HUR – 630 T Five-Axis Vertical Machining Center

The HUR – 630 T five-axis machining center adopts a stable C-shaped structure, the column is fixed on the bed, the slide plate moves laterally along the column (X direction), the slide seat moves longitudinally (Y direction), and the headstock moves vertically along the slide seat (Z direction). The worktable adopts the self-developed direct-drive single-arm cradle structure, and various performance indicators have reached the international advanced level.

CNC Controller: Siemens 840D

Machine structure Layout:

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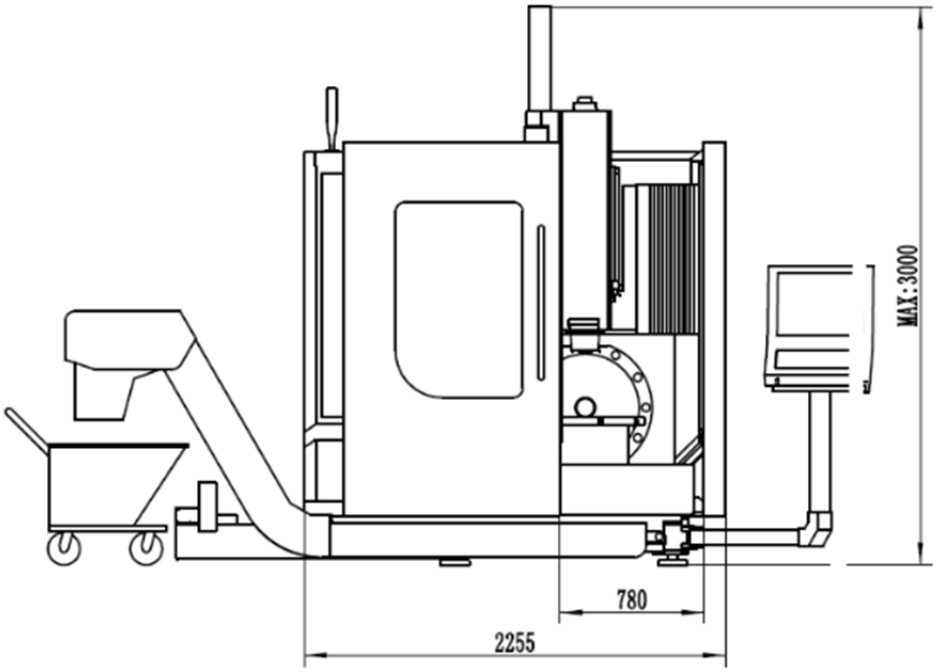

