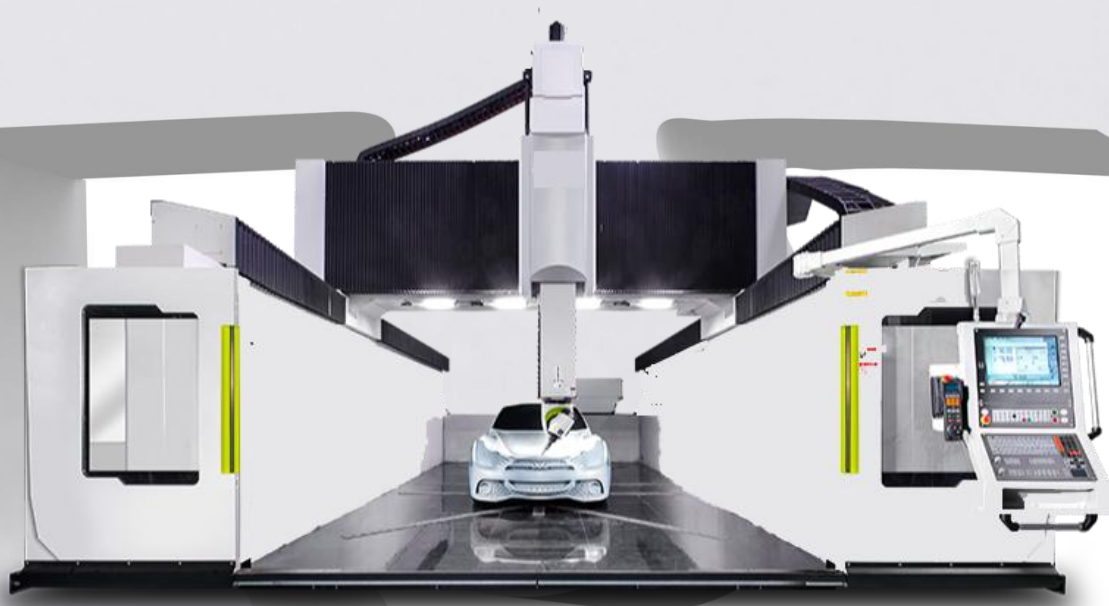


客户的需求就是我们所做的一切

All We Do Are Clients Demand



 **厦门扬森机械科技有限公司**
Xiamen YANGSEN Machinery Technology Co., Ltd

Pre-sales technical information
Five-Axis Machining Center CNC Machining
YSMD8045-5A-HSKA63

Xiamen Yangsen NC Equipment Co., Ltd.

Add: No.586-590 Shanbian Rd. Dongfu Industrial Zone, Haicang

Dist., Xiamen, Fujian Province, China 361027

T: +86-592-6682467

Website: www.cncyangsen.com

Contents

1. General introduction of YSMD-8045-5A gantry CNC machining center
2. Main structure and technical features of YSMD-8045-5A gantry CNC machining center
3. Main technical parameters of YSMD-8045-5A gantry CNC machining center
4. List of main purchased parts of YSMD-8045-5A gantry CNC machining center
5. List of main accessories of YSMD-8045-5A gantry CNC machining center
6. Main function table of electrical system of YSMD-8045-5A gantry CNC machining center
7. Operating environment and testing requirements of YSMD-8045-5A gantry CNC machining center
8. YSMD-8045-5A gantry CNC machining center installation, commissioning, and acceptance training
9. Recommended oil and grease table for YSMD-8045-5A gantry CNC machining center
10. After-sales service commitment letter of Xiamen Yangsen CN Equipment Co., Ltd.

1、YSMD8045-5A General introduction of gantry CNC machining center

1 Overview

1.1 Narrative

This technical task book is used for the ordering, design, manufacture, installation, commissioning and acceptance of the CNC gantry type machining center and auxiliary equipment of the user.

