南兴装备股份有限公司

NANXING MACHINERY CO.,LTD.

CNC MACHINING CENTER Version:1.1

# NCP3312Z2 Machinery Operation Manual


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# Preface

First of all, NANXING FURNITURE MACHINERY & EQUIPMENT CO., LTD thanks you for using our products of CNC wood shaving machine. In this manual, we will introduce relevant machinery information to you, such as safety precautions, specification, mode of production, rules of maintenance. To Read the description of this manual, it will help you use various function of machinery more effectively and correctly.

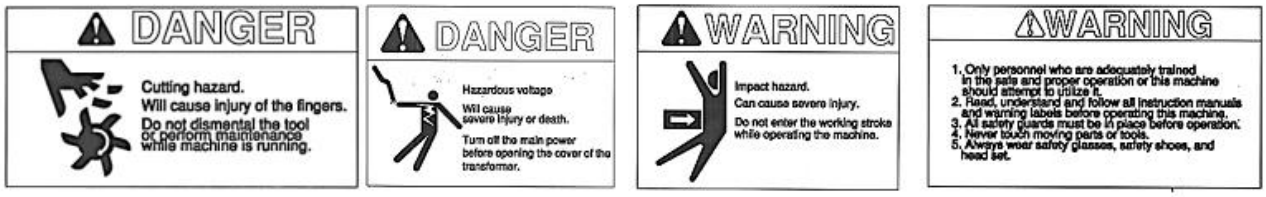
Chapter I "Safety Measures" describes how to avoid harm to operators and to prevent machinery damage, which shall be reminded in the following chapters. Therefore, please read all the manuals carefully, and make sure that you understand and follow the safety rules, in order to ensure the safety operation of machinery.

In addition, manual of controller, spare parts list of machinery,specification table, circuit diagram and other technology data shall be attached in this manual, which should be referred to at the same time, in order to help you understand the machine.

Due to the improvement of machinery performance, the manual content might be a bit different from that of the actual machinery, if there are errors and omission or for other reasons, you need our help, please contact NANXING FURNITURE MACHINERY & EQUIPMENT CO.,LTD service centres or agents all over the world.

When operating the machine, the basic principle of “safety first" should be always remembered.

As for "Danger", "Warning", "Be careful", "Specification", "Note" used in the manual and machinery, their meaning are described as follows:




**Danger:** Some conditions or practices, if not pay attention to or follow them carefully, it may cause serious personnel injuries or death.

**Warning:** With regard to the personnel safety, "Warning" represents that if not comply with this case or action strictly, it may cause machine damage and personnel injuries.

**Be careful:** With regard to equipment damage, "Be careful" represents that if not comply with this case or action strictly, it may cause equipment damage.

**Specifications:** Regulations with regard to controller, “Specifications" represents operators must comply with the rules, or they can’t operate the machinery correctly.

**Annotations:** Notation for the operator, “Annotations" represents additional notation and description provided for the operator once again.

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# 1. Safety measures

Safety measures provided by our machine are for both the operator and the machinery itself. We hope that the operator can not only rely on the safety design, but also pay attention to your own safety and the following safety regulations while using the machinery.

## SAFETY FIRST

### 1.1 Simple safety measures

1.1.1 Please confirm the following points before starting up the machinery:

- Confirm that there are no other foreign bodies to interfere the movement of machinery.
- Confirm that there are no personnel close to the machinery or within its sphere of movement.
- Confirm that all the doors of machinery or electrical box are closed.
- Confirm that the switch of main power supply and button or switches on the operating panel are not damaged.

1.1.2 Lubrication

- Please confirm that the amount of oil in the oil cup of oil feeder for FRL is sufficient every day.
- Regularly apply grease on the sliding block of linear rail and ball screw as scheduled.

1.1.3 Air pressure

- Confirm that the inlet pressure of machinery meets the specified requirements.

1.1.4 Function of machinery

- Confirm that all the used NC codes of machinery are within our scope of supply.
- Confirm that all the gauges on the machinery display within normal range.

1.1.5 Emergency stop switch

- In case of emergency, press the emergency stop switch quickly to ensure that the machinery stops at once.

1.1.6 Others

- When operating the machinery, please wear suitable shoes, security guard and etc.
- Confirm to use the lubricating oil specified by us or of the same level.
- It is prohibited to touch the rotating tool.
- When using machinery, please do not enter the sphere of machinery movement.
- Place the tool in place, and clear up the obstacles within the sphere of machinery movement.

- After using the machinery, please clean up the machinery and check whether there are any bits of wood in the wire or rail.

- For the machinery, if any fault, please attach warning signs.

- Please be careful not to touch any devices with the warning signs of "High Voltage".

- During the repair or maintenance of machinery, please place the warning signs to prevent other people from operating the machinery.



● 1.2 Matters need attention while transporting and moving

- It is not recommend that any one else installs or disassembles the machinery, except for the technicians of NANXING FURNITURE MACHINERY & EQUIPMENT CO., LTD.
- No one must not move the machinery, unless the technicians.
- For the technicians operating the crane or hoisting machine, they should have qualified licenses.
- When moving the machinery, please clean up the passageway.
- When moving the machinery, please disperse irrelevant personnel.
- When moving the machinery, please pay attention to the locations of other colleagues to move the machinery at any time and maintain good communication with them.
- Please pay attention that the used tools such as rope, ring for moving the machinery should have enough strength to bear the weight.
- Before lifting the machinery, please confirm that wires or other items and every axis attached to the machinery have been fixed tightly, and ring or hook also have been fixed exactly.
- When lifting the weight, make sure that the machinery is in balanced state in every direction.

● 1.3 Safety warning

This machine is designed for specific purposes, hereby declare that do not modify the machine or use outside the original machine design, if any processing for other special application, please contact with our company, to determine its feasibility, and confirm there is no safety concerns, we can use the machine.

**BE SAFE**

1.3.1 Matters need attention while operating

- The operator must be adequately trained before operating machine.
- Before starting the work, first check the work place, and eliminate any risks likely to endanger the personnel safety of operators.

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- There must be adequate lighting in the workplace.
- The operating personnel can not wear accessories, tie, scarf, and too loose clothe, due to they shall be pulled and hooked by the moving parts to cause dangers.
- Sequence of starting up the machinery: air valve - main power supply – NC power supply on the operation panel (while shutting down the machinery, operate in reverse order).
- When NC power supply is on, confirm it in the "Ready" state
- If any error or abnormity for power supply, please turn off the main power supply immediately.
- When processing with the machinery, please confirm the woke-piece are fixed firmly.
- When placing or removing the tool, please confirm the machinery and the spindle have been halted completely.
- When operating the machinery control panel, do not wear gloves to avoid touching other buttons.
- For the rotation speed, it must not exceed the tolerance range specified by the manufacturer or recommended by our company.
- Tools should be balanced accurately, and when in use, make sure that the tools are sharp.
- When installing the tools, its contact surface should be maintained clean and free of scratches.
- In process of the work, the dust collecting equipment should be on at the same time.
- In the operation of machine, the operator should not leave the workplace.
- Wear safety protection equipment, such as shoes, protective goggles and breathing mask.
- Do not pile up unnecessary items in the workplace.
- While the machine is running, do not open the protecting device, in order to avoid the injuries due to the moving parts touch the personnel.
- For the machine, if there are any faults or damaged parts, please contact with relevant qualified technicians for repair.

1.3.2 Matters need attention while repairing:

- No one else can repair the machinery, except for the qualified personnel with authorization.
- When adjusting or disassembling the components of machinery, the main power supply should be off, and the appropriate warning signs shall be placed to indicate that the machine is under the maintenance.
- When repairing the machine, stop the supply of compressed air.
- When filling the lubricating oil, confirm oil is consistent with its specification.
- Do not use gasoline, solvent or other inflammable to clean the parts of equipment, but please use the non flammable and non-toxic solvent with certification of qualified.
- Keep all the markings clear and complete, in order to facilitate the identification of future operating or repair personnel, but if need to be torn up for repair, be sure to make up the markings after that.
- At the end of repair work, all the screws should be examined carefully, and confirmed to be locked with appropriate torque properly.
- Do not enter the electric box, only professional qualified personnel with authorization can repair the equipment.
- After switching off the main power supply, don’t touch any device inside the electrical box immediately; please wait for a few minutes, and then touch the devices in the electric box.
- If need to replace the fuse, the main power supply must be off before the replacement. The fuse’s capacity (amperage) should meet the requirements of standard.

