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NEW 2020-EN-Q-B The text description, pictures and technical parameters in the sample are for reference only, and the changes due to technological development are subject to change without notice.

CNC MACHINE TOOLS FOR AUTOMOTIVE INDUSTRY SOLUTIONS

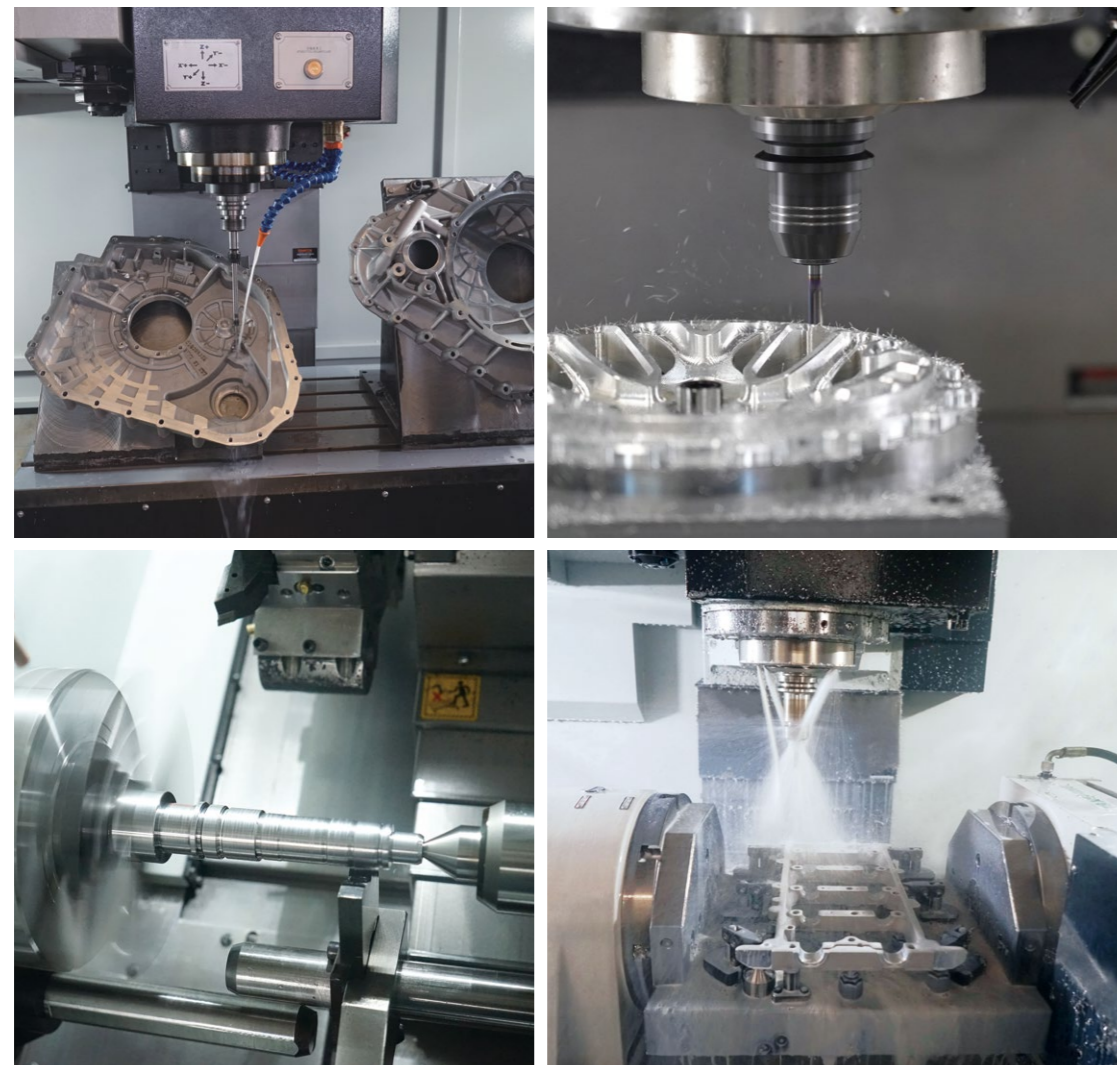
HIGH SPEED | HIGH EFFICIENCY | HIGH ACCURACY

CFV / HPC / HTC II

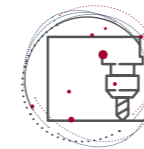
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INTRODUCTION

Ningbo Haitian Precision Machinery Co., Ltd. is a listed company specializing in machine tooling industry. It has developed Ningbo Dagang production base, Ningbo Yanshan production base and Dalian production base. It has a modern constant temperature processing and assembly plant of over 300,000 square meters with nearly 1500 employees. It is awarded honors such as "key high-tech enterprise of the National Torch Plan", "national major technical equipment enterprise", "national high-tech enterprise", and "provincial high-tech research and development center".



CATALOGUE



CFV VERTICAL MACHINING CENTER

- CFV600 [Page 05]
- CFV900 [Page 05]
- CFV1100 [Page 05]



HPC HORIZONTAL MACHINING CENTER

- HPC650 [Page 09]
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HTC II CNC LATHE

- HTC150 II [Page 13]
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VERTICAL MACHINING CENTER

CFV

The CFV series is fixed by A-shaped single column, with mobile structure of worktable. The rigidity of the basic components is high and the mobile components are light, fully conforming to the needs of users. Meanwhile, it is characterized by the environmental protection and energy saving, therefore widely used in high-efficiency and high-precision processing of automobiles, aerospace and dies, etc.



Optimized Component Design

- **High-rigid base components:** large-span bed base, thickened column.
- **Lightweight moving parts:** the total weight of the spindle box and built-in spindle 30% lower than the conventional machines.

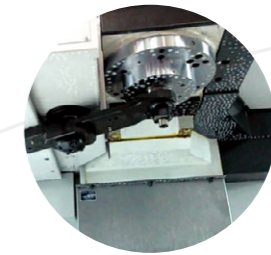
High Speed, High Precision Built-In Spindle

- **High precision:** built-in spindle direct drive, no other vibration source.
- **High torque:** two-speed automatic transmission, low speed and high torque, high speed and constant power.
- **Efficient start and stop:** zero drive chain, small inertia, starting from 0 to 8000 rpm in just 0.8 seconds.



