nm



20000 rpm HSK A63 22KW electric spindle
Rated torque 61.3Nm Maximum torque 73.5Nm





S1 S6 MAX S1 S6

Worktable Specifications



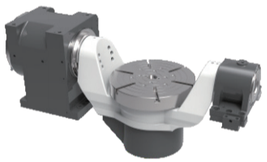
Tk10 Worktable

B-axis travel range		+20°-125°
C-axis travel range		n×360°
B-axis rapid traverse speed	(rpm/min)	50
C-axis rapid traverse speed	(rpm/min)	100
Worktable size	mm	Φ100
Max Workpiece Size	mm	Φ100*100
Max Workpiece Weight	kg	10
Optional turning C-axis maximum speed	(rpm/min)	2000



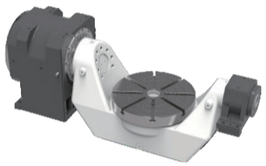
Tk20 Worktable

A-axis travel range		±125°
C-axis travel range		n×360°
A-axis rapid traverse speed	(rpm/min)	50
C-axis rapid traverse speed	(rpm/min)	100
Worktable size	mm	Φ200
Max Workpiece Size	mm	Φ200*200
Max Workpiece Weight	kg	30
Optional turning C-axis maximum speed	(rpm/min)	2000



Tk35 Worktable

A-axis travel range		±120°
C-axis travel range		n×360°
A-axis rapid traverse speed	(rpm/min)	50
C-axis rapid traverse speed	(rpm/min)	100
Worktable size	mm	350
Max Workpiece Size	mm	Φ350*250
Max Workpiece Weight	kg	100
Optional turning C-axis maximum speed	(rpm/min)	1600



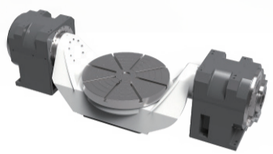
Tk50 Worktable

A-axis travel range		±120°
C-axis travel range		n×360°
A-axis rapid traverse speed	(rpm/min)	30
C-axis rapid traverse speed	(rpm/min)	80
Worktable size	mm	Φ500
Max Workpiece Size	mm	Φ520*410
Max Workpiece Weight	kg	400
Optional turning C-axis maximum speed	(rpm/min)	1200



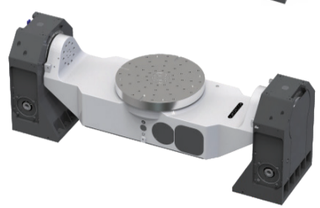
Tk65 Worktable

A-axis travel range		±120°
C-axis travel range		n×360°
A-axis rapid traverse speed	(rpm/min)	30
C-axis rapid traverse speed	(rpm/min)	100
Worktable size	mm	Φ500
Max Workpiece Size	mm	Φ650*410
Max Workpiece Weight	kg	500
Optional turning C-axis maximum speed	(rpm/min)	1200



Tk80 Worktable

A-axis travel range		±120°
C-axis travel range		n×360°
A-axis rapid traverse speed	(rpm/min)	30
C-axis rapid traverse speed	(rpm/min)	50
Worktable size	mm	Φ700
Max Workpiece Size	mm	Φ800*500
Max Workpiece Weight	kg	500
Optional turning C-axis maximum speed	(rpm/min)	600



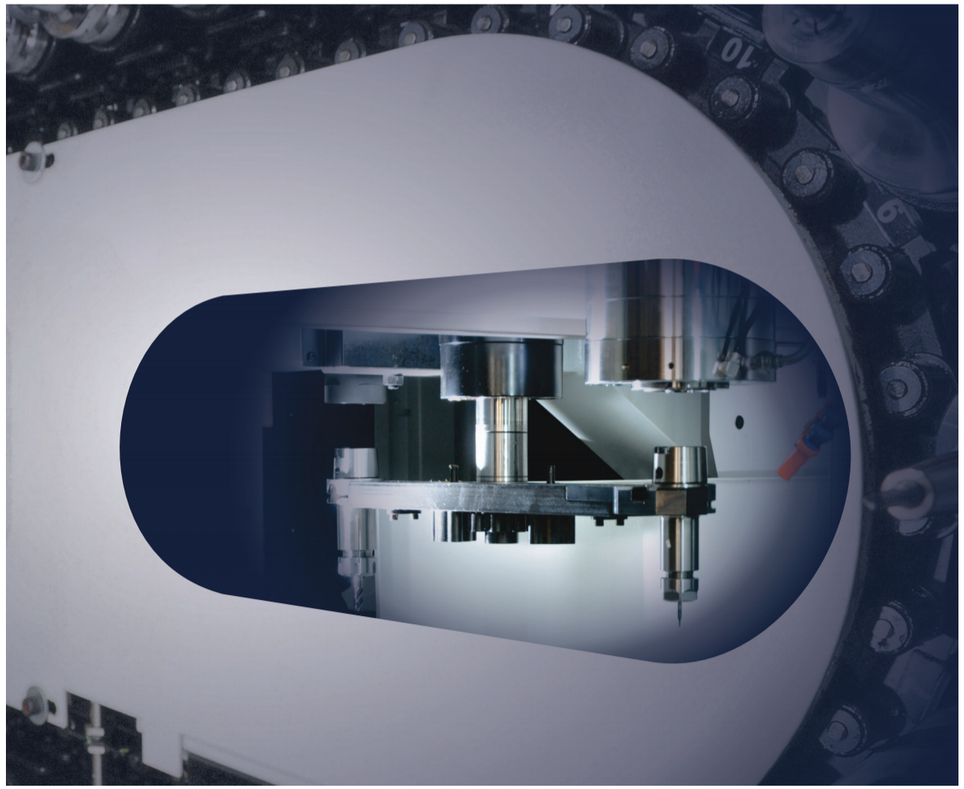
TKG1600 Worktable

A-axis travel range		-140°~+20°
C-axis travel range		360°
A-axis rapid traverse speed	(rpm/min)	20
C-axis rapid traverse speed	(rpm/min)	20
Worktable size	mm	Φ800
Max turning diameter	mm	Φ1600
Max Workpiece Weight	kg	1000

EFFECTIVELY MEET COMPLEX PROCESSING REQUIREMENTS

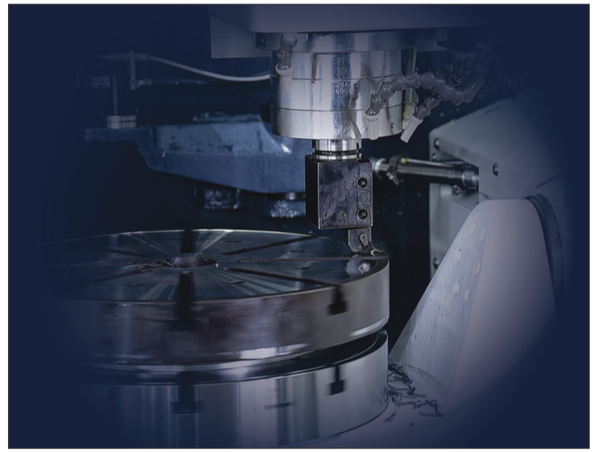
Up to 100 large-scale chain tool magazines, flexible tool management, and a spare tool function, effectively shorten downtime, increase production capacity, and the fastest tool change time is 0.6 seconds, which is extremely fast.

- The one-shaped tool magazine door is simple and practical, and the cutting area and the tool magazine are strictly isolated



MILLING/TURNING COMPOUND PROCESSING TECHNOLOGY REALISE COMPLETE PROCESSING

Perform complete machining on a single machine tool,including milling and turning complete and turning,with only set up required equipped with direct drive technology, and a maximum speed of 40,000/min. The processing speed is fast and the logistics cost is low, which is due to the lack of auxiliary time and additional operations, resulting in low single piece production costs and high processing accuracy.





3D PRINTING FOR ADDING AND REDUCING MATERIALS

3D

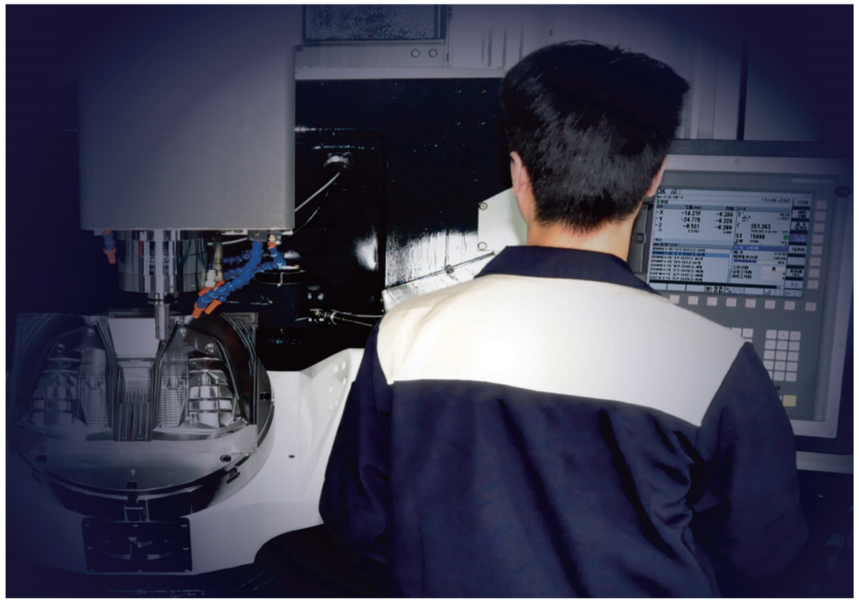


THE BIRTH OF A CONTROL PLATFORM WITH PERFECT COMBINATION OF HUMAN AND MACHINE

Humanized control platform design, with good spindle accessibility, reduces the burden on operators and improves work efficiency. The spacious processing area and excellent visibility of the tool tip allow for easy processing of large workpieces.



