

**客户的需求就是我们所做的一切**

**All We Do Are Clients Demand**



**Xiamen Yangsen NC Equipment Co., Ltd**

**Technical Document**

**YSM-7028 Double Column**

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# 1. General introduction of YSM-7028 gantry CNC machining center

## 1. Overview

### 1.1 Narrative

This technical task book is used for the ordering, design,

#### 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+/-10%, 50Hz+/-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 adopts the international standard color, and the user provides a standard sample for painting.

#### 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. The main structure and technical characteristics of YSM-7028 gantry CNC machining center

The overall layout of the machine tool is a fixed-beam beam structure, and the worktable moves forward and backward; the left and right columns and the bed are distributed on both sides of the workbench. The gantry table moves forward and backward in the X axis, the square ram moves vertically in the Z direction on the slide plate, and the slide plate and the ram move horizontally in the Y direction on the beam. As shown below:

(1) Workbench moves vertically

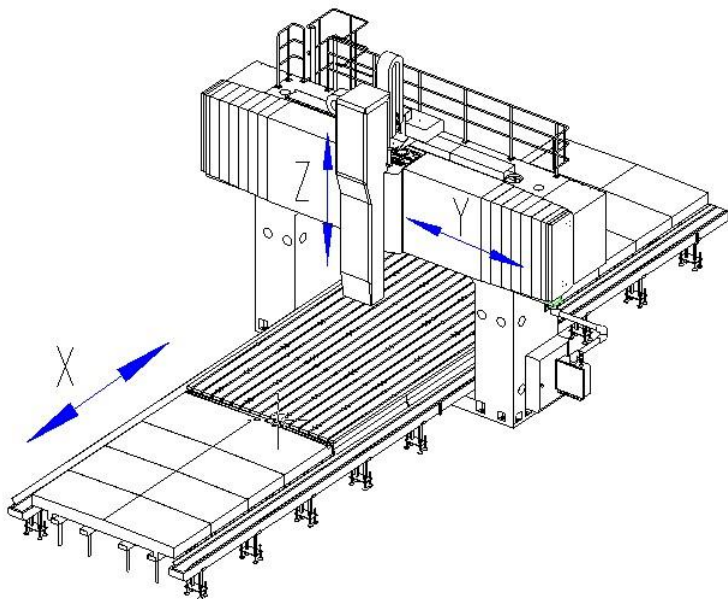
(X Axis)

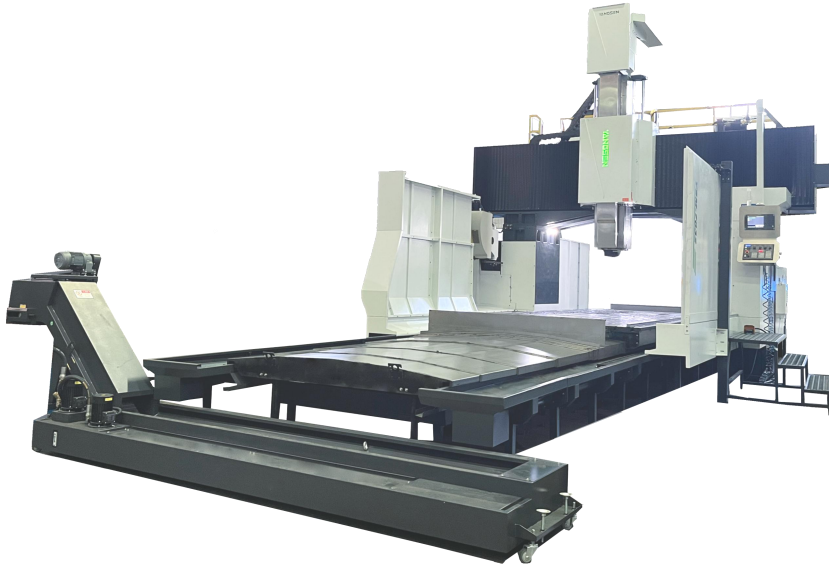
(2) The saddle moves along the beam

(Y Axis)

(3) Axial movement of ram

(Z Axis)





### 1. Machine tool spindle

#### Machine tool spindle and headstock structure

The main shaft is driven by a 22/26KW high-torque AC servo motor, and the speed change of the main shaft adopts an automatic two-stage high and low gear transmission. The lubricating oil temperature of the gearbox is controlled by an independent oil cooling device; the main shaft is equipped with an automatic broaching device, which is hydraulically released, the disc spring is tensioned, and the loosening and broaching detection is safe and reliable; the main shaft adopts a BBT50 high-rigidity main shaft with super cutting force;