24T Servo Tool Magazine

- **Intelligent preparation tool mode:** shorten non-machining time.
- Max.180mm dia. bridge type boring tool.
- Automatic protection door.
- Heavy tool mode: auto slow tool change in this mode.



Professional Automation Interface

- Automatic door.
- Automatic line communication interface.
- Tool automatic compensation & life management.
- Tool magazine broken tool detection.
- Workpiece detecting device.
- Option 4th axis & 5th axis.



CFV

Technical Specification		Unit	CFV600	CFV900	CFV1100
Working Area	X axis travel	mm	600	900	1100
	Y axis travel	mm	430	430	540
	Z axis travel	mm	510	510	520
	Distance from spindle nose table	mm	150-660	150-660	150-670
Working Table	Table size	mm	900x430	1100x430	1300x550
	Max.table loading capacity	kg	500	700	1200
	T slot (slot number X width X distance)	mm	3x18x125	3x18x125	5x18x100
Spindle	Driving system		Built-in spindle	Built-in spindle	Built-in spindle
	Speed of the spindle	rpm	12,000	12,000	12,000
	Spindle power (continuous 30 minutes overload)	kW	7.5/11	7.5/11	7.5/11
	Spindle torque	N.m	71.6/105	71.6/105	71.6/105
	Spindle taper		ISO 7:24 NO.40 (BT40)	ISO 7:24 NO.40 (BT40)	ISO 7:24 NO.40 (BT40)
	Pull stud specifications		MAS-P40T-1 (45°)	MAS-P40T-1 (45°)	MAS-P40T-1 (45°)
Feed Speed	Rapid feed X/Y/Z axis	m/min	36	36	36
	Max.working feed speed	m/min	20	20	20
Tool Magazine	Guideway type		Linear guideway	Linear guideway	Linear guideway
	Tool magazine capacity	T	24	24	24
	Tool change type		Tool change arm	Tool change arm	Tool change arm
	Max.tool dia.(with / without adjacent tools)	mm	Φ80/Φ125	Φ80/Φ125	Φ80/Φ125
	Max.tool length	mm	300	300	300
	Max.tool weight	kg	7	7	7
Others	Change time of tool	s	1.5	1.5	1.5
	Machine weight	t	6	7	8
	Machine size (LxWxH) (without conveyor)	mm	2060x2400x2660	2600x2420x2580	2900x2890x2680
	Power capacity	kVA	35	35	35

Standard Configuration

(Notes: “●” standard configuration, “◎” option configuration)

No.	Item	CFV600	CFV900	CFV110
1	Controller: Mitsubishi M80A	●	●	●
2	12000rpm built-in spindle	●	●	●
3	Coolant system	●	●	●
4	Splash guard	●	●	●
5	Internal water flooding chip conveyor	◎	●	●
6	Internal screw chip conveyor	●	◎	◎
7	3 color signal lamp	●	●	●
8	Coolant gun	●	●	●
9	Scraper type external chip conveyor & trolley	◎	●	●
10	Scraper type external rear chip conveyor & bucket	●	◎	◎
11	24T servo ATC-arm type	●	●	●
12	ATC pneumatic door	●	●	●
13	Hydraulic & grease lubrication system	●	●	●
14	Spindle oil chiller	●	●	●

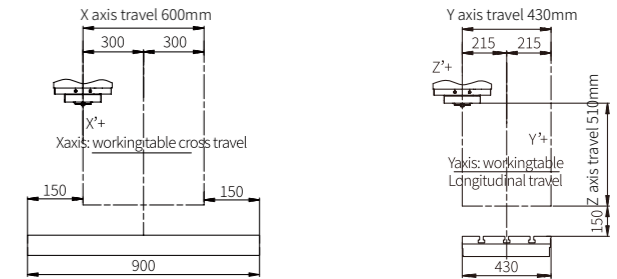
Option Configuration

No.	Item
1	Controller: FANUC 0i
2	Air conditioner
3	Auto door
4	CNC rotary table (4th)
5	BLUM tool setter
6	BLUM workpiece probe
7	Tool detection in magazine
8	Air gun
9	Coolant through spindle (2-6MPa)
10	Spindle ring spray
11	Shower coolant
12	Oil mist collector
13	Oil skimmer
14	Internal helix type chip conveyor (front)
15	Flush chip system (front)

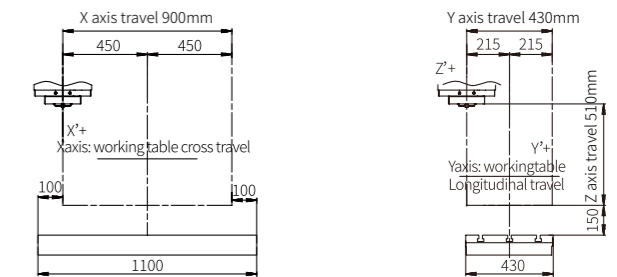
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Processing Range

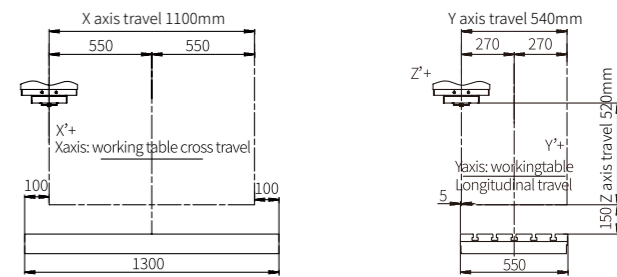
CFV600



CFV900



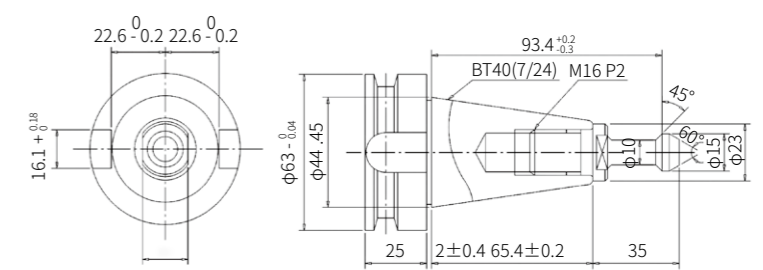
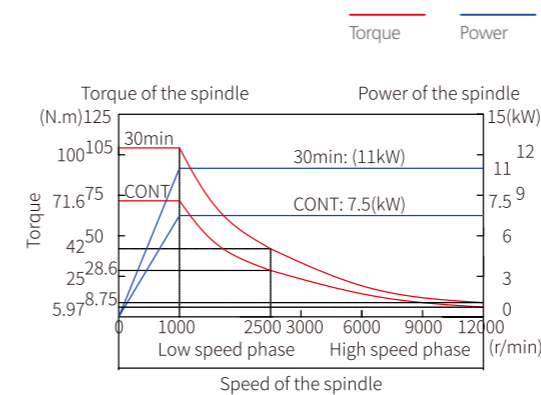
CFV1100

