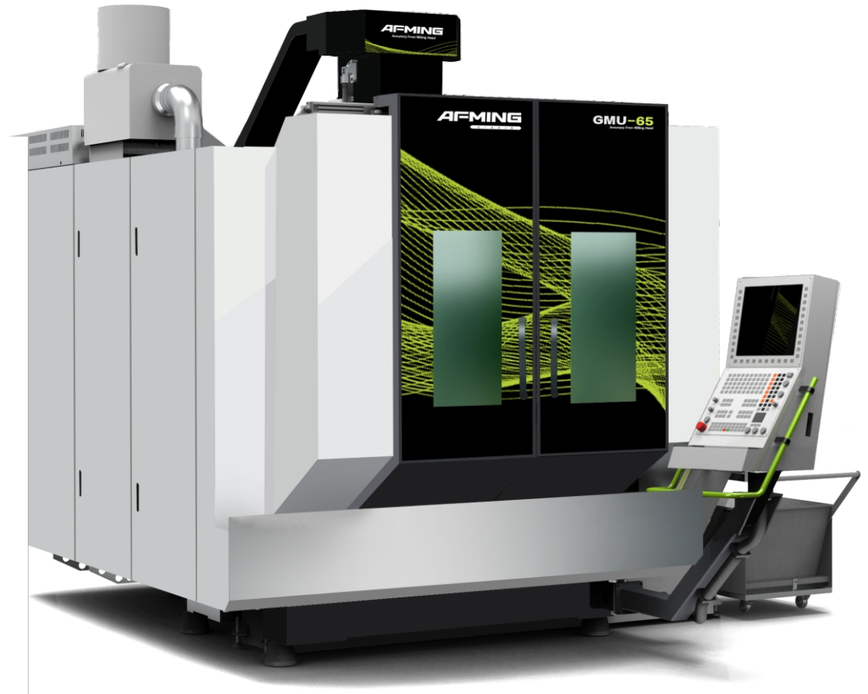
AFMING 埃弗米
Accuracy From Milling Head 精准始于铣头

GMU-65

五轴联动加工中心



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5-AXIS GTRT
搭载齿轮驱动转台技术

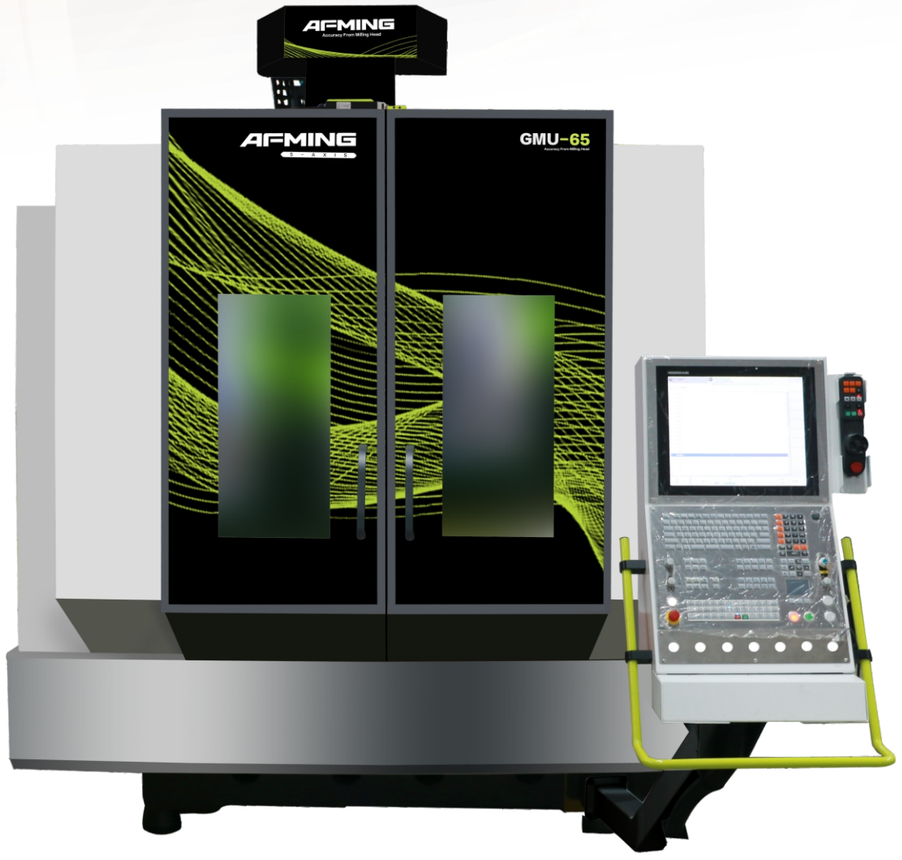
Dongguan AFMING Numerical Control Equipment Technology Co,Ltd.(hereinafter referred to as "AFMING")was founded in 2015.It is a high-tech enterprise primarily engaged in the R&D,production,sales,and service of high-end CNC machine tools.As a holding subsidiary of Guangdong Topstar Technology Co.,Ltd.(Stock Code:300607),a leading listed robotics enterprise in China,AFMING has been honored as a Guangdong Province "Specialized, Refined,Differential &Innovative"SME.The company adheres to its corporate mission of "popularizing high- end five-axis CNC equipment,"dedicating itself to advancing five-axis technology to achieve domestic substitution for high-end five-axis equipment.It provides comprehensive and efficient machining solutions based on five-axis simultaneous machining centers for domestic industries such as aerospace,automotive, medical,mold,and precision parts processing.Valuing talent development,AFMING has established industry- university-research collaboration platforms with multiple domestic institutions,laying a solid technical and talent foundation for its future growth.

