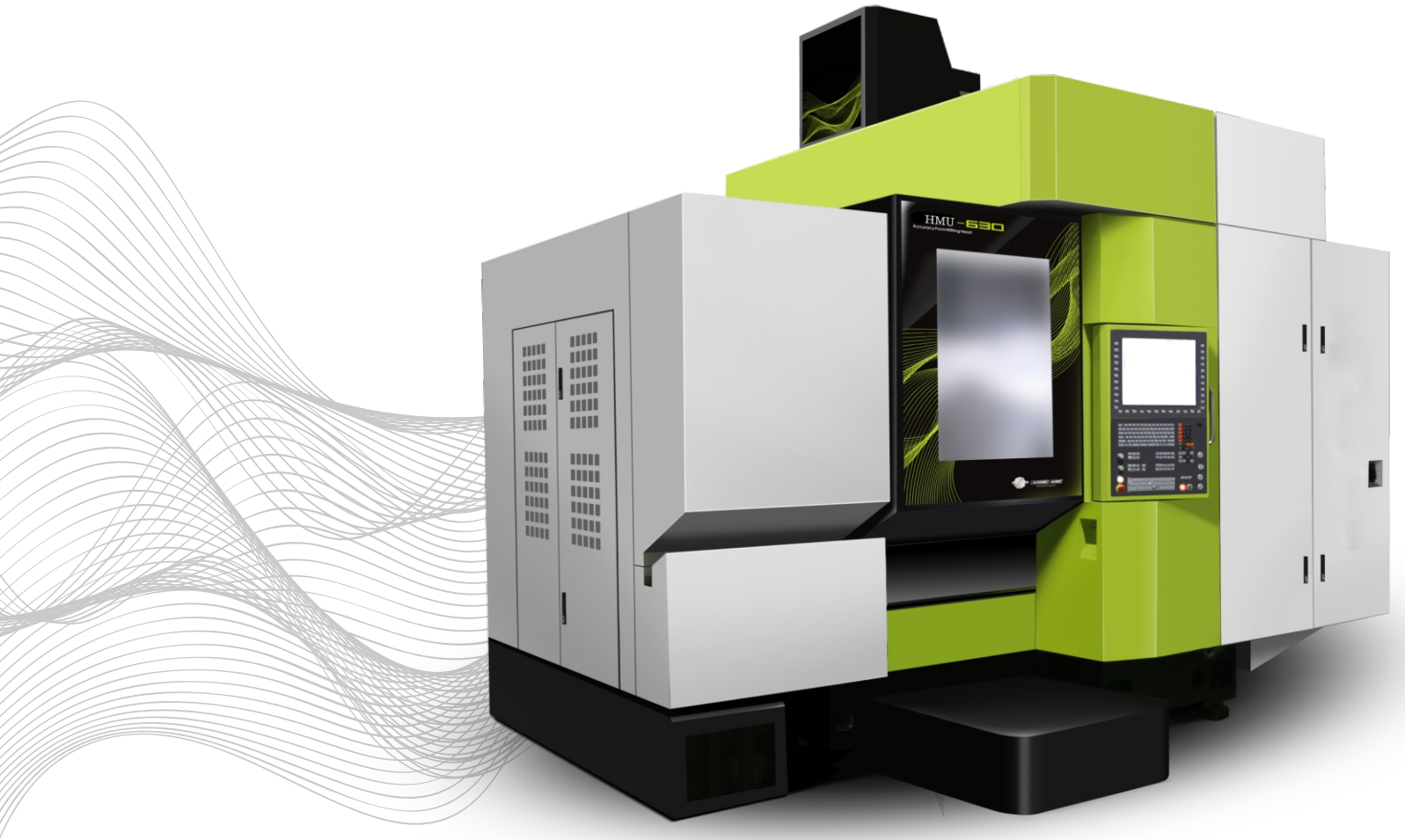
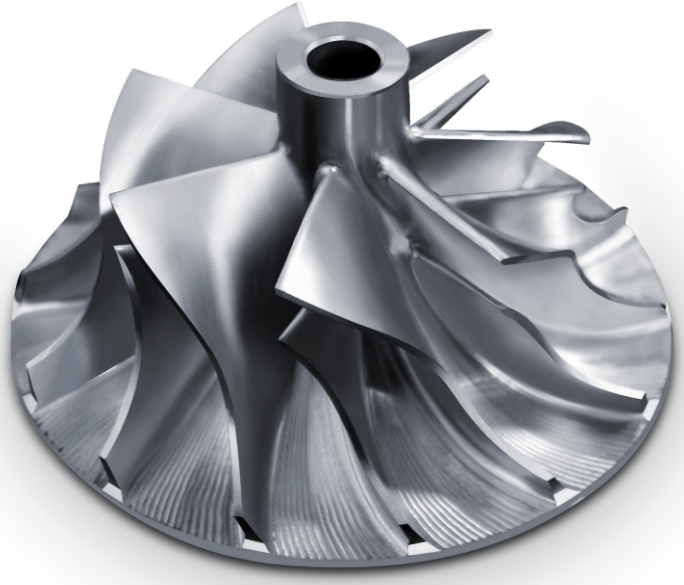


