

COMPREHENSIVE CATALOG

SHAWAHED

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

Kingdom of Saudi Arabia-Riyadh

+966-55-122-2734

chairman@shawahed.com.sa

03

CNC
Machining Center

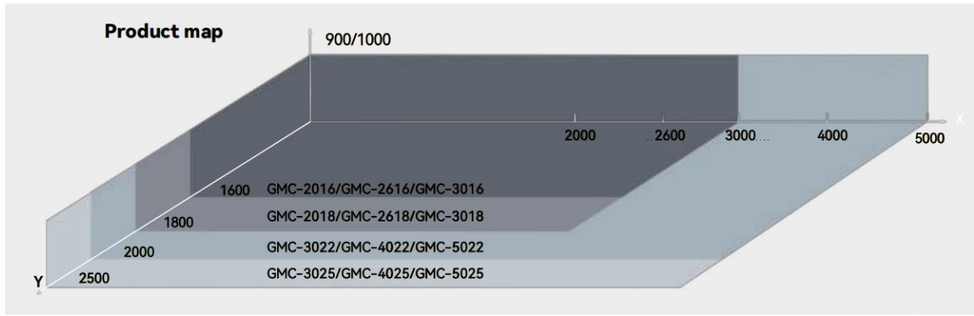
شركة شواهد المتقدمة الصناعية
Shawahed Advanced Industrial Co.

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.

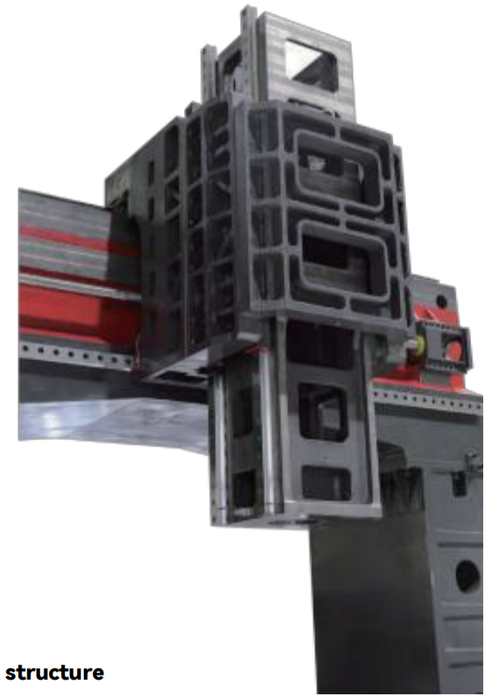


HIGH RIGIDITY AND LONG TERM ACCURACY RETENTION

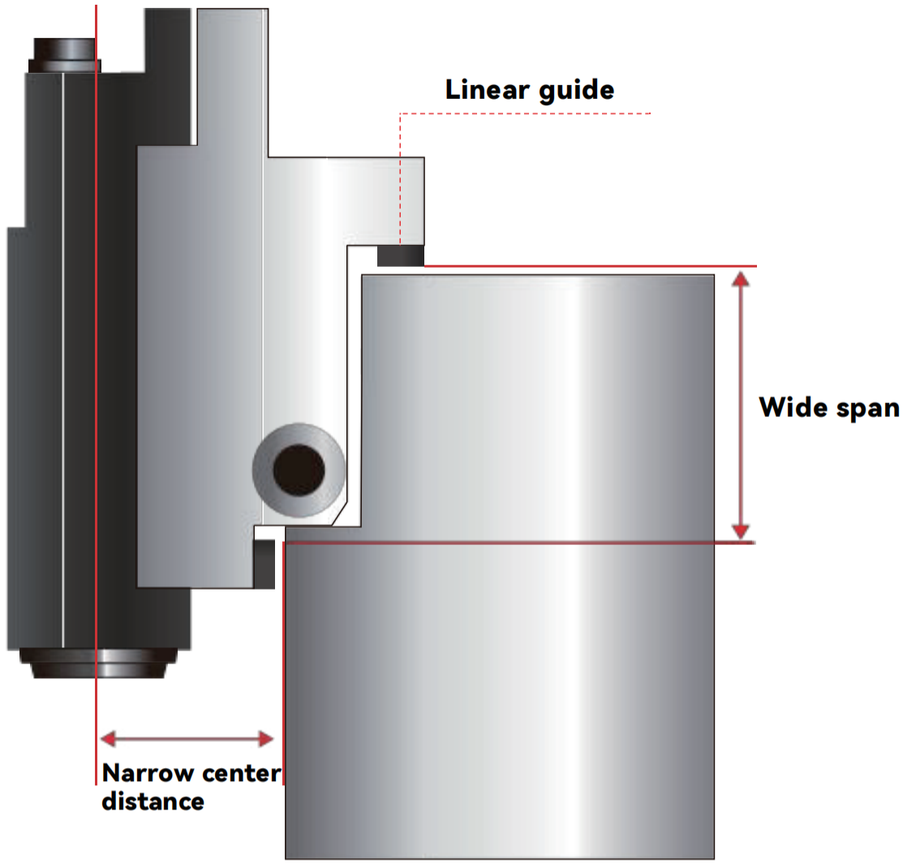


Precise flat surface scraping of the spindle end face

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



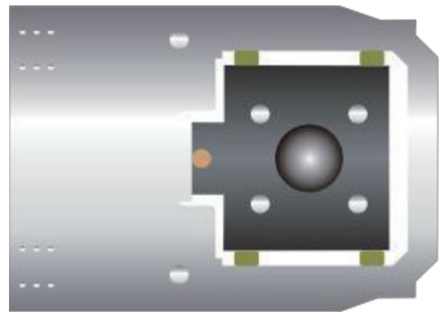
High rigidity four-track structure



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.