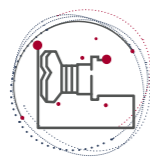


Power-Torque Diagram

Mitsubishi Electrical Spindle (12000rpm)

BT40(7: 24) Pull Stud Specification





HORIZONTAL MACHINING CENTER

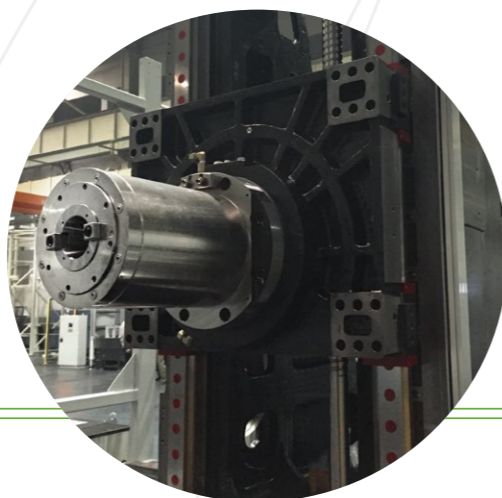
HPC

The high-speed horizontal processing center for HPC series is a new high-end product integrated with the international advanced design concept. The structure of the rib cavity is optimized by analyzing and calculating the basic large components. The thick one-piece bed, combined with a three-axle heavy roller guide and an integrated high-speed motorized spindle, can handle a wide range of material processing from high-speed and high-precision to heavy processing and from aluminum and steel to castings. In addition, high-speed feed servo axes and fast-rotating APCs enable efficient processing to meet your cutting and production efficiency requirements. Product application areas: precision machining in automotive, aerospace, petroleum, electric power, locomotive, plastic machinery, construction machinery and other industries.



Spindle box

- The whole series is equipped with integral built-in electric spindle, which greatly improves the transmission efficiency. Synchronous oil cooling circulation technology is equipped to prevent thermal deformation and ensure stable cutting accuracy.

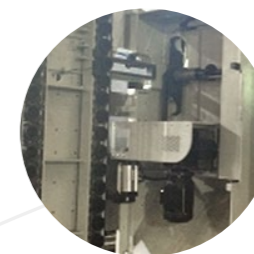


High rigidity Machine frame

- The design of positive T-shaped integrated high-strength bed and full closed frame symmetrical structure can effectively save the overall accuracy of the machine tool and achieve efficient tool change and work table exchange.

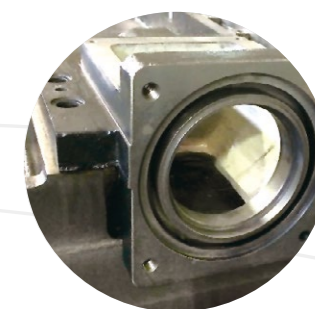
Gantry Frame Apc Rotating Structure

- Gantry frame exchange station, with high rigidity, adopts self-lubricating bearing structure, which makes the balance and reliability in the exchange process of plate.



Servo ATC

- The tool magazine is driven by servo motor, fixed-point tool change, and the tool magazine move with manipulator simultaneously to effectively shorten the tool change time.



Drive Cooling System

- The three-axis drive system is equipped with screw nut cooling and motor base circulating cooling to reduce the thermal deformation of the drive system and ensure the positioning accuracy.



HPC

	Technical Specification	Unit	HPC650	HPC800
Working Area	X-axis travel (column cross travel)	mm	1050	1400
	Y-axis travel (spindle box vertical travel)	mm	900	1100
	Z-axis travel (table longitudinal travel)	mm	900	1050
	Distance between spindle center and table surface	mm	70-970	55-1155
	Distance between spindle forepart and table center	mm	200-1100	200-1250
Working Table	Table size	mm	630x630	800x800
	Table indexing	degree	1° x360	1° x360
	Max.table loading capacity	kg	1300	2000
Spindle	Driving system		Built-in spindle	Built-in spindle
	Electrical spindle motor	kW	26/45	26/45
	Spindle rotary speed	r/min	8000	8000
	Max.spindle	Nm	305/623	305/623
	Spindle taper hole		ISO7:24 NO.50	ISO7:24 NO.50
	Pull stub specification torque		PT50T-2-MAS403	PT50T-2-MAS403
Feed Speed	Rapid feed X/Y/Z	m/min	40	36
	Cutting feed X/Y/Z	m/min	40	30
	Table 90° indexing time	s	2.5	5
Pallet	Exchanging mode		Direct rotary type	Direct rotary type
	Pallet exchanging time		10	15
	Tool magazine capacity	T	40	40
Tool Magazine	Tool selection mode		Any shortest path	Any shortest path
	Tool holder		BT50	BT50
	Max.tool length	mm	500	500
	Max.tool dia. (full/empty adj. Positions)	mm	Φ115/230	Φ115/230
	Max.tool weight	kg	25	25
	Tool changing time (tool to tool)	s	2.5	2.5
Others	Machine weight	t	19	25
	Machine size	cm	580x430x336	650x470x385
	Power capacity	kVA	65	65

Standard Configuration

(Notes: “●” standard configuration, “◎” option configuration)

No.	Item	HPC650	HPC800
1	Controller: FANUC 0i	●	●
2	40T ATC (BT50)	●	●
3	1° index pallet	●	●
4	APC (Auto pallets changer)	●	●
5	Full enclosure with top cover	●	●
6	Guideway cover	●	●
7	External chain type chip conveyor	●	●
8	Coolant system	●	●
9	Spindle oil chiller	●	●
10	Ballscrew cooling system	●	●
11	Spindle air blow	●	●
12	Automatic power-off device	●	●
13	Diagnostic function	●	●
14	3-color signal lamp, working light	●	●
15	Standard accessories	●	●

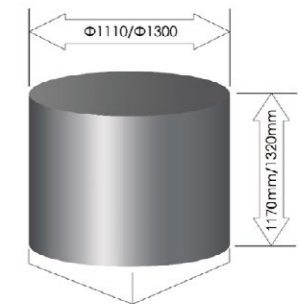
Option Configuration

No.	Item
1	Controller: FANUC 31i
2	High speed built-in spindle (12000rpm)
3	Linear scales for XYZ axis
4	CNC rotary table (0.001°)
5	T-slot,enlarge table
6	60/90/120T ATC
7	Workpiece probe
8	Tool setter
9	Coolant through spindle
10	Shower coolant
11	Water gun
12	Oil skimmer
13	Air conditioner
14	Air gun

The company reserves the right to modify the parameters due to technical improvement.