Door width 1200mm//Wide operating space for easy lifting



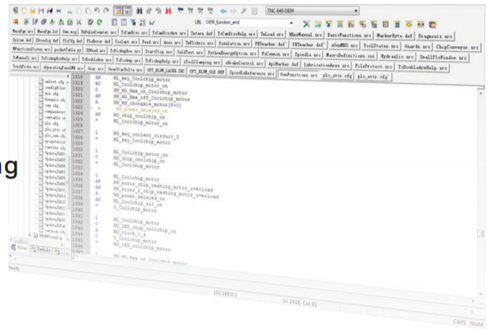
SELF-CREATED COMPOSITE SPINDLE WITH HIGH EFFICIENCY AND EASY OPERATION

Spindle patented technology

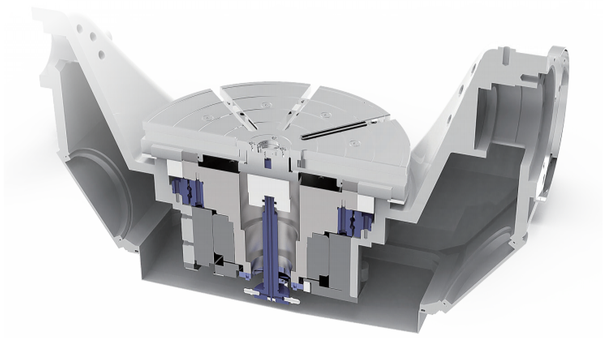


CNC INTELLIGENT DEVELOPMENT TECHNOLOGY

Years of industry five-axis application technology precipitation has independent control of mechatronics, making machine tools more stable and developing industry-leading functions



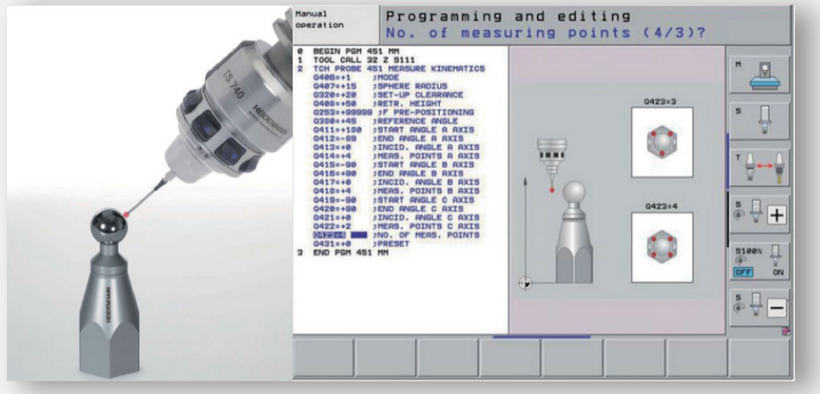
CORE FUNCTIONAL COMPONENTS



EASY OPERATION SEAMLESS CONNECTION

German HEIDENHAIN TNC640 manipulator, Siemens SIEMENS 840D/ONE manipulator, high-end CNC system ensure safe processing and higher precision, make production more optimized, and handle production tasks systematically.

Widely used in high-end fields

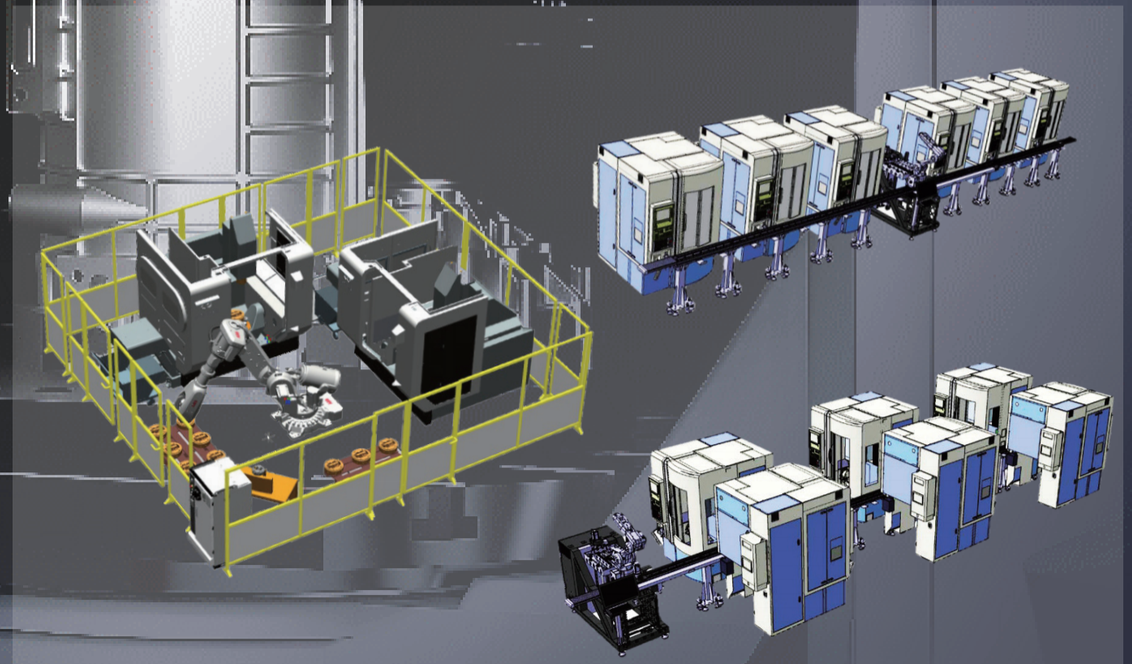


Easily align rotary axes for optimum accuracy



CUSTOMIZED AUTOMATION SOLUTIONS

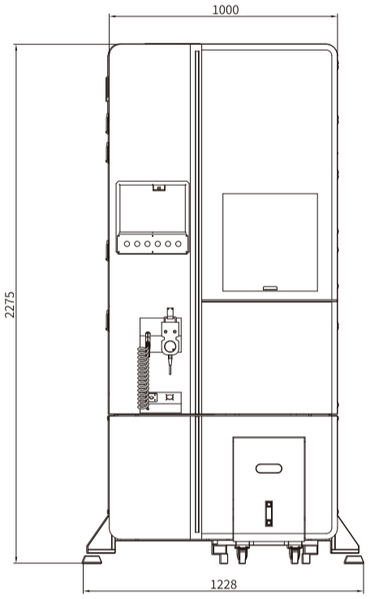
Machine tool automation processing belongs to the "metal processing" industry. Its customized automation solutions for various enterprises are based on the combination of high-end CNC milling machines and CNC milling cars, integrating elements such as robots, automation systems, high-precision positioning systems, and incorporating flexible and intelligent design concepts to develop automated workstations and production lines suitable for various specifications of products. This is a modern high-tech product in the metal processing industry that is transitioning towards automation and intelligence. This technology is widely used in the automotive industry and has assisted more production enterprises in upgrading to intelligent manufacturing.

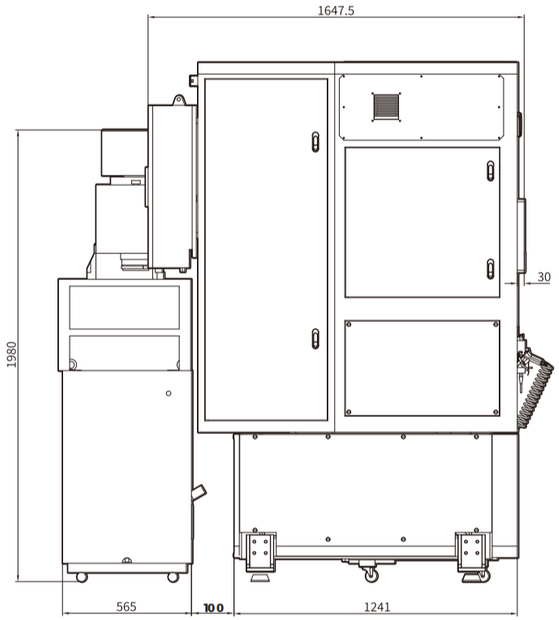


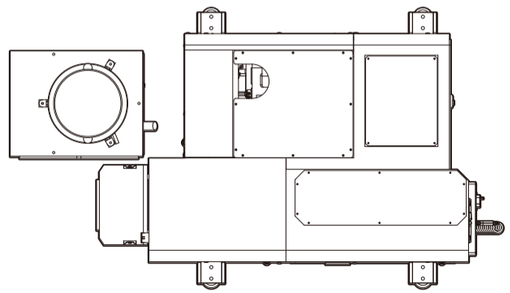
Shawahed Advanced Industrial CO.

