

**蕙勒 US WHEELER**

Industrial Robot + CNC Machinetools + Intelligent Factory

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**杭州蕙勒智能科技股份有限公司**

HANGZHOU WHEELER GENERAL MACHINERY INCORPORATED CO.,LTD

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For more information,  
please pay attention  
to the official WeChat  
account

**400 780 1898**

We provide on-call service 24 hours a day, 7 days a week. If you encounter any equipment maintenance and repair problems, please contact us. If you have any suggestions, please log in to the company's official website to leave a message.



Sample parameters and information are subject to change without prior notice, and the final data is subject to the technical agreement.



**HL-EM02303-01-1000**

杭州蕙勒智能科技股份有限公司

HANGZHOU WHEELER GENERAL MACHINERY INCORPORATED CO.,LTD

# EM Series

VERTICAL MACHINING CENTER

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**US WHEELER**

**蕙勒**

INDUSTRIAL ROBOT/CNC  
MACHINETOOLS/INTEL-  
LIGENT FACTORY

# ABOUT US

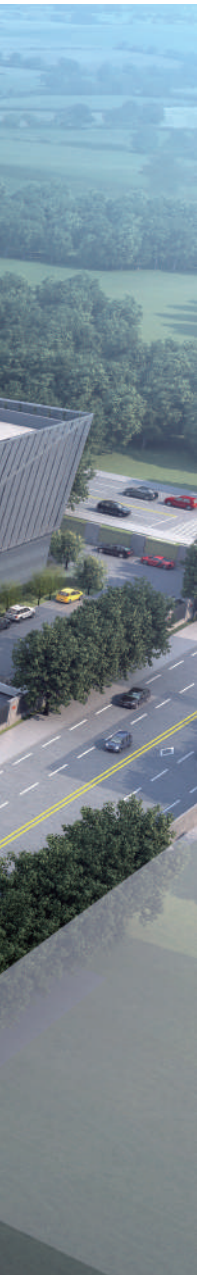
Hangzhou Wheeler General Machinery Incorporated Co., Ltd. is a national high-tech enterprise specializing in CNC machining equipment, automatic machine tool loading and unloading, digital factories, and non-standard fixtures design and manufacture. The company was established in January 2015, and is located in Linping District, Hangzhou City. The company has more than 300 employees, and an efficient professional technology research and development team, including more than 60 professional and technical personnel with various intermediate and senior technical titles (engineers). The company has a 5,000-square-meter R&D center and a 43,000-square-meter production and debugging base, and has more than 50 patented technologies. There are offices and after-sales service outlets in 22 prefecture-level cities in China, as well as professional agency partners and service outlets in Turkey, Russia, Egypt, South Africa, Brazil, Australia, Singapore, Malaysia, Thailand and other countries.



**Certification  
system we  
have passed**



Wheeler is currently a strategic partner of robotics companies such as KUKA(Germany), ABB(Switzerland), CNC system companies such as Fanuc, Mitsubishi(Japan), Seimens(Germany). We provide customers with mechanical mechanical processing automation technology scheme design, a full set of automation equipment, technical consultation, and perfect after-sales and technical services. The company's products are widely used in mass production industries such as auto parts processing and construction machinery.



# MACHANICAL STRUCTURE

## EM series vertical machining center

EM series vertical machining center is a new generation of CNC machine tools produced by US-WHEELER with advanced technology. The rational structure design of machine tools, high rigidity, high stability, high precision and high quality parts selection effectively save processing time.



### + Humanity Design



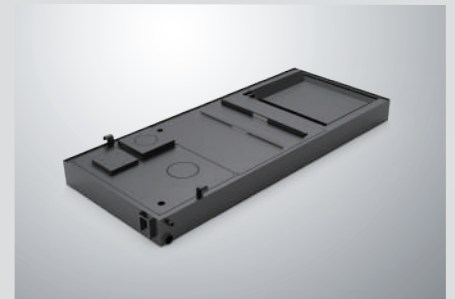
#### centralized layout

Auxiliary equipment is gathered right behind the machine for easy inspection.



#### Rotary operating panel

0°~60°rotatable operation panel improves operation convenience and visibility.



#### Standard water tank

A full range of multi-layer filter debris tanks ensure clean and efficient return water.



## Application

This series of machine tools has strong overall rigidity, convenient and flexible operation, and fully enclosed protection. It is suitable for the processing of box parts and complex two-dimensional and three-dimensional molds. After the parts are clamped once, multiple processes can be realized. It is widely used in multi-process parts and mold processing in industries such as automobiles, molds, aviation and military industries. It can also add rotary coordinate axes according to customer needs to process multi-angle parts and cylindrical gears, Cams and other types of parts.



# MACHANICAL STRUCTURE



## Spindle

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The spindle adopts precision sleeve-type, its body assembled with high-grade P4 Class bearings.

The inner hole taper of the spindle is stable and thick, which can ensure no vibration during cutting at various speeds.

It extends the tool life and improves the machining precision of the workpiece surface.



## Roller guide rail

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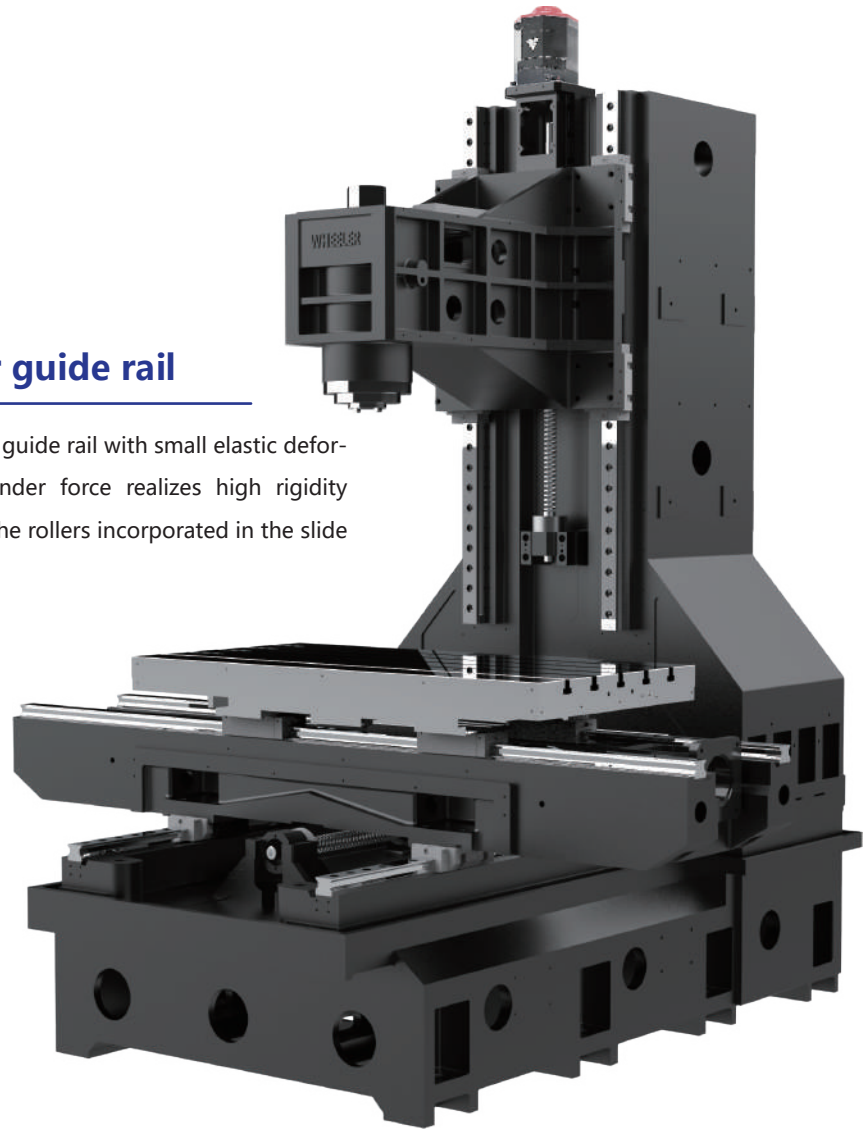
The roller guide rail with small elastic deformation under force realizes high rigidity through the rollers incorporated in the slide unit



## Ball screw

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It adopts imported C3 grinding grade screw rod, which has the characteristics of good rigidity, wear resistance, torque resistance and long service life. After adding the pre-tension nut, the backlash is eliminated to ensure the high machining accuracy of the machine.