HMU – 630/700

FIVE-AXIS MACHINING CENTER

Realize high-precision simultaneous 5-axis machining

HMU-630/700 inherits the strong rigidity of the fixed beam gantry structure, is equipped with unique mechanical transmission turntable technology, combined with gear anti-backlash patents and turntable torsional damping structure; in addition, through the industry's strong spindle research and development technology, the HMU630/700 is fearless The series realizes efficient and accurate turning, milling and pinning linkage processing.

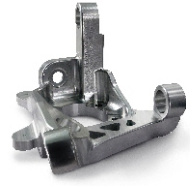


Applications | +Auto industry +Mold industry +Medical instruments + Aerospace

Workpiece: Bone Plate
Material: Titanium alloy

Workpiece: sloping top of automobile mould
Material: 1.2738

Workpiece: Leaf Disc
Material: stainless steel alloy



Workpiece: Automotive structural parts
Material: aluminum alloy

NAS parts precision check

NAS parts	Circle precision	0.012mm	(X/Y feed 3.000mm/min and radius 100mm)
	Roundness	<0.006mm	(Conical simultaneous 5-axis)
	Flatness	<0.01mm	(Φ80/300x400mm)
	Surface roughness	0.04mmPa	(Φ80/300x400mm)

* Depending on the measured environment and processing conditions, there may be differences from the data recorded in the product catalog.

	HMU-630
X/Y/Z positioning precision /Repeatability	0.008/0.004mm
A/C positioning precision /Repeatability	12/6 ARCSEC

* Based on GB17421.22000

With fixed beam gantry bed structure, high rigidity, high precision, high efficiency and stability of the bed structure is guaranteed.

The design of finite element analysis and dynamic optimization greatly improves the static and dynamic characteristics of each part of the machine tool, ensuring the overall rigidity, stability and dynamic accuracy of the machine tool

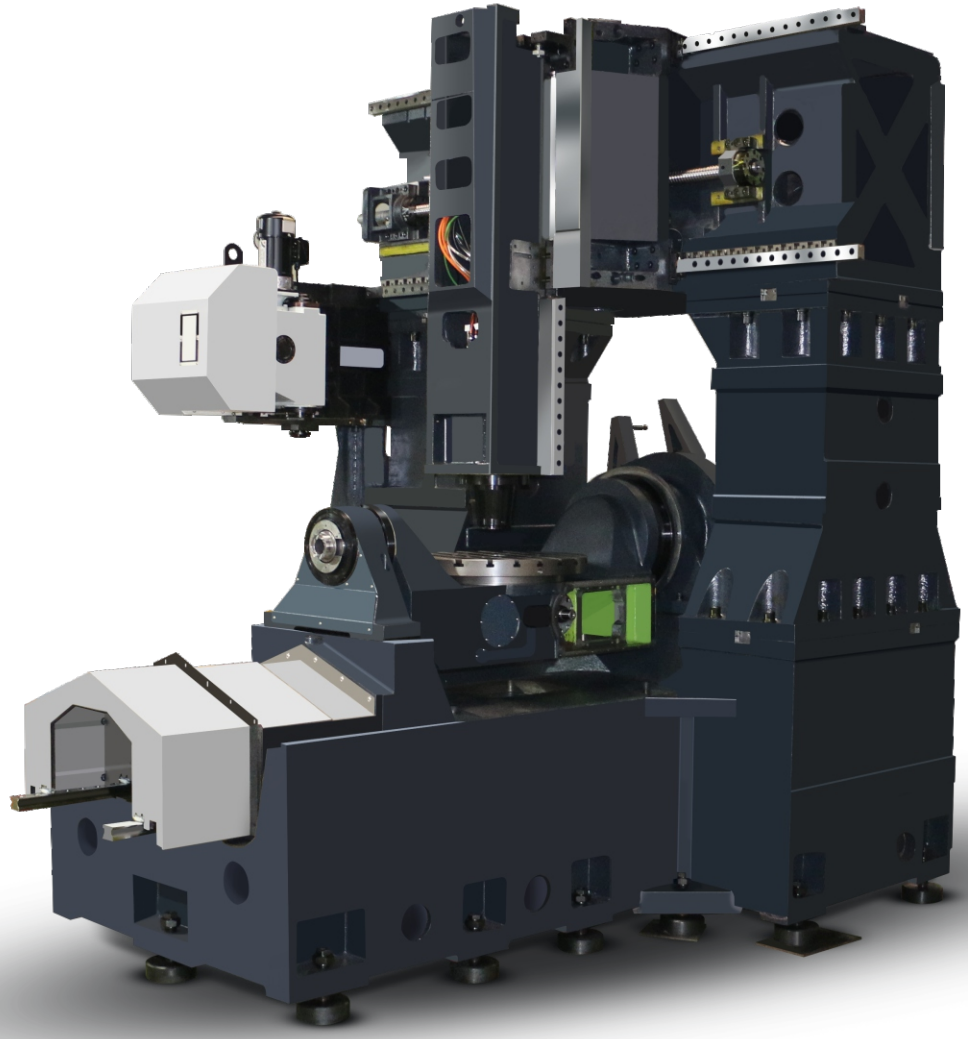
+Fully optimized fixed beam gantry bed structure. All main components are mounted with a large number of ribs and reinforcing ribs, and the machine tool structure is thermally symmetrically balanced, with strong machine rigidity and high anti-torsional strength.