BBT50高刚性主轴



**两面定位系统**  
**BIG-PLUS 两面定位主轴系统**  
**BIG PLUS SPINDLE SYSTEM**

BIG-PLUS	以往系统
	

- 通过确立完善的量规系统,实现了锥面、端面同时两面定位的系统。
- 采用BIG-PLUS系统的公司: 日本66家 其它国家90家

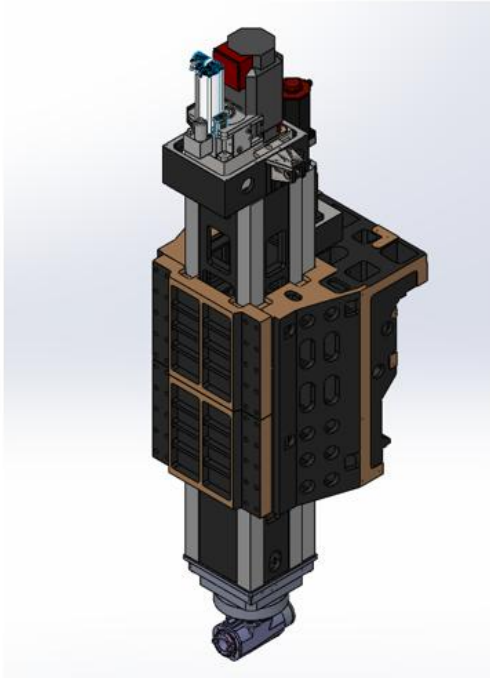


获得第23届发明大奖/  
池本发明功劳奖

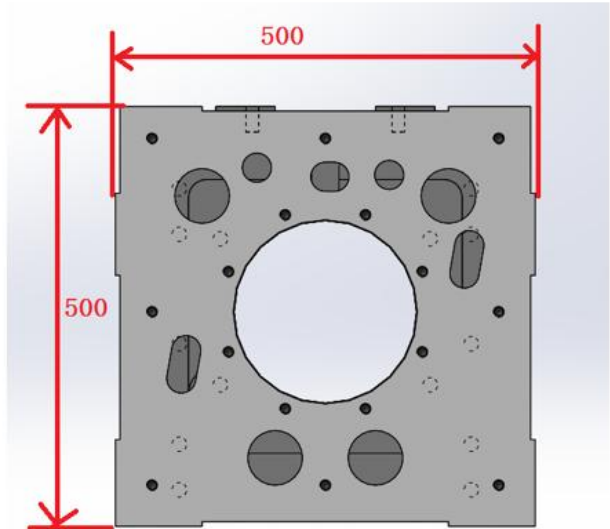
**BIG-PLUS的种种优点:**

● 提高加工表面和加工尺寸精度	● 提高ATC的重复精度
● 延长刀具寿命	● 高速旋转时Z方向尺寸稳定
● 抑制重切削时因振动引起的锥柄变色 (微动磨损)	● 提高镗孔加工的圆度

The spindle box adopts a large cross-section square ram structure, supported by four heavy-duty roller guide rails, which has a strong ability to resist the lateral strong cutting of the spindle, and can realize strong cutting in the full stroke of the Z-axis; the Z-axis movement adopts dual hydraulic balance cylinder balancing technology to eliminate the resulting up and down unbalanced



方滑枕截面尺寸



moment;

The square ram can be equipped with an optional BF gearbox to realize high and low speed changes through automatic shifting, and stepless speed regulation within each



双速行星齿轮箱 简介

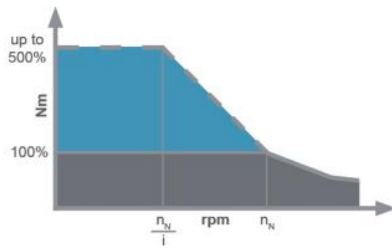
主要特点:

- 高性能速度
- 低噪音
- 可扩展电机恒定功率的范围
- 安装方便, 可配合使用多系列电机
- 可适应高强度拉力
- 外形小巧
- 合理设计的驱动装置有效地减少了主轴振动和热量的产生
- 根据不同的应用, 可以选择合适的润滑系统

优点是:

- 增加主轴电机的功率范围
- 保持高精度的同时提高产能
- 可高速度切割软质材料和高强度加工硬质材料

Torque/扭矩

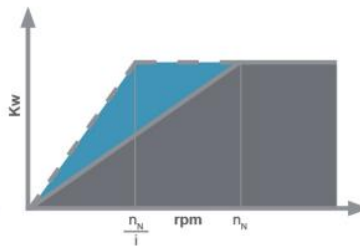


电机扭矩增加到500%

■ 扩展的扭矩  $i > 1$  (低速)

■  $i = 1$  (高速)

Power/功率



电机功率最优化不断提高

—— 齿轮箱安装于  $i = 1$ , 即高速运转

- - - 齿轮箱安装于  $i > 1$ , 即低速运转

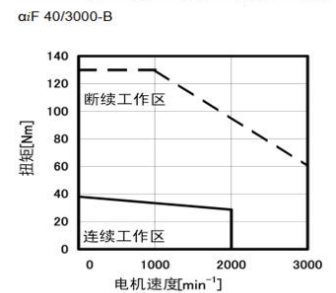
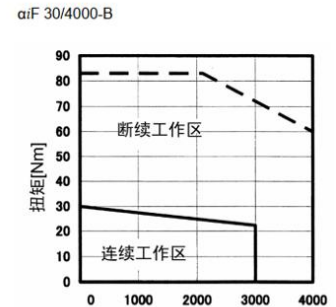
speed.