# MAIN CONFIGURATION



## High-speed ATC tool magazine

The tool changer is driven by a cam motor. During processing, the tool magazine can rotate to the next tool to be used to wait for the tool change command, which can minimize non-cutting time. At the same time, 24 tools can be assembled (optional 30 tools), to diversify its processing.

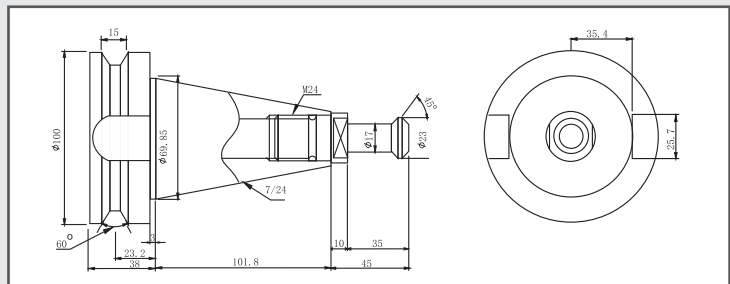
**T 24**   
Standard

**T 30**   
Optional

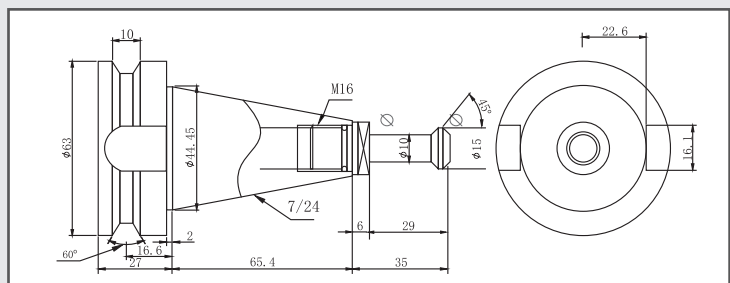
### Tool Holder Type Diagram

Match the corresponding size tool holder according to the processing requirements of the equipment

#### BT 40

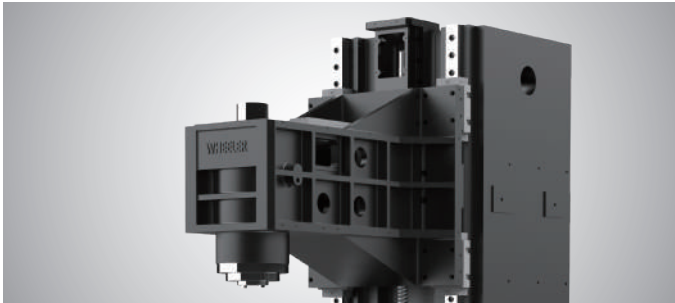


#### BT 50



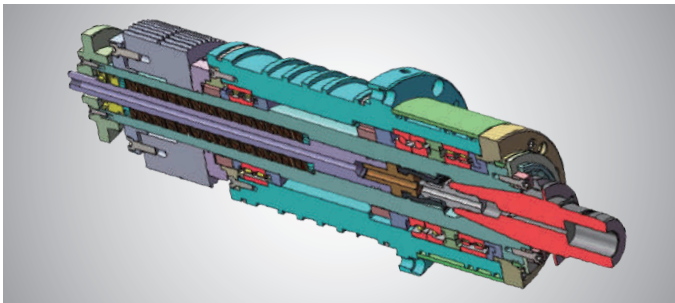


# MAIN CONFIGURATION



## + Spindle

The proportion of the contact length between the spindle head and the column is appropriate, which provides stable support for the spindle. The spindle head has a built-in independent cooling system, which keeps the heat of the spindle head within a reasonable range, reduces the thermal extension of the spindle, and ensures machining accuracy.

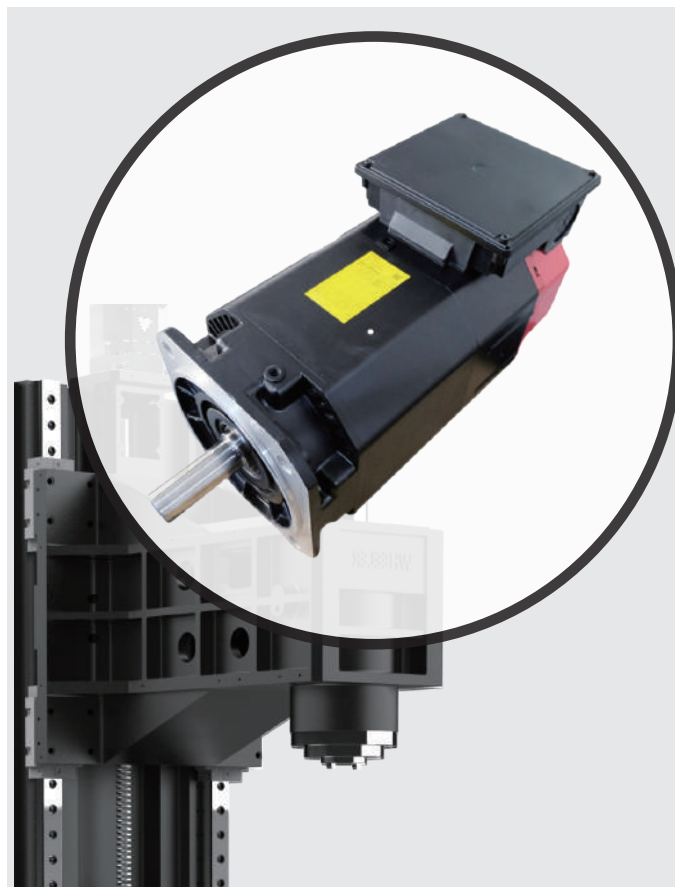


## + Spindle

The vertical machining center is equipped with a high-performance, high-precision spindle, providing faster acceleration and deceleration and more stable processing results. The high-precision, high-speed, high-torque spindle can adapt to the processing requirements of various parts and provide strong support for the high-precision and high-strength processing of the vertical high-speed machining center.

## High-performance spindle motor (for BT50) facilitates efficient machining

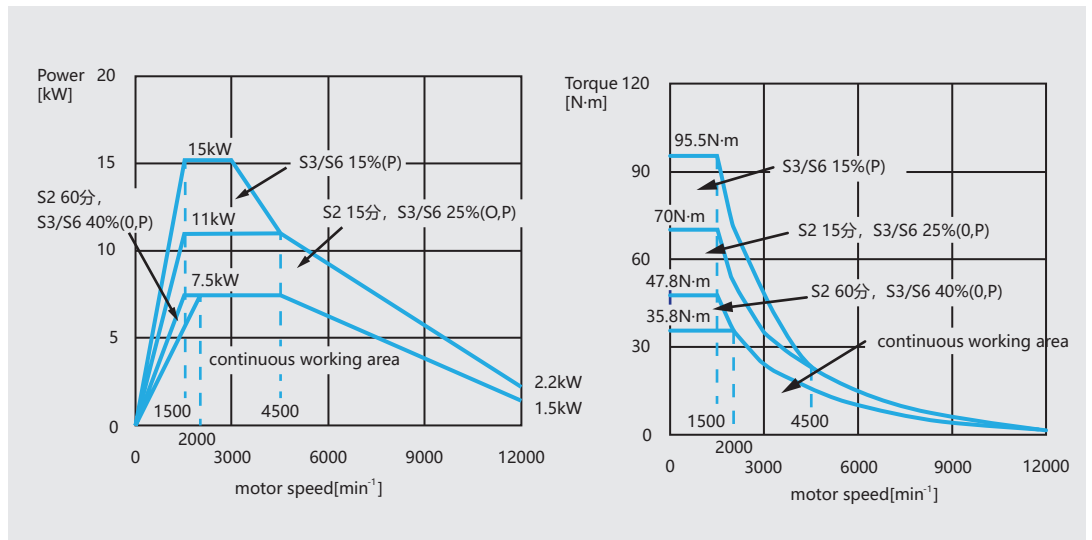
iIP-B series spindle motors are air-cooled asynchronous motors with compact structure, high output and high torque. Spindle motor HRV control makes it more efficient to control and generate less heat. It can provide a more stable machine tool processing effect and ensure the processing efficiency of the equipment.