Currently,the company's main products include:five-axis simultaneous machining centers,high-speed machining centers,high-precision slider grinders,high-speed graphite machining centers,and core components.AFMING's products sell well both domestically and internationally.

GMU-65 5-Axis Machining Center

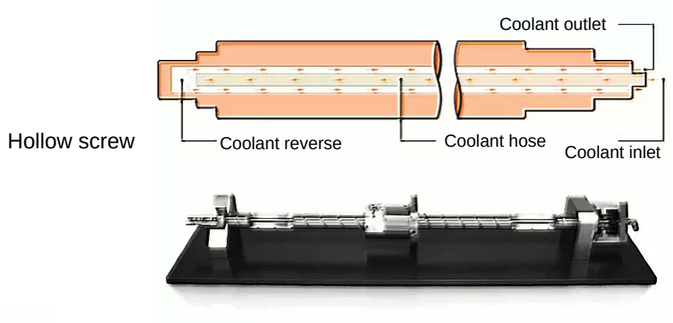
Overhead Gantry 5-Axis Machining Center

- Overhead gantry symmetric structure design, integrated base, **wide-span guideway rear-mounted structure**, optimized force distribution, significantly reducing vibration interference, effectively enhancing machine tool operational stability and machining accuracy.
- **Standard hollow screw cooling**, X/Y/Z axis positioning accuracy 0.006/0.006/0.005mm, repeatability 0.004mm.
- A/C axis positioning accuracy/repeatability 6/4 arcsec.
- A-axis driven by **high-precision gear drive**, static torque **3500N.m.**
- C-axis driven by **DD motor direct drive**, speed 80rpm (up to 800rpm for milling-turning version).



Technical Advantages

The GMU-65 features an overhead gantry structure, optimized through FEA to achieve high rigidity. Equipped with a high-performance motor spindle and a high-rigidity A-axis cradle table driven by anti-backlash gearing (featuring a unique torsional damping structure to reduce torsional vibration), combined with the C-axis driven directly by a torque motor, it meets the core requirements of mold machining for high surface finish and high-response dynamics for complex contours.