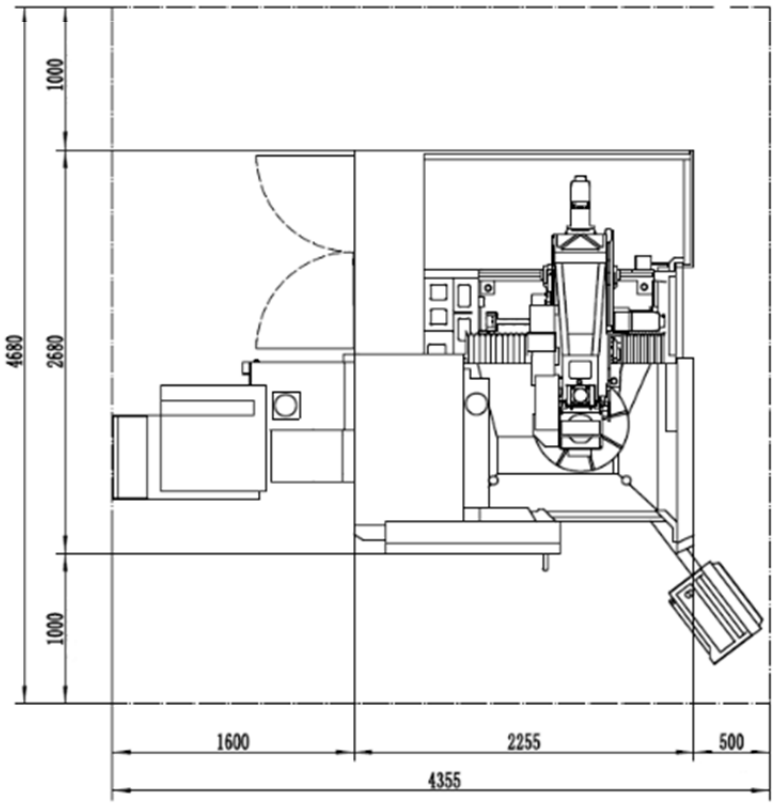

Feeding system

The X, Y, Z axes adopt ultra-high rigidity, high-precision roller linear guides and high-performance ball screws, with low dynamic and static friction, high sensitivity, low high-speed vibration, low-speed creep-free, high positioning accuracy, and excellent servo drive performance. X, Y, Z axis servo motors are directly connected with high-precision ball screws by couplings, reducing intermediate links, realizing

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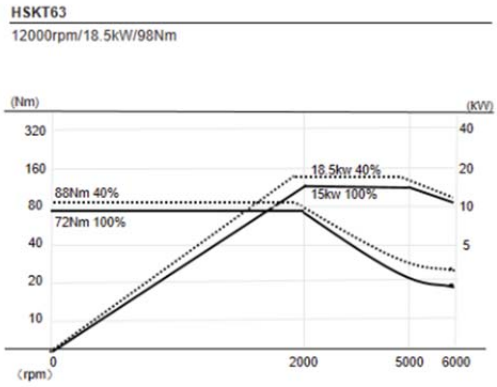
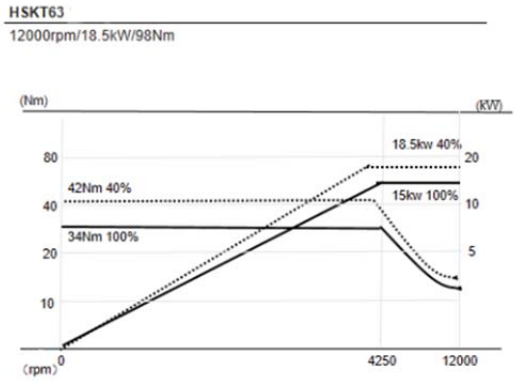
gap-free transmission, flexible feeding, accurate positioning, and high transmission precision. The Z-axis servo motor has a brake function. In the case of power failure, it can automatically hold the brake to hold the motor shaft tightly so that it cannot rotate, which plays a role in safety protection.

Electric spindle

The motorized spindle adopts the self-developed HSKT63 motorized spindle with built-in end tooth plate, which can realize the compound function of turning and milling. The end is equipped with a ring spray joint to cool the tool. Stepless speed regulation, built-in high-precision encoder, can achieve directional accurate stop and rigid tapping.





Turntable

The self-developed direct-drive cradle turntable is equipped with a high-precision absolute encoder and is cooled by a water cooler at a constant temperature. It has the advantages of high rigidity, high precision, and high dynamic response. The worktable adopts 8- 14mm radial T-slots, the maximum load is 500kg (horizontal), 300kg (vertical), and the maximum workpiece diameter is ¢650.

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Tool magazine The tool magazine adopts HSKA63 manipulator disc type tool magazine, which can accommodate 24 tools.

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Fully closed loop feedback system

X, Y, Z linear axes are equipped with Renishaw absolute value grating scales; B and C rotary tables are equipped with HEIDENHAIN RCN2000 series absolute value angle encoders to realize full closed-loop feedback of 5 feed axes, guaranteed high precision and high precision retention.

Cooling and pneumatic system

Equipped with the large flow cooling pump and water tank to provide sufficient cooling for tools and workpieces. The headstock end face is equipped with cooling nozzles, which are controlled by M code or control panel.