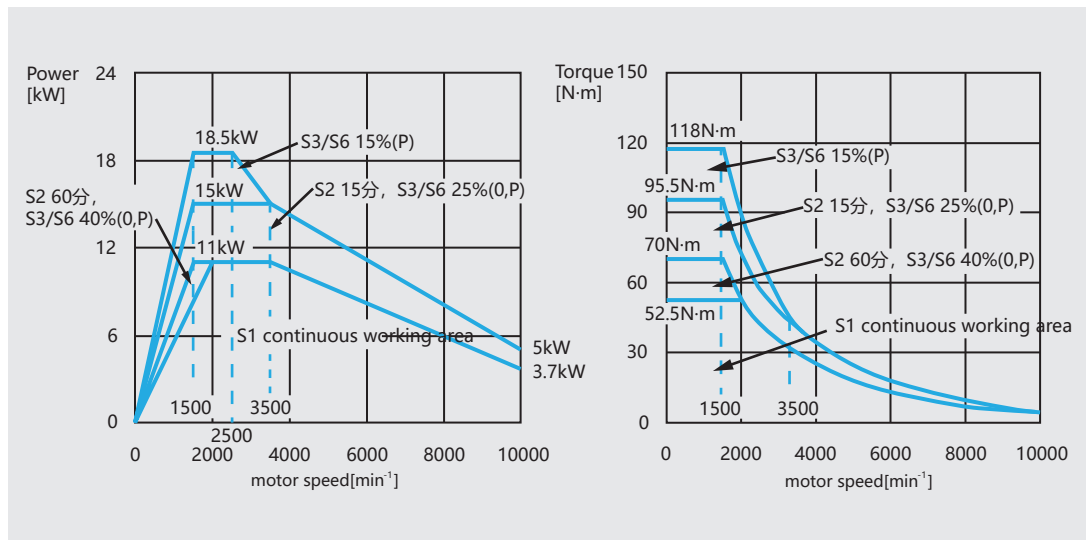
	7.5/11kW	11/15kW	15/18.5kW
Spindle drive	Synchronous belt drive		
Max. speed	12000rpm	10000rpm	8000rpm
Rated torque	35.8Nm	52.5Nm	143Nm
Max. Torque	95.5Nm	118Nm	236Nm

# MOTOR CHARACTERISTIC CURVE

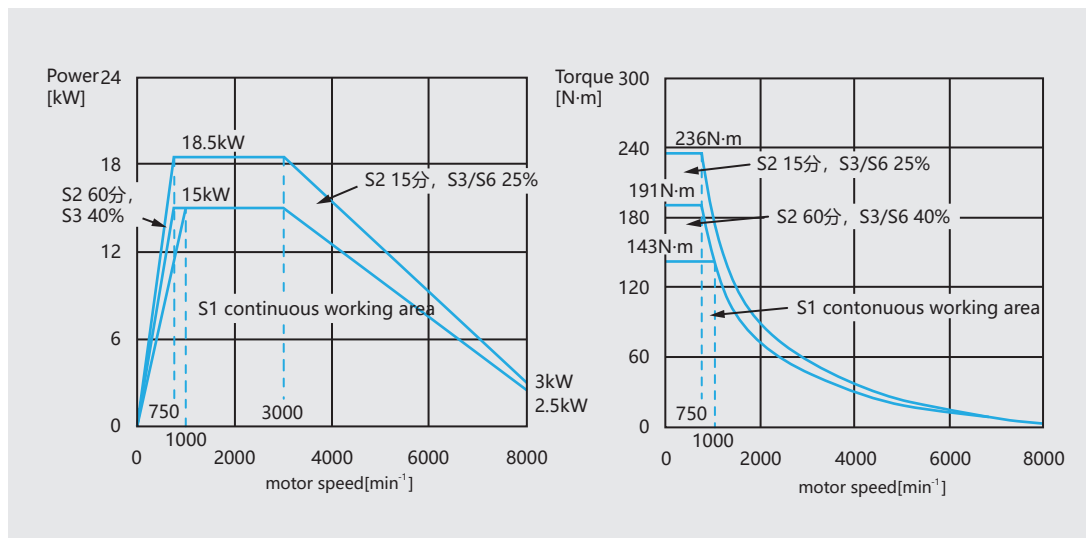
## 7.5/11kW



## 11/15kW



## 15/18.5kW



# OPERATION SYSTEM



## FANUC - OiMF PLUS

### Brand new operating experience

- equipped with *i* HMI(Type0)
- Maximum support 21.5" PANEL *i* H Pro
- Customized design according to customer needs

### Higher operating efficiency

- System Configuration Servo Selection Software
- Insulation deterioration detection function
- Fault Detection - Diagnostics feature provides quick troubleshooting
- Prevention of machine tool damage during power outages

### Stronger performance

- Smart Servo Control
- Fine surface treatment technology
- Efficient Processing Technology



## OiF Plus System storage capacity leaps and bounds

- storage capacity standard 2M+ 1000 programs
- support online editing of programs
- equipped with 24000 steps as standard
- PMC Full range standard MEM B
- User software capacity6M

## Richer functions

- AICC I/II
- multi-step skip
- dynamic graphic display
- AI thermal compensation

## More convenient operation

- storage capacity leap
- One-key setting for efficient processing
- Shortcut macro call
- Program Online Editing



## Efficient processing settings

Recommended settings that can be set with one touch



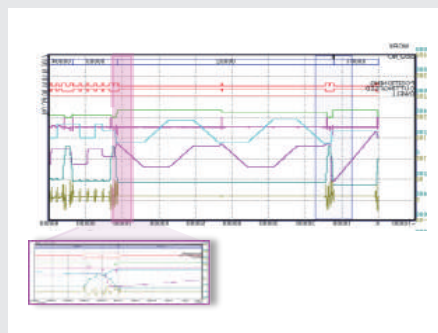
## Dynamic graphic display

3D model, no mechanical movement simulation



## Tool magazine test

For MTB



## Servo sensor

Supporting Machine Behavior Improvement Through Visualization



## VMC tool magazine

Rich tool magazine data display



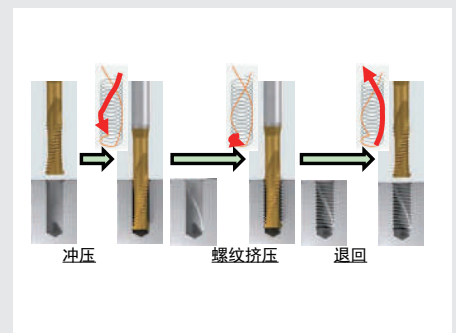
## Automatic middle interface

Calculate the center coordinates and set them to the coordinate system



## Development Platform

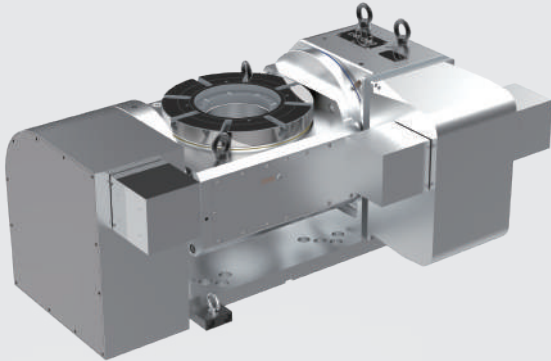
Composable module development



## The latest machining technology Punch Tap

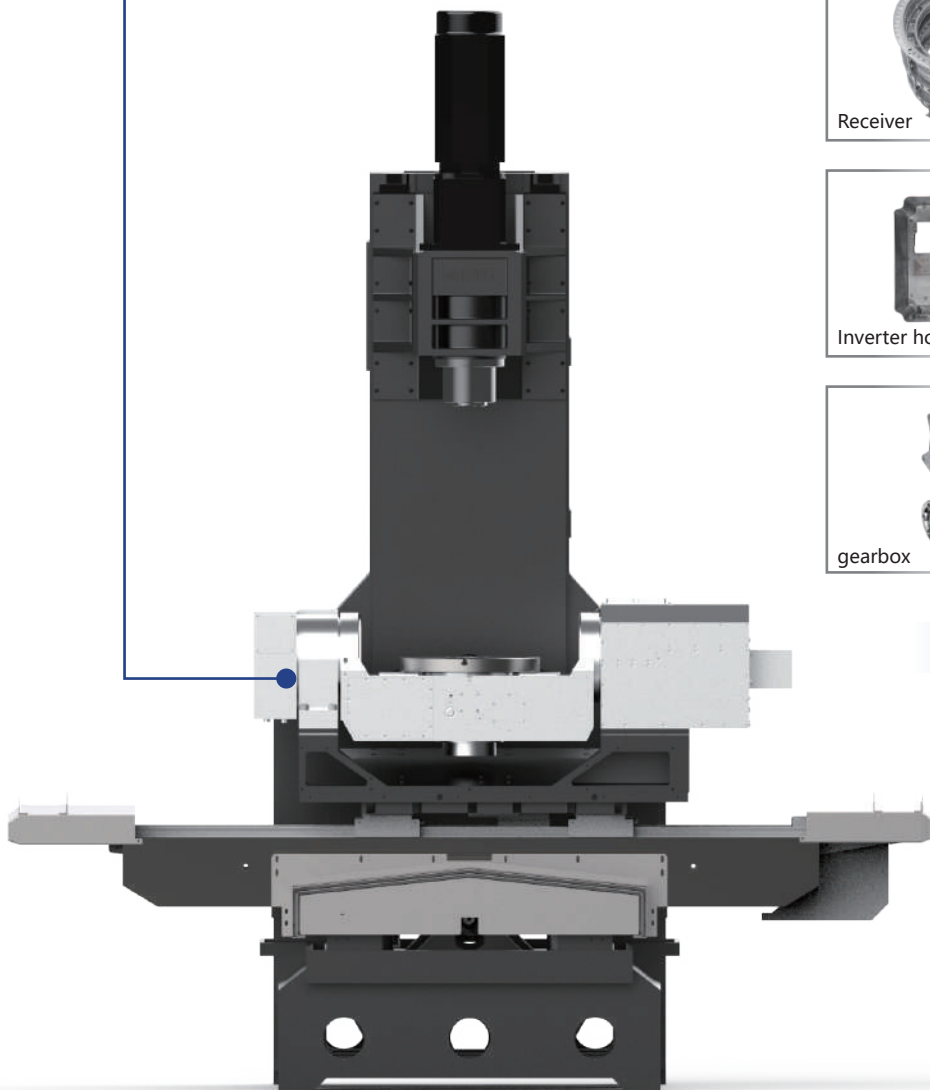
Special tools that respond to high productivity