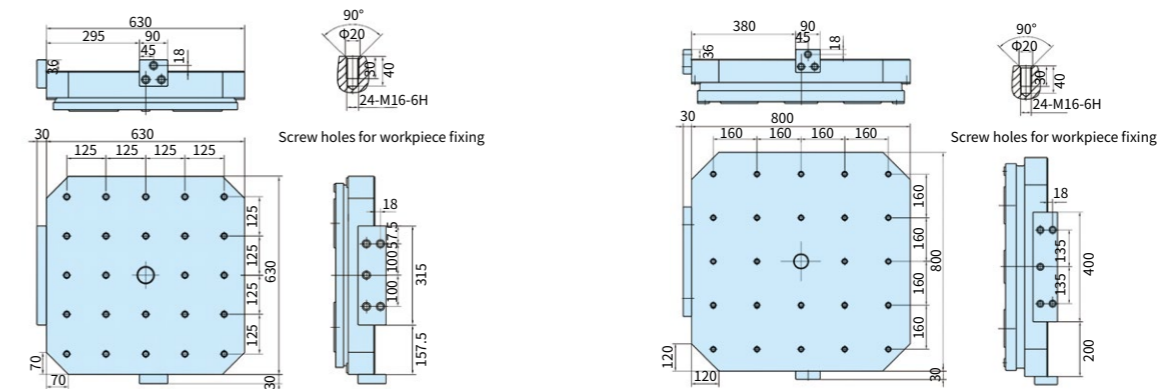
Workpiece Clamping Range

	HPC650	HPC800
Exchange worktable size	630x630 (800x800 Option)	800x800
Max.workpiece size	Φ1110x1170mm	Φ1300x1320mm
Max.table loading capacity	1300kg	2000kg



Max. workpiece clamping size

Worktable Size



HPC650 Pallet size

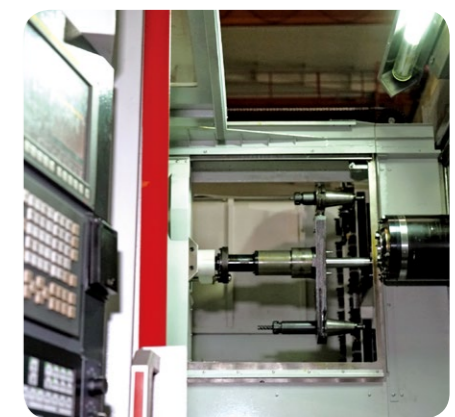
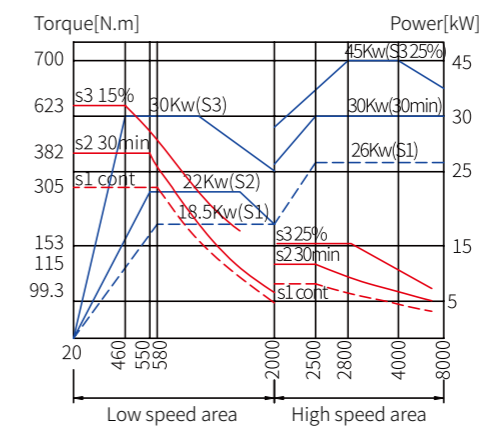
HPC800 Pallet size

Power-torque Drawing

Hpc650/Hpc800 Power Torque Diagram

Fanuc 160LI Advanced Type

Spindle torque
Motor power

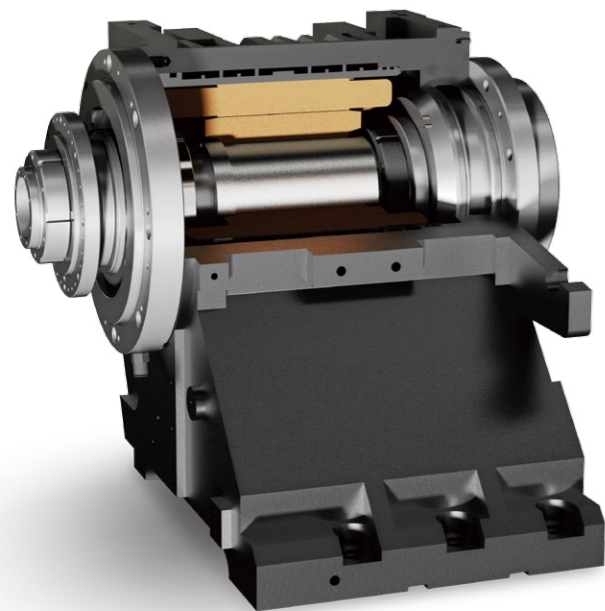




HORIZONTAL MACHINING CENTER

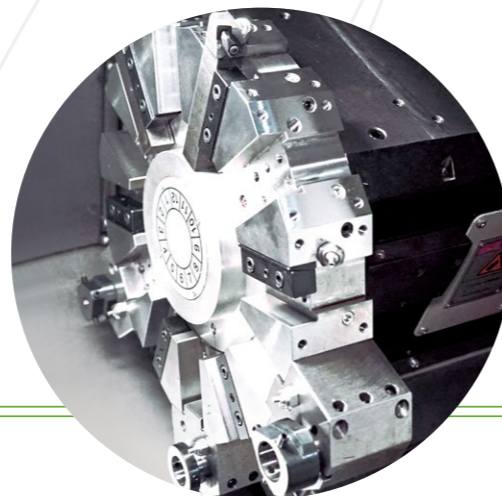
HTC II

HTC Series is an integral cast-iron inclined bed mechanism. Through finite element analysis, the wide-area asynchronous two-speed motorized spindle is used to make the processing faster, more precise and more efficient, and the series is endowed with environmental protection and energy-saving characteristics, therefore widely used in automotive parts, energy, hardware and other precision machining fields.