Equipped with a water cooler for constant temperature cooling, to ensure that the electric spindle and the direct drive turntable are in good working condition and can run efficiently for a long time.

The pneumatic system uses pneumatic components to filter, and realizes the functions of cleaning and blowing the taper hole of the spindle, air-sealing protection of the spindle bearing, turning over the tool holder of the tool magazine, and blowing the grating ruler.

Centralized lubrication system

The slide block of the guide rail and the nut of the ball screw are all lubricated with thin grease, and the lubrication is provided regularly and quantitatively to ensure the accuracy and stability of the ball screw and the guide rail.

Oil-air lubrication system

The electric spindle is equipped with imported oil and gas lubricating device, which can fully lubricate and cool the spindle. The sensor can provide abnormal lubrication alarm, which can effectively ensure that the spindle can work stably at high speed for a long time.

Workpiece measuring system

The machine is equipped with Renishaw OMP40 optical probe, used in conjunction with the OMI-2 receiver, which has strong resistance to light interference, false triggering and impact, and the measurement one-way repeatability is less than or equal to 1um (480 mm/min measurement speed, using 50 mm measurement needle), the applicable operating temperature is 5°C to 55°C.

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Tool measuring system

The machine is equipped with Renishaw's TS27R tool measuring system, which enables breakage detection of various tools and rapid measurement of tool length and diameter.

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Five-axis precision calibration function The machine is equipped with Renishaw's AxiSet Check-Up Rotary Axis Line Checker kit, paired with the OMP40 workpiece measurement system, enabling machine users to quickly and accurately check the condition of rotary axes and identify problems caused by changes in temperature and humidity, machine collisions or wear and tear problems, can quickly adjust and locate performance checks, benchmark and monitor how complex machines change over time.

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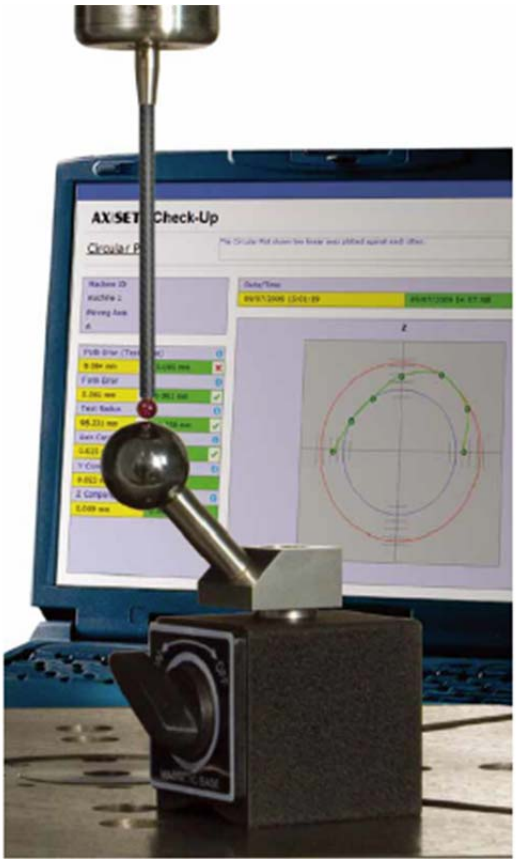

Machine protection

The machine adopts an integral protective cover that meets safety standards to prevent splashing of coolant and chips, ensuring safe operation and a pleasant appearance. The X-direction of the machine is equipped with an armored protective cover, which can effectively protect the guide rail and ball screw.

