

JUNYI CNC Lathe

# User Manual of JUNYI CKG32 CNC Lathe



Before installation and use, please read this **Manual** first.

# Introduction

Thanks for choosing JUNYI CNC Lathes.

This manual book described JUNYI CKG32 CNC lathe which you have chosen.

If our customer has special requirement on technical specifications, we will provide specialized user manuals that are different from this one.

As the product is updating and improving, the configurations of lathes may get changed without prior notice. Our company keeps the rights of alteration on diagram and parameter.

*This manual book is not for sale.*



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# 1. Machine unpacking and specifications

## *1.1 Summarize*

CKG32 is a high performing CNC lathe designed by Ningbo JunFa CNC Lathe Co.,Ltd. This machine boasts high efficiency, high accuracy, high stability and complete functions for mass production.

**JUNYI CNC Lathes can be equipped with different CNC system/servo drive system/hydraulic system.**

### **Main structure and specialty**

- Horizontal flatbed structure  
Linear ball guide high accuracy of positioning accuracy can be maintained for a long time
- High precision bearings, high speed rotation with low thermal deformation.
- The whole base makes good rigidity
- Simplified operation, ergonomics design, low maintenance cost.
- Applicable for machining small bar or disc parts with complex shapes, also suited for uniformity accuracy mass product.

**1.2 Main specification**

Items	Metric	S.A.E.
<b>TURNING CAPACITIES</b>		
Max. Swing over Bed	320mm	12.6"
Max. Swing over Cross Slide	100mm	3.9"
Max. Turing Diameter	40mm	1.57"
Max. Turning Length	200mm	7.9"
Bar Capacity	32mm	1.26"
<b>TRAVELS</b>		
X Axis	300mm	11.8"
Z Axis	200mm	7.9"
<b>SPINDLE</b>		
Collet Type	5C Collect Closer	
Spindle Motor Type	Servo Motor	
Spindle Power	3kW	4 hp
Spindle Speed	Max. 3500 rpm	
Spindle Bore	38mm	1.5"
<b>FEEDS &amp; AXIS MOTORS</b>		
Rapids on X Axis	16m/min	630 ipm
Rapids on Z Axis	16m/min	630 ipm
<b>GANG TOOL PLATE</b>		
Number of Tools	6	
Tool Shank Dimensions	16mm × 16mm	5/8" × 5/8"
Boring Bar Mount Diameter	16mm	5/8"

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ACCURACY		
<b>Repeatability</b>	0.002mm (X) / 0.002mm(Z)	0.00008" (X) / 0.00008" (Z)
<b>Circular Degree</b>	0.005mm	0.0002"
<b>Surface Roughness</b>	Ra 0.0004mm	Ra 0.000016"
OTHERS		
<b>CNC System</b>	Siemens 808D Advanced or GSK 980TC3	
<b>AC Power Input</b>	220V±10%, 3 Phase, 60Hz	
<b>Overall Power</b>	6.75 kVA (Siemens 808D Advanced) or 7.15 kVA (GSK 980TC3)	
<b>Hydraulic Station Tank</b>	38L	10 gal
<b>Hydraulic Pump</b>	750W	1 hp
<b>Coolant Tank</b>	38L	10 gal
<b>Coolant Pump</b>	370W	0.5 hp

The table above is the technical parameter of standard CKG32.

## 2. Machine unpacking and installation

### 2.1 Unpacking

After receiving this machine, open the crate and check the following things:

- a) Check whether the packaging is complete.
- b) Whether the machine is damp.
- c) Whether the outlook and all machine parts are damaged.
- d) According to the packing list, check whether machine and related items are included.

**Contact TOOLOTS if there are damages found or parts missing.**

### 2.2 Unloading

We suggest using fork lift to move the lathe. Forklift handling should make the bed saddle balanced. Avoid damage to the surface of the machine during the move.

#### Unloading of machine

- 1) Unload machine(s) as close to the installation site as possible.
- 2) If the machine comes in a crate, remove the top first, then sides.  
Thoroughly look over machine and note any damage.
- 3) After unloading, please check the condition of machine, if there are any problems, please contact related department of TOOLOTS at **US-based Customer Service: (844) 866-5687**.
- 4) Remove boxes, additional options/accessories, and tooling that are secured to the pallet floor.
- 5) Remove fastening hardware that secures machine to pallet.