# 5/4 AXIS TURN TABLE SYSTEM



## Optional 5/4 AXIS TURN TABLE SYSTEM

Adding four or five axes to the machine tool can make the processing surface of the tool wider, and can reduce the repeated clamping of the workpiece, which is conducive to simplifying the process, improving efficiency, shortening production time, and reducing costs. Complete multi-faceted processing in one clamping, and then integrate with the automated robotic arm to prepare for the infrastructure of Industry 4.0.



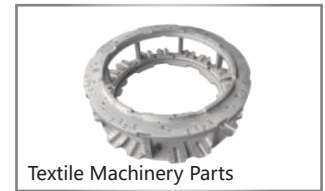
Receiver



Motor case



Inverter housing



Textile Machinery Parts



gearbox



steering knuckle

## Application

- New energy vehicles ■
- Aerospace ■
- Photovoltaic industry ■
- Traditional Auto Parts ■
- Textile industry ■

# STANDARD CONFIGURATION

- FANUC control system

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- Water tank cooling device

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- Automatic lubrication device

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- Outer shield

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- Spindle taper hole blowing device

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- Automatic Tool Changer (Robot Arm)

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- Transformer

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- Electrical cabinet heat exchanger

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- Hand wheeler

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- Working lamp

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- Tri-color warning light

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- LCD Monitor

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- Tools, toolbox

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- Operation Manual

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- Pneumatic components

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- Air gun



## Full cover tool magazine

Prevent moisture and dust from inside the tool magazine.



## Heat exchanger

Effectively block moisture, oil gas, and dust from entering the electric control box.



## Spindle

6000RPM-12000RPM optional, using ultra-precision P4 bearings, optional oil cooling to maintain the stability of the spindle temperature rise; and optional central water outlet.



## Screw

The screw rod is pre-compressed precisely, so that it has better rigidity and effectively reduces the thermal expansion and contraction phenomenon in use, and improves the service life and precision retention.

## 选择配置

### OPTIONAL CONFIGURATION

- Spindle oil cooling device

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- Spindle center water outlet system

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- Oil water separator

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- CNC turntable (four-axis/five-axis)

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- Auto Tool Length Measuring System

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- Manual/automatic side milling head

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- ZF gearbo

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- water gun

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- Chain chip conveyor



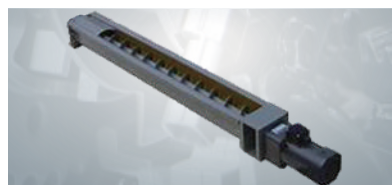
## Oil cooler

Maintain a constant temperature to ensure the machining accuracy of the spindle, and you can choose the constant temperature and room temperature synchronous mode.



## Oil water separator

Effectively remove cutting fluid slick oil, maintain the performance of cutting fluid, and prolong the service life of cutting fluid.



## Spiral Chip Conveyor

Easy installation, stable operation and low noise.



## Auto knife length measuring device

Improve work efficiency and ensure machining accuracy.

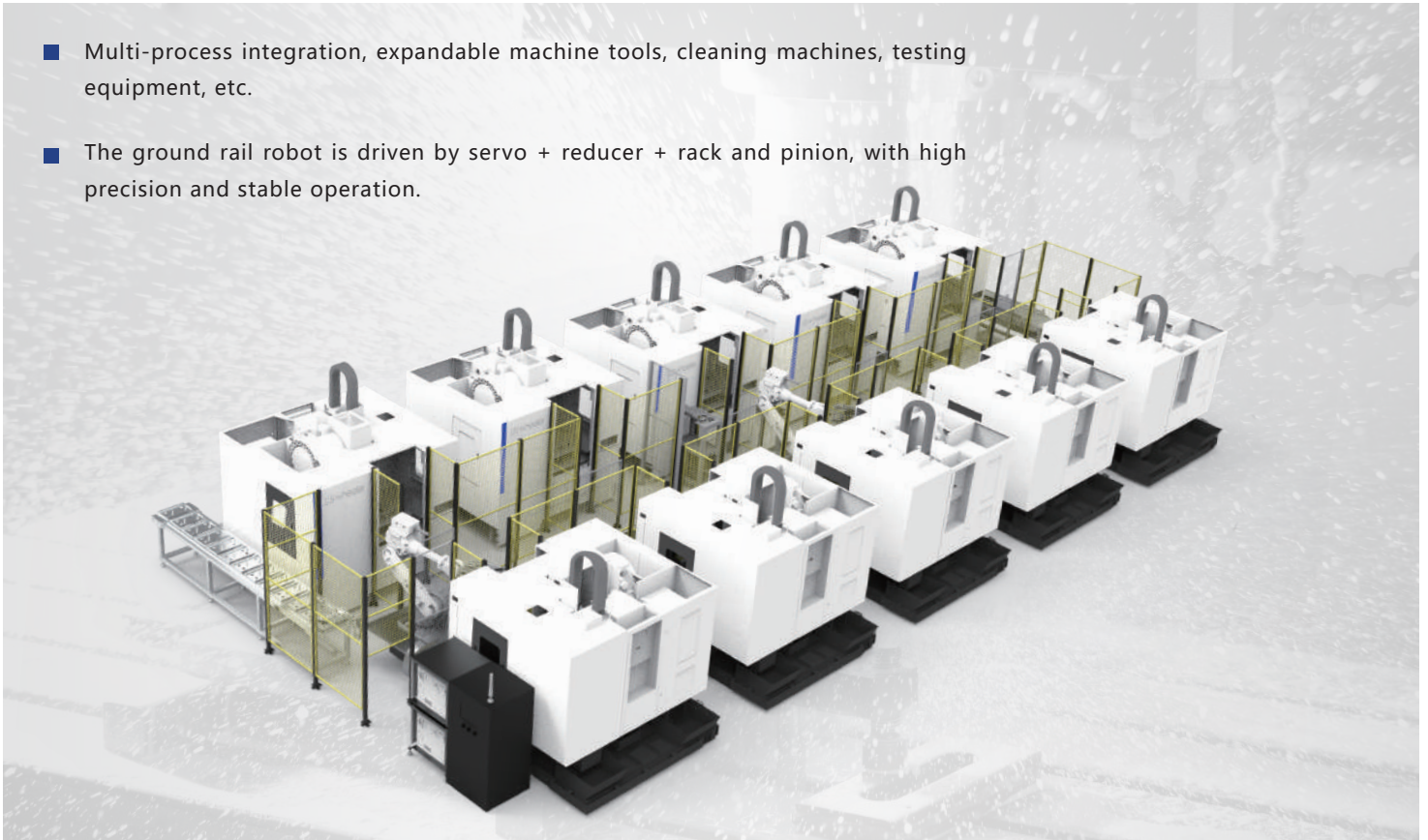
# AUTOMATIC MANUFACTURE

US-wheeler provides a complete set of automation project solutions from design to delivery, and its main business covers machine tool loading and unloading, automated production line integration, intelligent warehousing and logistics. There are four directions for households to build smart factories.

