

GMU-500

五轴联动加工中心

Five-axis simultaneous machining center

东莞市埃弗米数控设备科技有限公司

Dongguan AFMING Numerical Control Equipment Technology Co.,Ltd.

Dongguan Headquarters

Address: Room 202/201, Building 2, No. 35 Lianhuan Road,
Dalingshan Town, Dongguan City, Guangdong Province
Tel: 0769-85656688
Email: sales@afming.com

Central China Technical Application Center

Address: 155m West of the Intersection of Changjun Street and Manao
1st Road, Caidian Economic Development Zone, Caidian District,
Wuhan City, Hubei Province (within Hanfa Machinery Industrial Park)
Tel: 18825860062
Email: weimingguang@afming.com

North China Technical Application Center

Address: Building 4, Phase I, Shaanxi Qinhan Auto Parts Industrial Park,
100m West of the Intersection of Tiangong 2nd Road West Section and
Zhouzhou 3rd Road, Zhouling Subdistrict Office, Qinhan New Town,
Weicheng District, Xianyang City, Shaanxi Province
Tel: 13612697218
Email: chang@afming.com

Shenyang Office

Address: Building 1, Phase I, China Resources Happiness Lane,
No. 296-1 Changbai Middle Road, Heping District, Shenyang City, Liaoning Province
Tel: 13612697218
Email: chang@afming.com

East China Ningbo Technical Application Center

Address: 1st Floor, Unit 2, No. 20, Beikun Smart Manufacturing Park, No. 2288
Yongmao West Road, Zhuangqiao Street, Jiangbei District, Ningbo City, Zhejiang Province
Tel: 13216625533
Email: yebingcheng@afming.com

East China Suzhou Technical Application Center

Address: No. 1999 Songjia Road, Guoxiang Street, Wuzhong District,
Suzhou City, Jiangsu Province
Tel: 13216625533
Email: yebingcheng@afming.com

Southwest Office

Address: No. 965 South 4th Road, Longquanyi District, Chengdu City,
Sichuan Province (within Sichuan Provincial Institute of Mechanical Design and Research)
Tel: 13688159300
Email: xn-bhq@afming.com



Due to continuous R&D innovation, the product specifications, data, appearances, and accessory product appearances recorded in this catalog are subject to change without prior notice. We appreciate your understanding.

The product images in this catalog include optional specifications and optional equipment.

All machining data provided in this catalog are obtained under conditions specified by our company.