TK10-5AXIS

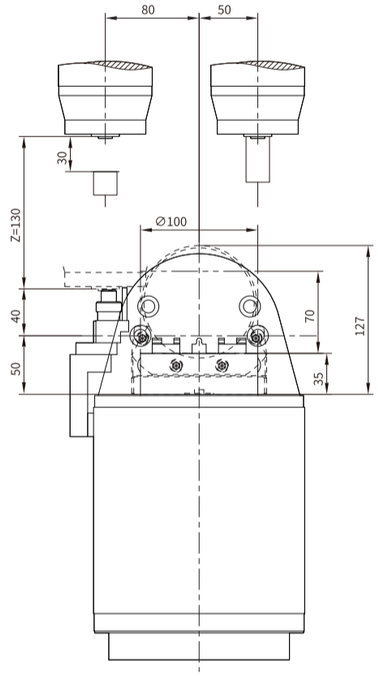
Outline Dimensional Drawing

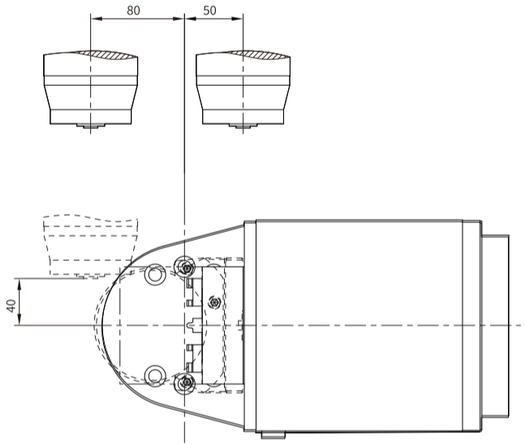


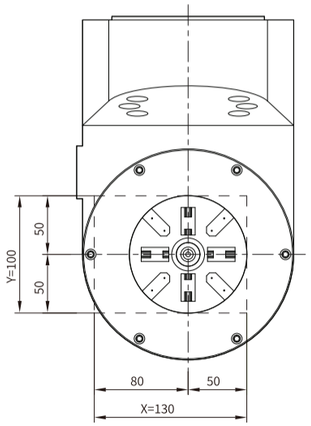


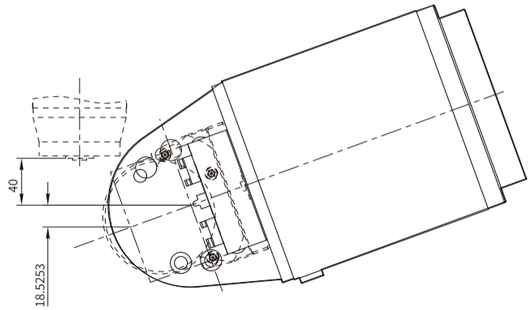


Application Space



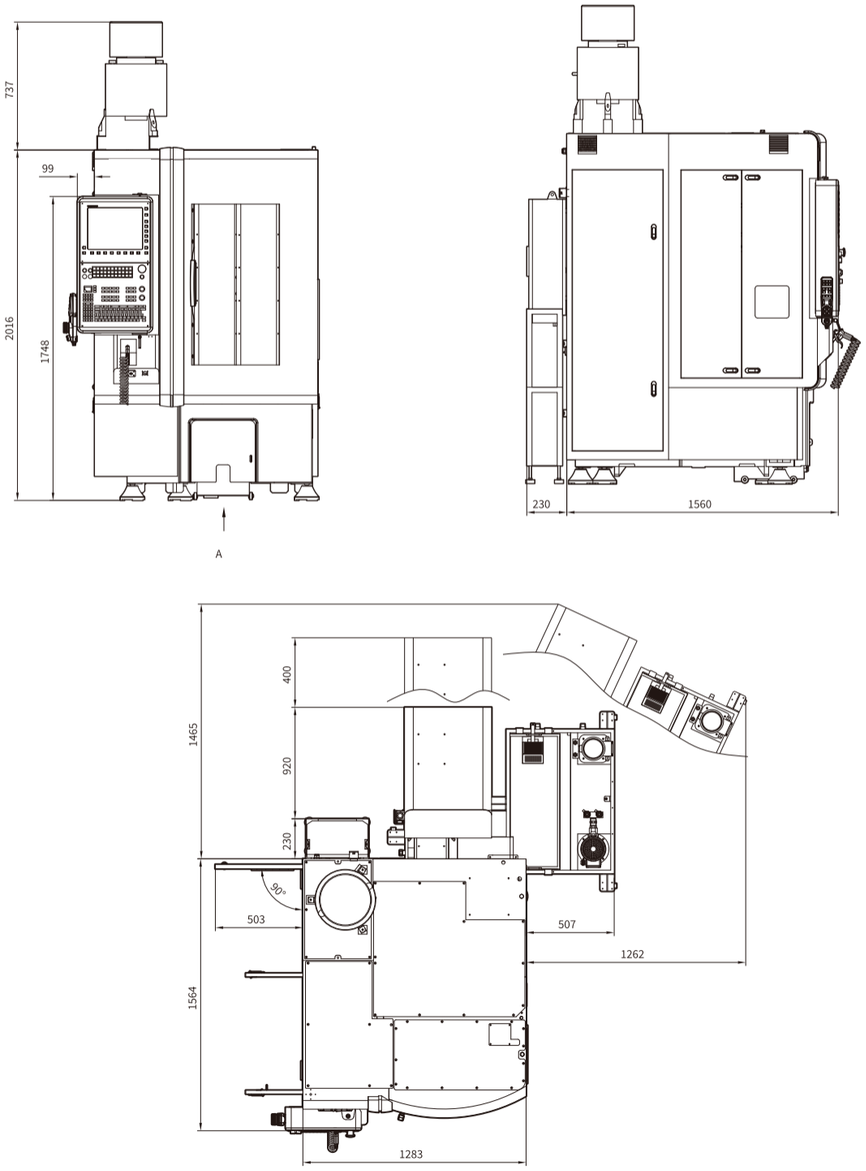




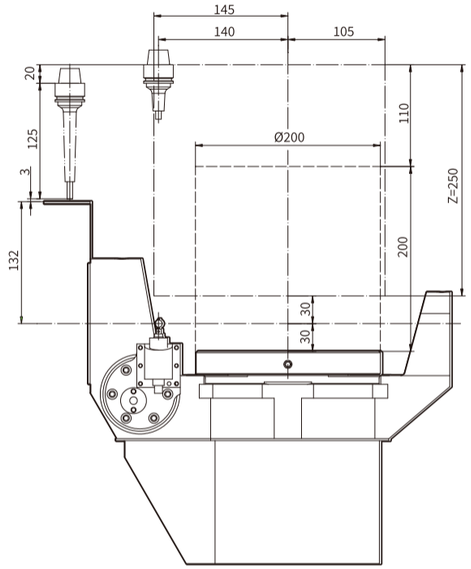


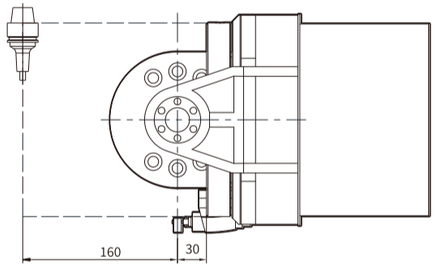
TK20-5AXIS

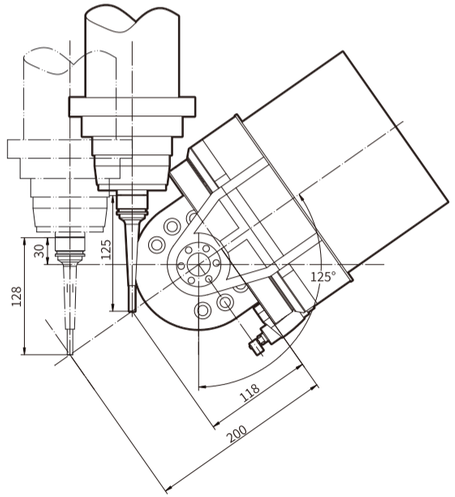
Outline Dimensional Drawing

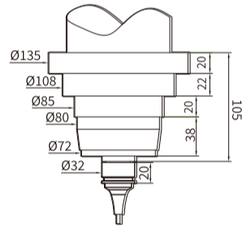


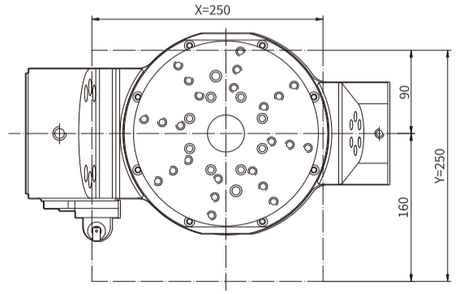
Application Space





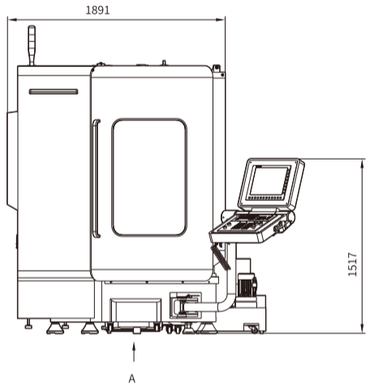


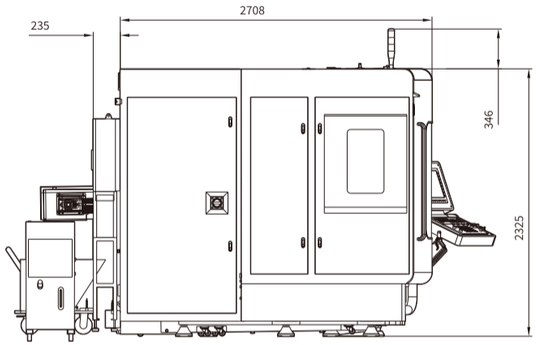


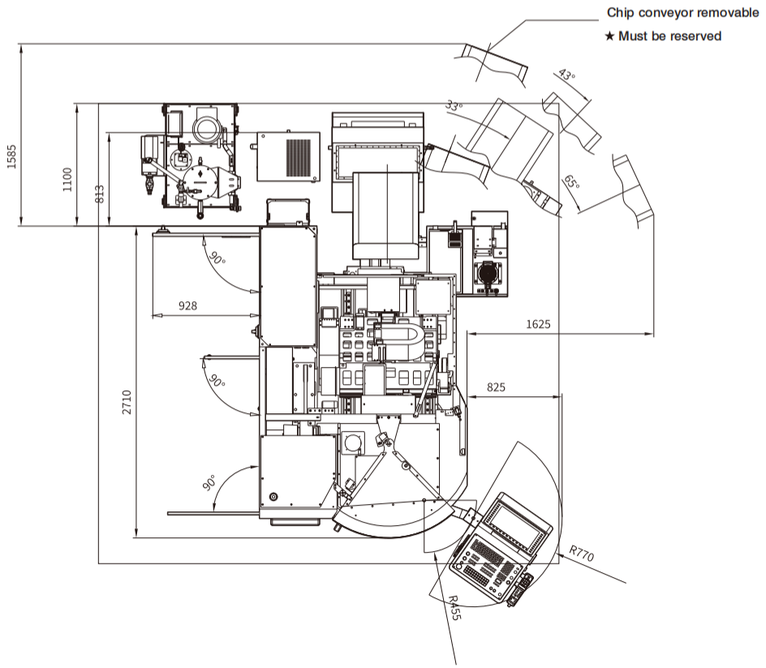