1.2 Installation position of gantry type CNC machining center

The gantry type CNC machining center described in this technical task book is installed in the workshop of the user.

2. Basic environment

2.1 Power supply voltage: AC 380V \pm 10%, 50Hz \pm 5%, 3-phase 5-wire system.

2.2 Use environment: The user is responsible for the power supply from the workshop to the equipment control cabinet.

3. Color of gantry CNC machining center

The color of the gantry type CNC machining center is painted with an international standard model.

4. The standards that the gantry type CNC machining center meets

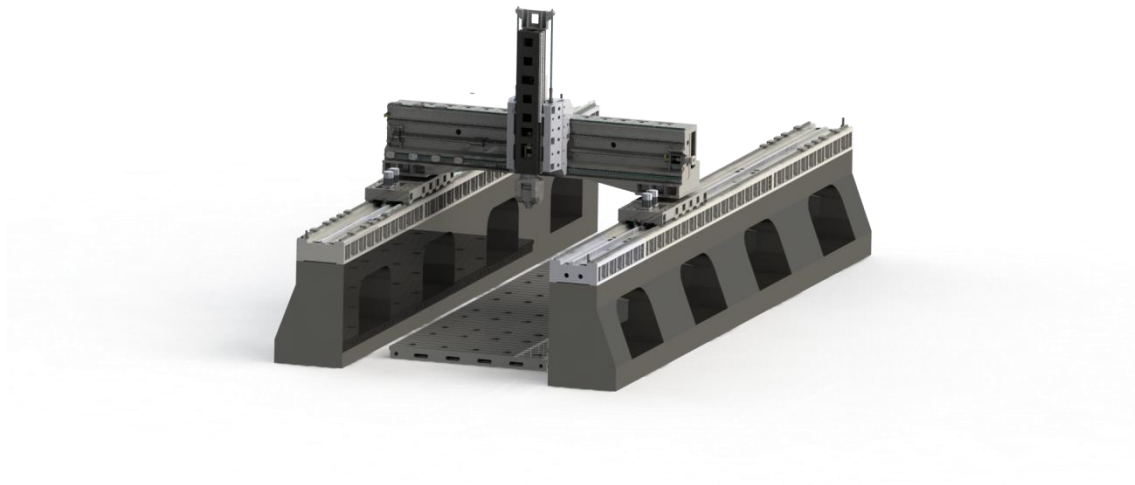
The ambient temperature detected by GB/T shall comply with the provisions of GB1093-89

Accuracy implementation standard: GB/T19362.2-2017

Machine tool electrical conforms to GB 5226.1-2008 electrical standard

2、YSMD8045-5A The main structure and technical characteristics of the gantry CNC machining center

The overall layout of the machine tool is a synchronous moving crane type gantry structure, with the workbench fixed and the gantry crane moving forward and backward; the left and right columns and the bed are distributed on both sides of the workbench. The gantry crane moves forward and backward on the X-axis, and the "box-in-box" symmetrical beam structure design.