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- Daily check the status and function of the safety device, and if any slight problems, please examine nd repair them immediately.
- Regularly check the wear condition of machinery, such as hairbrush, pneumatic circuit, and if any wear or defective parts, please examine and repair them immediately.

## 2. Machinery

### 2.1Brief introduction

This CNC machining center can be used for precise processing for industries of furniture, sheet and plate, plastics and advertising, such as carving, milling and drilling hole, which can enhance the production efficiency and improve the quality of requirements.

### 2.2Structure of machinery

- Solid structure of machinery, with the body design of steel structure, which shall provide the best stability and longest service life for the machine.
- Drive system with high precision, for X axis, use gear rack drive, while for Y, Z axis, use rack drive. All of them are equipped with servo system with high resolution, which shall provide high speed movement and accurate positioning for the machine.

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| | | |
|---|---|---|
| **Gang drill** | **BORING HEAD** | |
| 转速 | Rotation speed | 4000 rpm |
| 排钻马力 | Power | 1.7 kw (2.3 hp) |
| 垂直轴数 | Vertical spindles | 14 |
| 水平轴数 | Horizontal spindles | 2+2 / 2+2 |
| **进给率** | **FEED** | |
| X/Y/Z 进给率 | X/Y/Z-axis Rapid feed rate | 80/80/30/20 m/min |
| X/Y/Z 轴切削进给率 | X/Y/Z-axis Cutting feed rate | 40/40/30/20 m/min |
| **刀具** | **TOOL** | |
| 最大刀具直径 | Max. tool diameter | 80 mm (L30 mm) |
| 最大刀具直径长度 | Max. tool length | 110 mm (D16 mm) |
| X/Y/Z 轴马达 | X/Y/Z -axis motor | AC servo motors |
| 电源容量 | Electric power | 380V 3PH |
| 空压源 | Air pressures required | 6-7 kg/cm$^2$ |
| **机械尺寸** | **MACHINE** | |
| 机械外型尺寸 | Machine dimensions (W×H×D) | 5220x2300x2620 mm |
| 机械净重 | Machine weight N.W | 4800 kg |
| **控制器** | **CONTROLLER** | |
| 型号 | Type | OSAI |
| 操作系统 | Operation System | Windows 7 |

machining spindle with high speed and high precision made in Italy(the highest rotation speed is up to 24, 000 rpm), which can easily cut any non metal plate and sheet, wood with high speed.

- The whole series are equipped with high pressure worktable, which is solid and durable. Design of matrix type groove on the surface of worktable, which can provide the best vacuum adsorption effect for the work-piece.

## 2.3Specification

Model:NCP3312Z2

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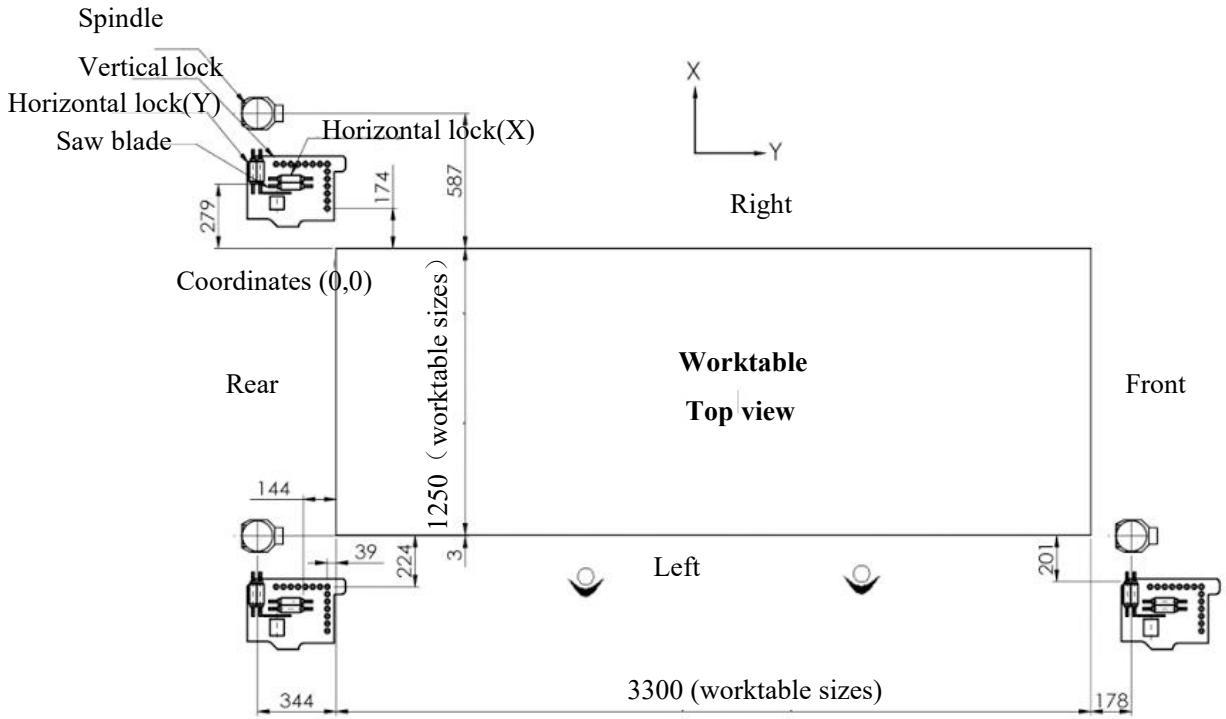
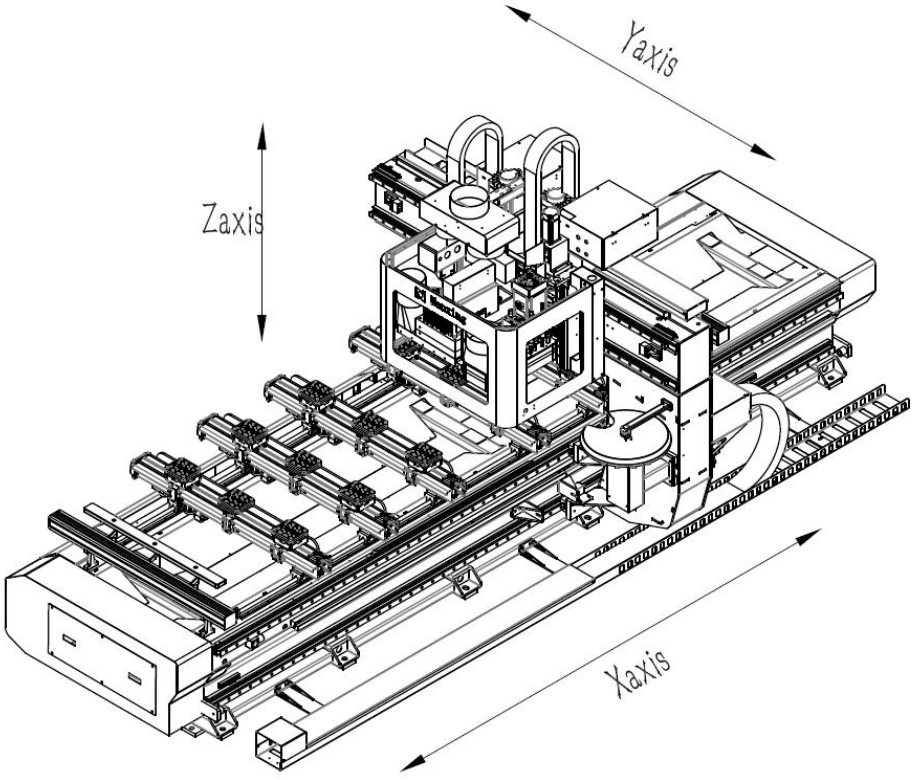