TK35-5AXIS

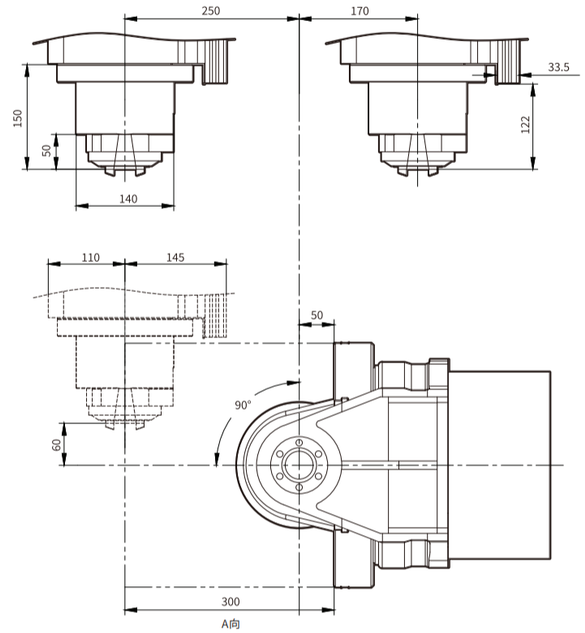
Outline Dimensional Drawing

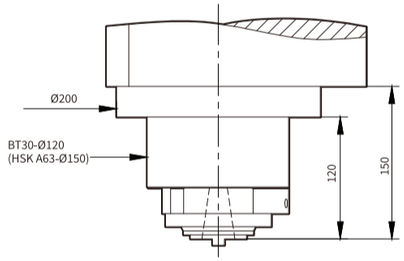


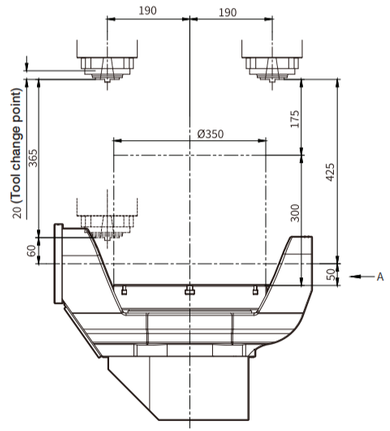


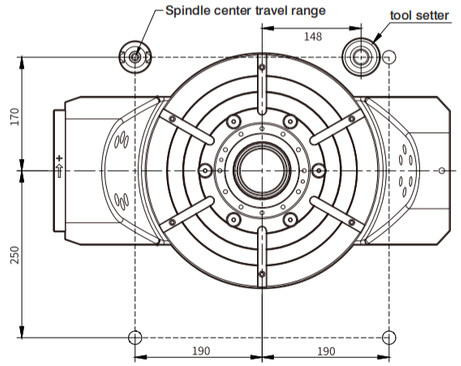


Application Space



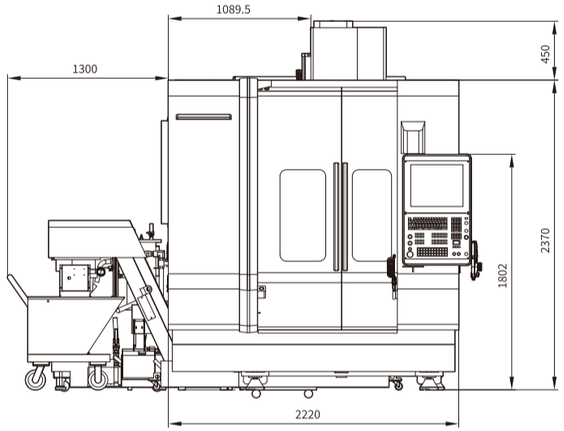


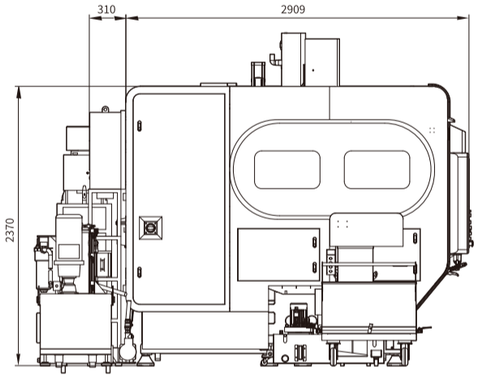


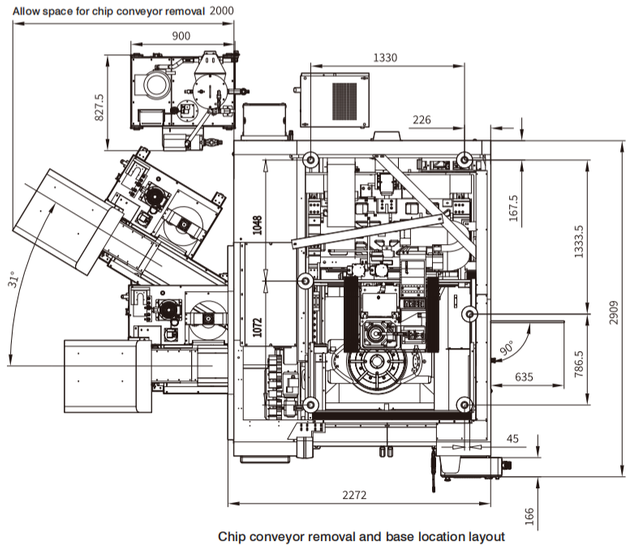


TK50-5AXIS

Outline Dimensional Drawing



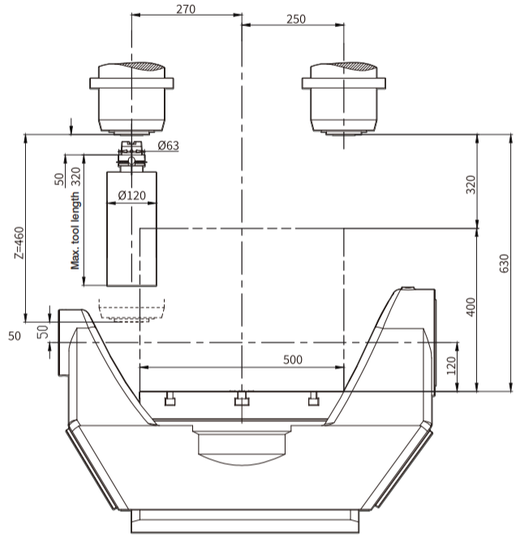


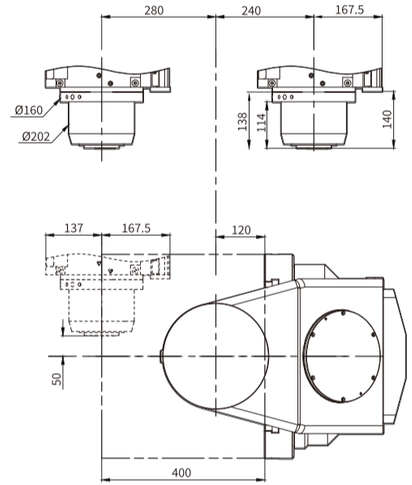


Chip conveyor removal and base location layout

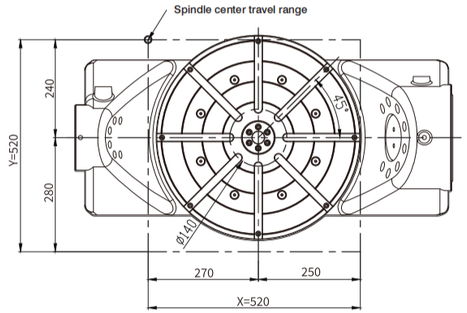
For optional rear chip removal, please consult for drawings