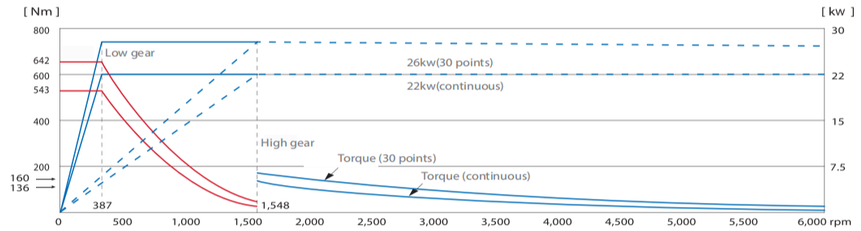
OPTIMIZED SPINDLE SYSTEM



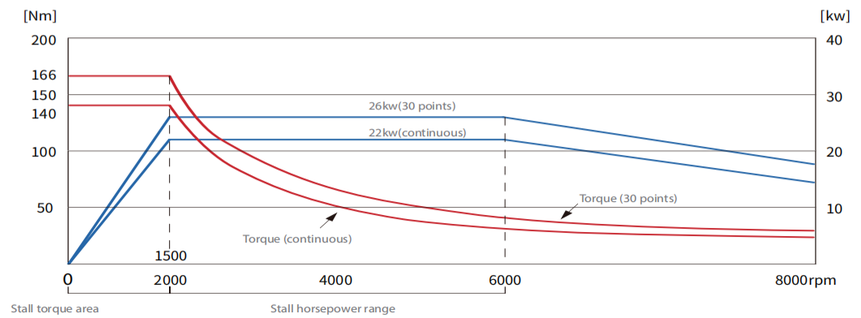
Center symmetrical spindle system design

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

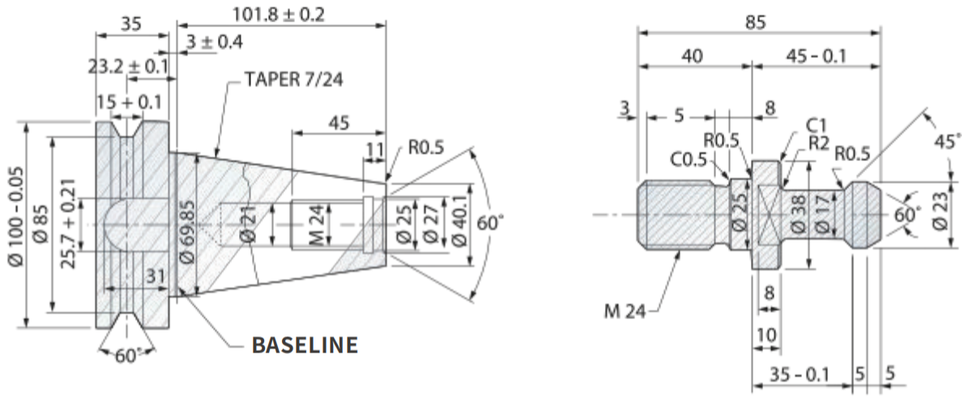
	YMC-3025	YMC-4025	YMC-5025
Moving Range			
X-axis trave mm	3000	4000	5000
Y-axis travel mm	2500		
Z-axis travel mm	1000（Optional 1200）		
Distance from spindle nose to table surface mm	200-1200		
Distance between columns mm	2500		
Worktable			
Worktable size (X direction) mm	3200	4200	5200
Worktable size (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

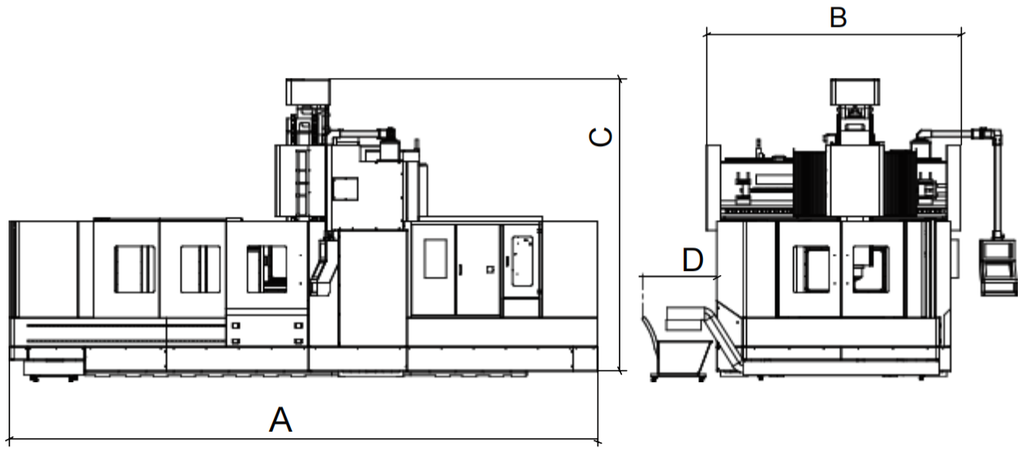
Tool handle and broach bolt dimensions

(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.