Typically, on a mill, there will be 4 bolts securing machine to the pallet, and on a lathe, 4-6.

### 2.3 Installation

#### 2.3.1 Requirement of setup

The area should be well lit, dry, have proper ventilation, provide for unobstructed machine motion and operation, and ensure unrestricted access to all lathe controls and the electrical cabinet.

Also the machine should get away from solar radiation. There should be no dust, liquid, or vibration around the machine.

Suggested environmental temperature: 41~95°F

Suggested environmental humidity: less than 75%

### 2.3.2 Requirement of power supply

We suggest use independent power supply that avoids current and voltage vibration from other electricity device.

This machine needs independent ground connection point and the ground wire need to be as thick as possible. Power supply is 220V, 60Hz, 3-phase (different countries with different requirements), voltage fluctuation can be around  $\pm 10\%$ .

If the power supply is other standards, please contact TOOLOTS customer service for Transmitter.

**WARNING!** Electrical Shock Hazard: Be sure to power off machine before making any electrical modifications. Failure to do so could result in serious injury or death.

## 3. Test Running

### 3.1 Preparation

Before test running, you need to finish the following work.

- a) Clean up anti-wear oil.
- b) Make sure all screws are fixed tightly.
- c) Make sure hydraulic oil (machine with hydraulic system) and lubrication oil are full filled.

### 3.2 Test running after power on

After machine is powered on, you need to check the following:

- a) Whether all cooling fans are working well.
- b) Whether hydraulic system is working and if there is any leakage.
- c) Whether pressure meter is work (for machine with hydraulic system)
- d) Whether lubrication system is working well.

If all above have been checked, then test the following parts.

#### a. Spindle system

Test the spindle system from low speed to high speed. We suggest start the spindle with 10% of maximum speed, then increase 10% of maximum speed each time until to the maximum speed. Each running test should exceed 20 minutes.

During the running test, pay attention to the following performance:

**Whether the spindle is steady and smooth in each speed**

**Whether the spindle emits any noise during running**

#### b. Feed system

Manually move X/Z machine tool carriage and then return it to zero with CNC system operation

Move the carriage by hand to check the limit of the carriage and whether the soft limit works.

Check whether the carriage moves on X/Z axis smoothly.

#### c. Tool post system

Make sure tools are installed correctly.

Check if there is any interference.

Check the tool rest and tools are stable and firm.