Code: AFM20260203001





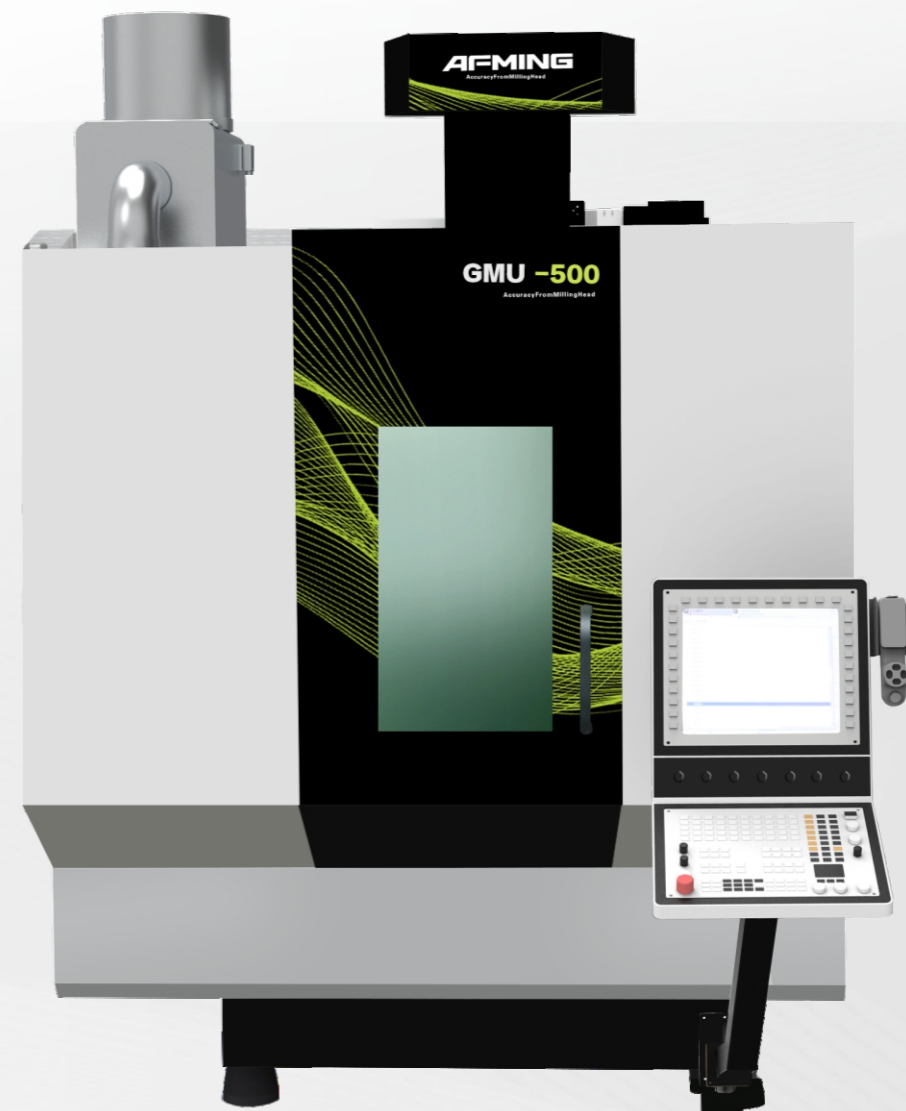
Compact & Efficient, Precise & Reliable, Empowering Precision Manufacturing

Compact Body: Small footprint design effectively saves workshop space, adapts to various layouts, and improves space utilization.

Optimized Three Axes: Upgraded travel on all three axes provides a wider machining range, accommodates more workpiece types, and enhances equipment versatility.

High Rigidity Structure: Heavy-duty cast iron bed resists vibration and deformation, ensuring long-term stable operation of the equipment.

Precision Assurance: Both rigidity and precision work together to achieve stable, high-accuracy cutting, meeting the stringent requirements of precision manufacturing.



Dongguan AFMING Numerical Control Equipment Technology Co., Ltd. (abbreviation: AFMING) Established in 2015, it is a high-tech enterprise primarily engaged in the R&D, production, sales, and service of high-end CNC machine tools. It is a holding subsidiary of a domestic leading robot listed company, Guangdong Topstar Technology Co., Ltd. (stock code: 300607), and has been awarded the title of "Specialized and Sophisticated SME" in Guangdong Province. The company adheres to its corporate mission of "making high-end five-axis technology accessible", dedicating itself to mastering five-axis technology and achieving domestic substitution of high-end five-axis equipment. It provides overall efficient machining solutions based on five-axis simultaneous CNC machine tools for domestic aerospace, automotive, medical, mold, precision parts machining, and other fields. The company values talent development and has established industry-university-research cooperation platforms with several domestic institutions, laying a technical and talent foundation for its future development.