**2. Feed transmission of each axis**

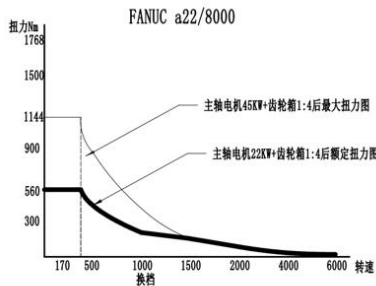
The X, Y, and Z transmissions all use AC servo motors as power sources, and ball screws as transmission components. The ball screw is fixedly supported at both ends, supported by imported special precision bearings and pre-stretched in two directions to ensure the feed rigidity and life of the screw. The Y-axis screw is equipped with an advanced auxiliary support structure, which can effectively avoid the accuracy error caused by the sag of the center of gravity of the large-stroke screw. The Z-axis motor has an automatic brake function. In the event of a power failure, the automatic brake will hold the motor shaft tightly so that it cannot rotate.

**X/Y/Z and Spindle Torque Charts:**

系统	Oi-MF Plus	额定功率kW	额定扭矩N.m	最大扭矩N.m
X轴	$\alpha iF$ 40/3000-B	6	38	130
Y轴	$\alpha iF$ 30/4000-B	7	30	83
Z轴	$\alpha iF$ 30/4000-B	7	30	83
主轴SP	$\alpha iI$ 22/8000-B	22	140	286



$\alpha iI$  22/8000-B



**3. Rail form**

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

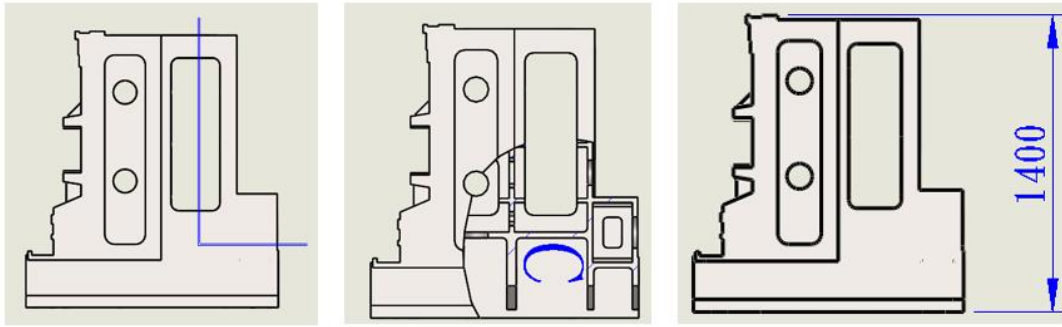
The Y-axis beam guide pair adopts two heavy-duty linear guide rails; the guide rails are arranged in steps, with a large span, and sufficient bending rigidity and torsional rigidity.

The Z-axis guide rail is a closed embracing sliding guide rail pair, that is, cast iron-plastic-coated friction pair transmission, which has good shock absorption and ensures stable cutting during processing. It adopts a square ram 500\*500 structure.

**4. Basic parts of machine tools**

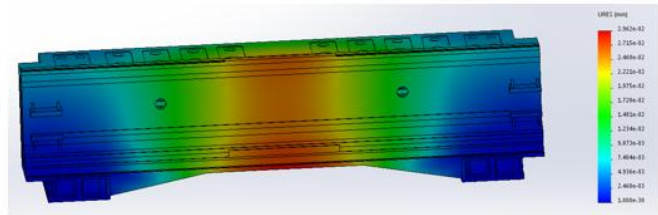
The bed, columns, beams, and spindle boxes are all cast with high-strength cast iron materials and resin sand technology. In order to meet the heavy-duty cutting of the machine tool, the cross-beam adopts a large cross-section, which has sufficient bending rigidity and torsional rigidity. These large pieces are designed with computer-assisted three-dimensional software, and the arrangement of ribs is reasonable to improve the rigidity of the large pieces.