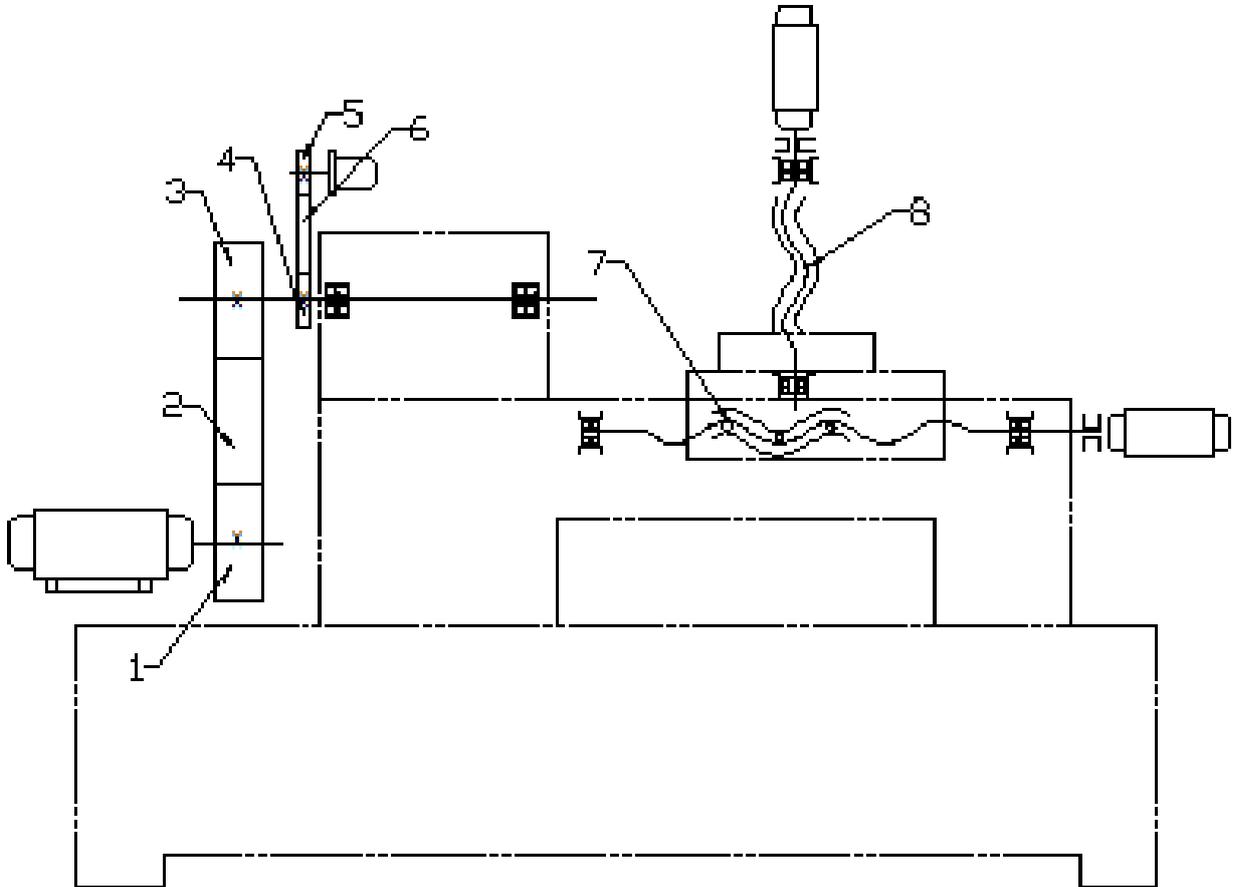
## 4. Leveling

### *Procedure of leveling:*

- a) Properly levelling a lathe requires time and a machinist level capable of .0005" in 8" or better. Take your time now to save hours of aggravation later when your tools are cutting unwanted tapers.
- b) Levelling should be done when temperature in workshop has stabilized to a normal operating temperature.
- c) Place machinist level across ways parallel to the X axis. It is critical that this reading be the same on both the headstock and tailstock end of the ways. This will eliminate twist of the lathe bed thus eliminating tapers. Levelling parallel to Z is not as critical, but the procedure is the same as X.