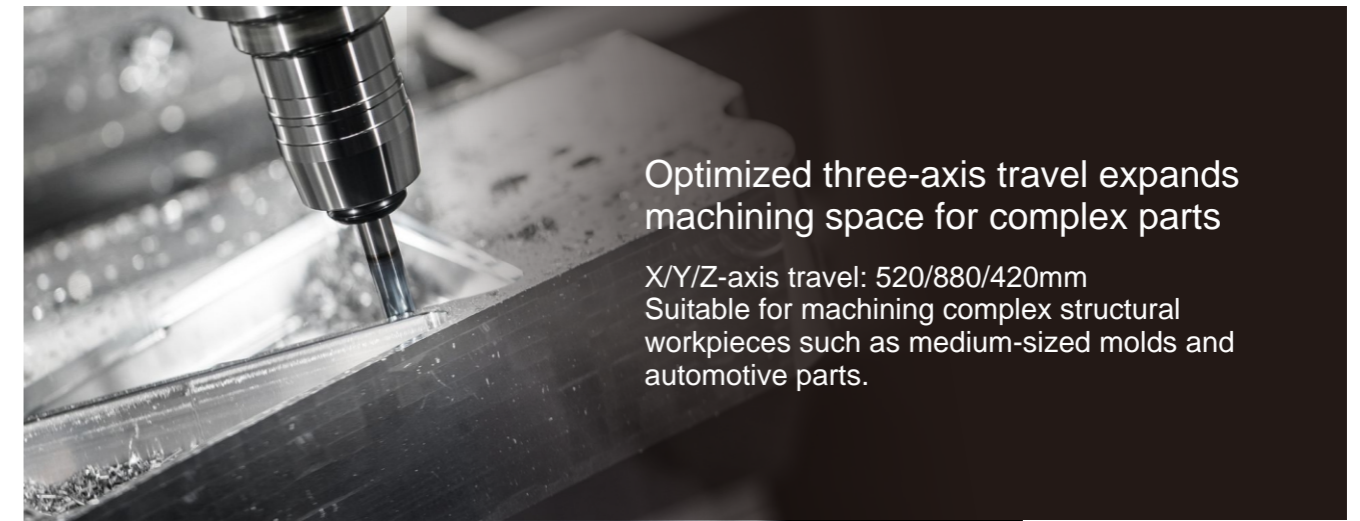
Currently, the company's main products include: five-axis simultaneous CNC machine tools, high-speed machining centers, high-precision slide grinders, high-speed graphite machining centers, and core components. The company's products are well sold both domestically and internationally.

Small Footprint, Big Performance **GMU-500**

Precise and Efficient Five-Axis Solution

Machine floor space: only 3700x2040x2800mm

The compact body design significantly saves factory space and is particularly well suited to the layout and production needs of various small and medium-sized workshops.

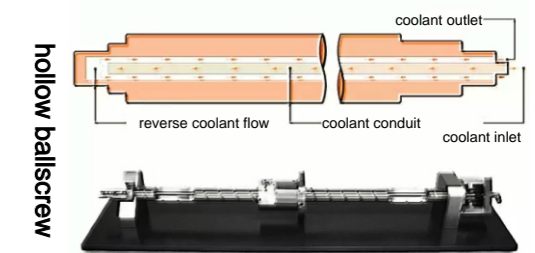


Optimized three-axis travel expands machining space for complex parts

X/Y/Z-axis travel: 520/880/420mm
Suitable for machining complex structural workpieces such as medium-sized molds and automotive parts.

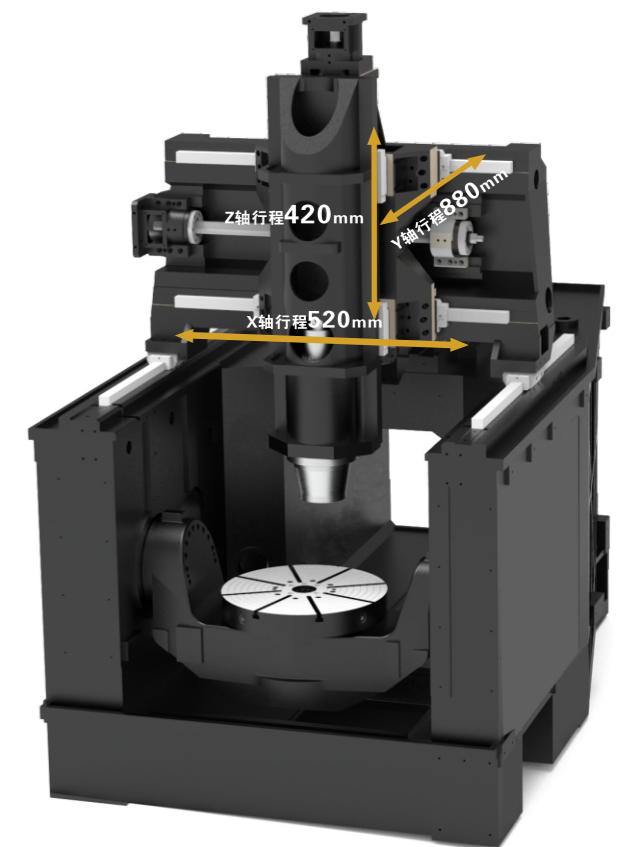
Dual cooling system support:

Hollow ballscrew cooling + Nut plate and bearing housing cooling
Effectively suppresses thermal deformation, ensuring stable output of high-precision machining.