High Productivity

X/Y/Z axis travel: 650/950/500mm

A/C axis travel: ±120°/360°

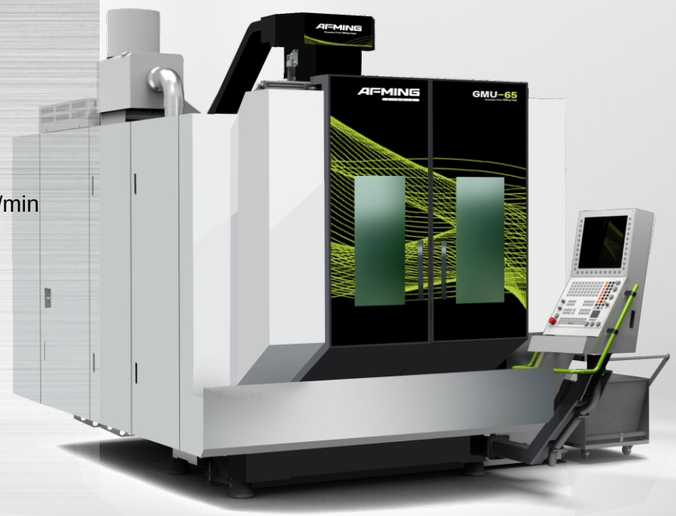
Maximum workpiece size: Ø800

Maximum table load: 350kg

X/Y/Z axis rapid traverse: 40/40/30m/min

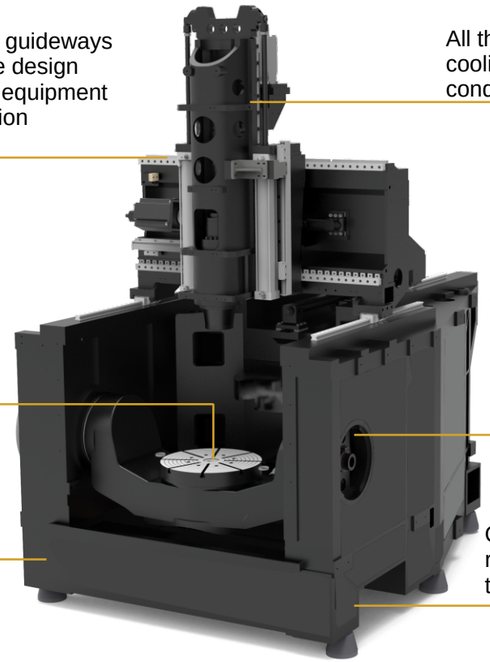
Maximum cutting feed rate: 20m/min

A/C axis maximum speed: 20/80rpm



High-Rigidity Bed Structure

The GMU-65 sets a new benchmark for high rigidity and precision through structural innovation . By integrating the three-axis motion system into a one-piece base and optimizing the bed module, it achieves an all-around breakthrough in machine rigidity and dynamic performance, providing stable dynamic performance and machining accuracy retention for mold and part processing.



Utilizes high-rigidity roller guideways and optimal span iterative design to achieve an upgrade in equipment longevity and high-precision performance

All three axes feature nut recirculating cooling,effectively reducing screw heat conduction

C-axis driven directly by torque motor, speed up to 80rpm, enabling high response

A-axis driven by high-precision gear drive Dynamic performance Static torque up to 3500N.m Greater torsional rigidity

One-piece base structure design combined with embedded table installation process,enhances overall equipment rigidity while ensuring long-term stability of machining accuracy

Optimized chip discharge opening reduces the footprint of the coolant tank

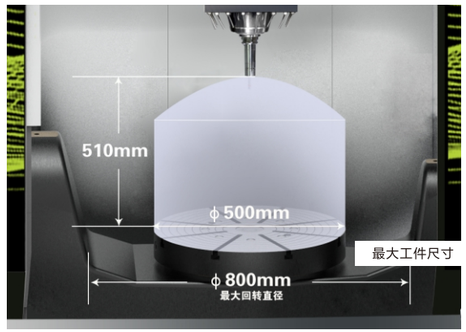


Table size	∅500mm
Max. workpiece clamping	∅800x510
Max. workpiece load capacity	350kg
Collision circumference	800mm

Spindle

Leveraging its core independently developed high-end spindle technology, AFMING is committed to providing customers with high-rigidity, high-stability spindle solutions.By optimizing the bearing span through FEA and combining core cooling and thermal elongation control technologies, we effectively ensure the spindle's long-term machining accuracy and service life. Based on extensive practical maintenance experience, we can quickly respond to customer needs and solve maintenance challenges, thereby helping customers significantly reduce overall operating costs.