+The finite element analysis of the bed components ensures the consistency of the final performance of the torsional rigidity and optimized structural rigidity.

+The best dynamic rigidity is accurately calculated under actual working conditions to ensure that the bed structure has a good cutting function, and it can maintain toughness, rigidity, high precision and vibration suppression even under heavy cutting conditions.

+The minimum cross flexibility of the tool nose and the workpiece is accurately calculated under actual working conditions, increasing the chatter limit of the machine tool for high-speed milling, and achieving high-speed and high-precision machining performance.

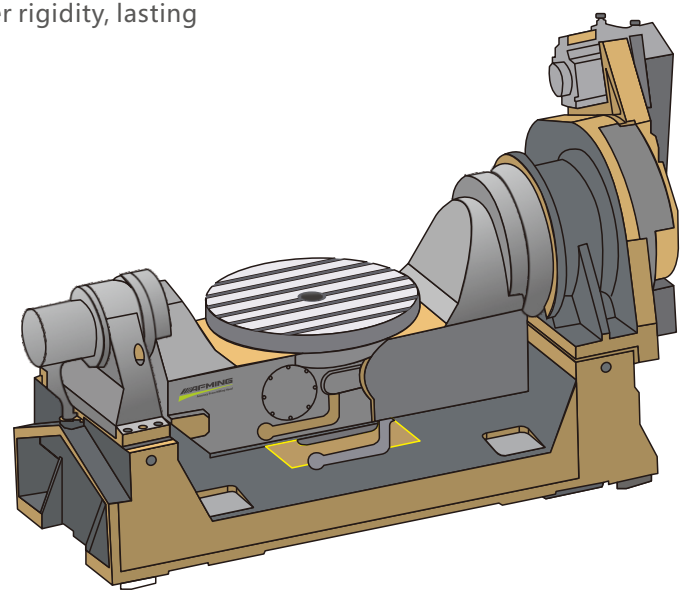
+The natural frequency of the mechanical feed system and the cut-off frequency of the electromechanical drive system are increased, the KV value of the position loop gain rises, the positioning time is effectively shortened, and the hysteresis of the feed system is reduced, achieving high-response dynamic performance and high-speed and high-precision machining performance.