## + Vertical processing robot ground rail line

### Production line features

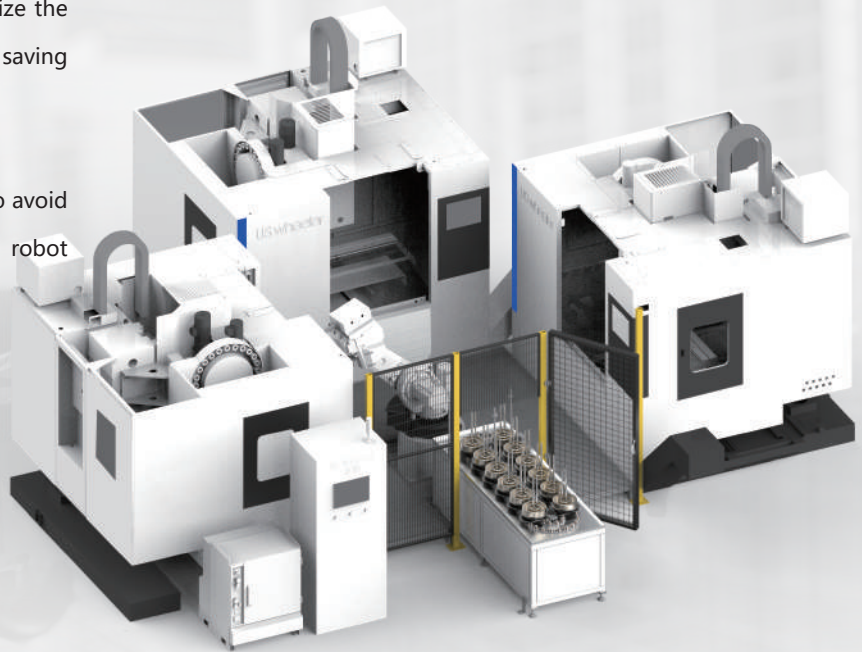
- Multi-process integration, expandable machine tools, cleaning machines, testing equipment, etc.
- The ground rail robot is driven by servo + reducer + rack and pinion, with high precision and stable operation.



## + Top and twin-side bottom

### Production line features

- The silo adopts a rotating silo, which can realize the sharing of loading and unloading, realize cost saving and space saving.
- Set up a ground water tray in the robot area to avoid water dripping onto the ground during robot handling.



## + Truss manipulator unit

### Production line features

The truss is driven by servo + reducer + rack and pinion, with high precision and stable operation; the vertical space of the site is used to reduce the area occupied by the whole line

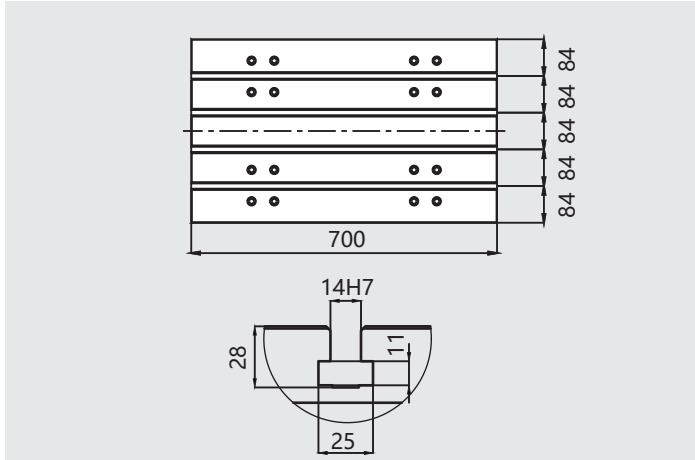
Compatible with multiple models and specifications