15000rpm direct-drive spindle HSK-A63 (T63 optional for milling-turning)

The high-rigidity, high-torque spindle offers excellent heavy-duty milling and high-efficiency machining capabilities

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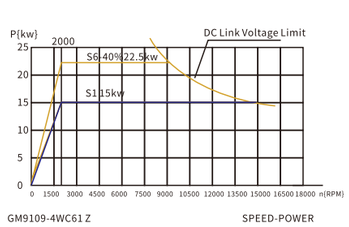
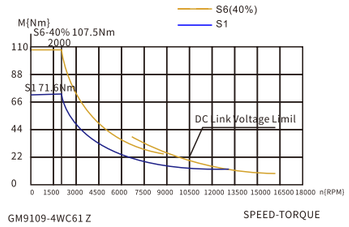
22.5 kW
功率 (Maximum output power)

107.5 N.m
扭矩 (Maximum output torque)



GM9109-4WC61 Z SPEED-POWER



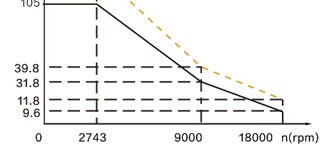
GM9109-4WC61 Z SPEED-TORQUE

18000rpm motor spindle HSK-A63

High speed and high rigidity maximized for a wide range of applications

37.5 kW
功率 (Maximum output power)

130.6 N.m
扭矩 (Maximum output torque)



Application Solutions

The GMU-65 5-axis machining center features excellent rigidity and high dynamic response, making it widely applicable for precision machining in fields such as stamping dies, automotive components, low -altitude aircraft, aero-engine critical parts, and general machinery.

Diffuser

Dimensions: 300×30mm

Material: 7075 aluminum alloy

Machining characteristics: As a core component of a small turbojet engine, the main machining feature of this part is the blades. The machining characteristics are typical of thin-walled parts. The blade profile accuracy is controlled within ±0.05mm, and the blade surface roughness Ra<0.8μm

Precision Parts Field

Workpiece: Flow measurement pump
Material: Aluminum alloy

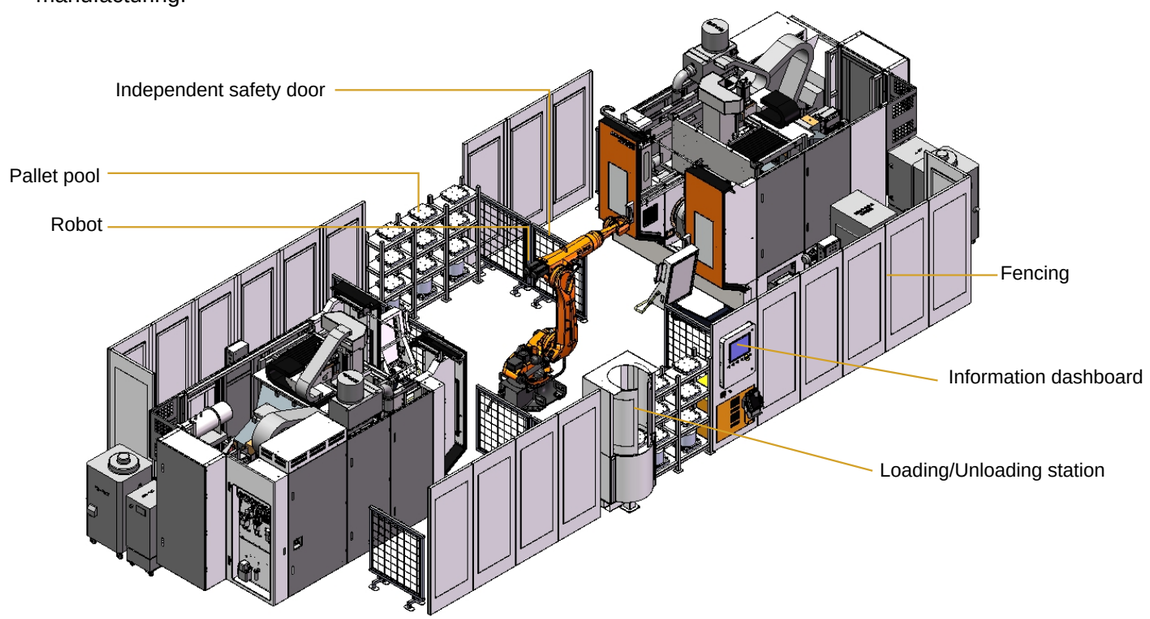
Workpiece: Motor housing
Material: Aluminum alloy