Full Series With Servo Turret (Optional: Power Turret)

- HTC II series lathes are equipped with servo turrets with fast transposition and reliable transmission links, and the application of servo turrets realizes the synchronous tool change in the process of returning to zero and improves the production efficiency.

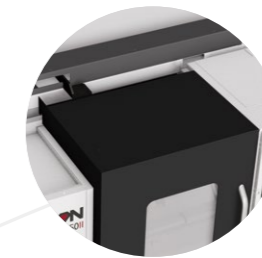
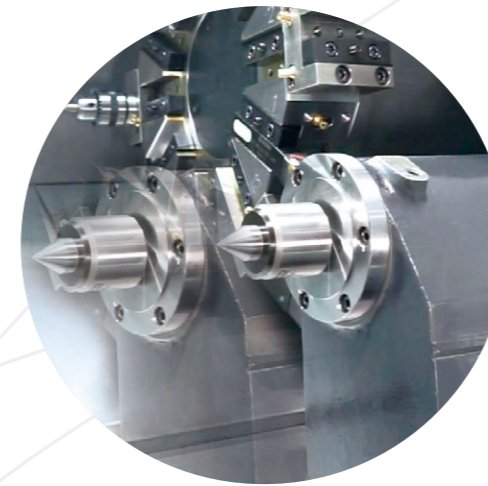


Full Series With Built-In Spindle

- The spindle is directly driven by the built-in motor, and there are no other transmission links, so the machine "zero transmission" is realized and the reliability is good.
- High static and dynamic accuracy and good stability.
- The motorized spindle has the advantages of fast acceleration and deceleration, short start and stop time, and improves production efficiency.
- It not only meets the requirements of low speed and high torque, but also takes into account the high speed performance.

Servo Tailstock (Option)

- Servo motor control, quick response, accurately control the position and pre-tightening force, easy to realize automation.



Automatic Protection Modularization

- Automatic door, automatic skylight modular design, easy to install.



Rear-Chip Conveyor Mode

- HTC II series adopts Rear-chip conveyor mode, which has compact structure and small footprint, so it is suitable for automatic processing.



HTC II

	Technical Specification	Unit	HTC150 II	HTC200 II X 360	HTC200 II X 560	HTC300 II X 580
Working Area	Max.swing over bed	mm	Φ550	Φ620	Φ620	Φ620
	Max.swing over saddle	mm	Φ300	Φ410	Φ410	Φ420
	Max.turning diameter	mm	Φ300	Φ400	Φ400	Φ520
	Max.turning length	mm	290	360	560	600
	Height of spindle center to ground	mm	1050	1080	1080	1100
High Speed Motorized Spindle	Max.spindle speed	rpm	4500	4500	4500	3500
	Spindle powder (continuous/30min overload)	kW	11/18.5	11/18.5	11/18.5	15/22
	Spindle torque	Nm	140/220	140/220	140/220	265/420
	Spindle nose taper	-	JISA2-6	JISA2-6	JISA2-6	JISA2-8
	Spindle through hole	mm	Φ62	Φ62	Φ62	Φ76
	Max bar diameter	mm	Φ50	Φ50	Φ50	Φ65
	Spindle bearing diameter	mm	Φ100	Φ100	Φ100	Φ120
Chuck size	Chuck size	inch	8	8	8	10
	Type	-	Servo V8	Servo V12	Servo V12	Servo V12
Turret	Tool section	mm	25x25	25x25	25x25	25x25
	Boring bar diameter	mm	Φ32	Φ40	Φ40	Φ40
Tailstock	Tailstock type	-	-	-	Hydraulic	Hydraulic
	Tailstock travel	mm	-	-	580	500
	Sleeve bore taper	-	-	-	MT.NO.4	MT.NO.4
Feed Shaft	X/Z axis travel	mm	180/345	225/410	225/610	280/695
	Rapid feed X/Z axis	m/min	30/30	24/30	24/30	24/30
	Guideway type	-	Linear guideway	Linear guideway	Linear guideway	Hardened rail
	X/Z axis power	kW	2.2/2.2	2.2/2.2	2.2/2.2	3/3
Others	Power capacity	kVA	30	35	35	35
	Machine size(LxWxH) (without conveyor)	mm	1900x1500x1750	2410x1850x1790	2700x1850x1790	2600x1800x2150
	Machine weight	t	3.8	4.2	4.8	5.3

Standard Configuration

(Notes: "●" standard configuration, "◎" option configuration)

No.	Item	HTC150II	HTC 200II X 360	HTC 200II X 560	HTC300II
1	Controller:MITSUBISHI E80B	●	●	●	●
2	Hydraulic and lubrication system	●	●	●	●
3	Cutting cooling	●	●	●	●
4	Full enclosure	●	●	●	●
5	Servo turret	●	●	●	●
6	Soild hydraulic chuck	●	●	●	●
7	Face tool holder	●	●	●	●
8	Hydraulic tailstock with live sleeve	※	◎	◎	●
9	Hydraulic tailstock with live quill	◎	◎	●	※
10	External chain type chip conveyor(rear)	●	●	●	●
11	Standard accessories	●	●	●	●
12	Soft packaging	●	●	●	●
13	Ground installation	●	●	●	●
14	Common maintenance tool	●	●	●	●
15	Soft jaw	●	●	●	●
16	3-Color signal lamp, working light	●	●	●	●
17	Foot switch	●	●	●	●
18	Trolley	●	●	●	●

Option Configuration

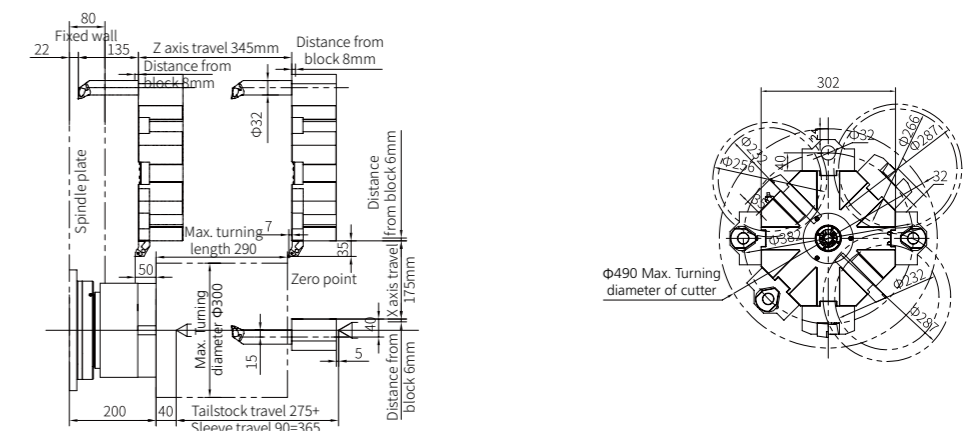
(Notes: "◎" option configuration, "※" Cannot be configured)