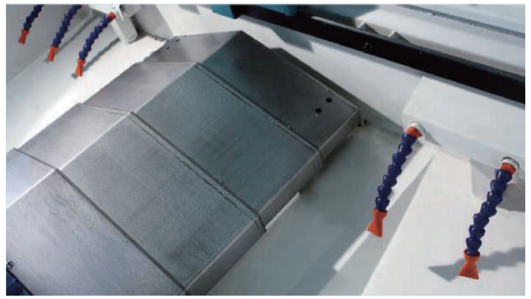
High rigidity ductile iron bed. The machine tool adopts a three-point support method, which is easy to install and ensures accuracy and stability.

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.

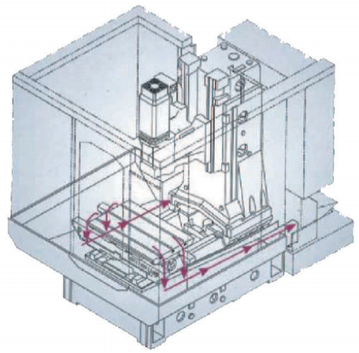
The machine is simple in design and adopts a beautiful and generous rear chip removal design. The overall area is small, which is beneficial to the best use of plant space.

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



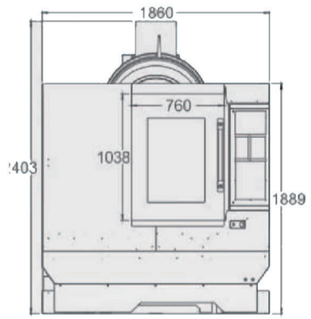


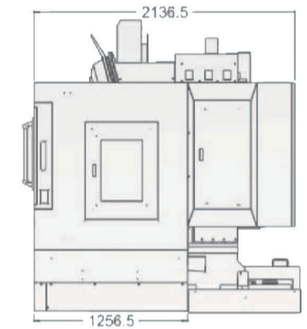
Direct spindle 15000-20000rpm

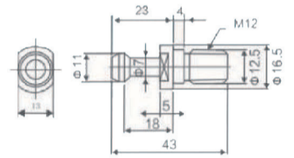


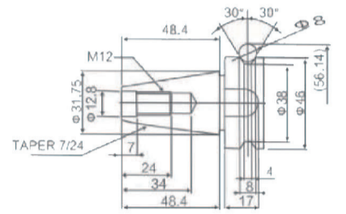


	Model	Unit	F-50	F-60
Spindle	Spindle taper		NO.30	
	Spindle drive mode		Direct	
	Spindle speed	rpm	15000/20000	
Worktable	Worktable size	mm	650x400	700x420
	Max. loading	kgs	250	300
	T-slot	mm	3x14x125	
Moving range / Rapid Speed	X axis travel	mm	500	600
	Y axis travel	mm	400	400
	Z axis travel	mm	300	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.



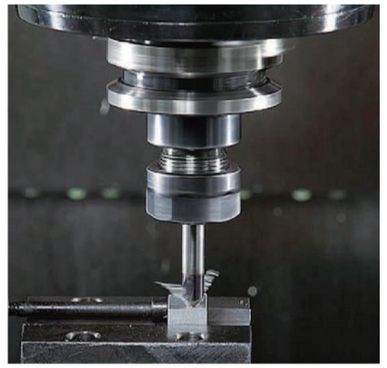
FMC-850

VERTICAL MACHINING CENTER

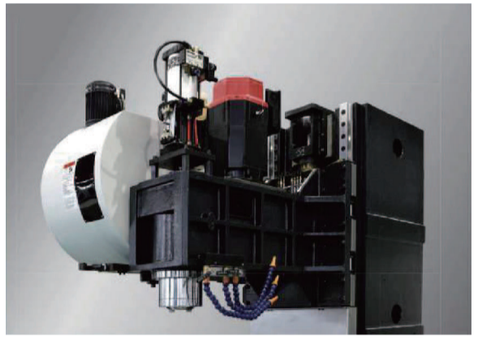
This series of vertical integrated processing machines show advanced design concepts and excellent mechanical structure balance. It is a high-speed, high-capacity model. Suitable for high precision mold industry and precision metal processing industry.

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.