High-Rigidity Bed Structure

1. Adopts a gantry crane symmetrical structural design with an integrated base and widely spaced rear-positioned guide rails, optimizing load distribution and significantly reducing vibration interference, effectively enhancing machine stability and machining accuracy.
2. Machining diameter of 500mm, maximum clamping of 600mm.
3. Maximum cutting feed rate of 20m/min.
4. Tool change time of 5 seconds.



High-Speed Electric Spindle Empowers Efficient Machining

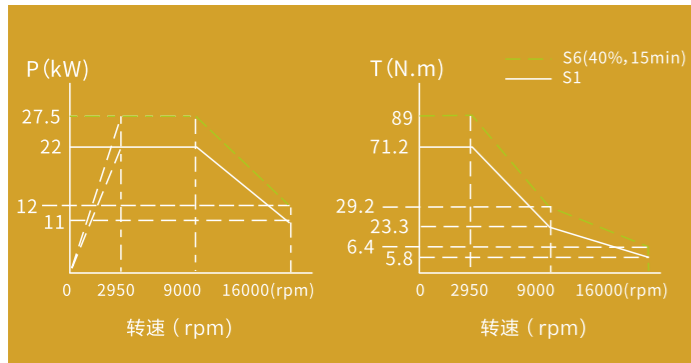
Core Technology: Self-developed core technology for high-end spindles, providing high-rigidity, high-stability solutions.

Technical Advantages: Optimized bearing span through FEA, combined with cooling and thermal elongation control technologies, ensuring machining accuracy and service life.

Service Advantages: Extensive hands-on maintenance experience, rapid response to customer needs, reduced overall operating costs.

The GMU-500 is equipped with a 16,000 rpm high-speed electric spindle, delivering a maximum torque of 89 N·m and a maximum power of 27.5 kW. It is suitable for precision part machining, complex cavity milling, and batch processing of small parts.

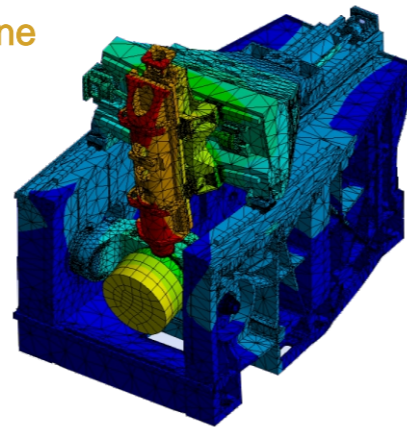
Coolant through the spindle reaches the cutting core area directly from the tool, significantly improving cooling efficiency. It precisely removes cutting heat and reduces tool wear (optional).



16000/HSK-A63	
maximum power(S6-40%)	27.5kw
maximum torque(S6-40%)	89N.m

Finite element analysis + dynamic optimization significantly improves the dynamic performance of the entire machine

Technical highlights	Efficient synergy	Core value
FEA dynamic optimization	Reduce tool-tip and workpiece vibration, improve chatter limit	Increase cutting volume, reduce tool wear
High-speed electric spindle	High-speed precision output with optimized coordination improves cutting efficiency	Enhance quality and efficiency, optimize machining surface finish