4.1 Beam



横梁

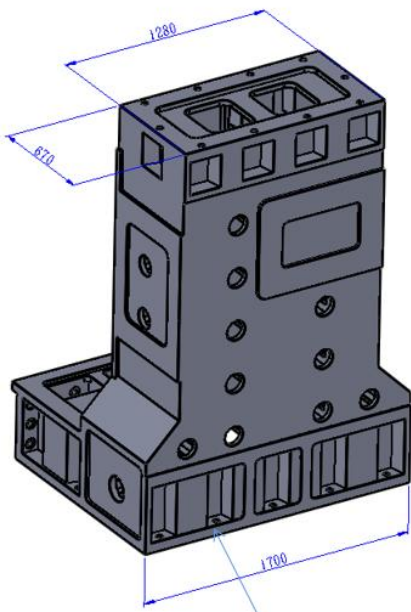
1. 台阶L形设计提升刚性。
2. 内凹式C型结构抗弯性能更佳。
3. 大尺寸截面设计。
4. 有限元分析。



structure

4.2. Column

structure

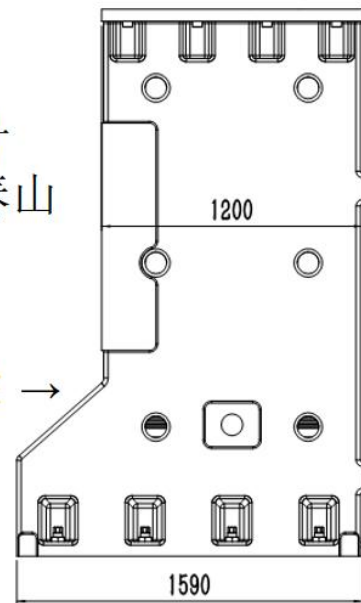


双向超宽底盘

立柱

超宽尺寸重载设计  
让机床加工稳如泰山

老式立柱 →



5. Machine tool lubrication

There are two types of lubrication for machine tools: grease lubrication and automatic thin oil lubrication.

Grease lubrication part: Three coordinate bearings

Automatic thin oil lubrication parts: ball screw pair, linear guide rail, cast iron-friction guide rail pair composed of plastic paste

Automatic thin oil lubrication is a timing and quantitative automatic method, the action is automatically controlled by the



numerical control system, and can detect and alarm

**6. Cutting cooling chip removal system**

The cutting cooling of the machine tool adopts the external cooling method, and the cooling liquid is emulsified and non-corrosive liquid. The chip removal is sent to the trolley through the two-measuring chain plate chip removal machine on the bed.

**7. Machine tool protection device**

The bed guide rail (X-axis) of the machine tool adopts an anti-rust metal telescopic protective cover; the beam guide rail (Y-axis) adopts an organ-type protection; work in the environment.

**8. Electrical system**

This machine tool adopts the latest OI-MF-PULS CNC system from FANUC, Japan. The spindle drive unit, feed drive unit, AC spindle motor, and AC feed servo motor are all imported, with advanced performance, stability and reliability.

**9. Paint packaging**

The color of the machine tool is subject to the manufacturer's standard color standard. If the user has special requirements, specify the color requirements when signing the agreement. Machine tool packing box In addition to the electrical cabinet and machine tool accessories, which are packed in strong wooden boxes, the main engine of the machine tool is transported bare metal to ensure the installation cycle of the machine tool.

**10. Machine tool foundation**

The foundation must be a solid, rigid and smooth concrete foundation, and meet the requirements of the manufacturer's foundation drawings. The standard installation position of the equipment is ground installation, and the host and all related accessories are placed on the ground. If the factory building has height restrictions, Foundation sinking is optional and specified in the agreement, otherwise the default is not to sink.

**11. The machine tool parts belong to the famous brand of famous factory, with top-level configuration.**



**3. Main technical parameters of YSM-7028 gantry CNC machining center**

Items	Specifications	Units	YSM-7028
Travel	X/Y/Z Axis	mm	7000*3300*1250
	Distance From Spindle Nose to Worktable	mm	350-1600



	Gantry Width	mm	2800
	The Gantry High	mm	1750
	Square Ram Area	mm	500*500
Worktable	Table Size (L*W)	mm	6400*2200
	The Maximum Load Capacity of	t	28
	T-Slot	mm	11-28×200
Spindle	Spindle, Taper Hole (Model/Installation Size)	mm	BT50
	Spindle Speed	rpm	6000
	Spindle Drive Mode		Direct Connection (Gear Box)
Feed	X/Y/Z Axis Rapid Feed	m/min	8/10/10
	Cutting Feed	mm/min	8000
Tool changing device (optional)	Tool Change Method		Side Mount
	Handle Specifications	type	BT50
	Tool Capacity	tools	24
	Maximum Tool Diameter (Adjacent Tool)	mm	112
	Maximum Tool Diameter (Without Adjacent Tool)	mm	220
	Tool Length	mm	350
	Tool Weight	kg	18
	Fastest Tool Change Time	sec	4.9
Motor	Spindle Motor	kw	AII22/8000
	Three-Axis Servo Motor	kw	aiF40/3000/aif30/4000/aif30/4000
	Cutting Water Pump Motor	m/h-m	4-60
Tolerance (GB/T 19362.2—2017)	Positioning Accuracy	mm	0.035/0.025/0.015
	Repeatability	mm	0.025/0.02/0.01
Power Requirement	Power Requirements	kva	50
	Air Source Requirements	Kg/cm	6~8
Machine Size	Length*Width*Height	mm	17000*6120*5820
	Weight	T	Appr. 63