No.	Item	HTC150II	HTC 200II X 360	HTC 200II X 560	HTC300II
1	Hollow chuck	◎	◎	◎	◎
2	Hard jaw	◎	◎	◎	◎
3	Controller:fanuc 0i-tf	◎	◎	◎	◎
4	Servo tailstock with live quill	◎	◎	◎	※
5	Servo tailstock with live sleeve	※	◎	◎	◎
6	Power turret	◎	◎	◎	◎
7	Air condition	◎	◎	◎	◎
8	Workpiece water gun	◎	◎	◎	◎
9	Workpiece air gun	◎	◎	◎	◎
10	Auto door	◎	◎	◎	◎
11	Auto window	◎	◎	◎	◎
12	Tool setter	◎	◎	◎	◎
13	Auto bar feeder	◎	◎	◎	◎
14	Chuck air blow	◎	◎	◎	◎
15	Coolant through tool (1-7mpa)	◎	◎	◎	◎
16	Oil mist collector	◎	◎	◎	◎
17	Oil skimmer	◎	◎	◎	◎
18	Voltage regulator	◎	◎	◎	◎
19	External chain type chip conveyor	◎	◎	◎	◎

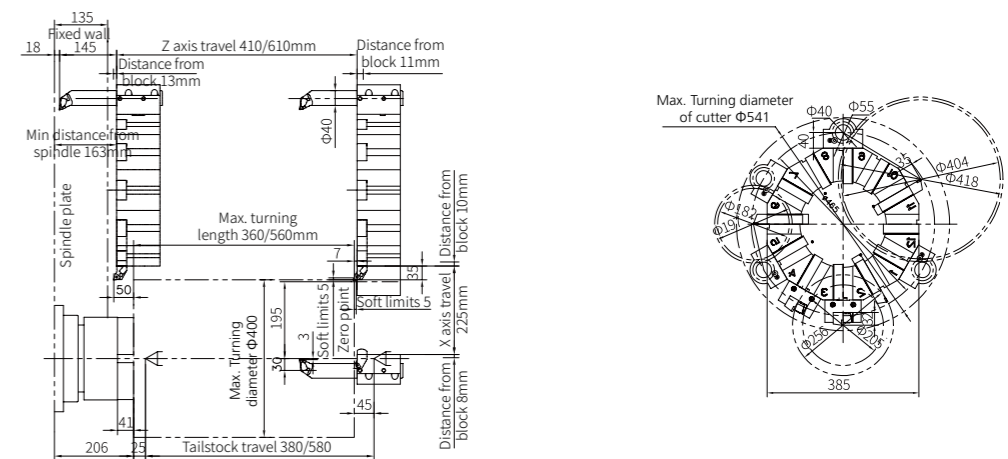
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Processing Range & Tool Interference Diagram