Machine working conditions

(1) Power supply: 380V±10% 50HZ±1HZ three-phase alternating current

(2) Ambient temperature: 5℃-40℃

(3) Best temperature: 22℃±2℃

(4) Relative humidity: 20-75%

(5) Air source pressure: 6±1 bar

(6) Air source flow: 500 L/min

Main specification:

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Item		Unit	Specification
Worktable	Worktable diameter	mm	φ630
	Maximum horizontal load	kg	500
	Maximum vertical load	kg	300
	T-slot	mm	8X14
Processing range	Distance between spindle end face and worktable end face (Max)	mm	550
	Distance between spindle end face and worktable end face (Min)	mm	150
	X axis	mm	600
	Y axis	mm	450
	Z axis	mm	400
	B axis	°	-35°~+110°
	C axis	°	360°
Spindle	Cone hole	CTB	HSKA63
	Rated speed	rpm	2000
	Maximum speed	N.m	12000
	Output torque S1/S6	N.m	72/88
	Spindle motor power S1/S6	kW	15/18.5
Axis	X axis Rapid traverse speed	m/min	36
	Y axis Rapid traverse speed	m/min	36
	Z axis Rapid traverse speed	m/min	36
	B axis Max. speed	rpm	80
	C axis Max. speed	rpm	800
	X/Y/Z axis motor power	KW	2.2
	B/C axis Motor power	KW	13.3/30
	B-axis Rated torque	Nm	2540
	C-axis Rated torque	Nm	400
Tool magazine	Type		Disc type
	Tool selection method		Bidirectional nearest tool selection
	Capacity	T	24
	Max. tool length	mm	300
	Max. tool weight	kg	8
	Max. cutter disc diameter(Full Tool)	mm	φ80
	Maximum cutter disc diameter (Adjacent empty tool)	mm	φ150
Accuracy	Enforcement criteria		GB/T20957.4(ISO10791-4)
	Positioning accuracy(X/Y/Z)	mm	0.008
	positioning accuracy(B/C)		6"/6"
	Repeated positioning accuracy(X/Y/Z)	mm	0.006
	Repeated positioning accuracy(B/C)		4"/4"
Weight		kg	6500
Capacity		KVA	45
Machine size		mm	4350×4000×3000

Standard configurations:

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1. Main components (including bed, column, sliding plate, sliding seat, spindle box)
2. X, Y, Z three-axis feed system
3. Single-arm cradle-type turntable BC630-4400T-42540T-800/800-50/80-RCNS
4. Electric spindle HSKT63
5. Electrical control system (including electrical cabinet, power module, servo module, PLC, operation panel, display, hand-held unit, electric cabinet air conditioner, etc.)
6. Hydraulic system
7. Pneumatic system
8. Centralized lubrication system
9. Oil-air lubrication system
10. Water cooler
11. Chip conveyor, water tank, chip collector
12. Grating ruler
13. Rail guard
14. machine overall protective cover
15. Workpiece measuring system
16. Tool setting instrument
17. Five-axis precision calibration function
Machine files certificate Packing list 1 set of machine manual (electronic version) machine backup data 1 set (U disk) 840D alarm diagnostic manual 1 set (electronic version) 840D Milling Operation Manual 1 (electronic version) 840D programming manual basic part 1 (electronic version))

Main configurations:

Name	Brand	Remark
X/Y/Z axis motor and drive	Siemens	
Energy chain	igus	
Screw bearing	NSK/NACHI	
Linear Guides	THK	
Tool magazine	Okada	
Centralized lubrication	valley	
Ball screw	THK	
Pneumatic Components	SMC	
Electric cabinet air conditioner	fly together	
water cooler	fly together	
grating ruler	Renishaw	
Workpiece measuring system	Renishaw	
Tool measuring system	Renishaw	

Standard accessories:

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Accessory name	Specification	Quantity
Machine mattress iron		4 sets
rings	M20	2 pieces
rings	M30	2 pieces
suspenders	5T×2.85m	1
suspenders	5T×2.8m	1
suspenders	5T×3.75m	1
suspenders	5T×3.8m	1
Torx open-ended wrench	22	1
Allen key	10	1
Allen key	12	1
T-nut	M12	4
Spindle holder		1
X-axis mount		1
Y-axis fixing		1

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