**4. List of main accessories**

No.	Items	QTY	Brand	Specification
1	CNC system	1 Set	Japan FANUC	FANUC-OI-MF
2	Spindle servo motor	1 Set	Japan FANUC	AII22/8000



3	X, Y, Z servo motor	1 Each	Japan FANUC	aiF40/3000/aif30/4000/aif30/4000
4	Main shaft front bearing	1 Unit	SKF	7020*4
5	Spindle rear bearing	1 Unit	SKF	7018*2
6	X, Y, Z axis screw bearings	1 Unit Each	Japan NSK	
7	X, Y, Z axis ball screw	1 Unit Each	Japan THK	10020/6316/6316
8	X-axis linear guide	2 Pieces	Japan THK	Roller55
9	Y-axis linear guide	2 Pieces	Japan THK	Roller55
10	Z axis square ram	2 Pieces	/	Square Ram 500*500
11	Spindle unit	1 Set	YANGSEN	BBT50
12	<b>Tool magazine (optional)</b>	1 Set	Okada	24T Disc Type Tool Magazine
13	Cutting fluid pump	1 Set	YANGSEN	LDPB4V-60-1350W
14	automatic lubrication system	1 Set	SKF	4L
15	Main pneumatic components	1 Set	Japanese SMC	
16	main electrical components	1 Set	Schneider	
17	<b>Spindle transmission gear box (optional)</b>	1 Unit	Italian BF	
18	Three-axis motor transmission mode and transmission ratio	1 Set Each	Japan Nidec/NBK	
19	Electric cabinet air conditioner	1 Set	Rico	
20	Chip removal device	1 Set	/	Double-Screw Chip Removal + Chain Plate Chip Removal
21	oil cooler	1 Set	Rico	

**If any supplier cannot supply it, it will be replaced by a brand of the same quality.**

**5. YSM-7028 List of main attached accessories of gantry CNC machining center**

No.:	Item	Specification	QTY	Remarks
1	Allen Wrench	1.5-10	1 Set	
2	Screwdriver	Slotted , Phillips	1 Each	
3	Raw Tape		2 Volumes	
4	Glass Glue	Porcelain white	1 Bottle	
5	Electronic Handwheel		1 PCs	
6	Card Reader		1 PCs	
7	Memory Card		1 PCs	
8	Cable	5 Meters, 20 Meters	2 Pieces	
9	Snap Ring		1 PCs	
10	Screw		1 Package	
11	Machine Tool Ground		1 Stick	
12	Bellows Connector		1 PCs	
13	Toolbox		1 PCs	
14	Floor Mat		1 Set	
<b>Attached Document</b>				
1	Machining Center System Operation Manual		1 Copy	
2	Certification		1 Copy	
3	Packing List		1 Copy	
4	Machine Tool Circuit Diagram		1 Copy	
5	Oil Cooler Manual		1 Copy	



**6. YSM-7028 main function table of the electrical system of the gantry type CNC machining center**

**CNC System: Fanuc OI-MF**

NO.:	Function	Illustrate
1	Number Of Control Axes	5 Axis
2	Simultaneously Control The Number Of Axes	4 Axis
3	Axis Name	X, Y, Z, S
4	Minimum Input Unit	0.001mm
5	Fine Acceleration And Deceleration Control	
6	High Response Vector Control	(Servo HRV3 control)
7	Imperial/Metric Conversion	G20/G21
8	Interlock	
9	Emergency Stop	
10	Overtravel Alarm	
11	Mirror Image	G51.1,G50.1
12	Backlash Compensation	Rapid traverse and cutting feed backlash compensation
13	Stored Pitch Error Compensation	
14	Automatic Operation	
15	Dnc Operation	
16	Mdi Operation	
17	Program Restart	
18	Single Block	
19	Manual Continuous Feed	
20	Manual Reference Point Return	
21	Set Reference Point Position Without Stopper	
22	Reference Point Offset	
23	Rapid Positioning	G00
24	Linear Interpolation	G01
25	Multi-Quadrant Circular Interpolation	G02, G03
26	Helical Interpolation	
27	Thread Cutting, Synchronous Feed	
28	Pause	G04
29	Skip Function	G31