## 5. Driven System

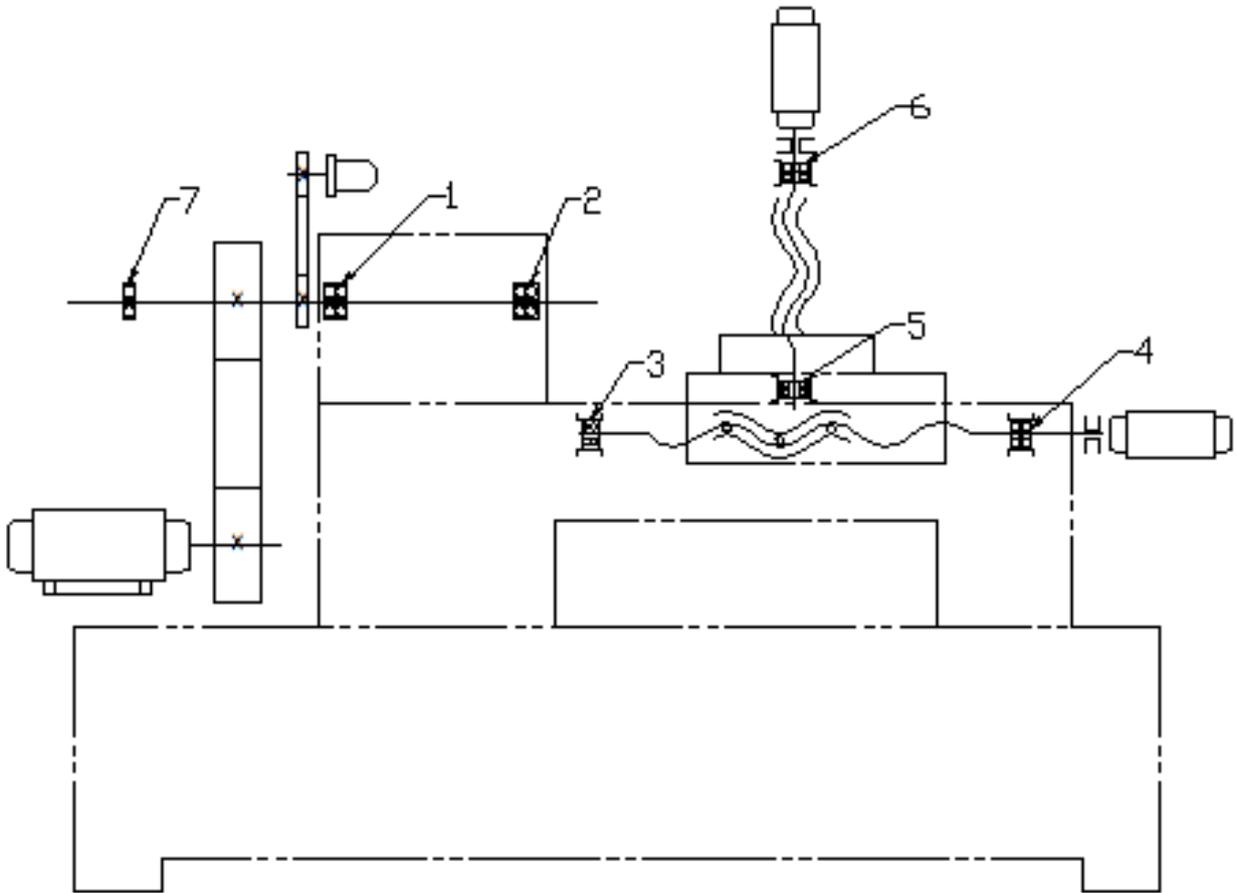
### 5.1 Driven system circuit diagram



Driving medium listing

NO.	Items	Specification	Modulus / Lead	Material
1	Motor Synchronous Pulley	34-8M-42AF	8M	45#
2	Synchronous Belt	880-8M-30	8M	
3	Spindle Synchronous Belt	34-8M-42AS	8M	45#
4	Synchronous Pulley	50XL-AS-10	XL5.08	45#
5	Synchronous Pulley	50XL-AF-10	XL5.08	6061
6	Synchronous Pulley	230XL-9.5	XL5.08	
7	Ball Screw Pair	2508	T=8	
8	Ball Screw Pair	2508	T=8	

## 5.2 Rolling bearing distribution



**Driving medium listing**

NO.	Name	Model	Quantity	Installation location
1	Group angular contact ball bearings	7210AC/2RZ/DBB	One pair	Back of the headstock
2	Group angular contact ball bearings	7212AC/2RZ/DBB	One pair	Front of the headstock
3	Double deep groove ball bearing	4202/2RZ	One piece	Front of the bed
4	Group angular contact ball bearings	760203TN/2RZ/DBB	One pair	Back of the bed
5	Double deep groove ball bearing	4202/2RZ	One piece	Front of the carriage
6	Group angular contact ball bearings	760203TN/2RZ/DBB	One pair	Back of the carriage
7	Hollow rotary cylinder	428	One piece	Back of the spindle

## 6. Spindle System

### 6.1 Specification

The spindle of the machine is whole spindle unit, electrical motor drive spindle through belt, stepless speed changing.

Spindle system has good accuracy, strength and thermal stability, the main spindle bearings have been adjusted and fixed in best position, and performance lubrication grease will reduce the warming of spindle, low thermal deformation.

Spindle unit is totally enclosed type. The spindle unit doesn't need to do any daily maintenance or refill lubrication grease.

If the machine has been out of operation over 10days, user needs to follow chapter 3 to do the test running again.

User may change the fixture for different workpiece, that may affect the speed of spindle. Please read the speed range of spindle, otherwise it may bring hazard to both spindle and workpiece.

User cannot dismantle or repair the spindle unit without the manufacturer's agreement

### 6.2 Structure and adjustment of spindle system

#### 6.2.1 Replacing synchronous belt

The spindle belt have been adjusted in best condition in factor, as the belt is vulnerable part, after long time use, the tension of belt will change, the belt may be stretched even be snapped. Here is some advice for replacing the belt:

- a. Release all locking nuts on main motor base.
- b. Move main motor and base by adjusting tension adjustment bolts, then install a new belt.
- c. Move main motor and base to adjust the tension of belt.
- d. Lock all the locking nuts.