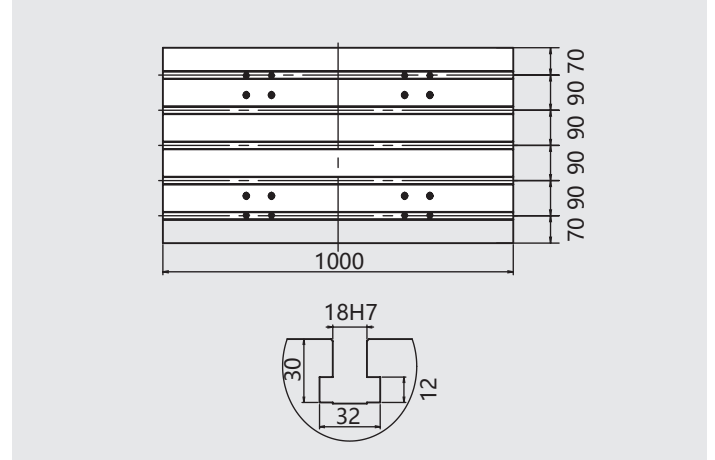


# WORK TABLE SIZE

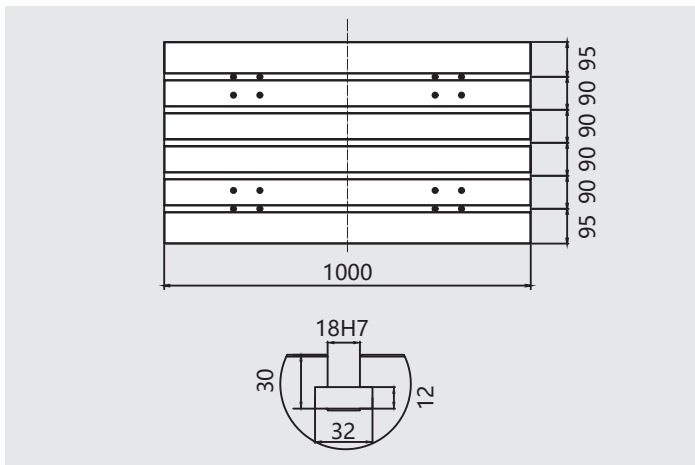
EM 600A



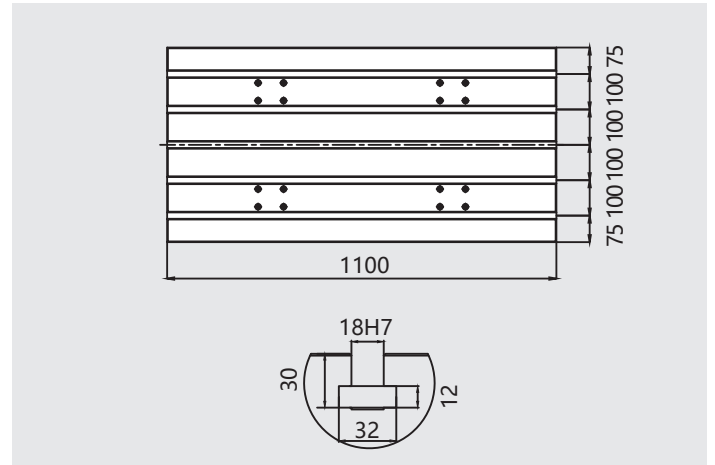
EM 800A



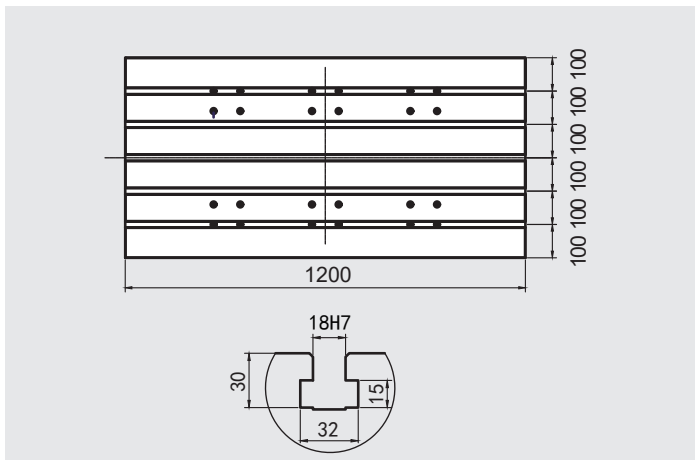
EM 855A



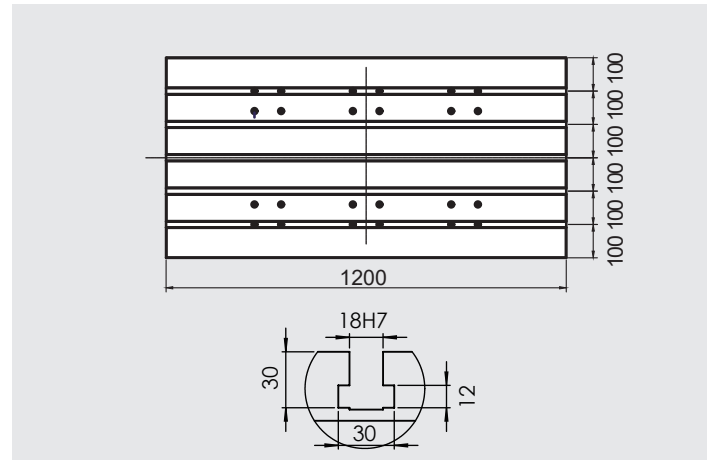
EM 900A



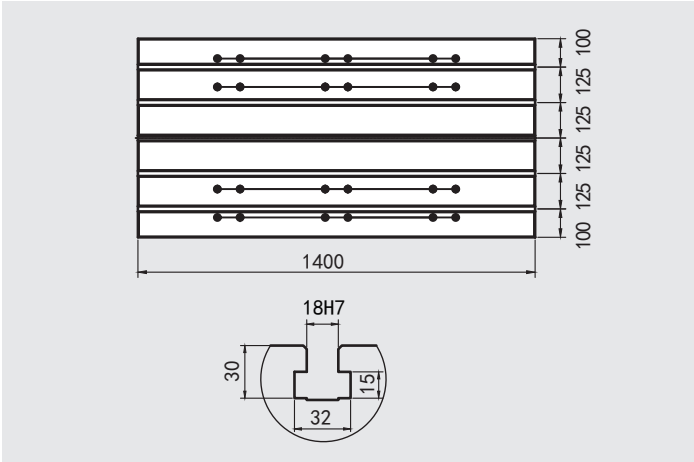
EM 1100A



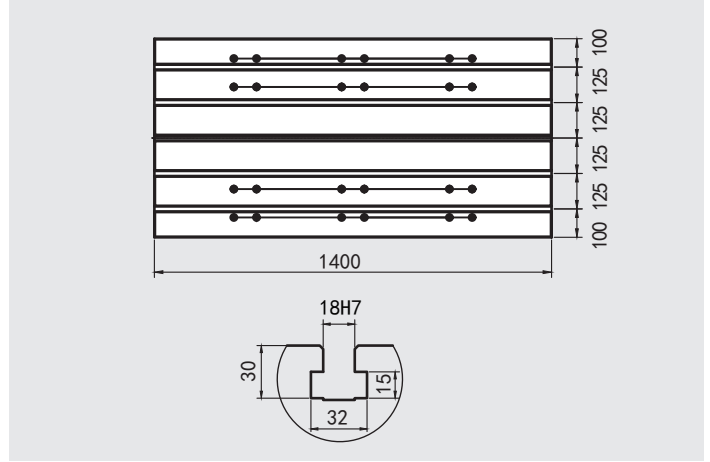
EM 1165Z



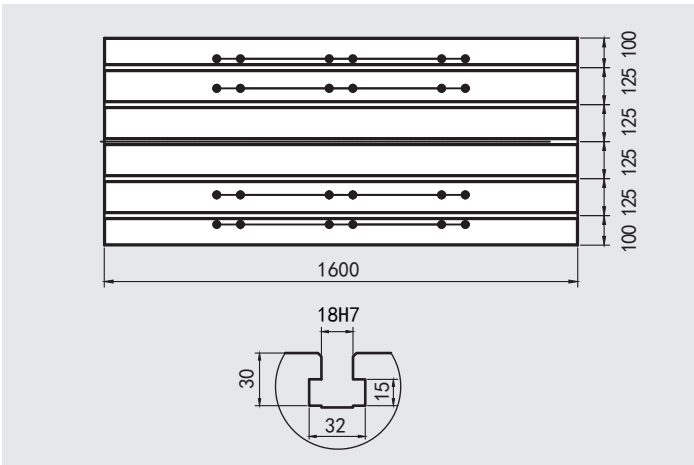
**EM 1300A**



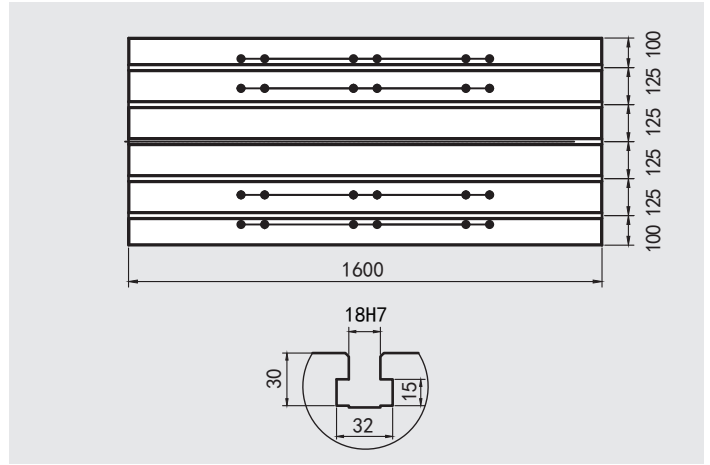
**EM 1300B**



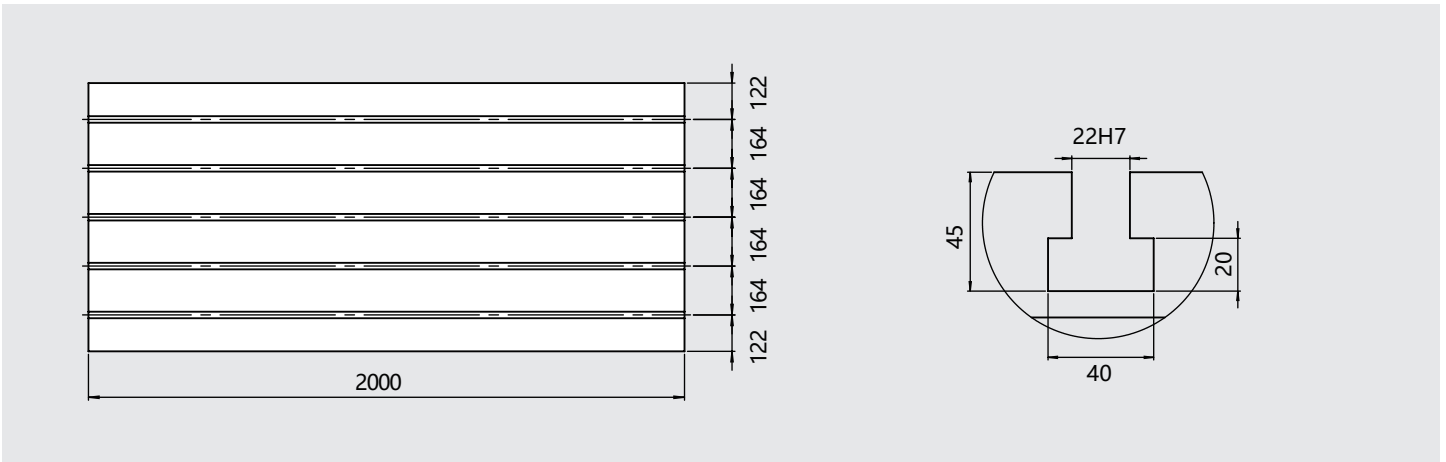
**EM 1500B**



**EM 1570**

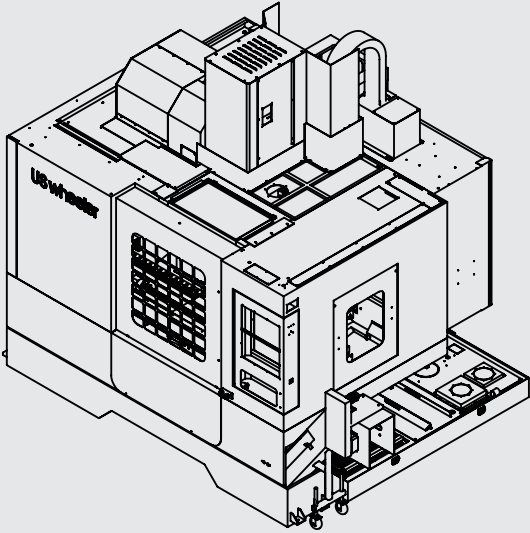


**EM 1800B**



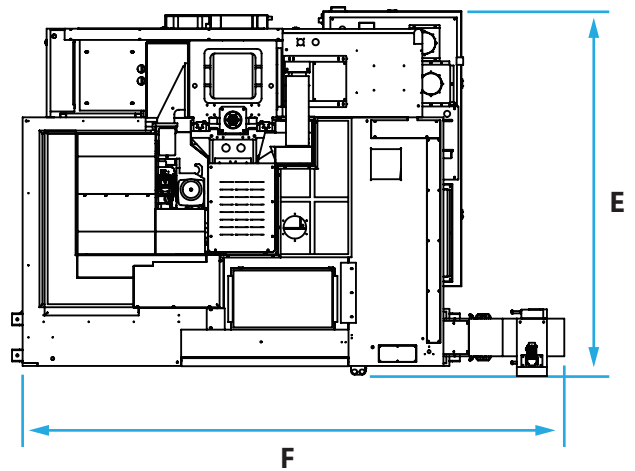
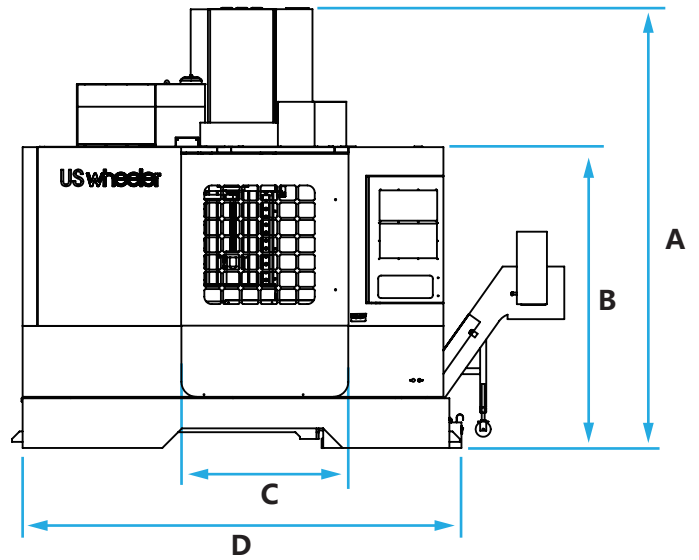
# MACHINE DIMENSIONS

- Standard single door model



Appearance Applicable Models:

- EM 600A    EM 800A    EM 855A
- EM 900A    EM 1100A

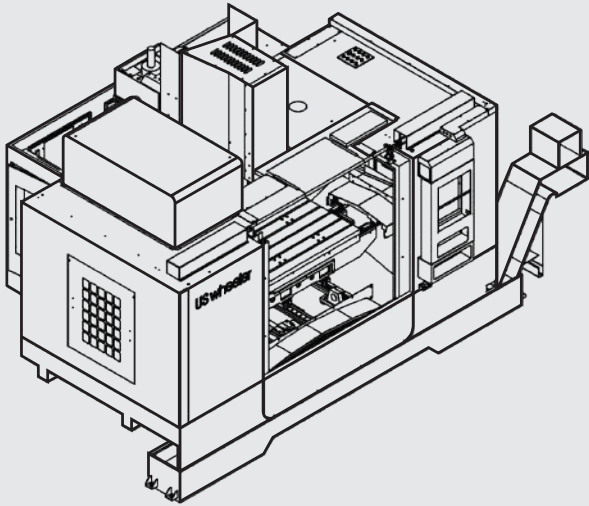


## + Detailed model size

unit: mm

	A	B	C	D	E	F	Weight(about kg)
EM 600A	2850	1950	730	2050	2050	2280	3700
EM 800A	2850	2000	1000	2500	2240	3600	5000
EM 855A	3000	2200	800	2500	2310	2600	5400
EM 900A	3000	2200	800	2500	2310	2600	5800
EM 1100A	2928	2002	1114	2840	2388	3674	6500

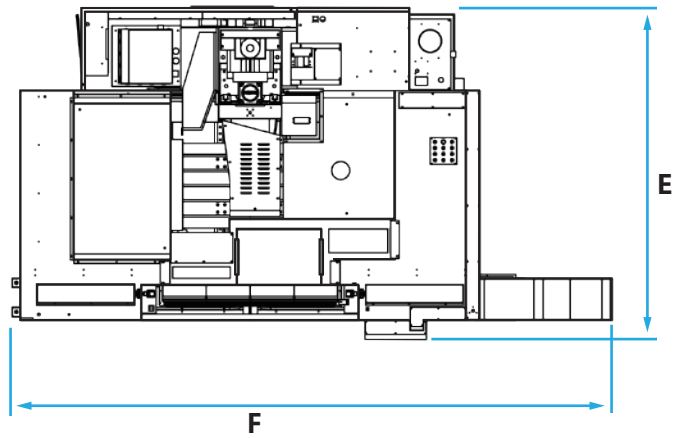
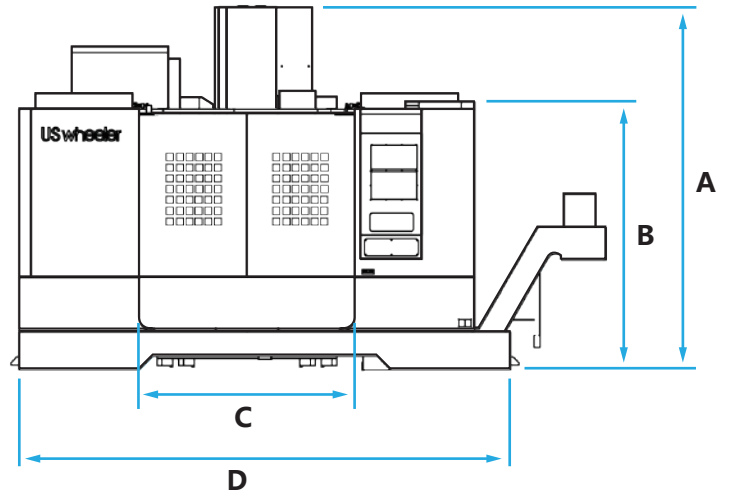
■ Standard two-door model



Appearance Applicable Models:

EM 1300A EM 1370 EM 1570Z

EM 1165Z EM 1500B



**+ Detailed model size**

unit: mm

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>Weight(about kg)</b>
EM 1165Z	2900	2214	1503	3200	2400	4000	7200
EM 1300A	3150	2270	1600	3670	2720	4430	7800
EM 1300B	3150	2270	1600	3670	2720	4430	7800
EM 1500B	3610	2420	1800	4300	3250	4000	10400
EM 1570	3300	2420	1750	4460	2750	5250	9000

# DETAILED PARAMETERS

The final parameters are subject to the technical agreement\*

			EM 600A	EM 800A	EM 855A