## 2.4 NCP3312Z2 machinery shape

### 2.4.1 Isometric drawing



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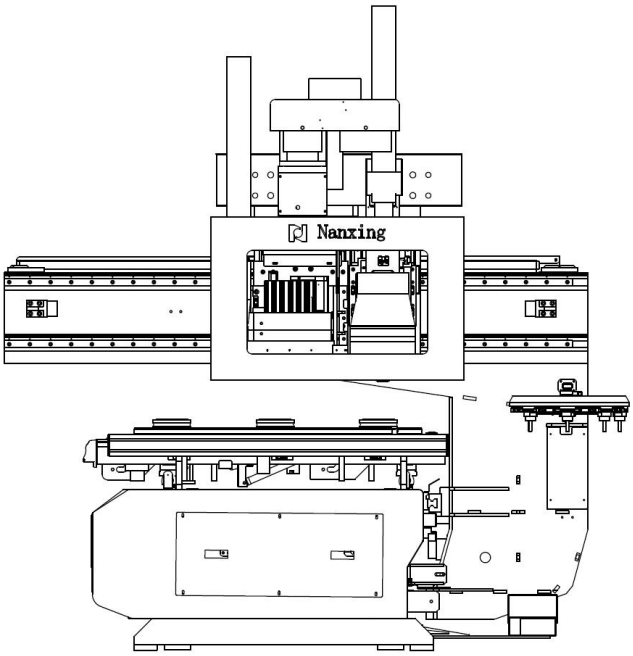
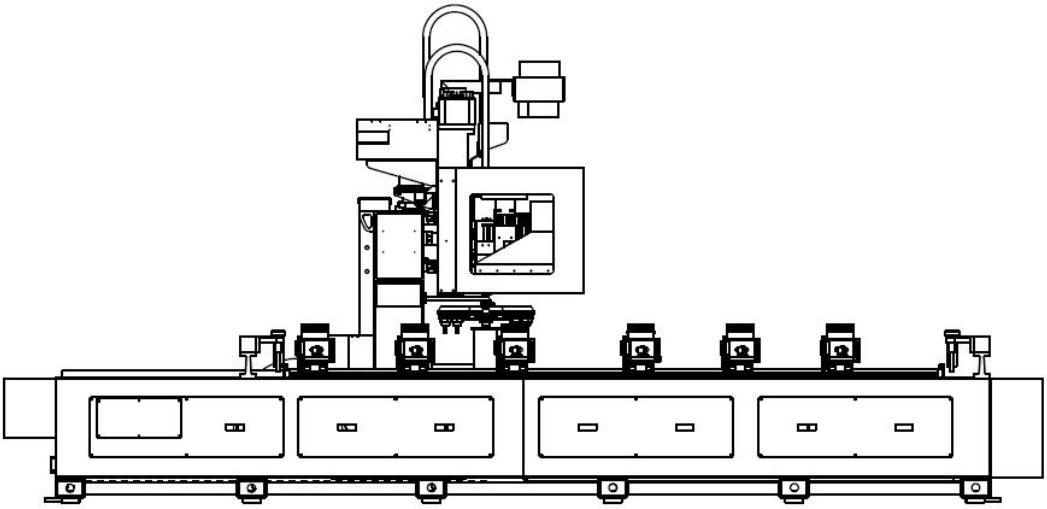
2.4.2 Lateral view




2.4.3 Front view



2.4.4 Vertical view

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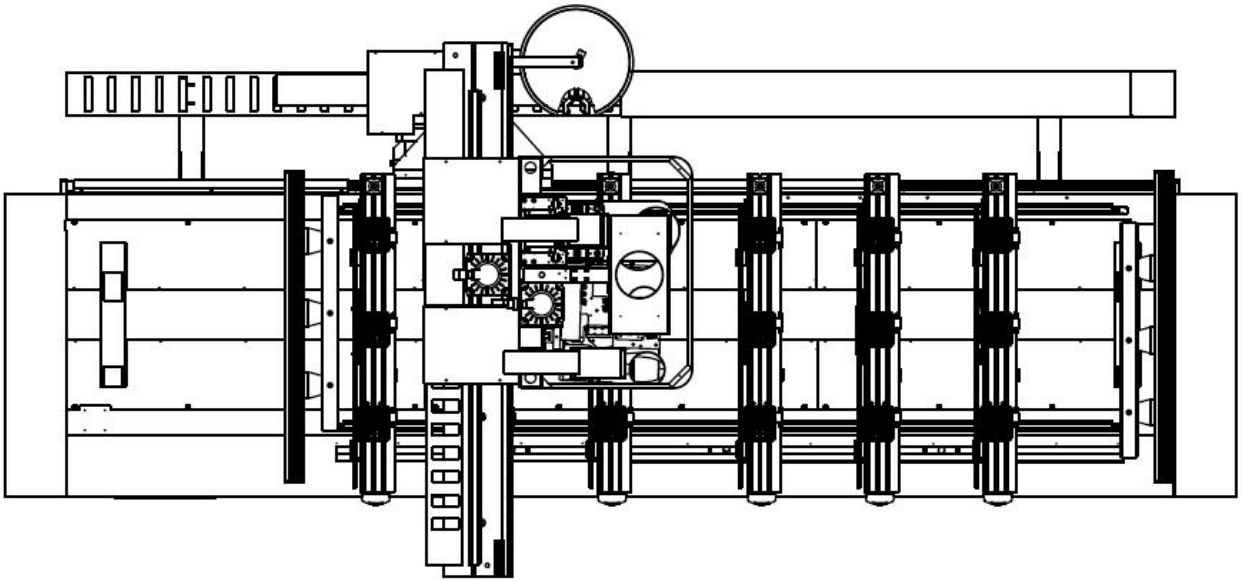


## 3. Preparations before the installation of machinery

●3.1 Space required for the placement of machinery

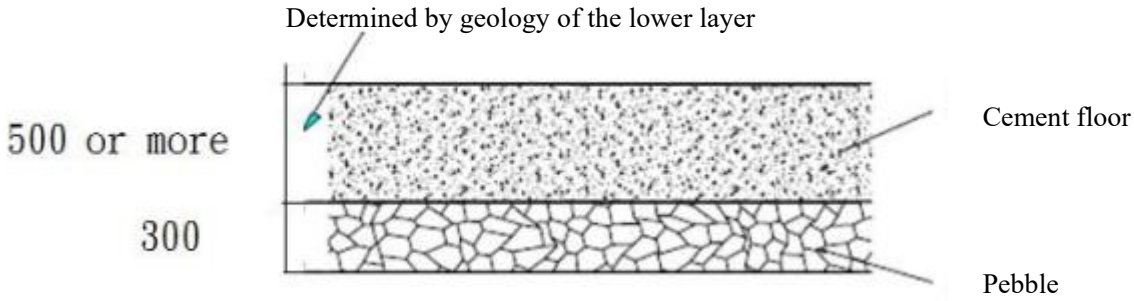
-Please refer to dimensions of space required for the machinery in the specification table (2.2).

Ground dimensions: Width:≥ 4 meters, length: ≥ 5 meters.

Height: ≥ 3.5 meters, and the movement space of dust collecting tube needs to be estimated.

●3.2Foundation

- Machinery must be installed on a flat cement floor.
- The following diagram shows the required foundation roughly.




●3.3 Environment

When installing machinery, please avoid to install machinery at the following locations:

- Do not install the machinery under the impact of direct sunlight, or near any heat source, and the machinery is suitable for the operating environment with the temperature of 0-45℃.
- For the location of machinery, it should to avoid the place where the temperature changes dramatically or

is very humid with the humidity is higher than 75% RH. For the machinery environment, it must install some dehumidifiers, due to if the machinery is not grounded in high humidity environment, it shall accelerate the damage of machinery.

- Do not place the machinery in the place with dust, erosion solvent or poisonous gases.
- Please avoid to be near any vibration source or explosive.
- Do not install the machinery in the place with not enough strength or no foundation.

## 3.4 Power supply

### 3.4.1Power supply

- In case of the shortage of power, when the motor starts, it will cause a voltage drop, and result in the machinery cannot work properly.
- The power supply voltage must be stable within the range of ±5% of the standard voltage.
- Power line must be connected from the factory's main power system.
- Power supply should be in accordance with the standards of the country where the machinery locates.
- Power supply must be used independently, which shall not be used commonly by other machinery.
- Power supply must have the grounding wire.
- The grounding wire for machinery must be independent, which shall not be used commonly by other machinery.
- The grounding wire should be as short as possible, and its diameter should be the same as that of two-phase power cable.