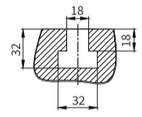
Application Space





A-90°

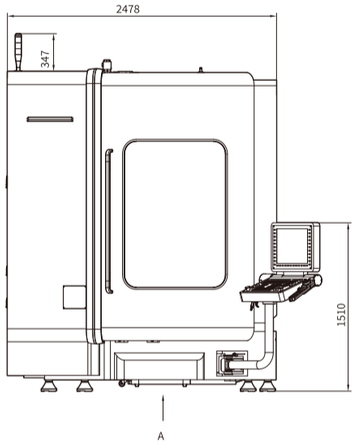


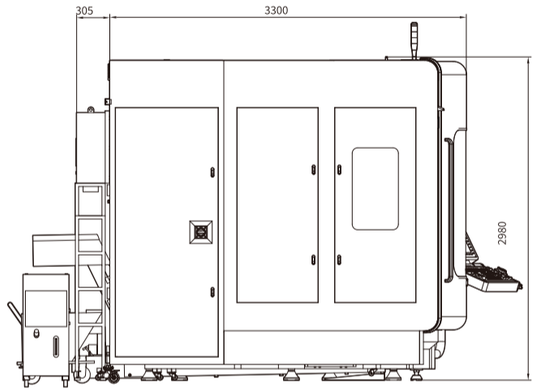


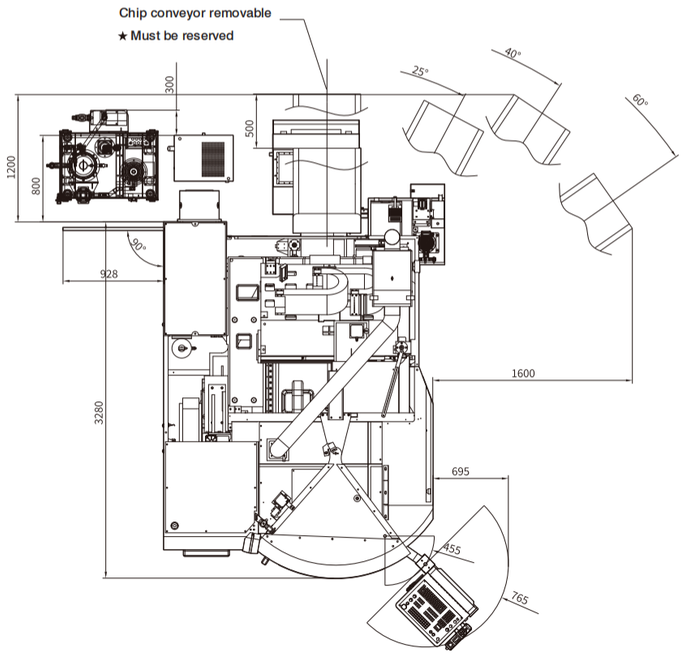
T-slot

TK65-5AXIS

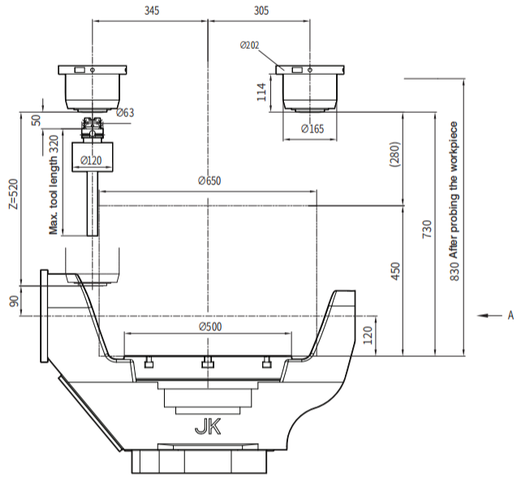
Outline Dimensional Drawing

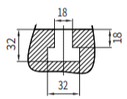


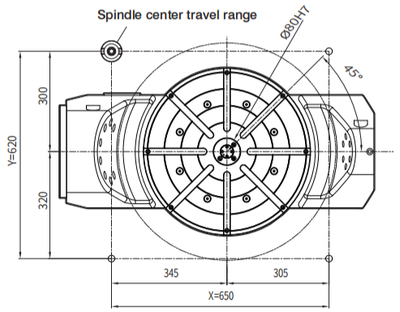


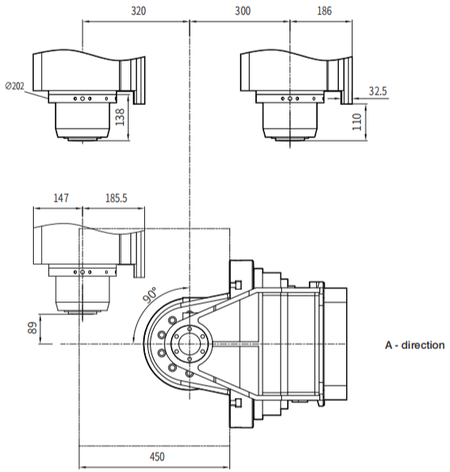


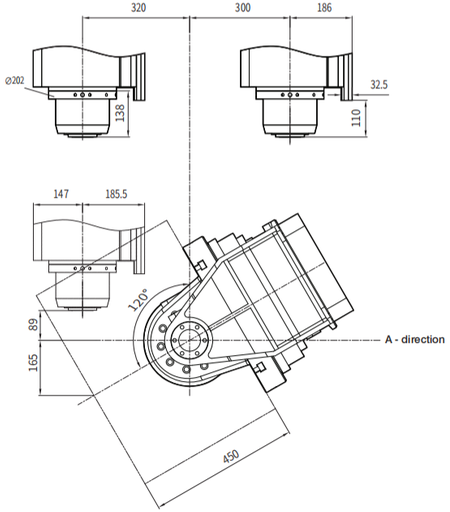
Application Space





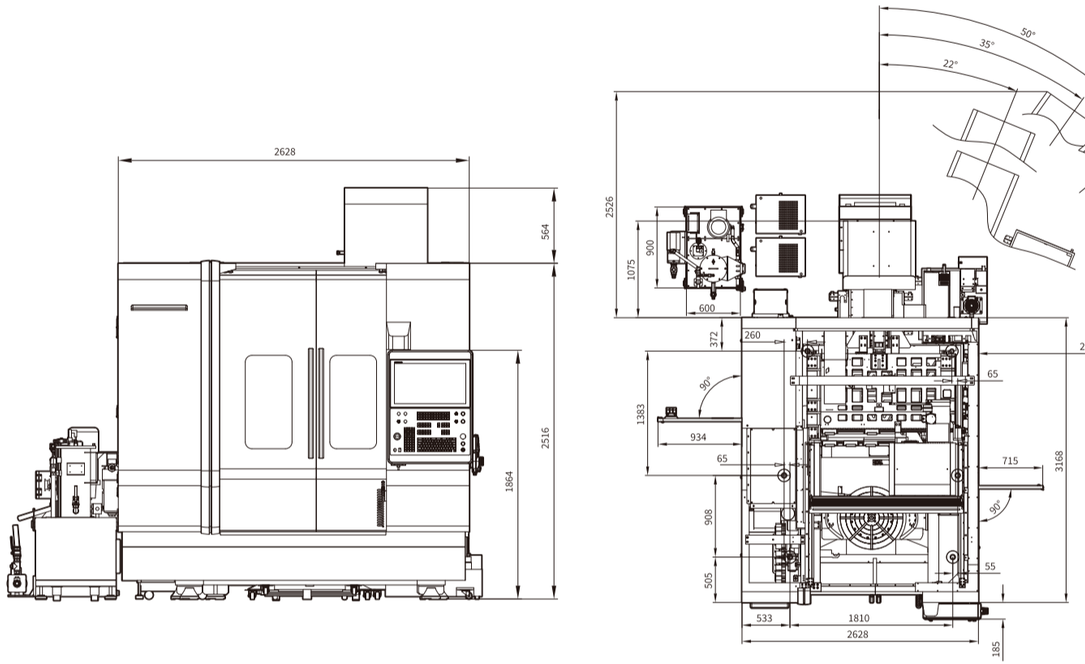


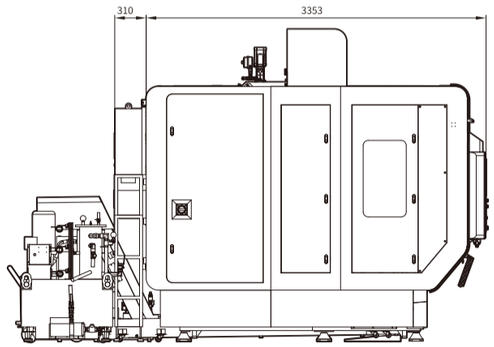




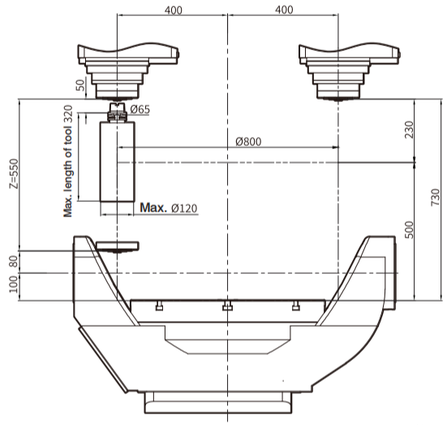
TK80-5AXIS

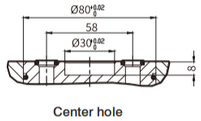
Outline Dimensional Drawing



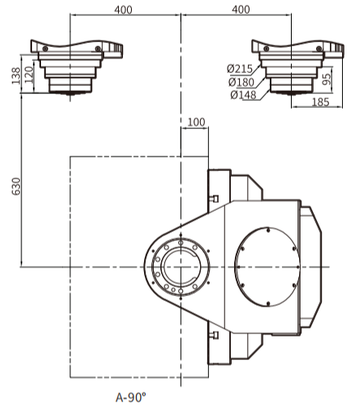


Application Space

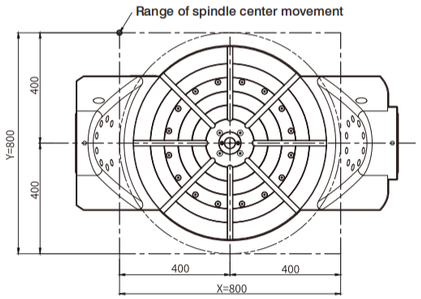


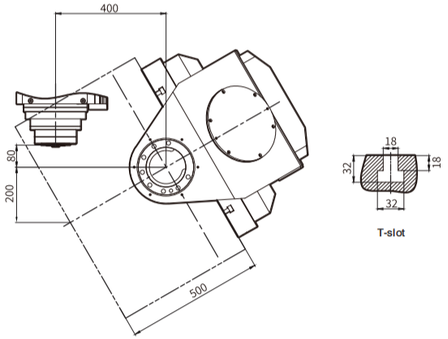


Center hole



A-90°





T-slot

A - direction (-120°)