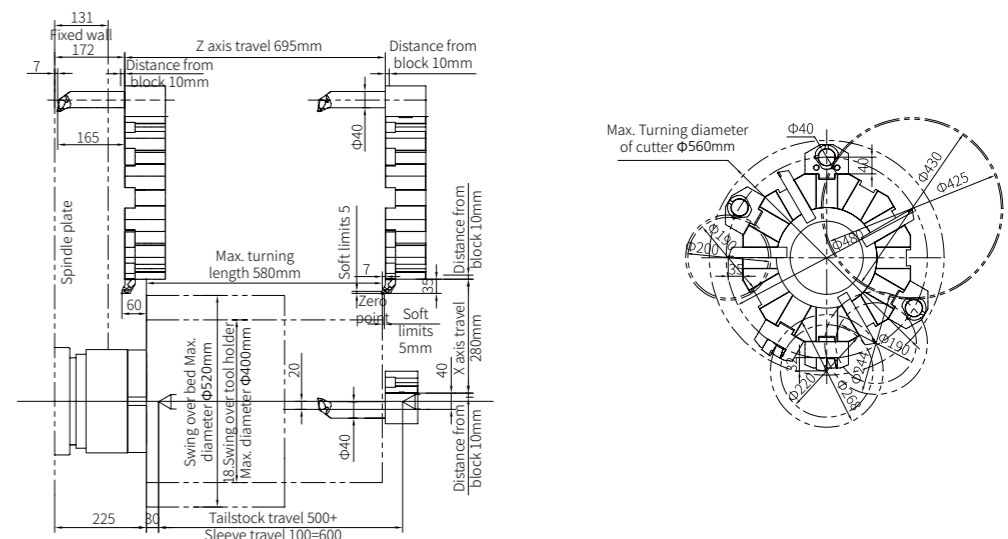
HTC150 II



HTC200 II



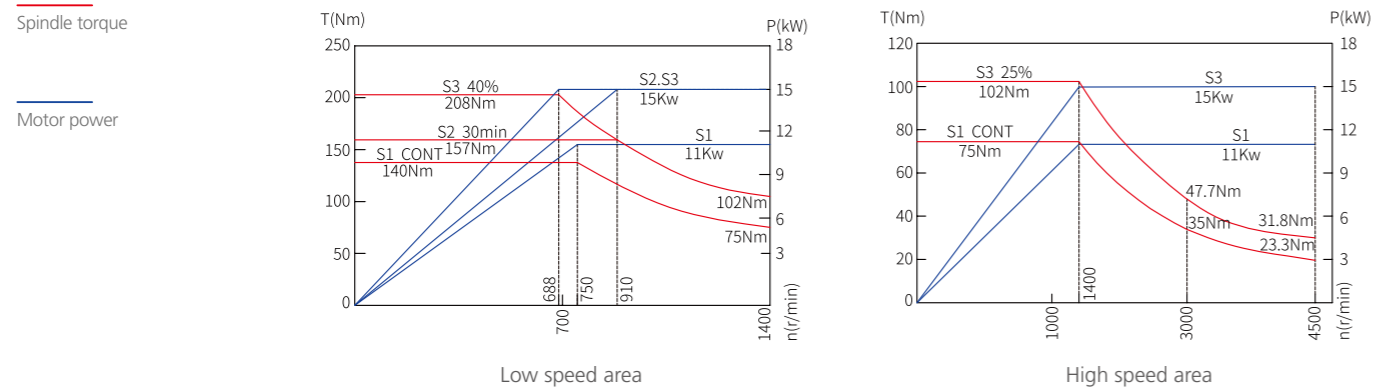
HTC300 II



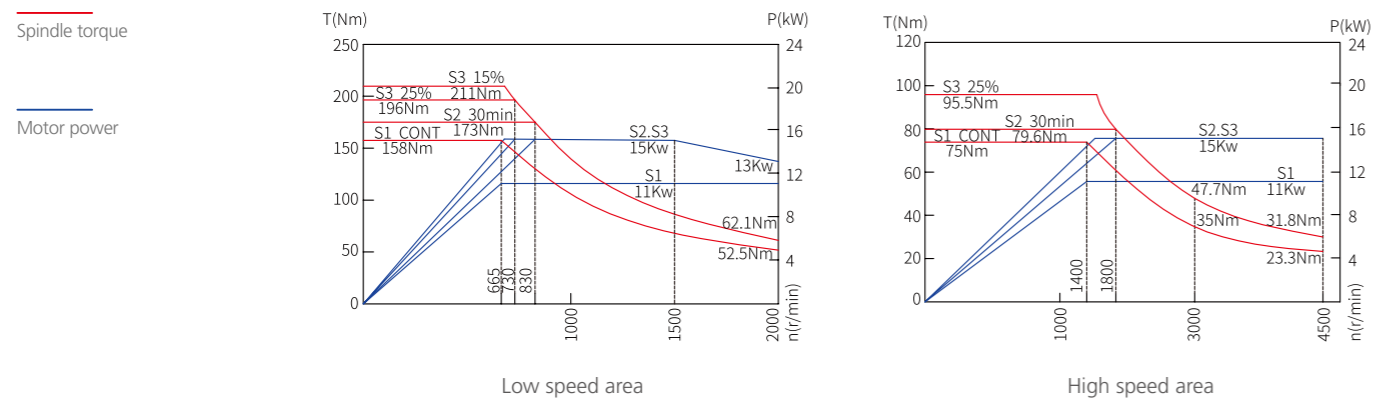
HTC II

Power-torque Diagram

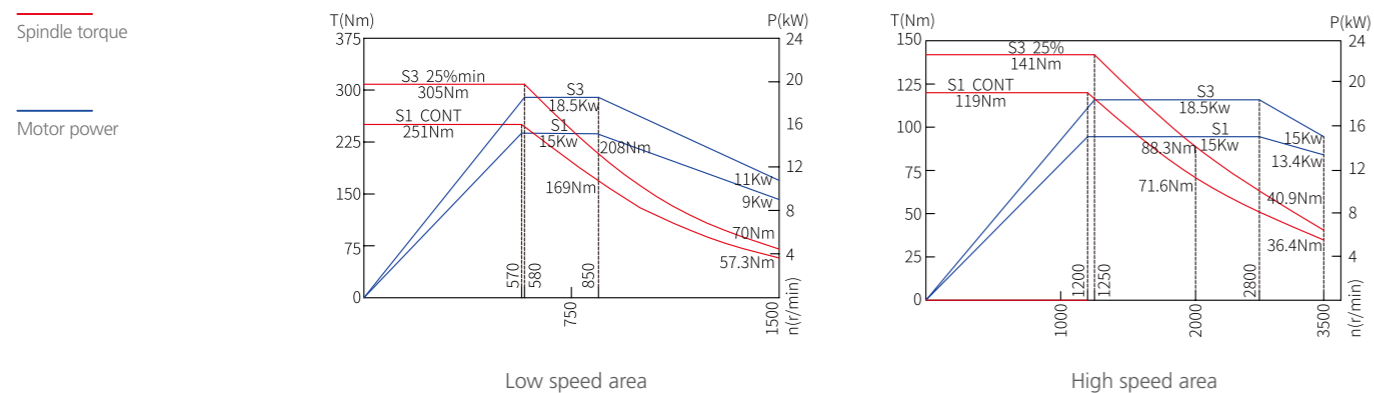
HTC150 II Power & Torque Diagram



HTC200 II Power & Torque Diagram



HTC300 II Power & Torque Diagram



HIGH ACCURACY

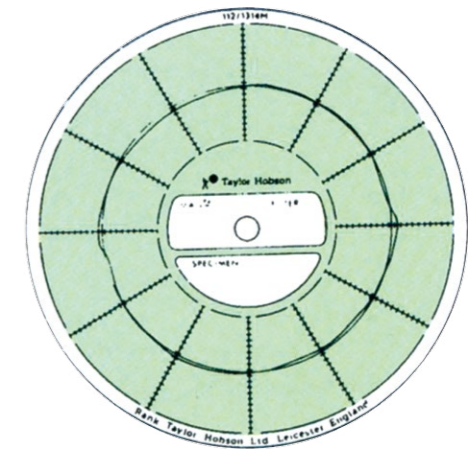
Dynamic Accuracy

Model	Positioning Accuracy(mm)	Re-positioning Accuracy(mm)
CFV Series	0.006	0.004
HPC Series	0.010	0.006
HTC II Series	0.008	0.005

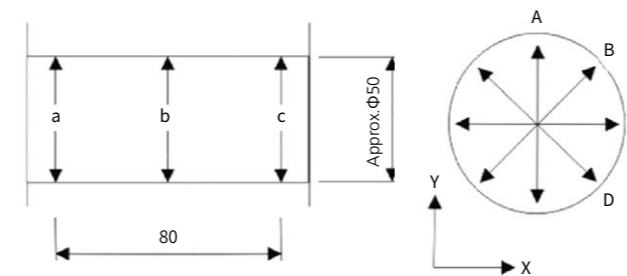
HPC Series

Superhigh Cutting Accuracy

- Circular interpolation accuracy (endmils) ----- 0.02mm
- Roundness(tolerance)standad values ----- 0.008mm
- Measurd value ----- No.20 cast steel
- Workpiece material: No.20 cast steel ----- Φ 250mm
- Outer diameter ----- 50m/min
- Linear velocity ----- 200mm/min
- Feed rate ----- 0.1mm
- Cutting depth -----