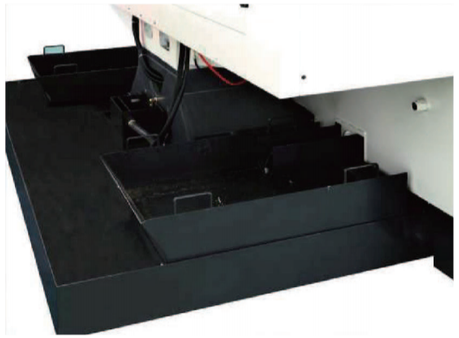
The servo motor is directly connected to the screw via a rigid coupling without backlash, which can ensure the machining accuracy. Even if it is a very complicated work, it can also process sharp corners to ensure the machining accuracy.



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

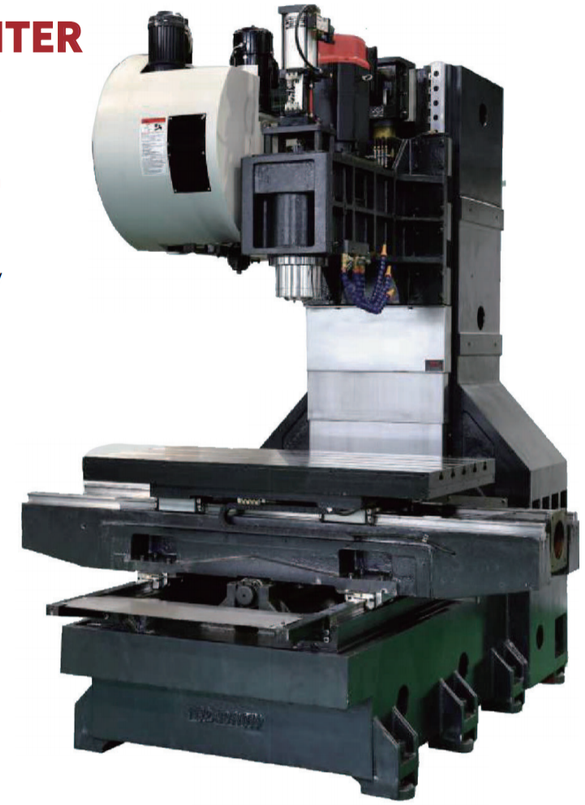


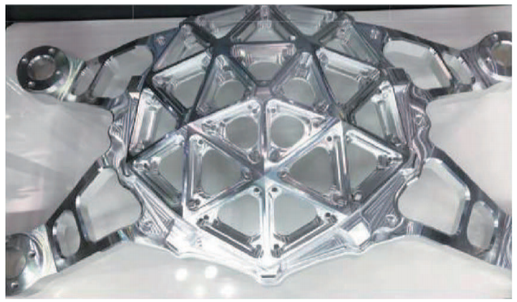
FMC-855

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.



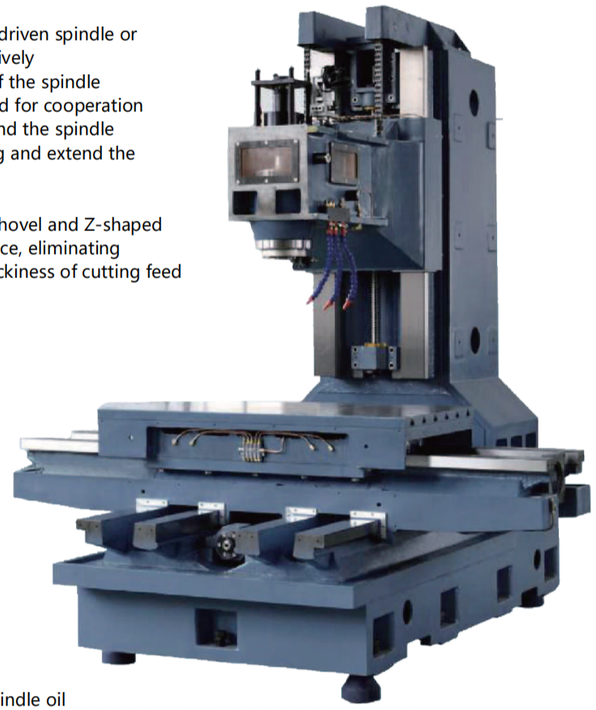
FMC-1370

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.

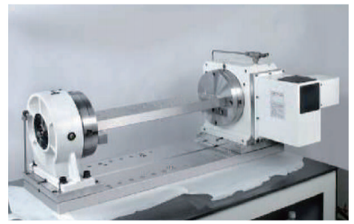
Japanese shovel technology combined with unique *shaped shovel and Z-shaped oil grooves can produce a uniform oil film on the sliding surface, eliminating foating phenomenon during rapid movement and starting stickiness of cutting feed

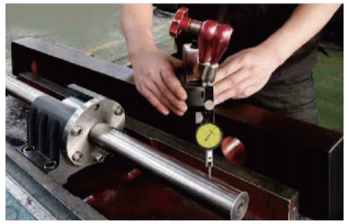




The spindle is equipped with spindle oil temperature control system, which can effectively achieve temperature effect.