NO.:	Function	Illustrate
30	Reference Point Return	G28
31	Rapid Feed Rate	
32	Rapid Travel Magnification	F0, 25, 50, 100%
33	Automatic Acceleration/Deceleration	
34	Feed Speed Override	
35	Jog Feed Speed	
36	The Code	EIA RS244/Iso840 Automatic Identification
37	Logo Skip	
38	Control I/O	G15/G16
39	Maximum Programmable Size	±9 Digit
40	Absolute/Incremental Programming	O4 Digit
41	10 Times Input Unit	N5 Digit
42	Plane Selection	G17, G18, G19
43	Polar Coordinate Command	
44	Coordinate System Setting	G92
45	Workpiece Coordinate System	G52—G59
46	Manual Absolute Value	ON/OFF
47	Subroutine Call	10 Re-nesting
48	User Macro	
49	Fixed Cycle	
50	Scaling	G50/G51
51	Coordinate System Rotation	G68/G69
52	Program Format	
53	Program Stop / Program End	M00/M01/M02/M30
54	Accessibility	
55	High Speed M/S/T/B Interface	
56	Spindle Serial Output	
57	Spindle Override	
58	1st Spindle Orientation	
59	Rigid Tapping	
60	M Function	M2 Digit
61	S Function	S4/S5 Digit



NO.:	Function	Illustrate
62	T Function	T2 Digit
63	Tool Offset Logarithm	400 Pairs
64	Tool Offset Memory C	
65	Tool Length Compensation	G43、G44、G49
66	Tool Radius Compensation C	
67	Part Program Storage Length	512K byte
68	Program Protection	
69	Status Display	
70	Program Display	
71	Parameter Setting And Display	
72	Alarm Display	
73	Alarm History Display	
74	Operation History Display	
75	Help Function	
76	Display Language	English
77	Display Language Dynamic Switching	
78	Graphic Display	
79	Data Protection Lock	
80	Embedded Ethernet Interface	
81	Memory Card Interface	
82	Status Output Signal	
83	Setting And Display Unit	10.4" Color LCD/MDI

## **7. YSM-7028 Gantry type CNC machining center operating environment and testing requirements**

### **1. Machine working environment**

The working environment of the machine tool is directly related to the performance and normal operation of the machine tool. If the temperature is too high, the control mechanism in the numerical control system will fail or malfunction; if the temperature is too low, the working conditions of the lubrication system and hydraulic system will deteriorate and the machine tool Faulty or damaged machine parts. Therefore, we recommend that the machine be used under the following conditions:

- The temperature in the factory building can generally work normally in the temperature range of 0℃ ~ 38℃, within this range, the error of the day should not exceed 5℃. Note: If the temperature in the factory building exceeds this range, the machining accuracy of the machine tool will be reduced.
- The detected ambient temperature should comply with the provisions of GB1093-89.
- Relative humidity <75%



- The dust concentration in the air shall not exceed 10mg/m<sup>3</sup>, and shall not contain acid, salt and corrosive gas.
- Atmospheric pressure 86~106kpa
- Machine tools should be installed away from vibration and heat sources. The power in the workshop where the machine tool is installed should be below 0.5G (G is the acceleration of gravity).

2. Machine tool testing requirements

When inspecting machine tools, the inspection instruments and inspection tools should be placed in the inspection environment for a sufficient time to keep them in an isothermal state. The influence of factors such as airflow, sunlight or external heat flow should also be avoided during inspection. The ambient temperature for the evaluation of machine tool position accuracy 20°C shall prevail, but generally the following conditions shall be met.

- Ambient temperature 0°C~38°C.
- Before testing, the machine tool should be kept in the testing environment for no less than 12 hours.
- Any temperature gradient in the space occupied by the machine tool shall not exceed 0.5°C/h.