**Note: The above must be installed by the qualified electrical technicians.**

### 3.4.2 Air

- In order to avoid any damage to the machinery, please make sure the air through the dryer and filter can be connected to the machine.
- Air pressure must be maintained at least 6-7 kg/cm$^2$, in order to make the machinery run smoothly.
- Some dryer and accumulator tanks can be installed at the compressed air inlet of machine, in order to keep the compressed air dry and maintain its pressure stable.

**Note: If air pressure is insufficient and air is not clean or wet, it will cause the rapid deterioration of the machine component, which shall lead to fault; if long-term, it shall damage the machine seriously.**

### 3.4.3 Dust collecting system

- In order to avoid exerting any effect on the operation personnel by bits of wood and dust, maintain the work place of machine and its peripheral environment clean, it must be equipped with dust **collecting** system, which should have sufficient suction force to collect the chips. For the dust collecting system, its recommended velocity of flow is not be less than 20 meter / second.

# 4. Handling and installation

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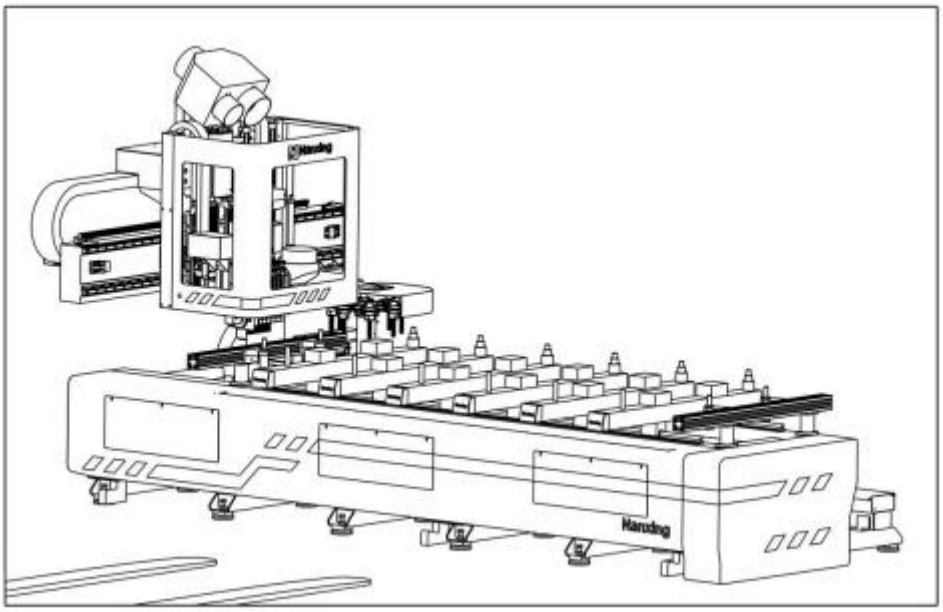
- We suggest that the machinery shall not be installed by the technicians who are not from our company.
- Machinery should not be handled or moved arbitrarily, unless the technicians with the license of lifting machine or crane and DONGGUAN NANXING FURNITURE MACHINERY & EQUIPMENT CO.,LTD technicians are present.

## 4.1 Safety precautions

### 4.1.1 Lifting

- Before moving the machinery, please clean up the passageway, and it requires enough space for operation of forklift.
- When moving the machinery, please let irrelevant personnel leave.
- There should be one and only one technician, who commands the machinery handling process.
- When moving the machinery, please pay attention to the locations of other colleagues to move the machinery at any time and maintain good communication with them.
- Please pay attention that the used tools such as rope, ring for moving the machinery should have enough strength to bear the weight.
- Before lifting the machinery, please confirm that wires or other items and every axis attached to the machinery have been fixed tightly, and ring or hook also has been fixed exactly.
- When lifting the weight, make sure that the machinery is in balanced state in every direction.
- When using forklift, make sure that the machinery is in balanced state in every direction.



### 4.1.2 **Installation position of machinery**

- There should be no devices such electric welder or EDM (Electron discharge machine), which may produce electronic noise, near the machinery.
- When installing the machinery, leave some space around the machine, in order to facilitate the future maintenance and repair.
- Pay attention to whether there is enough space not to interfere the opening of the safety door or door of electric box. According to the safety regulations, the door of electric box must be fully opened.
- Don't let the sunlight impact on machinery and control box directly, and according to Chapter 3.3 "Environment required by machinery", the temperature should be within 0-45℃, and the humidity should be less than 75% RH.

- Machinery and control box should not cause any other vibration, which shall influence the operation of machinery.

4.1.3 Installation of machinery

- Before installing the machinery, please make sure the air pressure and flow is enough.
- Confirm the strength of floor is adequate to support the machinery (see Chapter 3.2 "Foundation for required by machinery").
- After having assembled the machinery, the level of machinery must be adjusted.
- Only qualified professional electric technicians can connect it with the main power supply.

## 4.2 Handling procedures for the transportation of machinery

- In order to make the transportation of machinery simple and easy, we need to remove some parts, such as vacuum motor, independent electrical boxes, operation console, and security fence.
- Before the transportation, please confirm the X, Y, Z -axis and the electric spindle and gang drill has been fixed. We use removable fixed mounts to fix the X, Y- axis and a support to support Z-axis.
- In order to avoid the base of Z-axis to tilt forwards, we use two ratchet tighteners to fix it on the X-axis by straining them (depending on the machine).

## 4.3Mechanical installation

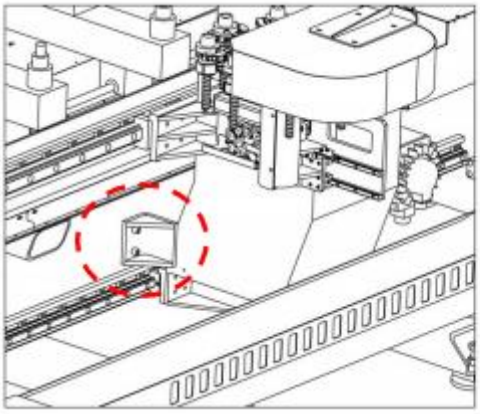
4.3.1 Placing the support foot pad

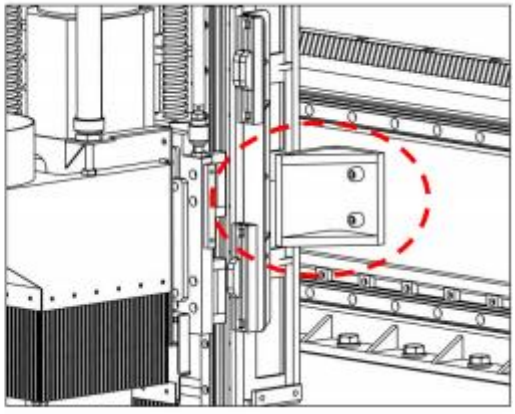
**Warning: Before the placement of machinery, irrelevant personnel should be driven away from the sphere of machinery movement, and then the following tasks can be performed:**

- Lower the leveling screw for correction on both ends of X, Y-axis.
- Place the foot pad under the leveling screw for adjustment.
- Slowly move the machinery onto the foot pad.
- Then place other foot pad under the leveling screw, and lower the leveling screw to the position of foot pad.
- Finally, each leveling screw of machinery has completed the placement on the foot pad.

4.3.2 Remove the fixed mount for X, Y-axis

- Loosen the screws on the fixed mount of X, Y-axis with L - wrench, and remove the fixed mount and screws.





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4.3.3 Mounting the vacuum tube

- Install the dust collecting tube and its bundle, then lock the screw on the tube bundle tightly.
- There is a interface for dust collecting tube with the diameter of 8 " above the machine, which is used for connection with the dust collecting system of factory, and the recommended flow rate of dust collection system should not be less than 20 meter / second.