Application Solutions

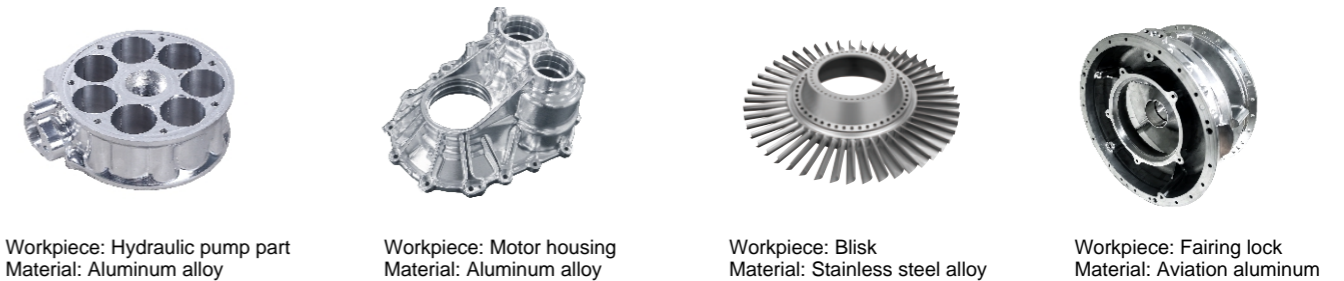
The GMU-500 five-axis simultaneous machining center offers excellent rigidity and high dynamic response. It is suitable for medium-sized molds, automotive parts, and related industries, efficiently completing multi-face machining of complex parts and five-axis simultaneous precision cutting.



Transmission Housing

Material: Aluminum alloy
 Machining characteristics: This part is a transmission housing used in the automotive industry. It features complex curved surfaces, stepped holes, flat surfaces, and deep cavity structures.
 The GMU-500 combines high rigidity with excellent precision stability. Total machining time for roughing and finishing the aluminum billet of the transmission housing is 22 hours. The stepover mismatch on curved surfaces from different angles can be controlled within 10 μm, and the accuracy of stepped holes is within 5 μm.

precision component area



Workpiece: Hydraulic pump part
Material: Aluminum alloy

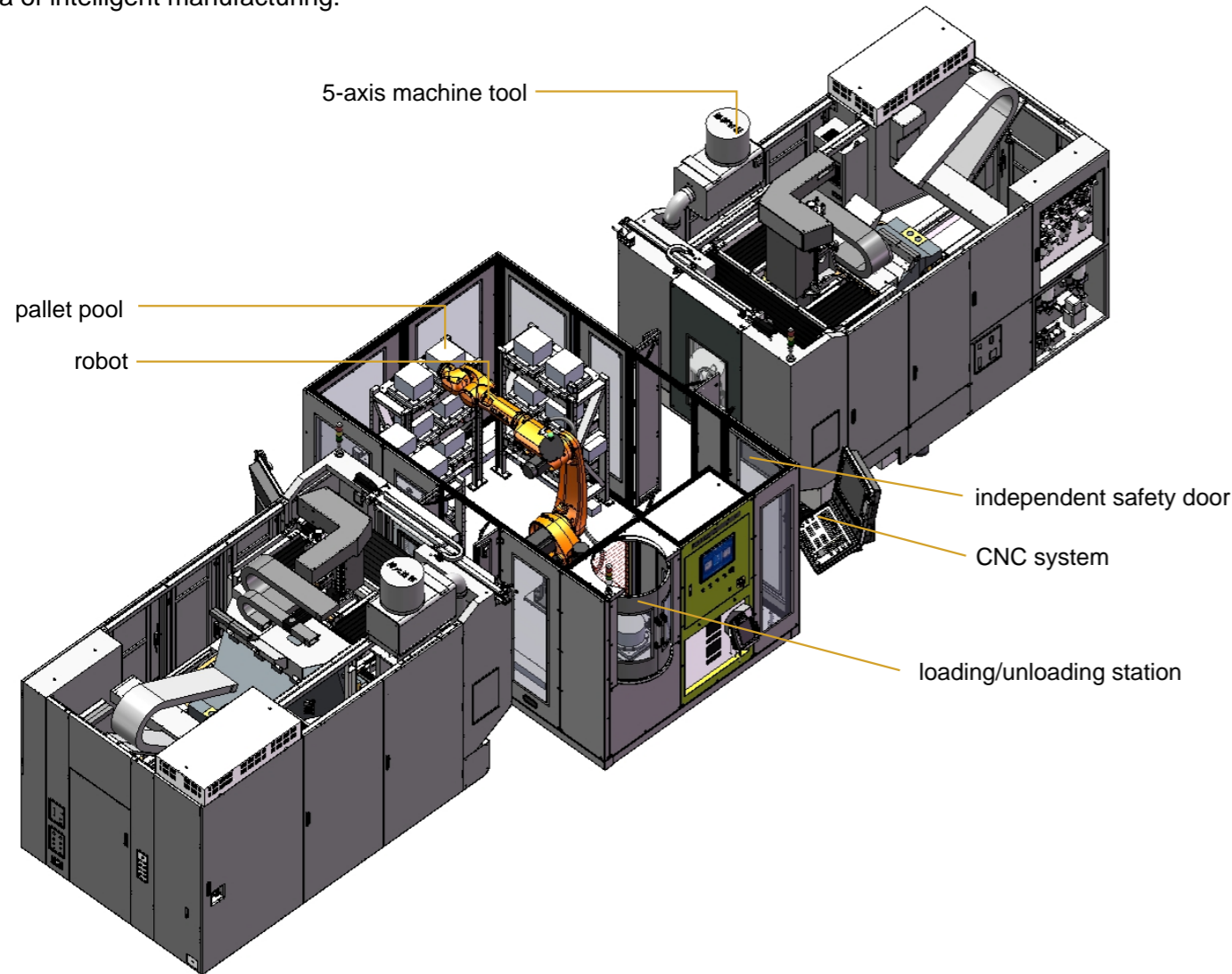
Workpiece: Motor housing
Material: Aluminum alloy