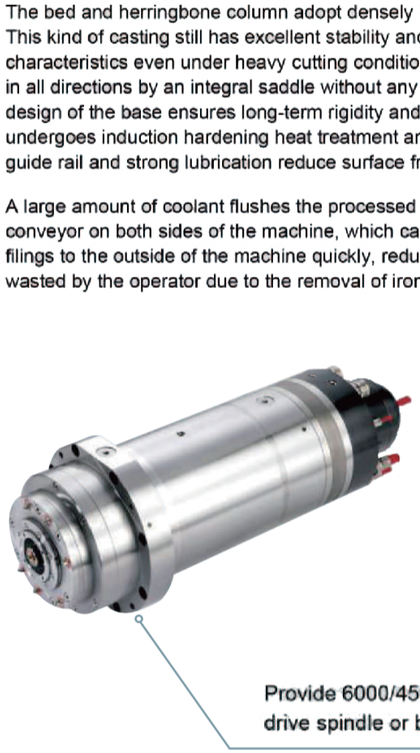


FMC-1580

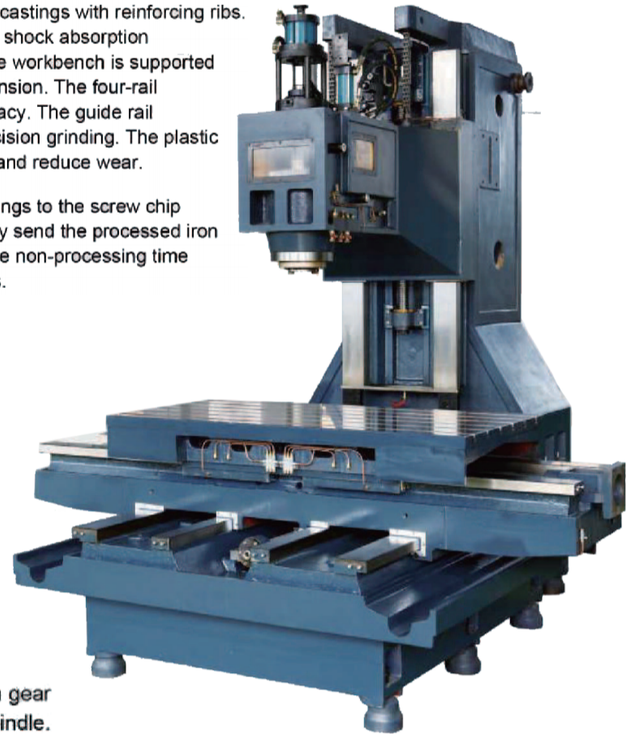
VERTICAL MACHINING CENTER

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.











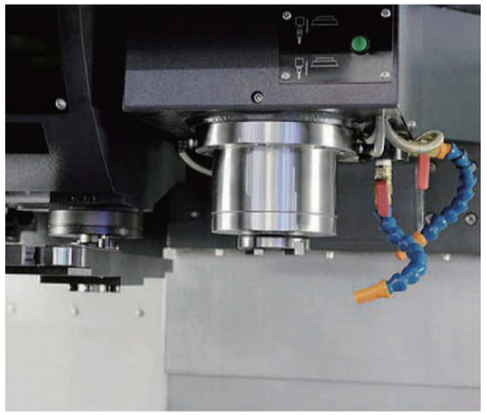
FMC-1890

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.