Workpiece: Blisk
Material: Stainless steel alloy

Workpiece: Fairing lock
Material: Aerospace aluminum

Automation Solutions

In the field of high-end precision manufacturing, efficiency and accuracy are the eternal core competitiveness. The perfect integration of the 5-axis machining center with industrial robot automation for loading and unloading aims to create an unmanned, highly flexible smart production cell, ushering you into a new era of intelligent manufacturing.



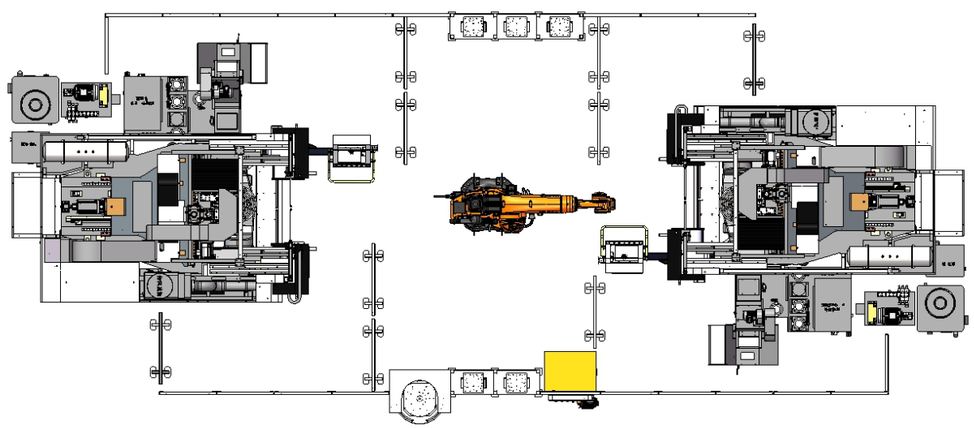
Maximum height utilization

Unattended operation

High flexibility

Consistent quality

Enhanced safety

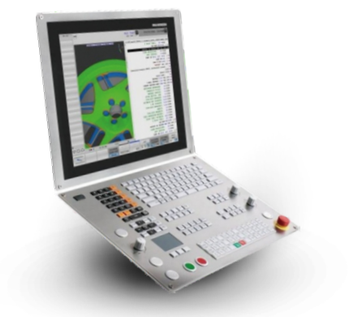


Control System

High-End CNC System for Safe Machining and High Precision

The GMU-65 is equipped with high-end CNC systems from world-leading suppliers—HEIDENHAIN TNC 640 and SIEMENS ONE—enhancing machine data performance for 5-axis simultaneous machining. Additionally, a 5-axis with 4-axis simultaneous option is available to offer customers greater flexibility in their choices.

HEIDENHAIN 海德汉



This machine tool is equipped with the HEIDENHAIN iTNC 640 system. This CNC (numerical control) system ensures comprehensive machine automation and provides a wide range of functions required for easy and efficient programming, such as a host component, TNC keyboard, and a large 19-inch TFT color flat-panel display that delivers clear visuals and comprehensive information on program editing, operation, CNC system, and machine inspection, including program blocks, comments, and error messages. Additional information is provided through graphics during program input, test runs, and actual machining operations. An optional split-screen display is available, where one half of the screen shows the part program block and the other half displays graphics or status information. While a program is running, the status bar shows tool position, current program, coordinate transformation, and other details.