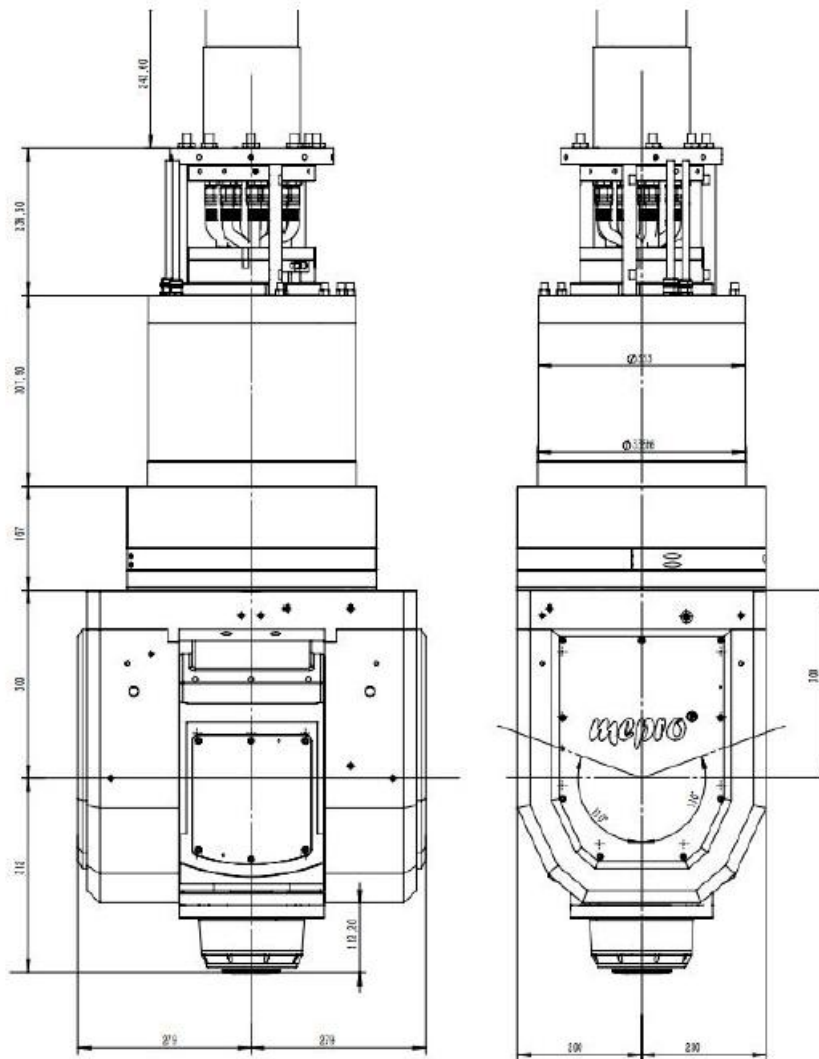
(Note: This picture is for reference only, not as a contract basis)

1、 Machine tool spindle

The spindle adopts HSKA63 high-speed electric spindle. The spindle has a water-cooled internal cooling method that reduces the thermal deformation of the spindle and improves the stability of the spindle accuracy and the machining accuracy of the machine tool. The machine tool has spindle orientation and rigid tapping functions. The spindle box component adopts a double nitrogen liquid balancing cylinder mechanism to ensure the stability of the spindle box movement.

Five-axis linkage double swing milling head: A/C mechanical axis + electric spindle, fork-type integrated structure, with high rigidity, A/C axis adopts unique anti-backlash structure transmission.

List of main accessories YSMD8045-5A





项目	单位	参数
A轴最大扭矩	Nm	1060
A轴最大转速	rpm	60
A轴抱紧扭矩	Nm	4000 (60bar)
A轴转角范围	°	±110
A轴编码器类型		绝对式
A轴定位精度	"	8
A轴重复定位精度	"	4
C轴最大扭矩	Nm	1350
C轴最大转速	rpm	60
C轴抱紧扭矩	Nm	4000 (60bar)
C轴转角范围	°	±360
C轴编码器类型		绝对式
C轴定位精度	"	8
C轴重复定位精度	"	4
主轴S7扭矩	Nm	120
主轴S6扭矩		85
主轴S1扭矩		72
主轴最高转速		18000
主轴额定转速		4000
主轴额定功率	-	30
刀柄	-	HSK-A63

2. Feed transmission of each axis

The X/Y axis adopts rack and pinion transmission, dual motor anti-backlash structure, the Z axis adopts rack and pinion transmission, the transmission system is a servo motor equipped with a reducer, the rotational motion of the servo motor is directly transmitted to the gear rack, and through the gear rack converted into linear motion.