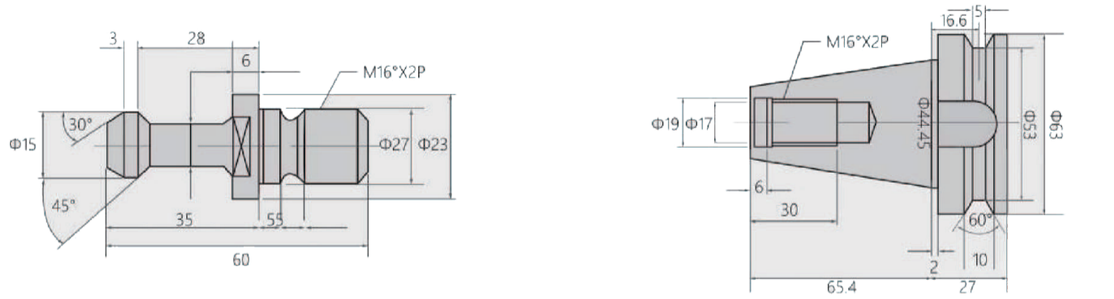
Internal details



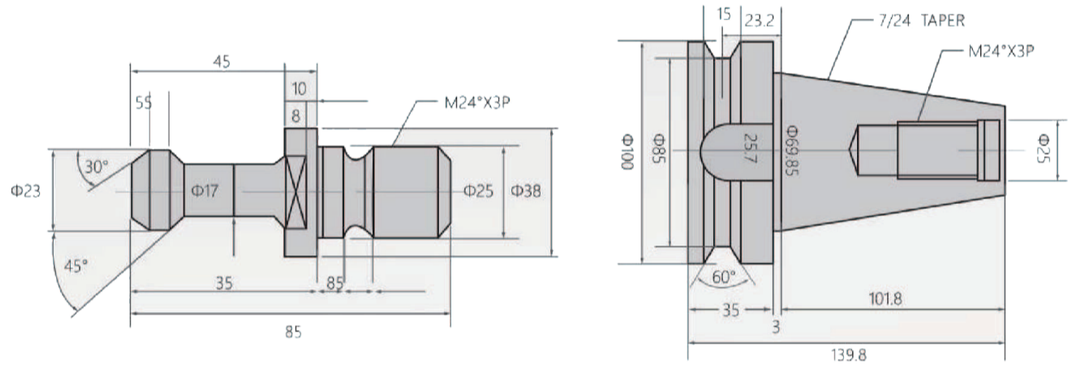


Features

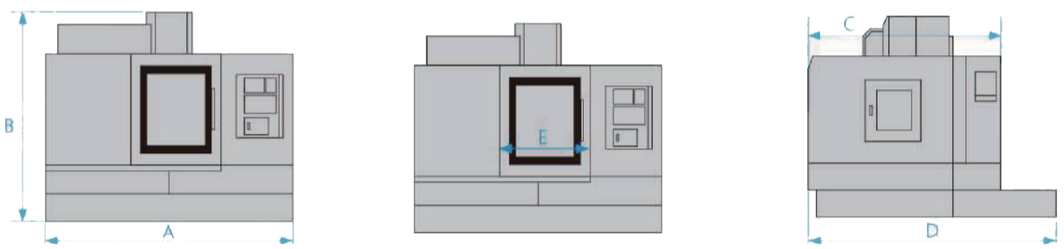
BT-40 Tool Holder Specification



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

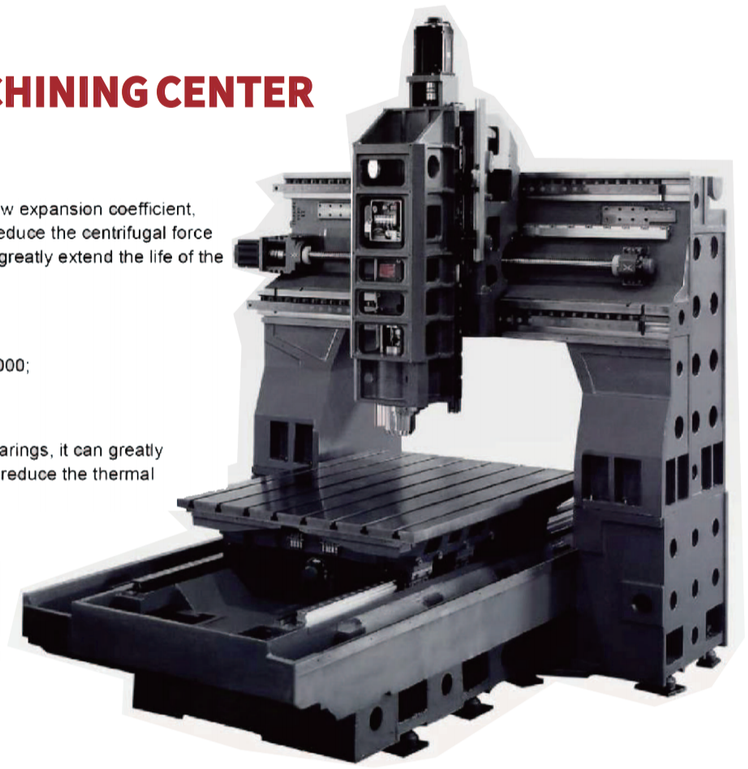
It has the characteristics of light weight, low expansion coefficient, strong hardness, etc., which can greatly reduce the centrifugal force of heat temperature and high speed, and greatly extend the life of the spindle;

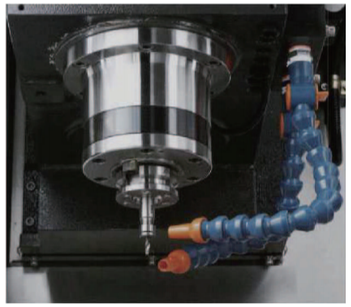
BT40 direct-coupled speed 12000/15000;

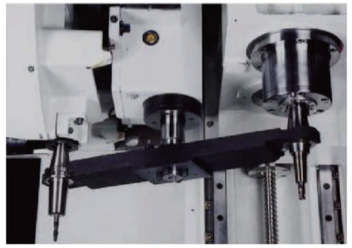
HSK-A63 direct-coupled speed 12000/15000;