- The moving parts are optimized for weight to achieve perfect dynamic performance.
- The Z-axis is optimized in mechanics and dynamics, which improves the rigidity and dynamics by 30% compared with similar models.
- Large column base area, more rigid and stable.
- The use of high-rigidity fixed beam gantry structure achieves outstanding rigidity, thermal symmetry stability and efficient vibration suppression.
- One-piece beam, closed section, eliminating redundant quality, realizing high rigidity.
- The whole machine structure and moving parts adopt finite element analysis operation and optimization.
- The first-order natural frequency of the whole machine reaches 67HZ, which greatly I mproves the anti-seismic performance of the machine tool and increase the static and dynamic rigidity of the machine tool.
- Three-axis acceleration up is to 0.8G

Powerful High-rigidity and High-precision Gear Driven Rotary Table Technology

HMU-630/700 is equipped with mechanical drive GTRT turntable technology for the first time in the same level, HMU-630/700 is equipped with GTRT turntable technology uniquely developed by Evermy for the first time, A-axis double tooth rod anti-backlash transmission C-axis double worm + gear drive presents More powerful torque, higher rigidity, combined with the original cradle torsion damping technology to ensure the excellent rotation accuracy of the turntable, to achieve more powerful torque output, higher rigidity, lasting stability and better rotation accuracy.



+GTRT mechanical rotary table technology
+European high-end gear driven design concept
+Gear anti-backlash patented technology
+A/C Rotary Table is supported by two arms, with high rigidity, strong bearing capacity, and high precision
+DIN5 level imported grinding gear technology
+Applicability of a wide range of processing materials, including the processing of high hardness and toughness materials such as steel and titanium alloys
+0.5μ round grating as standard for A/C axis
+Easier chip removal and cleaning
+Creative cradle torsion damping technology

GTRT ROTARY TABLE

A-axis: servo motor + double tooth rod anti-backlash (patented technology of side-backlash elimination)
C-axis: servo motor + double worm + gear drive (gear anti-backlash technology + torsional damping technology)

Travel (A/C) ±120°/360°
Max. speed (A/C) 20rpm
Max. torque (A/C) 3625/1770N.m
Repeatability (A/C) 6/6
Load capacity 500kg
Brake torque A/C 5000/3500N.m
Brake oil pressure A/C 10/5MPa

C-axis torque motor (optional): Milling1470N.m/Turning 1510N.m

Ease of Use

Based on ergonomic design, it realizes extraordinary processing accessibility and visibility, achieving an incomparable user-friendly operating experience.

Ergonomic Design

With the operating height of 1500mm, it is very easy for user to operate.
The use of the same keyboard type as the PC enhances the convenience of operation

19″ inck Display	110° deg Rotation angle	1500″ mm Height of screen center

SUPER POWER Inline Spindle/Motorized Spindle

The key to precise machining is the spindle, which is also one of the core components of the machine tool. Relying on the high-end spindle R&D technology in the industry and skilled spindle maintenance skills, we can quickly solve spindle maintenance problems and minimize costs for user.

+European high-end motorized spindle technology

+With finite element analysis and optimized bearing span, high rigidity, stability and running accuracy of the spindle are realized

+With spindle cooling and thermal elongation control technology, operation performance, precision and life of the spindle are ensured

+Innovative spindle bearing arrangement structure significantly improves spindle rigidity while effectively reducing thermal elongation

+Multiple spindle monitoring devices effectively protect the safe operation of the spindle

+Built-in double force clamping mechanism greatly improves the service life of the spindle

+ Industry-leading spindle maintenance technology, timely, fast and cost-effective

20000rpm motorized spindle HSK-A63

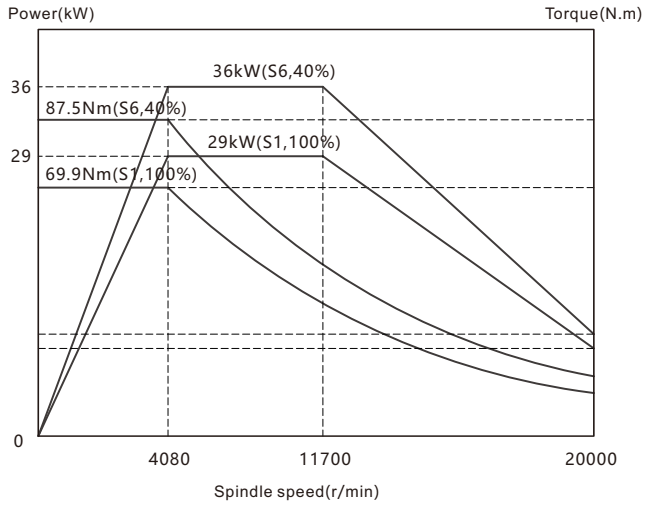
High-speed machining for surface quality

36 / 29

kW
Power (Max. output power S_1/S_6-40%)

87.5 / 69.9

N.m
Torque (Max. output torque S_1/S_6-40%)