3. Guide rail form

The X-axis guide rail pair uses four heavy-duty linear guide rails with small friction coefficient and high sensitivity; small vibration at high speed and no crawling at low speed. The drive shaft has high positioning accuracy and excellent servo drive performance; at the same time, it has large load-bearing capacity and good cutting vibration resistance, which can improve the dynamic characteristics of the machine tool and increase the accuracy, stability, and service life of the machine tool;

The Y-axis crossbeam guide rail pair uses two heavy-duty linear guide rails; the guide rails are arranged in a stepped manner, with a large span and sufficient bending stiffness and torsional stiffness.

The Z-axis adopts a box-in-box structure.

4. Basic parts of machine tools

The bed, columns, beams, spindle box, etc. are all cast using high-strength cast iron materials and resin sand technology. To meet the heavy load cutting of machine tools, the cross beam adopts a large cross-section and has sufficient bending stiffness and torsional stiffness. These large parts are designed optimally with the aid of computer three-dimensional software, and the stiffeners are reasonably arranged to improve the stiffness of the large parts.

5. Machine tool lubrication

The lubrication of machine tools is divided into two forms: grease lubrication and automatic thin oil lubrication.

Grease lubrication parts: three coordinate bearings

Automatic thin oil lubrication parts: ball screw pair, linear guide rail, cast iron-coated friction guide rail pair

Automatic thin oil lubrication is a timed and quantitative fully automatic method. The action is automatically controlled by the CNC system and can detect and alarm.

6. Cutting cooling and chip removal system

The cutting cooling of machine tools adopts external cooling, and the coolant is emulsified and non-corrosive liquid. The chips are sent to the trolley through two chain plate chip conveyors on the bed.

3. Main technical parameters of gantry CNC machining center

Subject	Specification	unit	YSMD-8045-5A
Travel	X/Y/Z axis	mm	8000*3500*2300
	Spindle nose to the worktable surface	mm	500-2800
	Gantry passable width	mm	4500
Worktable	worktable (L*W)	mm	8000*3500
	Worktable max load	t/m ²	10
	T SLOT	mm	36*200
Spindle	Spindle type	mm	HSKA63
	Spindle speed	rpm	18000

	Spindle delivery type		Electric spindle
Feed rate	Feed rate (X/Y/Z)	m/min	10/10/10
	The max cutting feed rate	mm/min	6000
Motor	Spindle motor	kw	30
	Three-axis servo motor	kw	5.2*4/5.2/5.2
	Cutting water pump motor	kw	2.7
ATC(optional)	Tool change method		Side Amount
	Tool handle specifications	type	HSKA63
	Tool capacity	tools	30
	Maximum tool diameter (adjacent tool)	mm	80
	Maximum tool diameter (without adjacent tool)	mm	120
	Maximum tool length	mm	350
	Maximum tool weight	kg	8
Accuracy(GB/T 19362.2-2017)	Positioning	mm	0.06/0.035/0.02
	Repeatability	mm	0.045/0.025/0.015
Power requirement	Power requirement	kva	60
	Air pressure requirement	Kg/cm	6~8
Others	L*W*H	mm	Appr 13300*7430*5950
	Weight	T	Appr 89

4. List of main parts of gantry CNC machining center

No.	Product name	Qty	Manufacture	Specification
1	Controller	1 pc	Siemens	SINUMERIK-ONE
2	Five-axis linkage double swing milling head	1 set	IBAG	30KW
3	X, Y, Z servo motor	1set	Siemens	1FK7103*4/1FK7103/1FK7103
4	Spindle bearing (Front)	1set	NSK	
5	Spindle bearing (Back)	1set	NSK	
6	X/Y/Z Axis transmission	1 Unit	Taiwan	Double rack and pinion
7	X linear guide way	4pcs	THK	55-gauge heavy-duty roller rail
8	Y linear guide way	2pcs	THK	55-gauge heavy-duty roller rail

9	Spindle	1Set	IBAG	T70.5
10	Coolant pump	1 Set	YANGSEN	4-10
11	Automatic lubrication system	2 Set	SKF	4L
12	Main pneumatic components	1Set	Japan SMC	
13	Main electric components	1Set	France	Schneider
14	Electric cabinet air conditioning	1Set	Riko	
15	Three Shaft-driven bicycle mode and gear ratio	1Set	Japan Nidec/NBK	
16	Chip removal device	1Set		chain plate chip removal
17	Oil cooler	1 Set	Rico	
18	Three-axis grating ruler	1Set	Heidenhain / Fagor	

Note: The manufacturer preserves the rights to exchange parts at equivalent values.