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

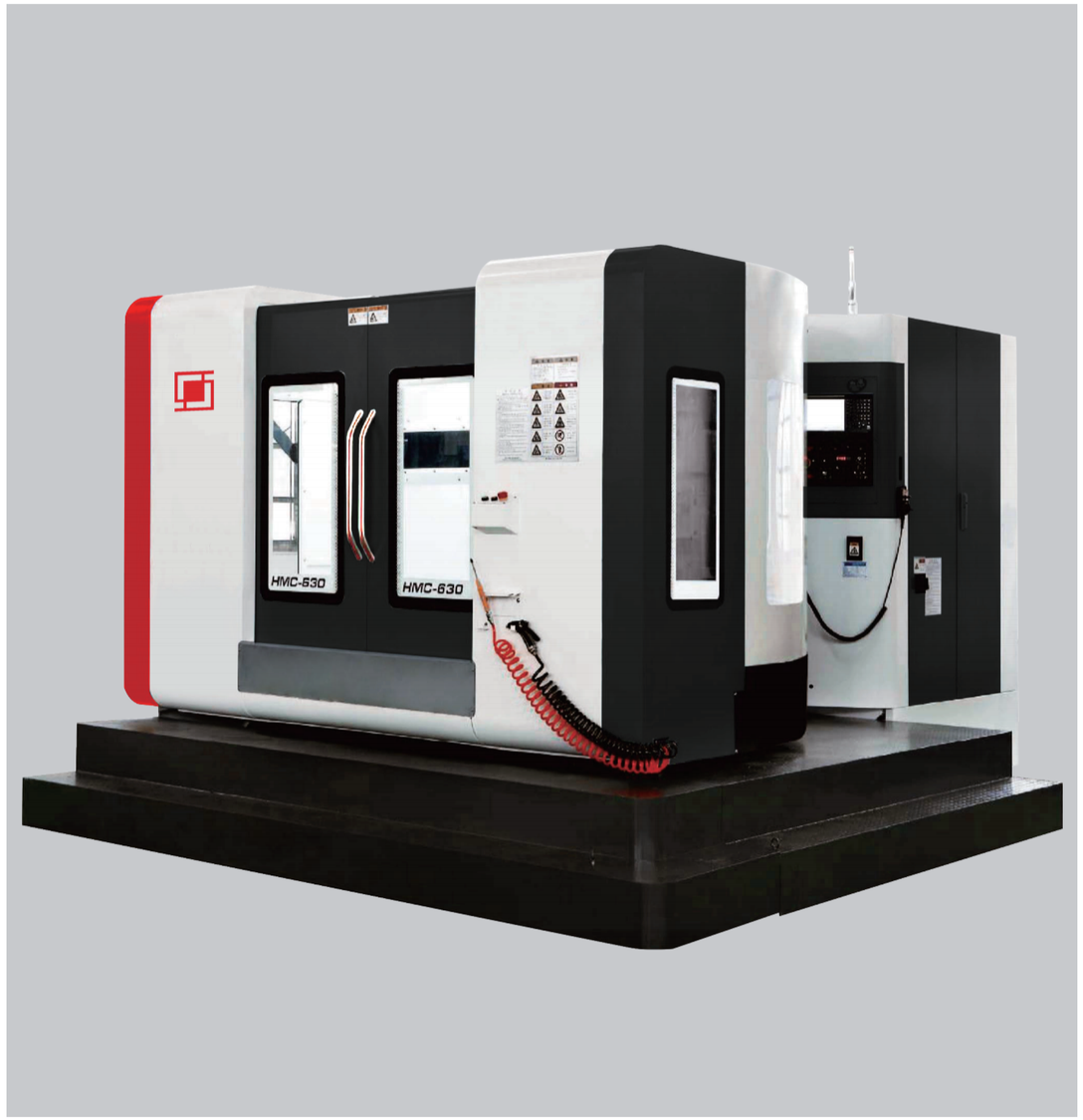


SHK-A63 Built-in 18000~30000

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

- 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.



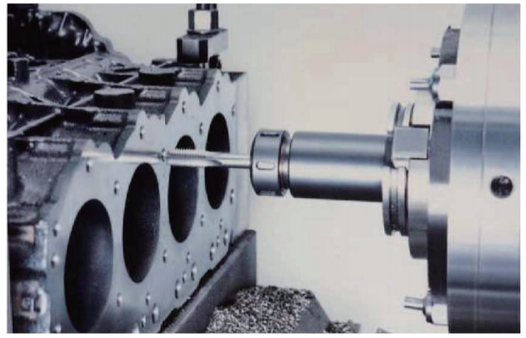
HMC-630

HORIZONTAL MACHINING CENTER

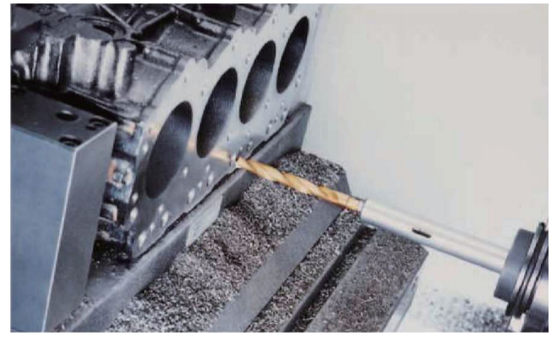
- It adopts high-torque spindle drive and powerful shaft drive device with high cutting rate.
- The base is the foundation of the whole machine tool and the main supporting part of the saddle and the column. The base of this machine adopts an integral inverted "T" structure, and a considerable number 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.