TK10 TECHNICAL

Parameters

1、Rinear Axis Parameters		
1	X/Y/Z -axis travel range (mm)	130/100/130
2	X/Y/Z Positioning precision seat (mm)	0.008
3	X/Y/Z Repeat positioning accuracy (mm)	0.005
4	X/Y/Z -axis rapid traverse speed (m/min)	15
5	X/Y/Z -axis max cutting speed (m/min)	10
2、Rotary Axis Parameters		
1	B-axis travel range	+ 20°-125°
2	C-axis travel range	n×360°
3	B/C positioning accuracy	8″
4	B/C repeated positioning accuracy	5″
5	B-axis rapid traverse speed (rpm/min)	50
6	C-axis rapid traverse speed (rpm/min)	100
3、Machine Parameters		
1	Machine tool height (mm)	2000
2	Footprint (mm)	1000*1200
3	Machine net (T)	0.9T
4、Worktable Parameters		
1	Worktable size (mm)	Φ100
2	Max workpiece size (mm)	Φ100*100
3	Max workpiece weight (kg)	10
4	Spindle end face to table distance (mm)	90-220
5、Tool Magazine Parameters		
1	Tool magazine capacity (piece)	20
2	T-T tool change time (s)	3
3	Max Tool length(mm)	60
4	Max Tool diameter(mm)	φ20
5	Max Tool weight (kg)	0.5
6、Basic Configuration		
1	5-axis 5-linkage, tool tip follow	√
2	Tool setting instrument	Contact Tool Setter
3	X/Y/Z axis grating ruler	×
4	B/C axis grating ruler	√
5	B/C cradle turntable drive mode	DDMotor Direct Drive
6	B/C axis brake system	Circle around
7	Spindle	40000 rpm HSK E25 electric spindle
8	Spindle Cooling System	√
9	Spindle air curtain dustproof system	√
10	Tool magazine	Umbrella tool magazine
11	Fully enclosed cutting room	√
12	Metal Recovery System	√
13	Cutting Cooling System	√
14	Processing blowing device	√
15	Automatic lubrication system	√
16	working lamp	√
17	Electrical box heat exchanger	√
18	Heavy duty base	√
7、System		
1	JK220	√

Optional

1. 3D probe
2. Self-calibration and matching of five-axis rotary center
3. 60,000 rpm T11 spindle
4. Three-axis 0.01μ resolution grating ruler (repeated positioning accuracy 0.002, positioning accuracy 0.003)
5. Zero point fixture
6. Pneumatic/hydraulic pressure enters the workbench to realize automatic clamping
7. Φ25 hollow back pull fixture
8. Turning function and turning tools
9. Five-axis linkage surface curve scraping function
10. Five-axis linkage curved surface T slightly shallow shading function
11. Six-axis linkage cross-stitching function
12. Five-axis linkage automatic polishing function (automatic waxing of polishing wheel)
13. Various software applications and training
14. Safety door lock function
15. Refrigerated air compressor and coarse and fine filter
16. Compressed air moisture detection device
17. Automatic chip removal function
18. Customized solutions

TK20 TECHNICAL

Parameters

1、Linear Axis Parameters		
1	X/Y/Z -axis travel range (mm)	250/250/250
2	X/Y/Z Positioning precision seat (mm)	0.008
3	X/Y/Z Repeat positioning accuracy (mm)	0.005
4	X/Y/Z -axis rapid traverse speed (m/min)	15
5	X/Y/Z -axis max cutting speed (m/min)	10
2、Rotary Axis Parameters		
1	A -axis travel range	±125°
2	C -axis travel range	n×360°
3	A/C positioning accuracy	8″
4	A/C repeated positioning accuracy	5″
5	A -axis rapid traverse speed (rpm/min)	50
6	C -axis rapid traverse speed (rpm/min)	100
3、Machine Parameters		
1	Machine tool height (mm)	2010
2	Footprint (mm)	1750*1290
3	Machine net (T)	2.3
4、Worktable Parameters		
1	Worktable size (mm)	φ200
2	Max workpiece size (mm)	Φ200*200
3	Max workpiece weight (kg)	30
4	Spindle end face to table distance (mm)	60-310
5、Tool Magazine Parameters		
1	Tool magazine capacity (piece)	16
2	T-T tool change time (s)	3
3	Max Tool length(mm)	125
4	Max Tool diameter(mm)	40
5	Max Tool weight (kg)	1
6、Basic Configuration		
1	5-axis five-linkage, tool tip follow	√
2	3D probe	√
3	Tool setting instrument	Contact Tool Setter
4	A/C axis grating ruler	√
5	Five-axis rotary center standard matching	√
6	A/C cradle turntable drive mode	DDMotor Direct Drive
7	A/C axis brake system	Circle around
8	Spindle	30000 rpm HSK E40 electric spindle
9	Spindle Cooling System	√
10	Spindle air curtain dustproof system	√
11	Tool magazine	Umbrella tool magazine
12	Fully enclosed cutting room	√
13	Cutting Cooling System	√
14	Processing blowing device	√
15	automatic lubrication system	√
16	working lamp	√
17	Electrical box air conditioner	√
7、System		
1	HEIDENHAIN TNC640 controller	√
2	Siemens 840D	
3	JK220	

Optional

1. Turning function
①The maximum speed of C-axis is 2000/min
③Professional handle for turning/scraping
④Contact tool setting instrument with tool length and tool diameter
2. Laser tool setting instrument
3. Five-axis machine tool anti-collision
4. Oil mist absorption and oil mist recovery
5. Spindle center water outlet function
6. The C-axis rotary joint is convenient for gas/liquid to enter the workbench for automatic clamping
7. Compressed air moisture detection device
8. X/Y/Z axis grating ruler repeat positioning accuracy 0.003, positioning accuracy 0.004
9. Customized plan

TK35 TECHNICAL

Parameters

1、Linear Axis Parameters		
1	X/Y/Z -axis travel range (mm)	380/420/365
2	X/Y/Z Positioning precision seat (mm)	0.004
3	X/Y/Z Repeat positioning accuracy (mm)	0.003
4	X/Y/Z -axis rapid traverse speed (m/min)	30
5	X/Y/Z -axis max cutting speed (m/min)	15
2 Rotary Axis Parameters		
1	A-axis travel range	±120°
2	C-axis travel range	n×360°
3	A/C positioning accuracy	8″
4	A/C repeated positioning accuracy	5″
5	A-axis rapid traverse speed (rpm/min)	50
6	C-axis rapid traverse speed (rpm/min)	100
3、Machine Parameters		
1	Machine tool height (mm)	2300
2	Footprint (mm)	1800*3200
3	Machine net (T)	6
4、Worktable Parameters		
1	Worktable size (mm)	ϕ350
2	T-slot	6-M10
3	Max workpiece size (mm)	ϕ350×250
4	Max workpiece weight (kg)	100
5	Spindle end face to table distance (mm)	110-475
5、Tool Magazine Parameters		
1	Tool magazine capacity (pcs)	24
2	T-T tool change time (s)	3
3	Max length of tool (mm)	200
4	Max diameter of adjacent positions without tools (mm	ϕ110
5	Max diameter of adjacent cutting tools (mm)	ϕ65
6	Max weight of cutting tool (kg)	6
6、Basic Configuration		
1	5-axis five-linkage, tool tip follow	√
2	3D probe	√
3	Tool setting instrument	Contact Tool Setter
4	X/Y/Z axis grating ruler	√
5	A/C axis grating ruler	√
6	Five-axis rotary center standard matching	√
7	A/C cradle turntable drive mode	DDMotor Direct Drive
8	A/C axis brake system	Circle around
9	Spindle	20000 rpm HSK A63 electric spindle
10	Spindle Cooling System	√
11	Spindle air curtain dustproof system	√
12	Tool magazine	Robotic tool changer
13	Chip removal system	√
14	Debris car	√
15	Cutting Cooling System	√
16	Oil mist mixing processing air blowing device	√
17	automatic lubrication system	√
18	working lamp	√
19	Electrical box air conditioner	√
7、System		
1	HEIDENHAIN TNC640 controller	√
2	Siemens 840D	
3	Jk220	
4	Siemens 828D (five-axis four linkage)	

Optional

1. Turning function
① The maximum speed of the C-axis is 1600 (r/min)
②HSK A63 special tool holder for turning and scraping
③Contact tool setting instrument with tool length and tool diameter
2. Laser tool setting instrument
3. Grinding function
①Sand repairing roller
②Sand dressing roller spindle
③Automatic sand repair: (1) outer circle repair (2) end face repair (3) programmable special-shaped grinding wheel
④ Automatic compensation
⑤Grinding plane, outer circle, end face of inner hole, curved surface, curve, special-shaped grinding
4. Oil mist absorption and oil mist recovery
6. HSK E40 or BT30 40-bit chain tool magazine
6. A-axis gear heavy-duty transmission
7. Spindle center water outlet function
8. The C-axis rotary joint is convenient for gas/liquid to enter the workbench for automatic clamping
9. Safety door lock function
10. Refrigerated air compressor and coarse and fine filter
11. Compressed air moisture detection device
12. Customized plan