**High tension will increase the wear of belt and main bearing while low tension will make spindle jitter. User need to check the tension of belt regularly.**

### **6.2.2 Spindle adjustment**

As the figure showed, round nut is used to adjust bearing, locking screws are distributed on cylindrical surface of round nut, rotate the locking screws to adjust spindle.

If the spindle be adjusted, it must through medium and high-speed unloading test.

If there is a crash during operation, user needs to check the accuracy of spindle.

If you have any problem, please contact us at **US-based Customer Service: (844) 866-5687**.

**As the spindle unit is high precision part, user can not open, repair, and adjust spindle without our permission.**

## **6.3 Chuck**

### **6.3.1 Collet chuck**

The standard of CKG32 adopts 5C collet chuck.

### **6.3.2 Hydraulic chuck and rotary cylinder (optional)**

Hydraulic chuck and rotary cylinder have been adjusted at best condition in factory. User needs to do the following work before use.

- a install jaws according to the size of workpiece
- b match jaws according to the size of workpiece

According to the condition of workpiece, adjust the pressure of rotary cylinder, try to maximum the clamping force without deformation.

(The maximum pressure of rotary cylinder and maximum clamping force of chuck should be identified, according to “powered chuck and rotary cylinder user manual”)

**Attention: the maximum spindle speed of CKG32 doesn't consider the maximum speed of chuck. Take the maximum RPM of spindle instead of RPM of chuck for machining.**

## **7. Feed System**

### ***7.1 X-way feed structure and specification***

The feed system of this machine uses standard ball lead screw to drive. On X-way, that can keep machine running with gap and high accuracy for long time.

### ***7.2 Z-way feed structure and specification***

On Z-way, motor contact to ball lead screw by coupler, that can keep machine running with gapness and high accuracy for long time.

The bearing in feed system use lubrication grease, user need to fill and replace lubrication grease during maintenance.

**The accuracy and per-extension of ball lead screw have been adjusted in factory. If there are any problem happened during using; contact to us. We are not suggesting to disassembly, repair or replace by user self.**

### ***7.3 Hydraulic oil***

This machine uses 40# anti-friction hydraulic oil, the amount of usage should more than two thirds of oil tank. Normally, we suggest change hydraulic oil every year, and clean oil tank and pipes at the same time.

**As hydraulic system is special optional part, the structure, control data base and element may be changed according to user's requirement. We will provide manual and drawing for special demand.**