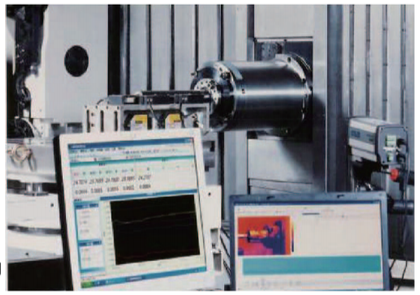


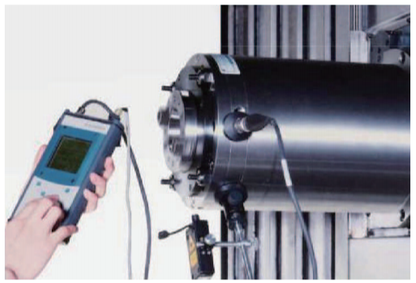
All three axes adopt 45# wide heavy-duty linear guide, which greatly improves the heavy-duty and machining stability of the machine tool and ensures the cutting rigidity. The X/Z axis adopts the design concept of 6 sliders.

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.

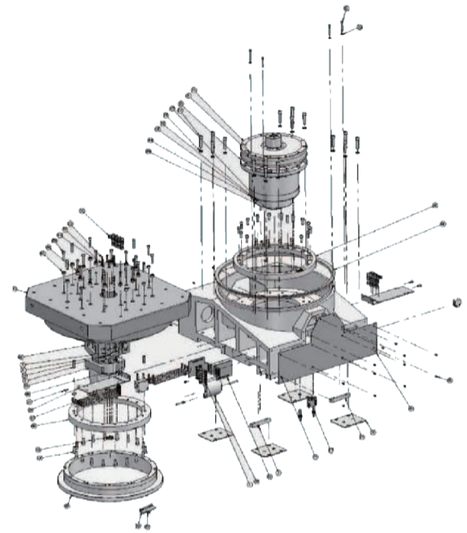
The standard belt type BT50 spindle has an oil cooling function, which reduces the thermal deformation of the head and improves the processing accuracy. It is equipped with a ZF two-speed gear box to achieve low speed, high torque, high speed and high power.

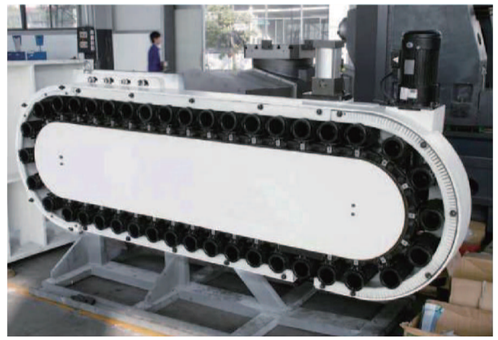




HIGH RIGIDITY,STABLE ACCURACY

- 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.



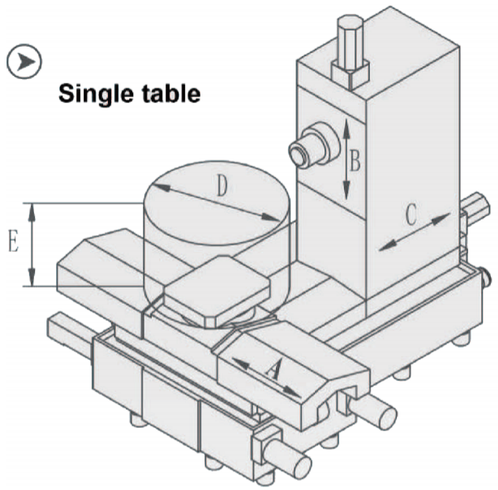


The storage capacity of the tool magazine is 24 tools (optional: 40/60/90/120). The automatic tool changer is composed of the tool magazine and the tool arm mechanism. The automatic tool changer and the machine-body design effectively prevent the machine from using the tool magazine for a long time.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



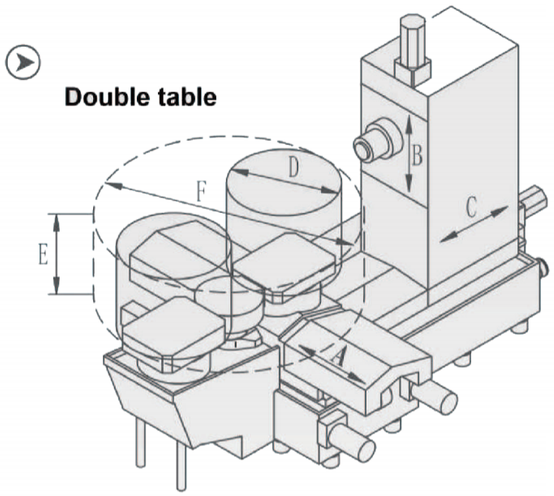
Generally, arbitrary tool selection is used, or a fixed location can be selected. The tool library program has an M code restoration function, which effectively prevents the collision of large tools

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