TK50 TECHNICAL

Parameters

1、Linear Axis Parameters		
1	X/Y/Z -axis travel range (mm)	520/520/460
2	X/Y/Z Positioning precision seat (mm)	0.004
3	X/Y/Z Repeat positioning accuracy (mm)	0.003
4	X/Y/Z -axis rapid traverse speed (m/min)	30
5	X/Y/Z -axis max cutting speed (m/min)	15
2 Rotary Axis Parameters		
1	A-axis travel range	±120°
2	C-axis travel range	n×360°
3	A/C positioning accuracy	8″
4	A/C repeated positioning accuracy	5″
5	A-axis rapid traverse speed (rpm/min)	30
6	C-axis rapid traverse speed (rpm/min)	80
3、Machine Parameters		
1	Machine tool height (mm)	2800
2	Footprint (mm)	3600*3220
3	Machine net (T)	10
4、Worktable Parameters		
1	Worktable size (mm)	Φ500
2	T-slot	8-M16
3	Max workpiece size (mm)	Φ520*410
4	Max workpiece weight (kg)	400
5	Spindle end face to table distance (mm)	170-630
5、Tool Magazine Parameters		
1	Tool magazine capacity (pcs)	24
2	T-T tool change time (s)	3
3	Max length of tool (mm)	320
4	Max diameter of adjacent positions without tools (mm)	Φ140
5	Max diameter of adjacent cutting tools (mm)	ϕ80
6	Max weight of cutting tool (kg)	6
6、Basic Configuration		
1	5-axis five-linkage, tool tip follow	√
2	3D probe	√
3	Tool setting instrument	Contact Tool Setter
4	X/Y/Z axis grating ruler	√
5	A/C axis grating ruler	√
6	Five-axis rotary center standard matching	√
7	A/C cradle turntable drive mode	DDMotor Direct Drive
8	A/C axis brake system	Circle around
9	Spindle	20000 rpm HSK A63 electric spindle
10	Spindle Cooling System	√
11	Spindle air curtain dustproof system	√
12	Tool magazine	Robotic tool changer
13	Chip removal system	√
14	Debris car	√
15	Cutting Cooling System	√
16	Processing blowing device	√
17	automatic lubrication system	√
18	working lamp	√
19	Electrical box air conditioner	√
7、System		
1	HEIDENHAIN TNC640 controller	√
2	Menzi 840D	
3	JK220	
4	Siemens 828D (five-axis four linkage)	

Optional

1. Turning function
①The maximum speed of C-axis is 1200/min
②Hydraulic locking of main shaft gear
③HSKT63 spindle taper hole, 12000 or 15000 milling and turning compound mechanical direct-coupled spindle
④Contact tool setting instrument with tool length and tool diameter
2. Laser tool setting instrument
3. Grinding function
①Sand repairing roller
②Sand dressing roller spindle
③Automatic sand repair: (1) outer circle repair, (2) end face repair, (3) programmable special-shaped grinding wheel
④ Automatic compensation
⑤Grinding plane, outer circle, end face of inner hole, curved surface, curve, special-shaped grinding
4. Oil mist absorption and oil mist recovery
5. 40-bit chain tool magazine
6. A-axis gear heavy-duty transmission
7. Spindle center water outlet function
8. The C-axis rotary joint is convenient for gas/liquid to enter the workbench for automatic clamping
9. Automatic door or safety door lock function
10. Refrigerated air compressor and coarse and fine filter
11. Compressed air moisture detection device
12. Customized plan

TK65 TECHNICAL

Parameters

1、Linear Axis Parameters		
1	X/Y/Z -axis travel range (mm)	650/620/520
2	X/Y/Z Positioning precision seat (mm)	0.005
3	X/Y/Z Repeat positioning accuracy (mm)	0.004
4	X/Y/Z -axis rapid traverse speed (m/min)	30
5	X/Y/Z -axis max cutting speed (m/min)	15
2 Rotary Axis Parameters		
1	A-axis travel range	±120°
2	C-axis travel range	n×360°
3	A/C positioning accuracy	8"
4	A/C repeated positioning accuracy	5"
5	A-axis rapid traverse speed (rpm/min)	30
6	C-axis rapid traverse speed (rpm/min)	100
3、Machine Parameters		
1	Machine tool height (mm)	3300
2	Footprint (mm)	2480*4390
3	Machine net (T)	11
4、Worktable Parameters		
1	Worktable size (mm)	Φ500
2	T-slot	8-M16
3	Max workpiece size (mm)	Φ650*410
4	Max workpiece weight (kg)	500
5	Spindle end face to table distance (mm)	170-690
5、Tool Magazine Parameters		
1	Tool magazine capacity (pcs)	24
2	T-T tool change time (s)	3
3	Max length of tool (mm)	320
4	Max diameter of adjacent positions without tools (mm)	Φ140
5	Max diameter of adjacent cutting tools (mm)	Φ80
6	Max weight of cutting tool (kg)	6
6、Basic Configuration		
1	5-axis five-linkage, tool tip follow	√
2	3D probe	√
3	Tool setting instrument	Contact Tool Setter
4	X/Y/Z axis grating ruler	√
5	A/C axis grating ruler	√
6	Five-axis rotary center standard matching	√
7	A/C cradle turntable drive mode	DDMotor Direct Drive
8	A/C axis brake system	Circle around
9	Spindle	20000 rpm HSK A63 electric spindle
10	Spindle Cooling System	√
11	Spindle air curtain dustproof system	√
12	Tool magazine	Robotic tool changer
13	Chip removal system	√
14	Debris car	√
15	Cutting Cooling System	√
16	Processing blowing device	√
17	automatic lubrication system	√
18	working lamp	√
19	Electrical box air conditioner	√
7、System		
1	HEIDENHAIN TNC640 controller	√
2	Menzi 840D	
3	JK220	
4	Siemens 828D (five-axis four linkage)	

Optional

1. Turning function
① The maximum speed of the C-axis is 1200, and the rated speed is 600
②Hydraulic locking of main shaft gear
③HSKT63 spindle taper hole, 15000 rpm or 12000 rpm direct-coupled mechanical spindle
④Contact tool setting instrument with tool length and tool diameter
2. Laser tool setting instrument
3. Grinding function
① Automatic sand repair, automatic radius compensation
② Grinding code designation soft function
③Grinding internal and external circles, sections, arbitrary curved surfaces, curves, vertical and horizontal oblique grinding
4. Oil mist absorption and oil mist recovery
5. 40-bit chain tool magazine
6. A-axis gear transmission (15r/min)
7. Spindle center water outlet function
8. Safety door lock
9. The C-axis rotary joint is convenient for gas/liquid to enter the workbench for automatic clamping
10. Refrigerated air compressor and coarse and fine filter
11. Compressed air moisture detection device
12. Customized plan

TK80 TECHNICAL

Parameters

1、Linear Axis Parameters		
1	X/Y/Z -axis travel range (mm)	800/800/550
2	X/Y/Z Positioning precision seat (mm)	0.005
3	X/Y/Z Repeat positioning accuracy (mm)	0.004
4	X/Y/Z -axis rapid traverse speed (m/min)	30
5	X/Y/Z -axis max cutting speed (m/min)	15
2 Rotary Axis Parameters		
1	A -axis travel range	±120°
2	C -axis travel range	n×360°
3	A/C positioning accuracy	8"
4	A/C repeated positioning accuracy	5"
5	A -axis rapid traverse speed (rpm/min)	30
6	C -axis rapid traverse speed (rpm/min)	50
3、Machine Parameters		
1	Machine tool height (mm)	3060
2	Footprint (mm)	4530*2630
3	Machine net (T)	18.5
4、Worktable Parameters		
1	Worktable size (mm)	Φ700
2	T-slot	8-M18
3	Max workpiece size (mm)	Φ800*500
4	Max workpiece weight (kg)	500
5	Spindle end face to table distance (mm)	180-730
5、Tool Magazine Parameters		
1	Tool magazine capacity (pcs)	24
2	T-T tool change time (s)	3
3	Max length of tool (mm)	320
4	Max diameter of adjacent positions without tools (mm)	Φ140
5	Max diameter of adjacent cutting tools (mm)	80
6	Max weight of cutting tool (kg)	6
6、Basic Configuration		
1	5-axis five-linkage, tool tip follow	√
2	3D probe	√
3	Tool setting instrument	Contact Tool Setter
4	X/Y/Z axis grating ruler	√
5	A/C axis grating ruler	√
6	Five-axis rotary center standard matching	√
7	A/C cradle turntable drive mode	DDMotor Direct Drive
8	A/C axis brake system	Circle around
9	Spindle	15000 rpm HSK A63 electric spindle
10	Spindle Cooling System	√
11	Spindle air curtain dustproof system	√
12	Tool magazine	Robotic tool changer
13	Automatic sunroof	√
14	Chip removal system	√
15	Debris car	√
16	Cutting Cooling System	√
17	Processing blowing device	√
18	automatic lubrication system	√
19	working lamp	√
20	Electrical box air conditioner	√
7、System		
1	HEIDENHAIN TNC640 controller	√
2	Menzi 840D	
3	JK220	
4	Siemens 828D (five-axis four linkage)	