Customer Optional configuration

No	Specification	Remark
1	Fully enclosed, automatic sunroof, bright interior of the armor!	
2	Machine head follow-up vacuum cleaner	
3	Renishaw 3D Measurement	
4	Handheld terminal HT2, 128x64 pixel display	
5	Temperature Sensing Thermal Compensation	
6	Optical and digital zoom enables video recording to internal hard drive - 360" unlimited panorama	
7	NC4 F230 tool setter	
8	Vacuum system with vacuum pump 250 m3/h and vacuum connector	
9	18 months warranty	

5. Main attachment list:

NO	Function	Specification	Quantity	Remark
1	Allen wrench	1.5---10	1 set	
2	screwdriver	word, cross	1 set	
3	raw tape		2 volumes	
4	glass glue	porcelain white	1 bottle	
5	Electronic handwheel		1pcs	
6	card reader		1pcs	
7	Memory card		1pcs	

8	cable	5 meters, 20 meters	2pcs	
9	snap ring		1pcs	
10	screw		1 package	
11	machine tool ground		1 stick	
12	Bellows connector		1pcs	
13	toolbox		1pcs	
14	foundation		1 set	
	Accompanying documents			
1	Machining Center System Operation Manual	U disk	1 copy	
2	Certification		1 copy	
3	Packing List		1 copy	
4	Machine tool circuit diagram		1 copy	

6. The main function table of the electrical system of the gantry type CNC machining center

CNC system: SIUMERIK ONE

NO	Function	Explanation	Remark
Hardware Configuration			
1	Number of control axes	5 axis	Standard configuration
2	Simultaneously control the number of axes	5 axis	Standard configuration
3	Axis name	X、Y、Z、A/C	Standard configuration
4	CNC system		Standard configuration
5	Operating area		Standard configuration
6	Machine operator panel		Standard configuration
7	Handheld operating unit		Standard configuration
8	Ethernet interface		Standard configuration
9	USB port	2x USB 2.0	Standard configuration
10	PLC program	Built-in SIMATIC S7-200	Standard configuration
11	PLC function	Up to 4096 flags, 128 timers, 64 counters	Standard configuration
12	PLC peripheral module	PP72/48D PN	Standard configuration

NO	Function	Explanation	Remark
13	CF card interface	1pcs	Standard configuration
14	Raster scale interface	3 axis	Standard configuration
System functions			
1	Minimum pulse equivalent	Linear axis 0.001 mm, rotational axis 0.001 °	Standard configuration
2	Feed rate per minute/revolution		Standard configuration
3	Feed and rapid feed		Standard configuration
4	Feed rate adjustment 0~120%		Standard configuration
5	Spindle speed limit		Standard configuration
6	Spindle constant speed cutting		Standard configuration
7	Spindle monitoring		Standard configuration
8	Spindle orientation accurate stop		Standard configuration
9	Spindle magnification 50-120%		Standard configuration
10	Spindle speed display		Standard configuration
11	Acceleration with impact limitation		Standard configuration
12	Programmable acceleration		Standard configuration
13	FRAME	Implement coordinate system transformation and bevel machining	Standard configuration
15	Forward looking function or forward-looking function	Implementing frequent motion control in high-speed machining	Standard configuration
16	tool radius compensation		Standard configuration
17	Length Compensation		Standard configuration
18	Compensation for screw pitch error		Standard configuration
19	Measurement system error compensation		Standard configuration
20	backlash compensation		Standard configuration
21	Quadrant error compensation		Standard configuration
22	Tool Management	The machine tool needs to be equipped with a tool magazine	
Interpolation function			
1	Accurate stop		Standard configuration
2	feed hold		Standard configuration
3	cutting		Standard configuration
4	Three coordinate linear interpolation		Standard configuration
5	Arbitrary two coordinate arc interpolation		Standard configuration
6	D+N spiral interpolation (arc interpolation up to two axis linear interpolation)		Standard configuration
Program			
1	Tapping		Standard configuration