**Warning: Both dust collection system and the machine must operate at the same time, in order to not only maintain the cleanliness and health of operators, but also ensure the machining quality and service life of machine**

4.3.4 Installing the vacuum motor

- Place the vacuum motor away from the machinery, in order to avoid touching the machinery in the operation of machinery.
- Connect to the power line.
- Connect to the air pipe and vacuum tube on the vacuum motor and filter.
- Lock the vacuum tube bundles between the machinery and vacuum motor.
- Test whether the motor operation direction is correct, and if wrong, please exchange any two of the power supply lines immediately to correct its operation direction.

4.3.5 Connecting the air supply

- Connector for the air pipe of air supply to the machinery is in the lower right corner of three points combination of the machinery (depending on machine).

4.3.6 Safety inspection

- Before switch on the main power supply of machinery, please confirm the following three points:

(1) For all the wires, the compressed air pipe and other connection parts, please confirm they are connected properly and completely.

(2) Don't let any irrelevant personnel enter the sphere of machinery movement.

(3) Please check that there are no obstacles within the sphere of machinery movement.

4.3.7 Removing the wood block to support Z-axis

- Before removing the wood block, please confirm the pneumatic cylinder and servo motor of Z -axis have been installed.
- Switch on the power supply and open the air valve.
- Slowly move Z-axis upwards by using the mode of hand wheel, and then remove the wood block to support Z-axis.

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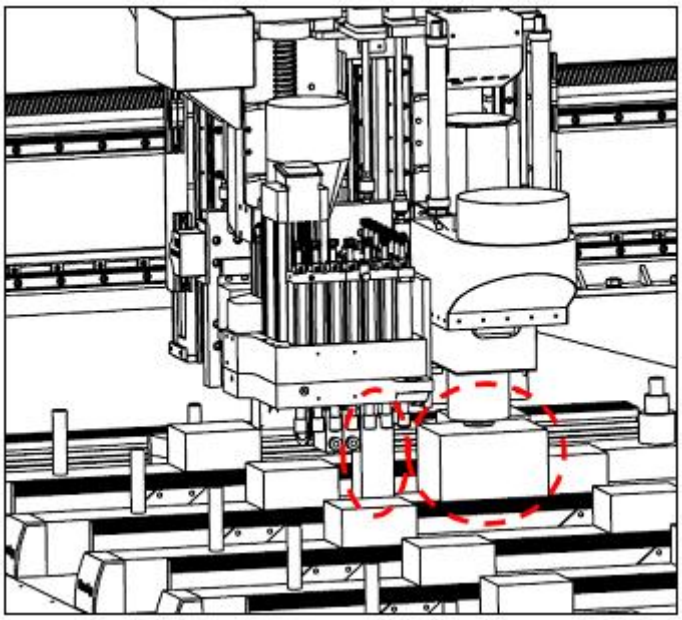

## 4.4 Electrical installation

### 4.4.1 Installing the independent electric box

- Place the independent electric box beside the machinery, which shall be easy for the operators to operate.
- Connect the wires to the machinery properly one by one.
- There are some dismantled wires in the electric box, which shall be connected properly one by one according to the arrangement number.
- Connect with the mouse and keyboard.
- Check whether the fixed screws of electric parts in the electric box are loosened in the process of transportation.

### 4.4.2 Connecting with the main power line

- Connect the main power line to R, S, T in the electric box. Switch on the power supply and deliver the power after confirming the voltage is coincident.

Annotations: If any other connection problems, please refer to circuit diagram.

## 4.5 Level adjustment for machinery

- The level of X-axis should be measured from two back ends of its guide rails.
- The level of Y-axis should be measured from two back ends of its two guide rails.
- Adjust the level with the leveling screw at the bottom of machinery.

a. Method of level adjustment –

- Place the leveling instrument on the linear rail of Y-axis.
- Measure the level for each axis once every meter.

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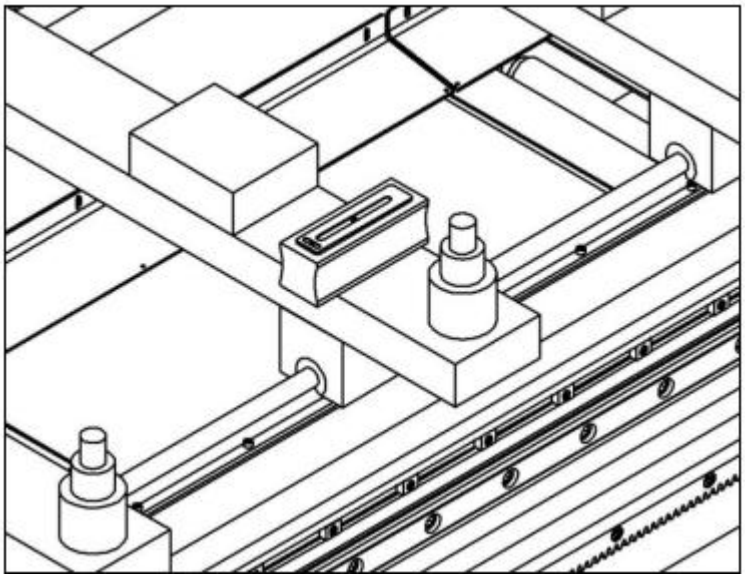

b. Adjustment error

- If the length of linear rail is less than 2 meters, the error should be less than 0.06 mm/m.
- If the length of linear rail is more than 2 meters, the error can increased by 0.01 mm/m.
- Max. error is 0.10 mm/m

Annotations: After having completed the machinery level adjustment, the nut of leveling screw should be locked tightly.

The smallest unit of leveling instrument should be 0.02 mm/m.

## 4.6 Measurement of back clearance

There may be some back clearance between the ball screw and nut, and the controller can provide a method to eliminate the back clearance.

a. Measurement method

(1) Place the dial indicator on the linear rail.

(2) By using the mode of hand wheel, move the measurement axis to contact with the pointer of dial indicator.

(3) Rotate the pointer on the surface to "0" location.

(4) Rotate the button of "Ratio" to 0.01mm and move the axis 0.20mm toward the direction of dial indicator.

(5) Then move it 0.20mm toward the opposite direction.

(6) If the dial indicator has not returned back to the original point, record the difference.

(7) Repeat the step of 4 - 6.

(8) Input the difference into the controller.

(9) Then repeat the step of 2 - 7 and confirm whether it is correct.

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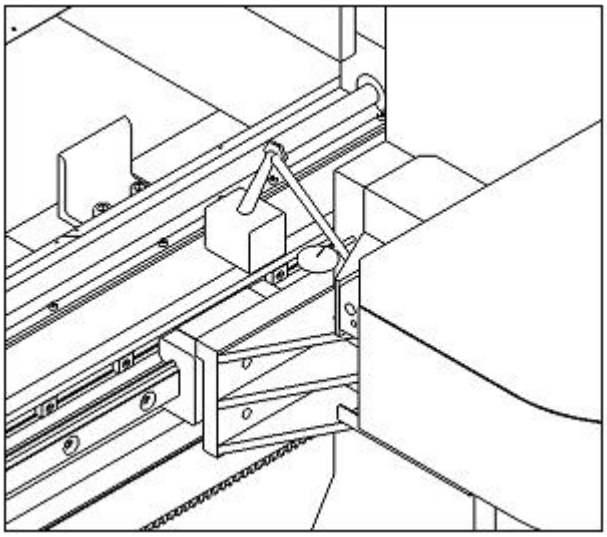

Annotations:

- The smallest unit of dial indicator should be 0.01 mm.
- The unit of the difference which is input into the controller is 0.001 mm.
- If the back clearance is greater than 0.25 mm, please check whether there are other problems in the machinery.

## 5. Preparations before the operation of machinery

The operator should perform the following steps, so as to avoid any damage to the operating personnel or machinery, which can prolong the service life of machinery.

### 5.1Cleaning and lubrication

- Before operating the machinery, remove the bits of wood and objects which may hinder the machinery movement on the machinery daily.
- Operator should check whether all the lubricating oil is enough regularly.