18000rpm motorized spindle HSK-A63

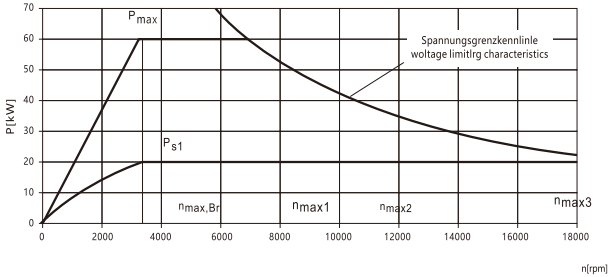
High-speed machining for surface quality

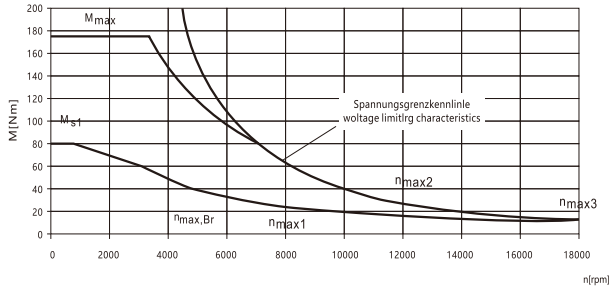
20 / 28

kW
Power (Max. output power S_1/S_6-40%)

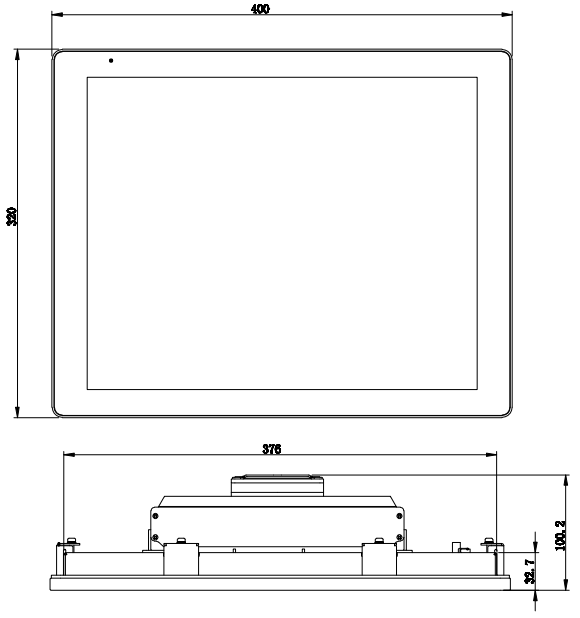
58 / 81.2

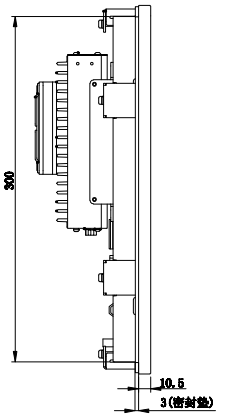
N.m
Torque (Max. output torque S_1/S_6-40%)