Optional

1. Turning function
① The maximum speed of the C-axis is 600 (r/min)
②Hydraulic locking of main shaft gear
③HSKT63 spindle taper hole, 12000 or 15000 milling and turning compound mechanical direct-coupled spindle
④Contact tool setting instrument with tool length and tool diameter
2. Laser tool setting instrument
3. Grinding function
①Sand repairing roller
②Sand dressing roller spindle
③Automatic sand repair: (1) outer circle repair, (2) end face repair, (3) programmable special-shaped grinding wheel
④ Automatic compensation
⑤Grinding plane, outer circle, end face of inner hole, curved surface, curve, special-shaped grinding
4. 40-bit chain tool magazine
5. A-axis gear heavy-duty transmission
6. Spindle center water outlet function
7. The C-axis rotary joint is convenient for gas/liquid to enter the workbench for automatic clamping
8. Automatic door or safety door lock function
9. Refrigerated air compressor and coarse and fine filter
10. Compressed air moisture detection device
11. Customized plan

TK1000 TECHNICAL

Parameters

1、Linear Axis Parameters		
1	X/Y/Z -axis travel range (mm)	1100/1100/700
2	X/Y/Z Positioning precision seat (mm)	0.006
3	X/Y/Z Repeat positioning accuracy (mm)	0.005
4	X/Y/Z -axis rapid traverse speed (m/min)	30
5	X/Y/Z -axis max cutting speed (m/min)	15
2 Rotary Axis Parameters		
1	A-axis travel range	±120°
2	C-axis travel range	n×360°
3	A/C positioning accuracy	8"
4	A/C repeated positioning accuracy	5"
5	A-axis rapid traverse speed (rpm/min)	30
6	C-axis rapid traverse speed (rpm/min)	100
3、Machine Parameters		
1	Machine tool height (mm)	4000
2	Footprint (mm)	3200*4200
3	Machine net (T)	25
4、Worktable Parameters		
1	Worktable size (mm)	Φ800
2	T-slot	M18T type straight slot
3	Max workpiece size (mm)	Φ1100*700
4	Max workpiece weight (kg)	2500
5、Tool Magazine Parameters		
1	Tool magazine capacity (pcs)	40
2	T-T tool change time (s)	4
3	Max Tool length(mm)	450
4	Max ool diameter(mm)	Φ200
5	Max Tool weight (kg)	20
6、basic Configuration		
1	5-axis five-linkage, tool tip follow	√
2	3D probe	√
3	Tool setting instrument	Contact Tool Setter
4	X/Y/Z axis grating ruler	√
5	A/C axis grating ruler	√
6	Five-axis rotary center standard matching	√
7	A/C cradle turntable drive mode	DDMotor Direct Drive
8	A/C axis brake system	Circle around
9	Spindle	10000 rpm HSK A63 electric spindle
10	Spindle Cooling System	√
11	Spindle air curtain dustproof system	√
12	Tool magazine	Robotic tool changer
13	Automatic sunroof	√
14	Chip removal system	√
15	Debris car	√
16	Cutting Cooling System	√
17	Processing blowing device	√
18	automatic lubrication system	√
19	working lamp	√
20	Electrical box air conditioner	√
7、system		
1	HEIDENHAIN TNC640 controller	√
2	Menzi 840D	
3	JK220	
4	Siemens 828D (five-axis four linkage)	

Optional

1. Oil mist absorption and oil mist recovery function
2. Five axis anti-collision function
3. Laser knife alignment instrument
4. 18000 rpm HSK A63 electric spindle
5. Milling car composite function or milling car grinding composite function
6. Spindle center water outlet function
7. C-axis rotary joint, air/liquid enters the workbench for automatic operation Clamping or palletizing system
8. Automatic door or safety door lock function
9. Refrigerated air compressor and coarse and fine filter
10. Compressed air moisture detection device
11. Customized solutions



Optical Grinding Machine

شركة شواهد المتقدمة الصناعية
Shawahed Advanced Industrial Co.

P-ONE

OPTICAL CURVE PROJECTION GRINDER



P-TWO

OPTICAL CURVE PROJECTION GRINDER



MODEL FEATURES

1. The machine bed, lifting platform and other components are made of high-quality HT350 castings which have undergone annealing and aging treatment. Through finite element analysis and optimized design, the reasonable structural strength provides high rigidity and stability.

2. Pre-tightened THK guideways and ball screws with feedback of entirely close-loop 0.0001mm grating ruler to ensure axial operation accuracy.

3. Ultra high-precision electric spindle with rotating speed 0-24000 rpm.

4. High-precision projection system of "20 ×" and "50 ×" switching with energy-saving LED light source to extend service life.

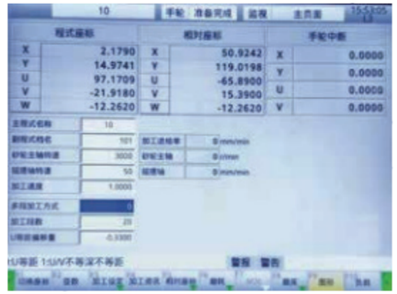
5. The control system can achieve 4-axis linkage (2-axis interpolation) machining so as to improve machining efficiency.

6. This machine is suitable for industries such as aerospace, automobile, shipbuilding, precision electronics, cutting tools, grinding tools, and molds due to its high rigidity and precision. It is ideal equipment for processing high-precision terminals, LED, SMD, precision shrapnel molds, inspection tools, cutting blades, and diamond rollers.

Processable parts

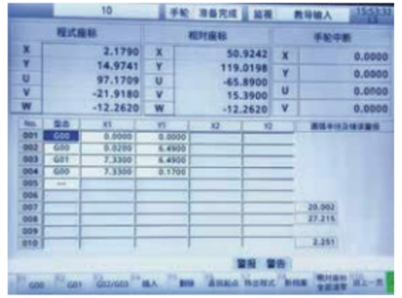


Angle funtion



Only X-axis handwheel can perform 8 types of cone machining, allowing for input of angle values or 2-point teaching. It is suitable for wheel angle profiling and cone manual processing.

Teaching mode



Processing programming can be conducted when records of action are made after grinding wheel tip simulates the shape changes on film magnification map. Complex calculations and NC language programming are not needed.

Arc function



Arc 3-point teaching automatically calculates central point, radius and direction. The radius can be manually processed with X-axis handwheel or by inputting value.

Four-axis linkage



Select the multi-stage machining mode, enter the number of machining segments, and carry out U-axis equidistant offset machining, or carry out UV-axis teaching input points, record the number of times its UV-axis positioning calls the subroutine, and carry out U-axis unequal distance multi-stage machining.

AUXILIARY PROCESSING FIXTURE



TSK160 Tilting Turntable

Working diameter: 160mm
Central hole mohist cone: 2
Central hole: 25x6mm
Worm gear transmission ratio: 1: 90
Tilting angle: 0-90
Workbench circumference scale: 360
Scale value of turntable handwheel: 1'



Precision Three Claws

Center height: 130mm
Clamping diameter: 4-160mm
Accuracy: 0.005mm
Rotating speed: 50-550rpm



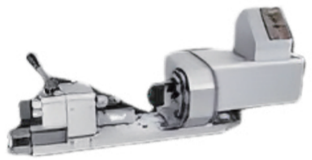
High Precision B-Axis

Center height: 71mm
Clamping diameter: 0.005mm
Accuracy: 1.0-25mm
Rotating speed: 20-600rpm



Grinding Wheel Dresser

Outer diameter of grinding wheel: 32mm
Clamping diameter: 1.0-25mm
Rotating speed: 20-225rpm



200 Round Grinding Fixture

Center height: 104mm
Clamping diameter: 1.0-25mm
Maximum clamping diameter: 200mm
Rotating speed: 50-240rpm
Accuracy: 0.005mm



100 Round Fixture

Center height: 67mm
Clamping diameter: 1.0-25mm
Maximum clamping diameter: 120mm
Rotating speed: 50-900rpm
Accuracy: 0.005mm



PFH600M Precision Three Claws

Center height: 102mm
Clamping diameter: 3-80mm
Rotating speed: 50-600rpm
Accuracy: 0.005mm

PRODUCT PARAMETERS

Item			Unit	P-ONE	P-TWO
Projection screen	The measure of area		mm	540×420	
	Magnification ratio		Double	20×,50×	√
Light source	Lower lighting		/	LED	√
	Upperlighting		/	LED	√
Workbench	Work surface		mm	400x250	√
	Movement amount	Longitudiral	mm	240	√
		Transverse(V-axis)	mm	150	√
		Up and down(W-axis)	mm	100	√
	Feed rate	Fast feed G00	mm/min	2000	√
		Grinding feed GO1	mm	0.1-1000	√
Sand wheel platform	Linear axis	X-axis	mm	200	√
		Y-axis	mm	150	√
		Fast feed G00	mm/min	1500	√
		Grinding feed G01	mm/min	0.1~1000	√
	Angle	Front corner	o	(-2~20)	(-2~+5)
		Horizontal table	o	±15	√
		Wheel table turning angle	o	±15	√
	Lifting and lowering	W-axis	mm	0-150	0-80
		Lifting speed	rpm	30-300	√
	Grinding wheel shaft	Grinding wheel diameter	mm	65~100×4~6×22.23	√
			mm	120~180×3~10×31.75	√
		Rotation speed	rpm	0~24000	√
			rpm	1000-6000	√
		Spindle	/	High precision electricspindle	High precision static pressure spindle
Machine weight			kg	4000	√
Body area(length xwidth x height)			mm	1730x1775x2075	√
Noise			db	lower than 70	√
Power capacity			kva	18	√
Air pressure/flow rate			Mpa/Nl/min	more than 0.6/500	√
Control equipment	NC		/	LNC	√
	Monitor		/	10.4inch colour	√
	Handwheel		/	2:X,Y(U,V)	√
	Pitch correction		/	standard	√
	Control of number of axes		/	four-axis	√