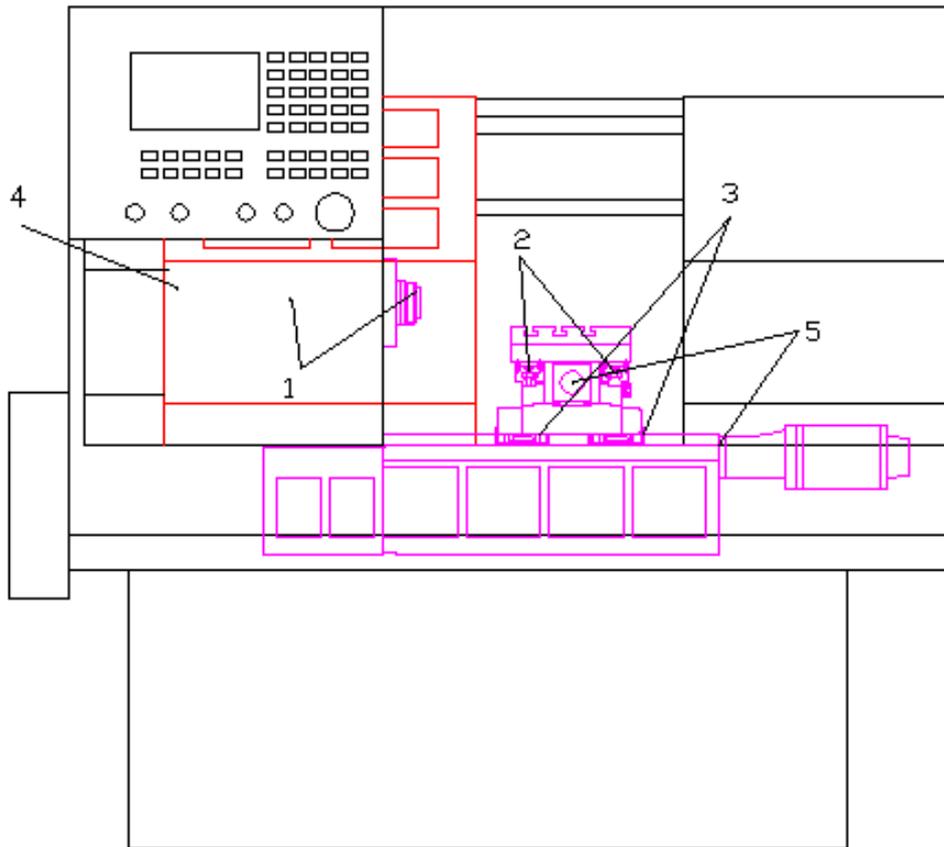
## **8. Tool Post**

The standard configuration of CKG32 is Gang Tool Plate, there are few notes below:

**Reasonable distribute tools**

**User needs to maintain the tool post regularly, see the tool post manual for maintenance.**

## 9 Lubrication System



**Lubrication position table**

NO.	Lubrication position	Lubrication target	Lubrication method
1	Headstock	Bearings at the front and rear of the spindle	Special grease lubrication
2	Horizontal carriage	Linear guide	Automatic centralized lubrication
3	Longitudinal carriage	Linear guide	Automatic centralized lubrication
4	428 hollow rotary cylinder		
5	Motor bracket	X/Z axis ball screws	Grease lubrication
6	X/Z axis ball screws	Screw surfaces of X/Z axis ball screws	Automatic centralized lubrication

This machine adopts centralized auto lubrication station, it lubricates moving parts through multi-points. The lubrication station is controlled by machine PC, so user can change the PC setting according the requirement of operation. The lubrication time and period have been set in factory.

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Spindle bearings and ball lead screw bearings adopts lubrication grease, the grease can keep lubricating for long time. User does not need to replace in 4~5 years.

Ball lead screw should be lubricated by lubrication station.

The lubrication oil is N40#, refill oil on time according to the condition of operation.



# 10 Inspection and maintenance

## 10.1 Routine inspection

	Checking position	Checking item
1	Auto lubrication pump	Oil level Cleanliness
2	Cooling liquor	Liquor level Cleanliness
3	Guide way	Flow rate of lubrication oil Damage of scraping plate
4	Pressure meter	Pressure
5	Belt	Tension Crack on surface
6	Pipes/ machine layout	Leaking
7	Moving parts	Noise, vibration/normal smooth
8	Control panel	Switches and buttons/alarm
9	Safe device	In functional
10	Cooling fan	Work
11	Wire	Short out Insulation
12	Spindle motor	Noise, vibration Heat
13	Clean	Chuck, tool post, guide cover, chips remove
14	Workpiece	Accuracy

## 10.2 Regular Check

Check position		Items	Period
<b>Hydraulic system</b>	Hydraulic device	Change hydraulic oil Clean oil filter	6 months
	Pipe connector	Check leakage	6 months
<b>Lubrication system</b>	Lubrication device	Clean oil filter	1 year
	Pipe connector	Check leakage	6 months
<b>Cooling system</b>	Water tank	Change coolant, clean tank	Timely
<b>Gas</b>	Air filter	Clean or change air filter	1 year
<b>Belt</b>	Belt	Tension, layout	6 months
	Pulley	Clean pulley	
<b>Main motor</b>	Voice, vibration	Unnormal noise	6 months
	Heating, insulation	Clean pulley	
<b>X/Z servo motor</b>	Noise	Noise and heating on bearing	1 months
	Heating		
<b>Chuck</b>	Chuck	Disassembly chips remove	1 year
	Rotary cylinder	Leaking check	3 months
<b>Control panel</b>	Electrical device	Smell, discolor	6 months
	Binding screw	Clean, tightness	
<b>Inner connection device</b>	Connection between	Tight all connection screws	6 months
	Electric units	Tight all electric elements	
<b>Electric device</b>	Limited position swatch	Tight electric elements and connection screws	6 months
<b>Sensor</b>	Electromagnetic valve	Check function and accuracy by operation	1 months
<b>Base</b>	Horizontal of machine	Check the horizontal of machine by level	1 year