NO	Function	Explanation	Remark
2	Chamfering/rounded corners		Standard configuration
3	Metric, English or mixed size programming		Standard configuration
4	Programming	Comply with DIN66025 standard, with High-level programming language programming features	Standard configuration
5	Absolute or incremental programming		Standard configuration
6	Variable and parameter operation		Standard configuration
7	Dynamic Program Caching (FIFO)		Standard configuration
8	7-level subroutine nesting		Standard configuration
9	Program Jumps and Branches		Standard configuration
10	Macro program		Standard configuration
11	Translation and rotation of coordinate systems		Standard configuration
12	Simultaneous programming and processing		Standard configuration
13	Program instruction returns reference point		Standard configuration
14	Profile programming and fixed loop programming		Standard configuration
15	Mirroring and scaling		Standard configuration
16	Plane selection		Standard configuration
17	Workpiece Coordinate System		Standard configuration
18	Fixed cycle of drilling and milling process		Standard configuration
19	Zero offset		Standard configuration
20	Program segment retrieval		Standard configuration
21	Program number retrieval		Standard configuration
22	Background editing		Standard configuration
23	PROGRAM PROTECT		Standard configuration
24	Select program through directory		Standard configuration
25	3MB user memory (RAM)	Can be used for part programs, tool compensation, and data offset	Standard configuration
Safety protection function			
1	Programmable machining area limitations		Standard configuration
2	Program testing function		Standard configuration
3	Emergency stop		Standard configuration
4	Software limit monitoring		Standard configuration
5	Hardware limit monitoring		Standard configuration
6	Contour monitoring		Standard configuration
8	Static monitoring		Standard configuration
9	Location monitoring		Standard configuration

NO	Function	Explanation	Remark
10	Speed monitoring		Standard configuration
11	Processing area restrictions		Standard configuration
13	Safety function clock monitoring measuring circuit, overheat, voltage, memory, Limit switch		Standard configuration
Operating mode			
1	AUTOMATIC (Automatic)	Including program operation, program interruption, idle operation, single program segment, etc	Standard configuration
2	JOG (manual) adjustment	Including REF mode, incremental mode (x1, x10, x100, x1000, x10000, and any incremental)	Standard configuration
3	MDA manual data input		Standard configuration
4	TEACHIN	Interactive program generation in conjunction with machine tools	Standard configuration
Operation and display			
1	Diagnostic function and screen protection with text display for NC and PLC		Standard configuration
2	Self-diagnostic function display		Standard configuration
3	Current position display		Standard configuration
4	Graphic display		Standard configuration
5	Program display		Standard configuration
6	Software bug display		Standard configuration
7	Operation error display		Standard configuration
8	Actual cutting speed display		Standard configuration
9	Chinese and English menu display		Standard configuration
10	Alarm information display		Standard configuration
11	Multiple sets of M-code instruction sets		Standard configuration
Data Communication			
1	USB port	Backup NC data, PLC data, and programs to a USB flash drive for input and output data	Standard configuration
2	CF card interface	Data input and output transmission through CF card	Standard configuration

Xiamen Yangsen NC Equipment Co., Ltd.

Our company's products are constantly being developed and improved, and specifications may change without notice. Some images in this document may contain optional items.

The pictures in this information are for reference only, and the actual product shall prevail.