<b>Processing range</b>	X Axis	mm	600	800	800
	Y Axis	mm	400	500	550
	Z Axis	mm	450	500	550
	Spindle nose to table surface	mm	150-600	150-650	120-670
	spindle center to column rail surface	mm	447	547	590
<b>Worktable</b>	Table size	mm	700*420	1000*500	1000*550
	max bearing	Kg	350	500	600
	T-slot Number	Num	4	5	5
	T-slot size/spacing	mm	14*84	18*90	18*90
<b>Spindle</b>	spindle drive	-	Synchronous belt drive	Synchronous belt drive	Synchronous belt drive
	Spindle speed	r/min	50-10000	50-10000	50-8000
	spindle power	kW	7.5/11	7.5/11	11/15
	Spindle motor torque (rate/max)	N·m	35.8/95.5	35.8/95.5	52.5/118
<b>Servo axis</b>	rapid speed on X/Y/Z	m/min	42/42/48	42/42/42	42/42/42
	X/Y/Z servo motor drive	-	Direct drive	Direct drive	Direct drive
	X/Y/Z servo motor speed	rpm	3000/3000/3000	3000/3000/3000	3000/3000/3000
	X/Y/Z axis screw diameter	mm	Φ32/Φ32/Φ32	Φ40/Φ40/Φ40	Φ40/Φ40/Φ40
	X/Y/Z axis screw pitch	mm	16/16/16	16/16/16	16/16/16
	Cutting feed rate	mm/min	1-10000	1-10000	1-10000
	Minimum feed	mm	0.001	0.001	0.001
<b>Tool magazine</b>	Magazine capacity	No.	24	24	24
	Tool magazine form	-	ATC	ATC	ATC
	Tool shank type	-	BT-40	BT-40	BT-40
	handle pull stud	-	45°	45°	45°
	tool diameter (adjacent)	mm	Φ80	Φ80	Φ80
	tool diameter (no adjacent)	mm	Φ150	Φ150	Φ150
	tool length	mm	300	300	300
	tool weight(max)	Kg	8	8	8
	tool to tool change time	Sec	2.5/3	2.5/3	2.5/3
<b>Accuracy</b>	positioning accuracy	mm	±0.005	±0.005	±0.005
	repositioning accuracy	mm	±0.003	±0.003	±0.003
<b>Other</b>	Machine weight	(about)Kg	3700	5000	5400
	Floor area	mm	2050*2280	2500*2240	2600*2310
	Machine height	mm	2850	2850	3000
	power capacity	kVA	25	25	25
	Lubricating oil capacity	L	3	3	3
	Cutting fluid capacity	L	250	286	286
	Air pressure	Bar	6~8	6~8	6~8
	CNC system		FANUC - 0iMF PLUS		