Workpiece: Blisk
Material: Stainless steel alloy

Workpiece: Fairing lock
Material: Aviation aluminum

Automation Solution

In the field of high-precision manufacturing, efficiency and accuracy are the eternal core competitive advantages. The seamless integration of 5-axis machining centers with industrial robots for automated material handling aims to create unmanned, highly flexible smart production cells, leading you into a new era of intelligent manufacturing.



Ultimate precision

Unattended operation

High flexibility

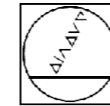
Consistent quality

Safety upgrade

Control System

High-end CNC system enabling safe machining and high precision

The GMU-500 is equipped with world-leading CNC system suppliers – the HEIDENHAIN TNC640 and SIEMENS ONE high-end 5-axis linkage CNC machines – to enhance machine tool data performance. In addition, a 5-axis with 4-axis linkage configuration is available as an option, offering customers a wider range of choices.



HEIDENHAIN
海 德 汉



This machine tool is equipped with the HEIDENHAIN iTNC 640 system. The CNC system (NC) ensures full automation of the machine and provides numerous functions required for easy and efficient programming – for example, the main unit, the TNC keyboard, and the large 19-inch TFT color flat screen deliver a clear display and comprehensive information on program editing, operation, the CNC system, and machine inspection, including program blocks, comments, and error messages. Graphics for program input, test run, and actual machining provide even more information. An optional split-screen display is available, showing the part program block on one half and graphics or status information on the other half. While a program is running, the status bar displays the tool position, the current program, coordinate transformations, etc.

Operating System – Machine Tool CNC System HEIDENHAIN Real-Time Operating System

- Input resolution and display step: Linear axes – down to 1Lm
- Rotary axes – down to 0.001°
- Input range: max. 999,999,999mm or 999,999,999°
- Interpolation: 4-axis linear interpolation (including spindle)
- Optional: 2-axis circular interpolation
- Block processing time: 0.5ms (without radius compensation, 3-D straight line)
- Error compensation: linear and non-linear errors, backlash, reversal spikes for circular motion, thermal expansion, and static friction
- Data interfaces: one RS-232-C/V.24 and one RS-422/V.11, max. speed 115Kbps
- Diagnostics: built-in diagnostic tools for fast and convenient fault elimination