### 5.2Safety inspection

- After having installed the machinery, please check the following items before switching on the power supply:
- Check whether all the screws are loose.
- Check whether all the connectors are loose.
- Confirm whether all the connection of dust collecting tube and air pipe are loose.
- If the machinery has any additional devices, please confirm each wire and air pipe connection are correct.
- Check the inputting voltage and R S T phase sequence are correct.
- Check all the values indicated on the gauge are correct.
- Spindle warming:

First run for 5 min at the rotation speed of 3,000 rpm, then run for 5 min at the increased rotation speed of 6,000 rpm, finally run for 5 min at the rotation speed of 9,000 rpm, which can make the spindle reach the

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working temperature.

## 5.3 Start up the machinery

Start up the machinery please start up the machinery according to the following sequence:

Annotations: Before starting up the machinery for the first time, please lubricate the guide rail manually.

- Open the air valve, and check whether its pressure is 6-7 kg/cm$^2$
- Switch on the main power supply, and start up the main computer, then the machine operation picture shall be displayed on the computer screen.
- Cancel the red button of "E-STOP" on the panel, and then press the servo system power supply button on the panel, select the button of resetting the computer screen by clicking with the mouse to clear the warning message on the computer screen. If the machinery is in normal operation, the operation picture on the computer screen shall not display a red warning message, which represents the boot is ready at that time. - The machinery uses the pneumatic cylinder to offset the weight of Z-axis, and the air pressure regulating valve shall be adjusted at the ideal location (in general, its setting value is 4 kg/cm$^2$), which should not be adjusted arbitrarily.
- If it is necessary to adjust the air pressure, its pressure can be adjusted as follows:

a. Confirm the following conditions of machinery:

Power supply …… Yes

Control…… Yes

Power supply …… None

b. Remove the cover of Z-axis coupling and rotate the Z-axis ball screw directly.

c. Adjust the pressure of air pressure valve to the best balanced state.

## 5.4 Shut down the machinery

According to the following steps, shut down the machinery one by one.

- Execute the Z-axis to the original point of machinery.
- Move the X, Y- axis to the middle of machinery.
- Switch off the controller supply power.
- Switch off the main power supply.
- Close the air.

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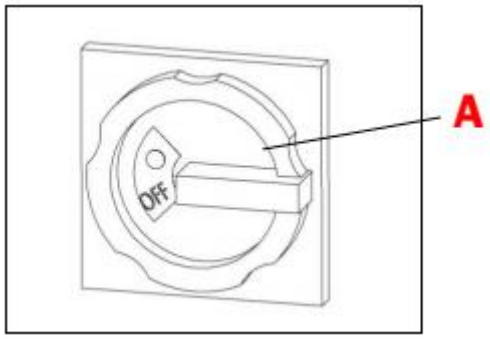
# 6. Operation instruction

## 6.1Start up

Switch on the controller power supply, and get ready to start the operation of machinery.

1. Switch on the main power supply, as shown in Fig.6.1.

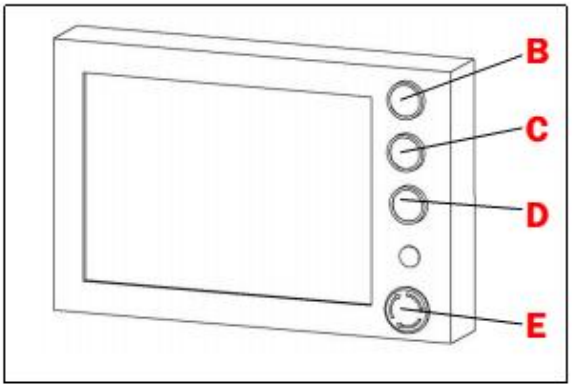
2. Button of "Start up" (green) on the right of screen, as shown in Fig.6.2.




A: Main power supply switch

B: Servo system start-up button

Fig.6.1

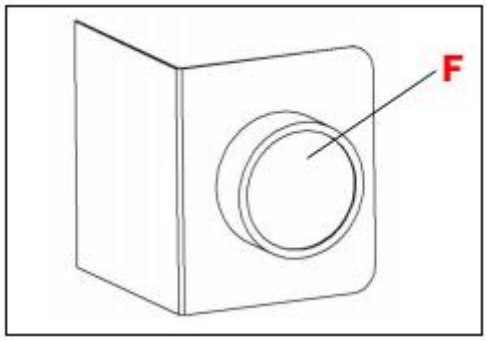



C: 自動執行按鈕(Cycle start)

D: 暫停(Feed hold)

E: 緊急停止按鈕 (E-Stop)

Fig. 6.2




F: 鬆刀按鈕(Tool Release)

Fig. 6.2.1

## 6.2Shutdown and restart the machinery

6.2.1 Click 

, as shown in Fig.6.3 Automatic zeroing

6.2.2 Click the drop-down menu to choose "shut down" or "restart", and then click "OK", as shown in Fig.6.4.

6.2.3 Wait a few seconds, and pop up a window to tell you that after you have exited the system safely, you can turn off the computer.

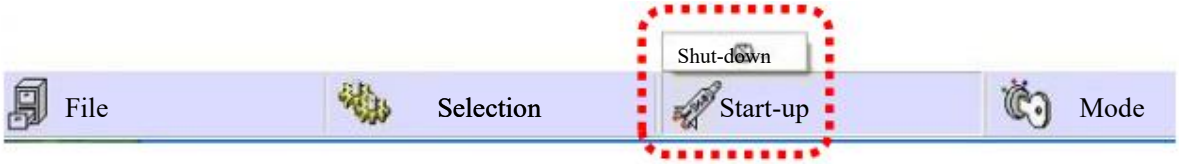



Fig. 6.3

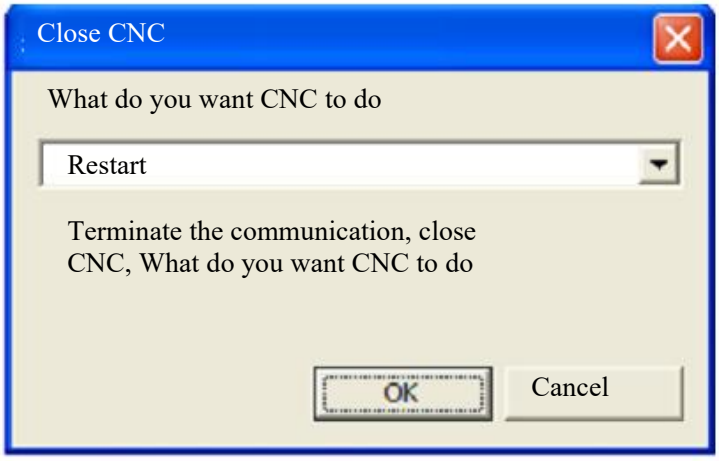



Fig. 6.4

## 6.3 Emergency stop

If there are any safety concerns on the safety of personnel or operation of machinery, press this button immediately, then all the electromechanical control of machinery will jump off, in order to ensure the safety of personnel and machinery, as shown inFig.6.2.

## 6.4 Origin mode

### 6.4.1 Automatic zeroing

When switching on the power supply, it must do the action of resetting to the original point.

This function can make three axes reset to the original point meanwhile. Steps are as follows:

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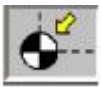
1. Click  (Automatic zeroing), as shown in Fig.6.5