Operating System

Machine tool CNC system HEROS real-time operating system

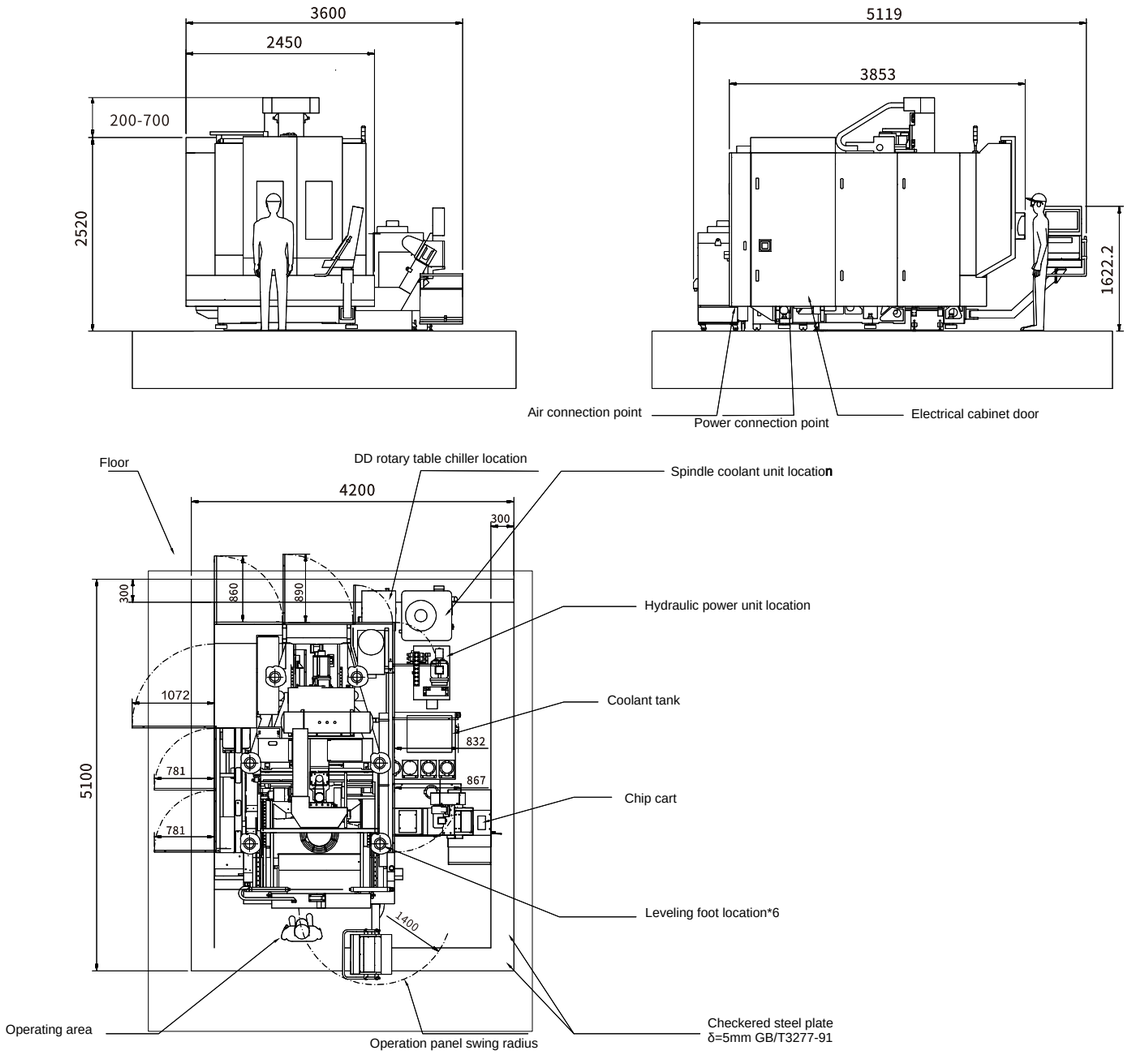
- Input resolution and display step for linear axes: up to 1 µm
- Rotary axes: up to 0.001°
- Input range max 999,999,999 mm or 999,999,999.9°
- Interpolation: 4-axis linear interpolation including spindle
- Optional: 9-2 axis circular interpolation
- Block processing time 0.5 ms (without radius compensation, 3-D linear)
- Error compensation: linear and non-linear error, backlash, reversal spikes in circular motion, thermal expansion, and static friction
- Data interfaces: one RS-232-C/V.24 and one RS-422 /V.11, maximum speed 115 Kbps
- Diagnostics: built-in diagnostic tools for fast and convenient troubleshooting