SIEMENS Control System

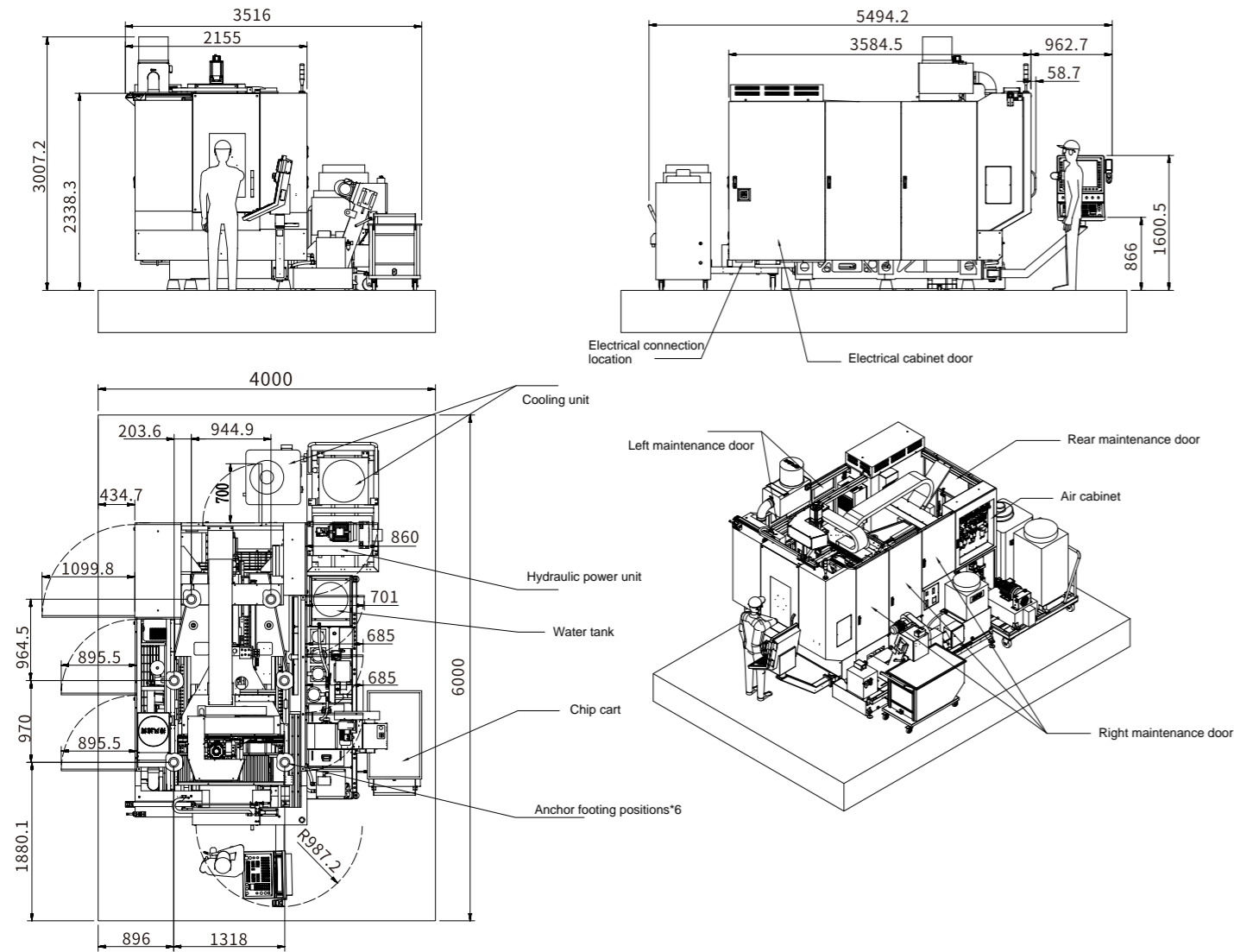
Powerful CNC Machine Tool Platform



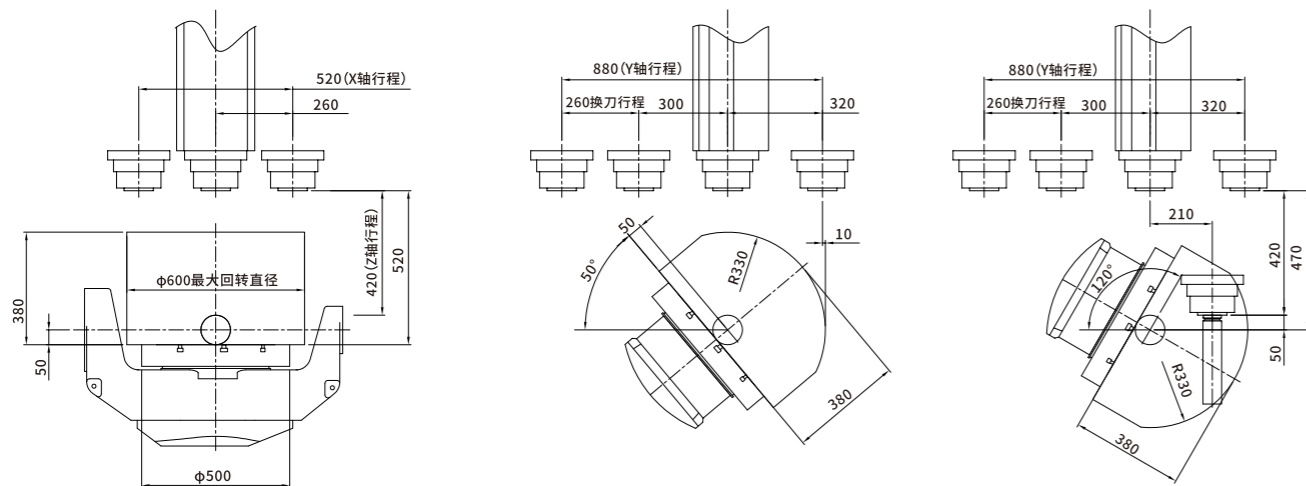
- Supports various structural types of 5-axis machine tools and mill-turn machines
- Static 5-axis machining and dynamic 5-axis machining
- Multiple vector interpolation methods
- 3D tool compensation
- Supports dual spline curves
- Cycles for measuring transformations on 5-axis machines
- Comprehensive 5-axis collision avoidance
- Kinematic chain definition simplifies the setup of related functions
- Supports the use of angle heads on 5-axis machines, suitable for internal machining of cylindrical parts

GMU-500 Machine tool technical specifications

General layout drawing of the complete machine



加工干涉图



Description	Unit	GMU-500
X/Y/Z axis travel	mm	520/880/420 (Y-axis travel includes tool change stroke)
A/C axis travel	度	±120/360
Distance from table to spindle nose	mm	100-520
Table size (LxW)	mm	Φ400
Max. load capacity (on table)	kg	250
Spindle		
Max. spindle speed / taper shank	rpm	16000/HSK-A63
Spindle power (S6-40%)	kW	27.5
Torque (S6-40%)	N.m	89
Feed system		
X/Y/Z rapid traverse rate	m/min	48/48/36 (optional: 24/24/24)
Max. cutting feed rate	m/min	20
Acceleration	m/s ²	7