2. Click  (Start-up)

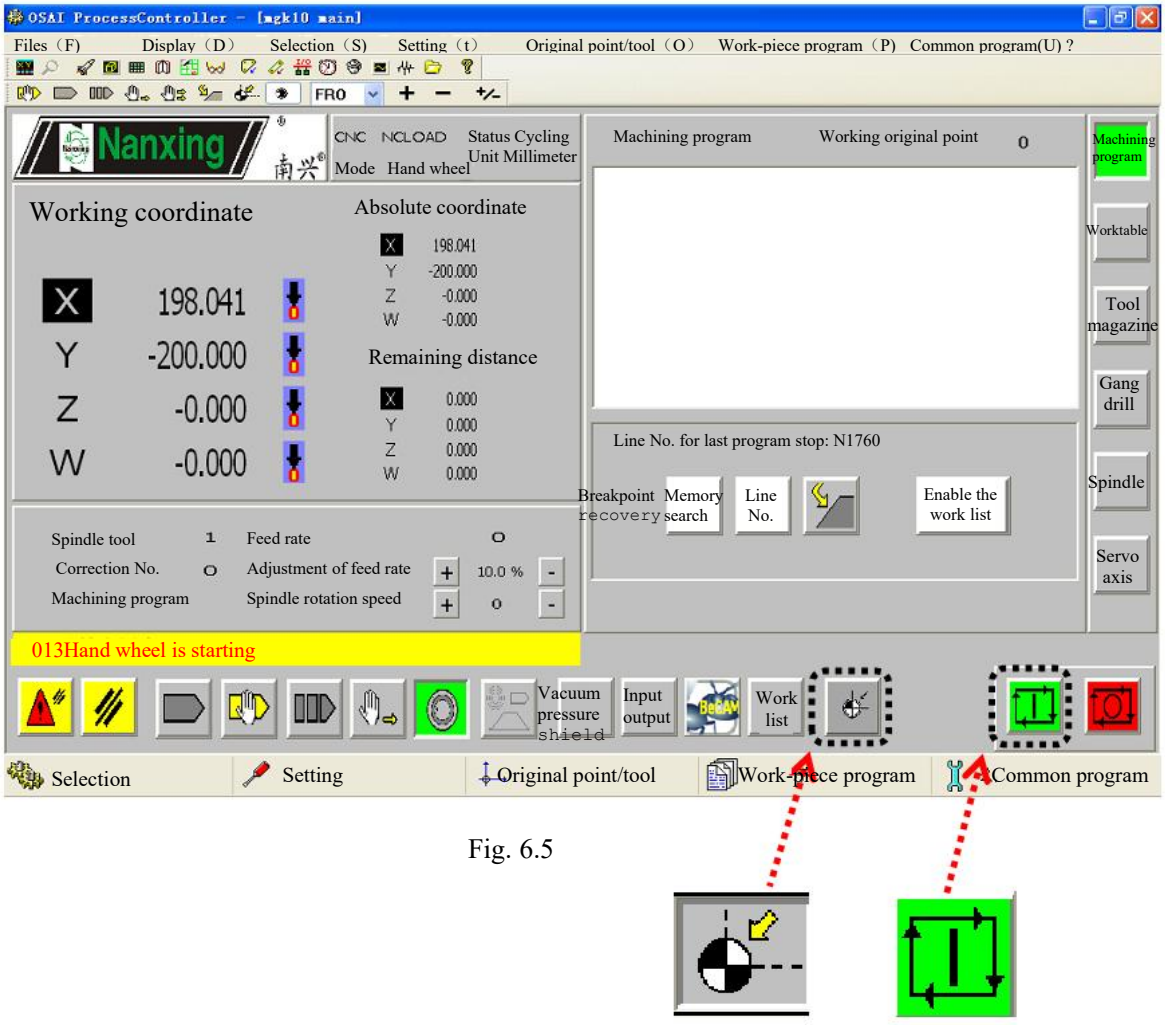



Fig. 6.5



## 6.5 Manual mode

### 6.5.1 JOG inching

After starting up this mode, you can move the machinery worktable by pressing the machinery worktable movement keys of 『 X+, X-, Y+, Y-, W+, W- 』.

1. Click  , as shown in Fig.6.6.

2. Click  , as shown in Fig.6.6

3. Move the machinery worktable by pressing the machinery worktable movement direction control keys of 『 X+, X-, Y+, Y-, W+, W- 』, as shown in Fig.6.6.

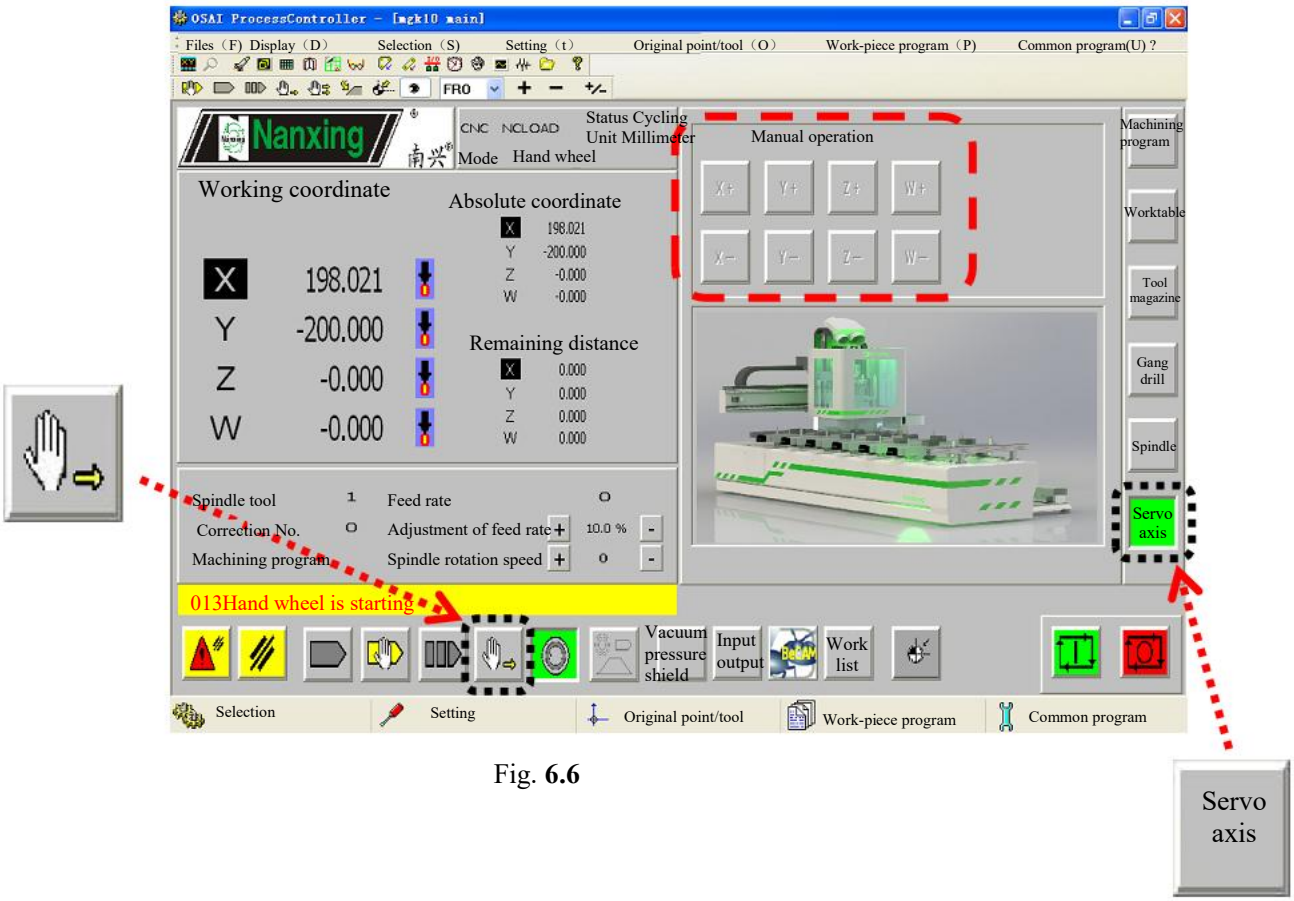



Fig. **6.6**

6.5.2 Hand wheel mode

After starting up the mode of hand wheel, you can only move the machinery worktable by using hand wheel.

Annotations: When the tool magazine is not in the returning location, the system shall automatically switch to hand wheel mode.