8. YSM-7028 Gantry type CNC machining center installation, commissioning and acceptance training

1. The preparations before the machine tool installation that the user needs to carry out

Machine Tool Installation and Commissioning Preparation Form

NO.:																
<b>*Foundation Preparation*</b>																
1	According to the foundation drawing provided by the manufacturer, find a professional design institute to design the foundation construction drawing according to the actual situation of the user's soil.															
2	Make the foundation according to the professional foundation construction drawings. The foundation must be a solid, rigid and smooth concrete foundation, and meet the requirements of the manufacturer's foundation drawings.															
3	The foundation is laid well, and the machine tool can only be installed after the concrete is completely solidified.															
4	Incoming power supply preparation: The power supply part of the machine tool must have a separate power supply and be equipped with a regulated power supply (380±10%V, 50±0.5Hz, 100KVA), and the ground wire part must be grounded separately to avoid connecting with the power ground wire of other equipment. Together (easy to interfere with the CNC system).															
5	Other: grouting tools, foot rod bushings, etc. <b>Confirmation of secondary grouting cement:</b> Customers are requested to make a choice according to the actual situation, which is convenient for reasonable arrangements for installation and commissioning. The cement label is the old national standard, and the ambient temperature is required to be above 10°C. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Cement Grade.</th> <th style="text-align: center;">The maintenance time after the 2nd grouting</th> <th style="text-align: center;">The maintenance time after adding early strength agent</th> </tr> </thead> <tbody> <tr> <td>425#-500#</td> <td style="text-align: center;">Not less 30 days</td> <td style="text-align: center;">Not less 20 days</td> </tr> <tr> <td>600#</td> <td style="text-align: center;">Not less 20 days</td> <td style="text-align: center;">Not less 15 days</td> </tr> <tr> <td>800#</td> <td style="text-align: center;">Not less 15 days</td> <td style="text-align: center;">Not less 8-10 days</td> </tr> <tr> <td>Grouting Material</td> <td colspan="2" style="text-align: center;">Not less 3-5 days</td> </tr> </tbody> </table>	Cement Grade.	The maintenance time after the 2nd grouting	The maintenance time after adding early strength agent	425#-500#	Not less 30 days	Not less 20 days	600#	Not less 20 days	Not less 15 days	800#	Not less 15 days	Not less 8-10 days	Grouting Material	Not less 3-5 days	
Cement Grade.	The maintenance time after the 2nd grouting	The maintenance time after adding early strength agent														
425#-500#	Not less 30 days	Not less 20 days														
600#	Not less 20 days	Not less 15 days														
800#	Not less 15 days	Not less 8-10 days														
Grouting Material	Not less 3-5 days															





	<b>Situation statement:</b> Only when the above conditions are met, our company can go to make an adjustment. If the installation and commissioning conditions are not met, we will not be able to guarantee the progress of the installation and commissioning.	
	<b>*Machine pre-installation conditions*</b>	
6	The workshop where the machine tool is installed must be complete, and the foundation of the machine tool must be completed according to the requirements of the foundation plan.	
7	Unpacking tools, lifting equipment and hoisting ropes must be prepared.	
8	Preparation of consumables: anti-wear hydraulic oil ISO-L-HL46 (200 liters), precision guideway lubricating oil ISO-L-HG68 (10 liters), oil cooler ISO VG32 (60 liters), washing machine oil ( 50 liters), cleaning cloth, etc.	
9	Preparation of tools and slings: unpacking tools, lifting equipment and hoisting ropes (self-made by Party A)	
10	Inspection tool preparation: two spirit levels, a pair of equal-height measuring blocks, a square ruler L=1000mm, a dial indicator, a magnetic gauge base, a square gauge L≥500, and an inspection stick.	
11	There must be no equipment with large interference such as electric welding machines near the machine tool. If large interference will cause inaccurate positioning accuracy, coordinate drift or even machine tool crash for no reason.	
	<b>*Materials to be confirmed before the machine leaves the factory*</b>	
12	Road condition confirmation: Confirm the transportation method according to the factory building and surrounding road conditions.	
13	Factory door size: It needs to meet the net transportation size of the largest part of the machine tool.	
14	Plant height: The lifting method must be confirmed according to the actual height of the plant.	
15	Tonnage and number of cranes: a crane with more than 25 tons is required.	
16	Unpacking and installation assistants: the customer prepares unpacking tools for disassembly and inventory of the packing box.	
	<b>*Customer's own special spreader list*</b>	
17	Four legs complete set with hook cloth belt rope//5TX5M	1PCs
18	Pressed galvanized steel wire rope is 6.5m long and can bear more than 20 tons	4PCs
19	90mm diameter, 2.2m long round steel roller	2PCs
20	Ring cloth belt rope sling//3TX3M	1PCs
21	Eye cloth strap rope sling//5TX5M	1PCs

If all items in this form are known and properly prepared, please send it to the manufacturer by fax as follows. If the confirmation has been completed but the above items are not implemented, the manufacturer will not be responsible for any problems caused. If there are special instructions, please indicate when returning.



- Before the machine tool arrives at the destination, the user should make preparations for foundation installation and secondary grouting (after the contract is signed and becomes effective, the standard machine tool manufacturer is responsible for providing the foundation drawing within one month), so as not to have a major impact on the accuracy of the machine tool.
- After the machine tool arrives at the destination, the user is responsible for unloading and lifting during installation and commissioning. After the machine is safely moved to the working position, the manufacturer is responsible for the initial adjustment, and the user performs the secondary grouting.
- Before the commissioning personnel go, the user needs to complete the pre-installation preparations proposed by the manufacturer.
- The user needs to notify the manufacturer two days in advance for commissioning, and before the installation and commissioning, the user and the service personnel will unpack the box together, count according to the contract quantity and packing list, the user will carry out the construction according to the requirements of the foundation plan, and the three-phase power line will be led to For electrical cabinets, provide lifting equipment and cooperate with the manufacturer's installation and commissioning personnel;
- After the installation and commissioning work is completed, the final acceptance of the machine tool is carried out.