SIEMENS Control System

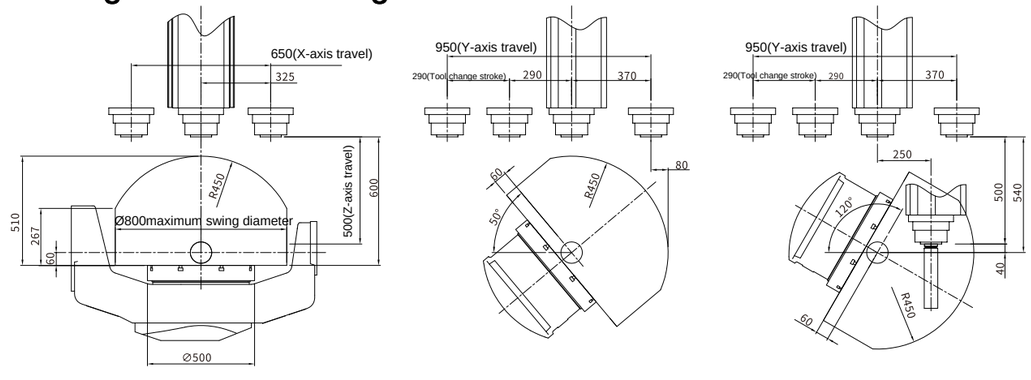
Powerful CNC machine tool control platform

- Supports various 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 double spline curves
- Cycle for measuring 5-axis transformation dimensions
- Comprehensive 5-axis collision avoidance
- Definition of kinematic chain simplifies the configuration of related functions
- Supports the use of angle heads on 5-axis machines, suitable for internal wall machining of cylindrical parts

General layout drawing



Machining interference diagram



GMU-65 Machine Tool Technical Specification Sheet

Parameter	Unit	GMU-65	GMU-65DT
X/Y/Z axis travel	mm	650/950/500	650/950/500
A/C axis travel	deg	±120/360	±120/360
Table to spindle nose distance	mm	100~600	110~610
Table size	mm	500	500
Max. load capacity	kg	350	250
Spindle			
Max. spindle speed / taper	rpm	18000/HSK-A63	15000/HSK-T63
Spindle power (S6-40%)	kW	37.5	22.5
Torque (S6-40%)	N.m	130.6	107.5
Feed System			
X/Y/Z axis rapid traverse	m/min	40/40/30	40/40/30
Max. cutting feed rate	m/min	20	20
Acceleration	m/s^2	6	6
A/C axis rapid speed	rpm/min	20/80	20/800
Positioning accuracy / Repeatability (with linear scale)(GB17421.22000)			
X/Y	mm	0.006/0.004	0.006/0.004
Z	mm	0.005/0.004	0.005/0.004
A/C	ARCSEC	6/4	6/4
Automatic Tool Changer			
Number of tools	Pcs	48T	48T
Tool change time (tool to tool)	sec	5s	5s
Max. tool length	mm	250	250
Max. tool diameter / adjacent empty	mm	Φ75/Φ125	Φ75/Φ125
Max. tool weight	kg	8	8
Machine Dimensions			
Overall machine height	mm	3300	3300
Floor space (L × W)	mm^2	5100×4200	5100×4200
Net machine weight	kg	13500	13500
Power requirement	kVA	57	57

Standard Configuration

1.CNC system: HEIDENHAIN 620/640
with 5-axis calibration package

2. Motor spindle 18000rpm / HSK-A63
Spindle chiller
Spindle air curtain dust prevention system

3.48T chain-type tool magazine

4.Chip removal system
Scraper-type chip conveyor
Machine cleaning gun
Full enclosure sheet metal
Process air blow

5.Hollow screw

6.A/C axis linear scales

7.Automatic lubrication system

8.Work light, warning light, electrical cabinet
air conditioning system, tool kit, anchor bolts, operation manual

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