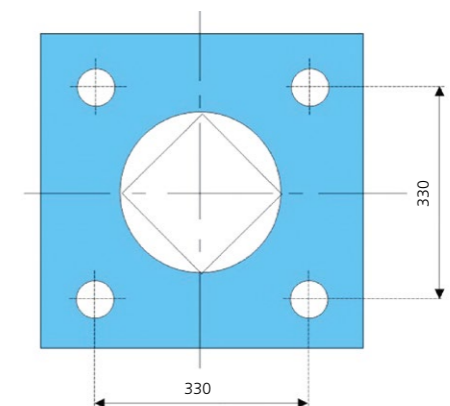


Boring Accuracy



	Standard value	Measured value
Roundness	0.005mm	0.005mm
Cylindricity	0.005mm	0.005mm

Workpiece Material



- Measured value----- 0.004mm
- Workpiece material----- No.25 cast steel
- Adjacent pitch----- 330mm

Provide Automotive Production Line Solutions

Suitable For Multi-Variety & Different Quantity Of Workpiece Production

- Installation and process preparation time can be reduced by placing parts in the upper and lower stations.
- Implement unmanned or less Humanized operation, reduce labor cost and reduce employee labor intensity.
- To achieve highly refined management of production and reduce inventory of raw materials and finished products.
- Implement tool management and integrated management, and can be connected to the factory's EPR and MMS systems, provide production reports and production scheduling services at any time.
- Stable product quality.
- Maximizing Machine Production Efficiency.
- Flexible operation,with wide range of processing products ability.

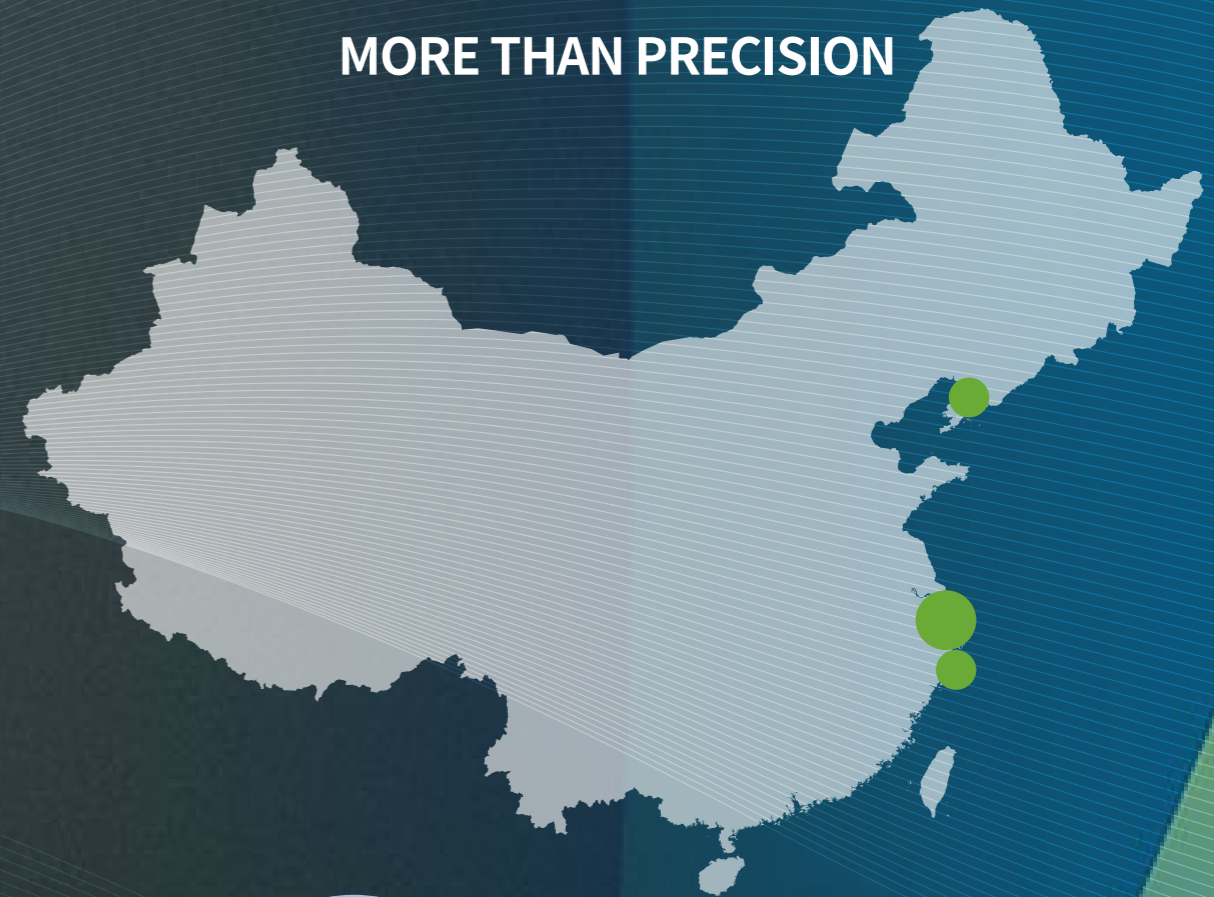
Customized FMS Production Lines Meet Individual Production Needs



FMS Automation Production Lines

Small/medium model	Single machine FPC unit with linear pallet magazine
Medium/large model	Multi-machine FPM system with Linear single-layer or multi-layer
Professional model	MLS System with Large Custom Flexible Multi pallet

MORE THAN PRECISION



DAGANG PRODUCTION BASE

It has 80,000 M2 Modern constant temperature production base. As Chinese government demonstration enterprise of high-end CNC machine tool intelligent manufacturing, it has the manufacturing capabilities of CNC turntable core parts, built-in spindle and horizontal machining centers, CNC lathes, CNC turning centers. It has 80,000 M2 Modern constant temperature production base. As Chinese government demonstration enterprise of high-end CNC machine tool intelligent manufacturing, it has the manufacturing capabilities of CNC turntable core parts, built-in spindle and horizontal machining centers, CNC lathes, CNC turning centers.



YANSHAN PRODUCTION BASE

It has 100,000M2Modern constant temperature production base. It has the ability to provide large equipment. It has mass production of DCMC, Bridge type high-speed machining centers, 5-axis machining center, CNC vertical lathe.



DALIAN PRODUCTION BASE

It has 1,120,000M2 Modern constant temperature production base. The establishment of Dalian production base is the strategic layout of the group company, serve northern customers and seize business opportunities.