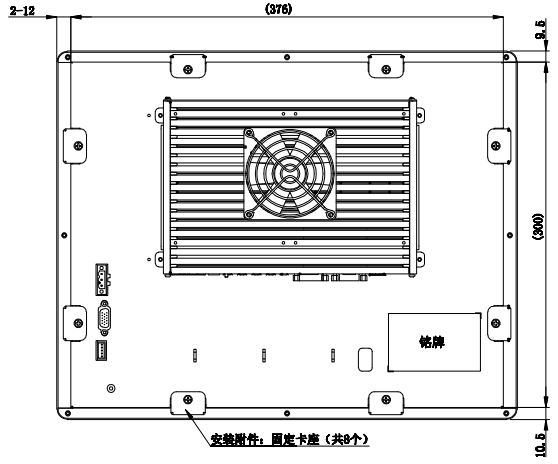




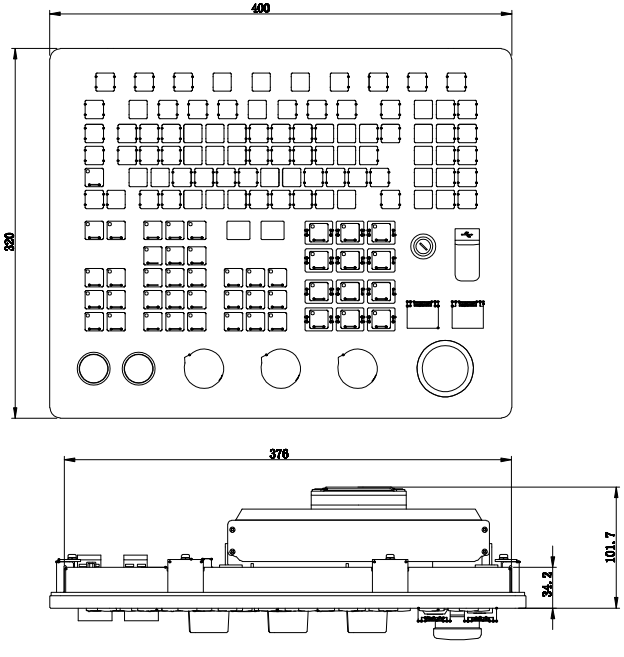
HNC-848Di series install dimensions

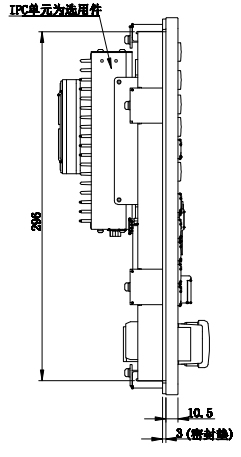


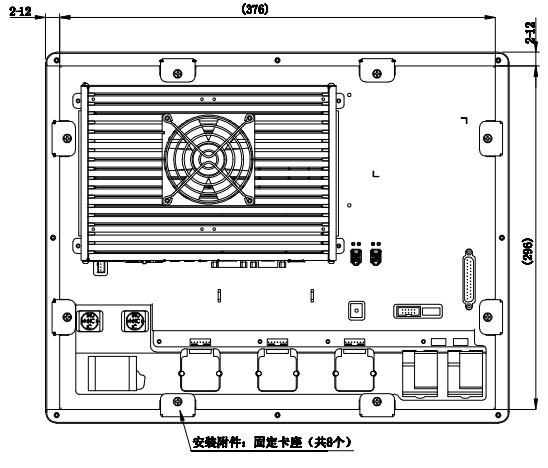




Upper panel







Lower panel

CNC Controller

HNC-848Di-M 17-inch

High-end CNC Controller for safe machining and high precision

To transform engineering manufacturing capabilities into high-efficiency machining to achieve high-precision and convenient operation of workpieces, intelligent CNC systems are indispensable.

HUAZHONGCNC

Wide application

CNC controller suitable for 5-axis machine,
heavy-duty machine and lathe mill compo machining center

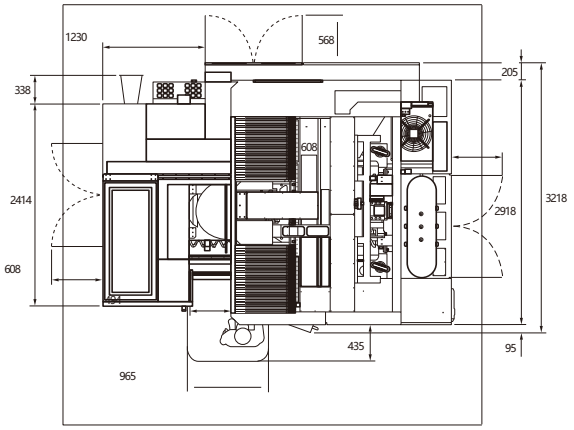
Basic parameter

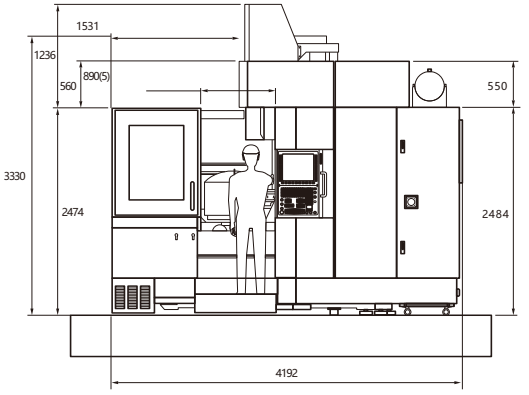
- 17” color LCD screen (touch screen is optional)
- Single panel version and upper-lower panel version are supported
- Up to 9 feed axes and 4 spindles in each channel
- 9 simultaneously controlled axes at maximum (RTCP is not supported)
- Typical matching machine tool: mill lathe combo, 5-axis machine, cam grinder