The final parameters are subject to the technical agreement\*

			EM 900A	EM 1100A	EM 1165Z
<b>Processing range</b>	X Axis	mm	920	1100	1100
	Y Axis	mm	550	600	650
	Z Axis	mm	570	600	600
	Spindle nose to table surface	mm	120-690	120-720	130-730
	spindle center to column rail surface	mm	590	650	680
<b>Worktable</b>	Table size	mm	1100*550	1200*600	1200*600
	max bearing	Kg	800	800	800
	T-slot Number	Num	5	5	5
	T-slot size/spacing	mm	18*100	18*100	18*100
<b>Spindle</b>	spindle drive	-	Synchronous belt drive	Synchronous belt drive	Synchronous belt drive
	Spindle speed	r/min	50-10000	50-8000	50-6000
	spindle power	kW	11/15	11/15	15/18.5
	Spindle motor torque (rate/max)	N·m	52.5/118	52.5/118	143/236
<b>Servo axis</b>	rapid speed on X/Y/Z	m/min	42/42/42	36/36/36	36/36/20
	X/Y/Z servo motor drive	-	Direct drive	Direct drive	Direct drive
	X/Y/Z servo motor speed	rpm	3000/3000/3000	3000/3000/3000	3000/3000/2000
	X/Y/Z axis screw diameter	mm	Φ40/Φ40/Φ40	Φ40/Φ40/Φ40	Φ40/Φ40/Φ40
	X/Y/Z axis screw pitch	mm	16/16/16	12/12/12	12/12/12
	Cutting feed rate	mm/min	1-10000	1-10000	1-10000
	Minimum feed	mm	0.001	0.001	0.001
<b>Tool magazine</b>	Magazine capacity	No.	24	24	24
	Tool magazine form	-	ATC	ATC	ATC
	Tool shank type	-	BT-40	BT-40	BT-50
	handle pull stud	-	45°	45°	45°
	tool diameter (adjacent)	mm	Φ80	Φ80	Φ110
	tool diameter (no adjacent)	mm	Φ150	Φ150	Φ200
	tool length	mm	300	300	300
	tool weight(max)	Kg	8	8	15
	tool to tool change time	Sec	2.5/3	2.5/3	4.5/7
<b>Accuracy</b>	positioning accuracy	mm	±0.005	±0.005	±0.005
	repositioning accuracy	mm	±0.003	±0.003	±0.003
<b>Other</b>	Machine weight	(about)Kg	5800	6500	7200
	Floor area	mm	2600*2310	2900*2400	2500*3200
	Machine height	mm	3000	3000	2900
	power capacity	kVA	25	30	30
	Lubricating oil capacity	L	3	3	3
	Cutting fluid capacity	L	286	286	286
	Air pressure	Bar	6~8	6~8	6~8
	CNC system		FANUC - 0iMF PLUS		

# DETAILED PARAMETERS

The final parameters are subject to the technical agreement\*

			EM 1300A	EM 1300B	EM 1500B/Z
<b>Processing range</b>	X Axis	mm	1300	1300	1500
	Y Axis	mm	700	700	800
	Z Axis	mm	700	700	700
	Spindle nose to table surface	mm	120-820	120-820	150-850
	spindle center to column rail surface	mm	750	750	900
<b>Worktable</b>	Table size	mm	1400*700	1400*700	1700*800
	max bearing	Kg	1000	1000	1200
	T-slot Number	Num	5	5	5
	T-slot size/spacing	mm	18*125	18*125	18*140
<b>Spindle</b>	spindle drive	-	Synchronous belt drive	Synchronous belt drive	Synchronous belt drive
	Spindle speed	r/min	50-8000	50-6000	50-6000
	spindle power	kW	11/15	15/18.5	15/18.5
	Spindle motor torque (rate/max)	N·m	52.5/118	143/236	143/236
<b>Servo axis</b>	rapid speed on X/Y/Z	m/min	36/36/24	24/24/24	20/20/20
	X/Y/Z servo motor drive	-	Direct drive	Direct drive	Direct drive
	X/Y/Z servo motor speed	rpm	3000/3000/2000	3000/3000/2000	2000/2000/2000
	X/Y/Z axis screw diameter	mm	Φ45/Φ45/Φ45	Φ45/Φ45/Φ45	Φ50/Φ50/Φ50
	X/Y/Z axis screw pitch	mm	12/12/12	12/12/12	10/10/10
	Cutting feed rate	mm/min	1-8000	1-8000	1-8000
Minimum feed	mm	0.001	0.001	0.001	
<b>Tool magazine</b>	Magazine capacity	No.	24	24	24
	Tool magazine form	-	ATC	ATC	ATC
	Tool shank type	-	BT-40	BT-50	BT-50
	handle pull stud	-	45°	45°	45°
	tool diameter (adjacent)	mm	Φ80	Φ105	Φ105
	tool diameter (no adjacent)	mm	Φ150	Φ200	Φ200
	tool length	mm	300	350	350
	tool weight(max)	Kg	8	15	15
tool to tool change time	Sec	2.5/3.5	5.5/9	5.5/9	
<b>Accuracy</b>	positioning accuracy	mm	±0.006	±0.006	±0.006
	repositioning accuracy	mm	±0.004	±0.004	±0.004
<b>Other</b>	Machine weight	(about)Kg	7800	8000	104000
	Floor area	mm	3400*2600	3400*2600	4000*3250
	Machine height	mm	3200	3200	3610
	power capacity	kVA	30	30	30
	Lubricating oil capacity	L	3	3	3
	Cutting fluid capacity	L	286	286	300
	Air pressure	Bar	6~8	6~8	6~8
CNC system			FANUC - 0iMF PLUS		

The final parameters are subject to the technical agreement\*

			EM 1500L	EM 1800B
<b>Processing range</b>	X Axis	mm	1500	1800
	Y Axis	mm	700	900
	Z Axis	mm	700	740
	Spindle nose to table surface	mm	130-830	95-835
	spindle center to column rail surface	mm	750	976
<b>Worktable</b>	Table size	mm	1600*700	2000*900
	max bearing	Kg	1000	1800
	T-slot Number	Num	5	5
	T-slot size/spacing	mm	18*125	22*164
<b>Spindle</b>	spindle drive	-	Synchronous belt drive	Synchronous belt drive
	Spindle speed	r/min	50-8000	50-6000
	spindle power	kW	11/15	15/18.5
	Spindle motor torque (rate/max)	N·m	52.5/118	143/236
<b>Servo axis</b>	rapid speed on X/Y/Z	m/min	24/24/20	16/16/16
	X/Y/Z servo motor drive	-	Direct drive	Direct drive
	X/Y/Z servo motor speed	rpm	2000/2000/2000	2000/2000/2000
	X/Y/Z axis screw diameter	mm	Φ45/Φ45/Φ45	Φ55/Φ55/Φ55
	X/Y/Z axis screw pitch	mm	12/12/12	12/12/12
	Cutting feed rate	mm/min	1-8000	1-5000
	Minimum feed	mm	0.001	0.001
<b>Tool magazine</b>	Magazine capacity	No.	24	24
	Tool magazine form	-	ATC	ATC
	Tool shank type	-	BT-40	BT-50
	handle pull stud	-	45°	45°
	tool diameter (adjacent)	mm	Φ80	Φ105
	tool diameter (no adjacent)	mm	Φ150	Φ200
	tool length	mm	300	300
	tool weight(max)	Kg	8	15
	tool to tool change time	Sec	2.5/3.5	5.5/9
<b>Accuracy</b>	positioning accuracy	mm	±0.006	±0.008
	repositioning accuracy	mm	±0.004	±0.006
<b>Other</b>	Machine weight	(about)Kg	9000	14500
	Floor area	mm	3700*2800	5000*3400
	Machine height	mm	3300	3350
	power capacity	kVA	30	40
	Lubricating oil capacity	L	3	3
	Cutting fluid capacity	L	300	300
	Air pressure	Bar	6~8	6~8
CNC system			FANUC - 0iMF PLUS	