### 3. Machine tool acceptance

Machine tool acceptance is carried out in two steps: pre-acceptance and final acceptance

- Pre-acceptance: The manufacturer will notify the user after passing the inspection, and the user will send relevant personnel to the manufacturer's work site for pre-acceptance of the equipment. The content of the inspection will be inspected according to the inspection items prepared by the manufacturer's PCs according to the relevant national inspection standards. After passing the inspection, both parties sign the acceptance meeting minutes.
- Final acceptance: carried out at the user's factory, Xiamen Yangsen CNC Equipment Co., Ltd. will send personnel to carry out installation and commissioning, and the content of acceptance will still be inspected according to the pre-acceptance content. After the final acceptance is passed, both parties will sign on the [CNC installation and commissioning final acceptance work order];
- Acceptance related matters:
- The acceptance criteria refer to the technical agreement and the factory certificate. After passing the acceptance, the user will confirm and fill in the [CNC Installation and Commissioning Final Acceptance Worksheet]

The accuracy indicators of the machine tool are inspected according to the technical agreement and the accuracy inspection table of the certificate of conformity. Accuracy implementation standard: GB/T19362.2-2017

### 4. Training

- Teachers: 10 professional senior lecturers with rich theoretical and practical experience will train the students on machine tool operation and programming system, and the engineers of our company's technical department will explain the maintenance of the machine tool mechanical structure and electrical system to the students.
- Training cycle: one week
- Training location: Xiamen Yangsen CNC Equipment Co., Ltd.
- Requirements for trainers: have certain working experience in CNC machine tools.
- Free training for operators and equipment maintenance personnel, free teaching materials, and self-care for board, lodging and transportation.
- Provide free lunch for students.



9. YSM-7028 Gantry Type Cnc Machining Center Recommended Oil and Grease Table

Lubricating Part Name		Name	Oil Volume	Viscosity	Time Interval
Hydraulic Power Station	Tool cylinder	Hydraulic oil	200L	ISO VG46	1 Year
	Balance cylinder				
	Recommended Brand (optional)	SHELL TELLUS46 Great Wall: L-HM46 anti-wear hydraulic oil			
Constant Temperature Fuel Tank	Spindle group cooling	Hydraulic oil	60L	ISO VG32	1 Year
	Gearbox				
	Recommended Brand	SHELL TELLUS32 Great Wall: L-HM32 anti-wear hydraulic oil			
Centralized Lubrication	Three-axis lead screw lubrication and line rail, sliding guide rail	Rail Oil	10L	ISO VG68	Oil supply every 30min
	Recommended Brand	SHELL TONNA T68			
		Great Wall: L-G68 rail oil			
Tool Magazine Lubrication		Rail lubricating oil	Please refer to the magazine manual	ISO VG 150	PCs, According to the actual oil level alarm signal supply

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## **10 Xiamen Yangsen NC Equipment After-sales Commitment Letter**

1. Pre-sales service: Janssen's sales team will provide users with the best processing solutions, including machine tool selection, option configuration, tool and fixture selection, lubricating oil, cutting fluid management and other series of services. And can provide turnkey projects.
2. Maintenance response time: Our company has a service team of up to 50 people and is equipped with a complete service vehicle. After receiving the user's notification of failure, we will respond within 8 hours.
3. Parts inventory: Janssen has a special production workshop and parts inventory in Xiamen, with strong strength and complete inventory. There are commonly used parts inventories in each office to provide users with the fastest repair parts.
4. Machine tool maintenance: All machine tools within the warranty period enjoy free maintenance services, and machine tools outside the warranty period can purchase maintenance services at an economical and reasonable price. And PCs can plan equipment management and maintenance processes according to customer needs.
5. Maintenance charges after the warranty period: The charging standard is clearly marked and the real price is charged, only the cost is charged, and the user is served with the concept of openness, fairness and fairness. After the maintenance period, our company is responsible for providing spare parts at preferential prices for a long time, and the maintenance service fee time is not more than 48 hours;
6. Ad hoc old user service department: closely track the use of machine tools, and deal with maintenance complaints in a timely manner.
7. Maintenance supervision: the general manager also serves as the director of the after-sales service department, supervises the quality of maintenance services in real time, and protects the rights of customers.
8. Warranty: From the date of acceptance of the equipment, a one-year warranty period is provided. During the warranty period, our company is responsible for free maintenance for equipment failures caused by users. If the fault is caused by improper use by the user, the cost fee will be charged after the service.

## **Xiamen Yangsen NC Equipment Co., Ltd**

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

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