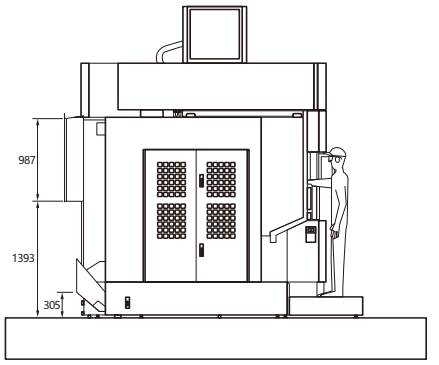
Features

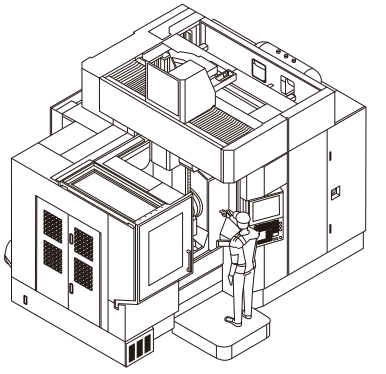
- High-speed high-precision control
- 5-simultaneously-axis control
  5-axis auto calibration
  5-axis RTCP function
  5-axis large circular interpolation Hyperbolic interpolation
  5-axis orientation machining
- Synchronization control
- Error compensation
- Direct drive
- Intelligent control
- Lathe-mill combination
- Multi-channel control
- Seamless integration of CAM software
- Touch screen is supported
- Backlash elimination for multiple motors