A/C axis rapid traverse speed	rpm/min	30/80
Positioning accuracy / repeatability (with linear scales) (GB17421.2-2000)		
X/Y	mm	0.006/0.004
Z	mm	0.005/0.003
A/C	ARCSEC	6/3
Automatic tool changer		
Number of tools	Pcs	32T
Tool change time (tool?to?tool)	sec	5s
Max. tool length	mm	300
Max. tool diameter / with adjacent empty	mm	Φ75/Φ125
Max. tool weight	kg	8
Machine dimensions		
Overall machine height	mm	2800
Floor space (LxW)	mm ²	3700x2040
Machine net weight	kg	8000
Power requirement	kVA	45

Standard Configuration

- CNC system: HEIDENHAIN 620/640
5-axis calibration package
- Built-in spindle 16000?rpm / HSK?A63
Spindle chiller
Spindle air curtain dust protection system
- 32-station chain-type tool magazine
- Chip Removal System
- Cooling for nut plate and bearing housing
- Scraper?type chip conveyor
- A/C axis linear scales
- Machine cleaning water gun
- Automatic lubrication system
- Full enclosure sheet metal
- Air blow during machining
- Work light, warning light, electrical cabinet air conditioning system, tool box, anchor bolts, operation manual

※ Due to the company's continuous R&D innovation, the actual machine configuration may differ from this sample specification sheet. Please refer to the actual sales configuration.