Machine Layout

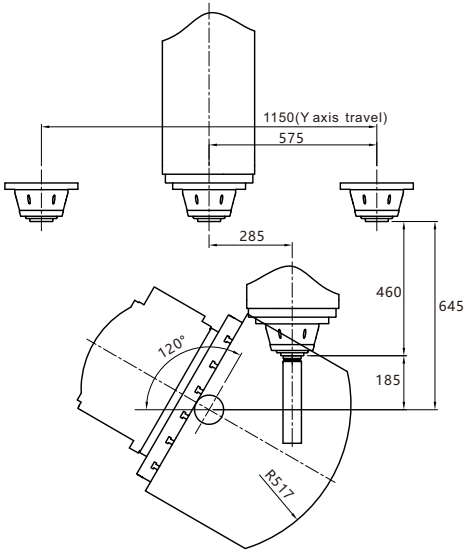


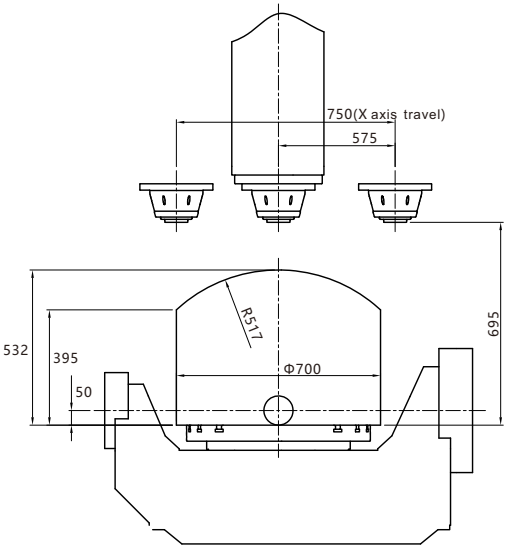


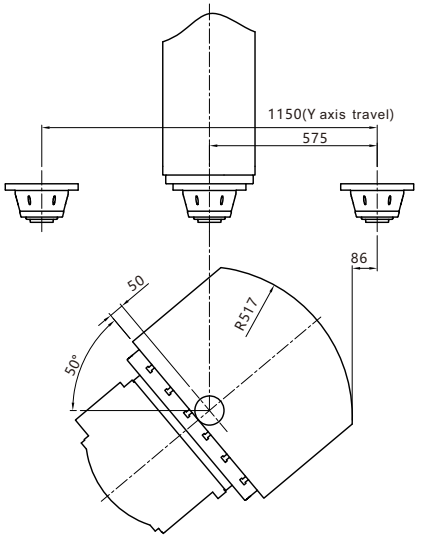




Processing Interferogram







HMU-630/700 Machine Specifications Table

Name	Unit	HMU-630	HMU-700D	HMU-700DT
CNC System		HNC-848Di	HNC-848Di	HNC-848Di
X/Y/Z-axis travel	mm	700/1180/550 (Y Tool change travel is included)	700/1180/550 (Y Tool change travel is included)	700/1180/550 (Y Tool change travel is included)
A/C-axis travel	Degree	±120/360	±120/360	±120/360
Distance from spindle end face to worktable (when A-axis is at 0°)	mm	150-700 (This value is for mechanical spindle, it is different for motorized spindle)	150-700 (This value is for mechanical spindle, it is different for motorized spindle)	150-700 (This value is for mechanical spindle, it is different for motorized spindle)
Worktable size	mm	Φ630	Φ700	Φ700
Max.load	kg	500	400	400
Spindle				
Spindle (standard)				
Max.spindle speed/taper	rpm	18000/HSK-A630	18000/HSK-A630	18000/HSK-A630
Spindle power (S1/S6-40%)	KW	20/28	20/28	20/28
Torque (S1/S6-40%)	N.m	58/81.2	58/81.2	58/81.2
Feed system				
X/Y/Z-axis rapid traverse	m/min	36/36/30	36/36/30	36/36/30
Max.cutting feedrate	m/min	20	20	20
Acceleration	m/s2	0.8	0.8	0.8
A/C-axis rapid traverse speed	RPM/min	20/30	20/80(C-axis DDR)	20/800(C-axis DDR)
Rated torque A/C	N.m	2080/1400	2080/860	2080/1080
Static torque A/C	N.m	3625/1770	3625/1470	3625/1510
Brake torque A/C	N.m	5000/3500	5000/3500	5000/3500
Positioning precision (GB17421.22000)				
X/Y/Z	mm	0.008/0.008/0.008	0.008/0.008/0.008	0.008/0.008/0.008
A/C	ARCSEC	12/12	12/12	12/12
Repeatability (GB17421.22000)				
X/Y/Z	mm	0.004/0.004/0.004	0.004/0.004/0.004	0.004/0.004/0.004
A/C	ARCSEC	6/6	6/6	6/6
ATC				
Number of tools	Pcs	24T	24T	24T
Tool change time (tool-tool)	sec	2.5S	2.5S	2.5S
Max.tool length	mm	300	300	300
Max.tool diameter (none adjacent)	mm	Φ60/Φ120	Φ60/Φ120	Φ60/Φ120
Max.tool weight	kg	8	8	8
Machine size				
Height	mm	3700	3700	3700
Area(length×widen)	mm²	3400x3000	3400x3000	3400x3000
Net weight	kg	1300	1300	1300
Power	kw	50	55	60

HMU-630/700 Standard Configurations/Optional Configurations (Option)

● Standard Configurations ○ Optional Configurations ⊖ None

		HMU-630	HMU-700D	HMU-700DT
System	HNC-848Di	●	●	●
Spindle	18000rpm split spindle HSK-A63	●	●	●
	20000rpm split spindle HSK-A63	○	○	○
	24000rpm motorized spindle HSK-A63	○	○	○
	Spindle cooler	●	●	●
	Water outlet system of spindle center	○	○	○
	Spindle air curtain dustproof system	●	●	●
Number of tools in magazine	24T disc type magazine	●	●	●
	30T disc type magazine	○	○	○
	40T chain magazine	○	○	○
	60T chain magazine	○	○	○
High-precision response	Laser tool setter (automatic tool length measurement function & tool wear detection function)	○	○	○
	Contact tool setter	○	○	○
	X, Y, Z-axis grating ruler	○	○	○
	A, C-axis grating ruler	○	●	●
	A-axis brake system	●	●	●
	C-axis brake system	●	●	●
	C-axis DD torque motor	⊖	●	○
	C-axis DD torque motor for lathe milling combo	⊖	⊖	●

● Standard Configurations　　Optional Configurations　　⊖ None

		HMU-630	HMU-700D	HMU-700DT
Chip removal system	Screw chip conveyor	●	●	●
	Crawler chip conveyor	○	○	○
	Chip storage truck	●	●	●
	Machine cleaning water gun	●	●	●
	Machine cleaning air gun	●	●	●
	Protective cover at machine top	●	●	●
	Full cover sheet metal	●	●	●
	Cutting water system	●	●	●
	Air blowing	●	●	●
	Oil mist collector	○	○	○
	Oil-water separation system	○	○	○
Safety system	Safety switch of front door	○	○	○
Lubrication system	Automatic grease	●	●	●
Electrical part	Working light	●	●	●
	Warning light	●	●	●
	Air conditioning system of electrical box	●	●	●
others	Tool box	●	●	●
	Anchor bolt	●	●	●
	Operation manual	●	●	●