1. Click  as shown in Fig. 6.7

2. Select the axis for movement, as shown in Fig.6.8 (A)
3. Adjust the ratio of movement speed, as shown in Fig.6.8 (B) and the following table

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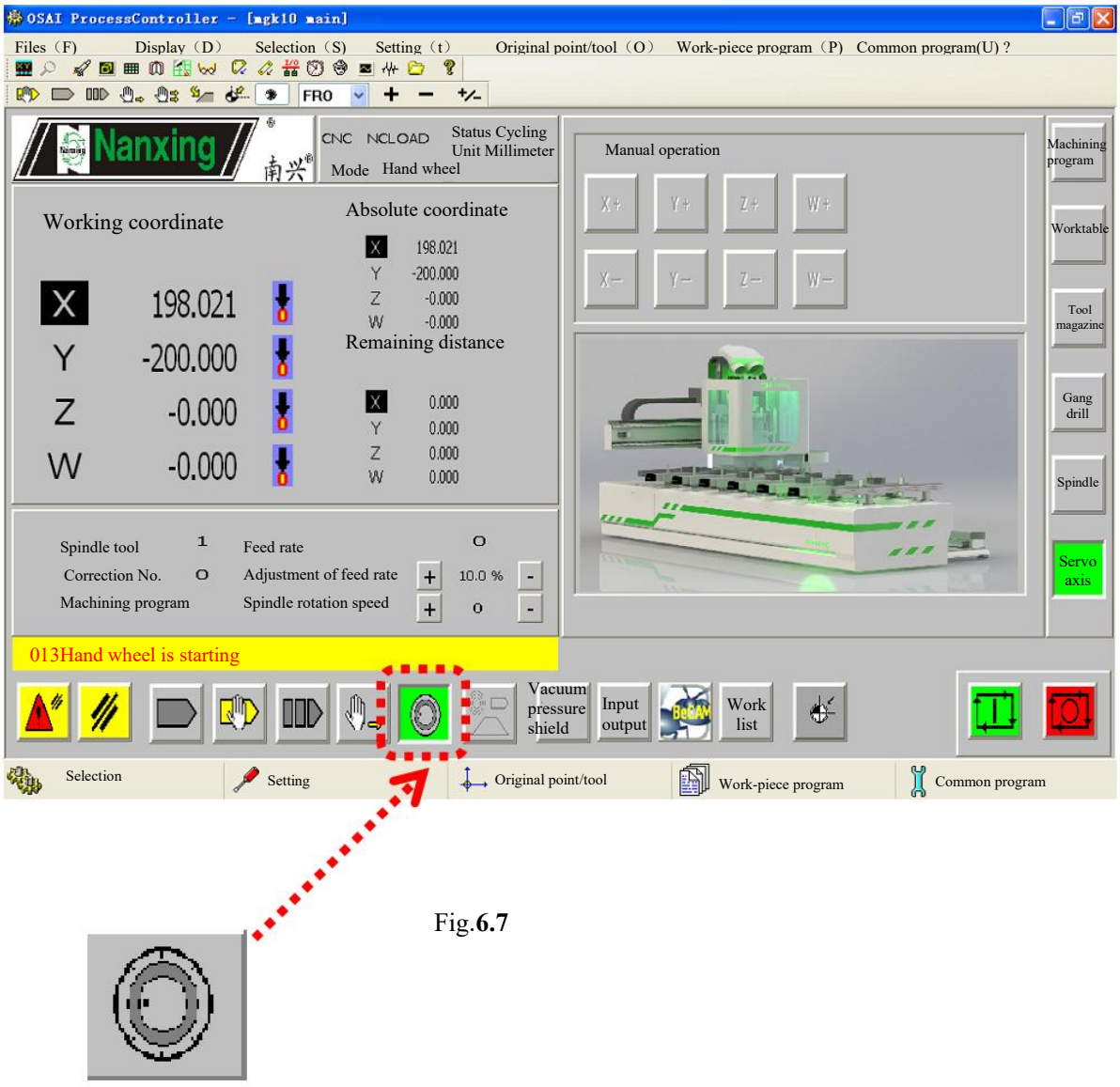


Fig.**6.7**



4. Rotate the hand wheel to move the machinery work table, as shown in Fig.6.8 (C)

| Ratio | Rotate the hand wheel a lattice | Rotate the hand wheel a circle |
|---|---|---|
| x1 | 0.01 mm | 1 mm |
| x10 | 0.1 mm | 10 mm |
| x100 | 1 mm | 100 mm |

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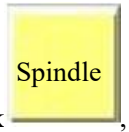
Fig. **6.8**

## 6.6 Spindle rotation

1. Click 

, enter the interface of spindle manual operation.
2. Input the rotation speed of spindle（RPM), as shown in Fig.6.9(A).
3. Click  (Clockwise rotation) or  (Counterclockwise rotation) to rotate the spindle, as shown in Fig.6.9(B)
4. Click  to stop the rotation of spindle, as shown in Fig. 6.9(C).
5. Click  (rising and falling the suction hood) to control the suction hood rise and fall, as shown in Fig. 6.9(D)**.**

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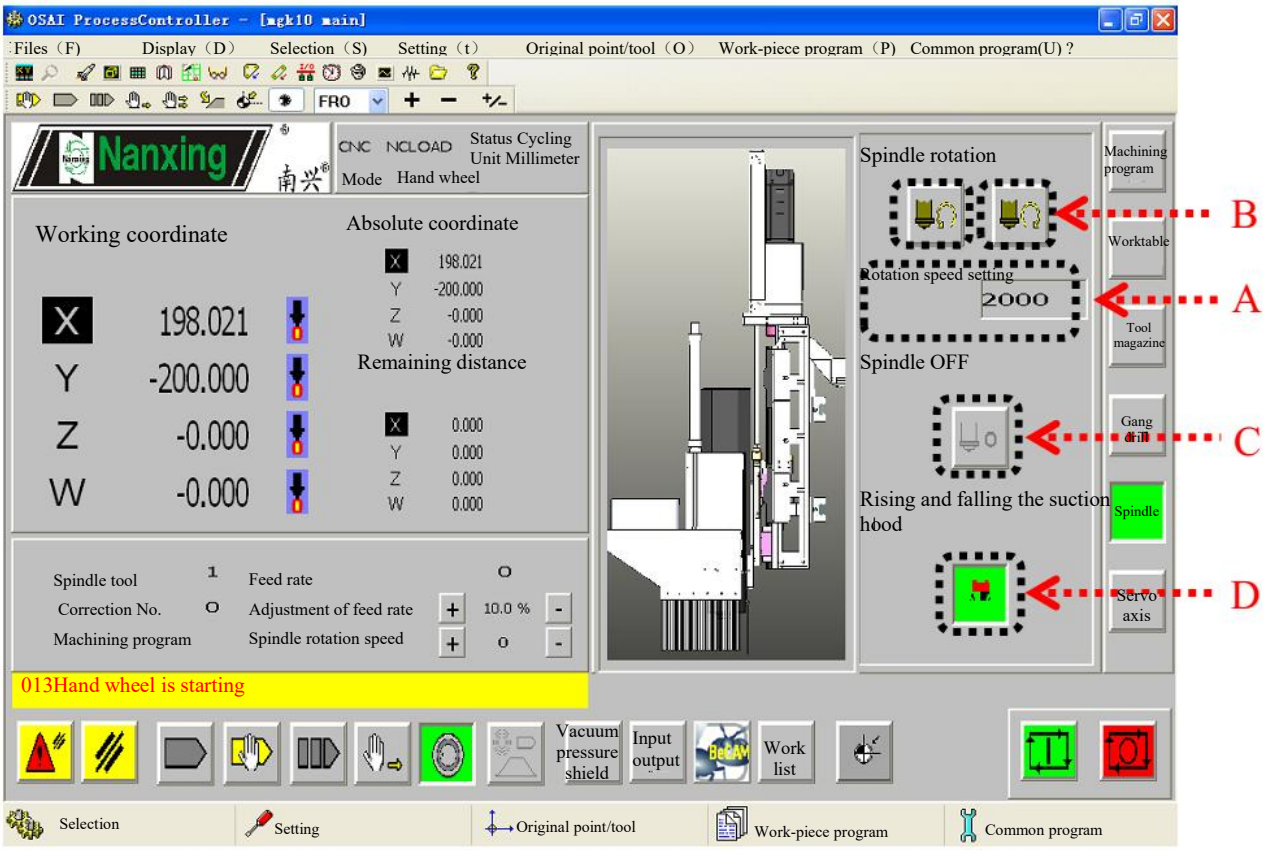


Fig.6.9

## 6.7 Single section execution

1 Click  (Single section execution),as shown in Fig.6.10 (A).

2. Click "start-up" button to execute NC program, and stop after executing a single section.

3. Click "start-up" button once again, and continue to executing the next single section, as shown in Fig.6.10 (B).

4. This function can help users check a single section of program one by one, in order to review whether there are any errors in the machining program.

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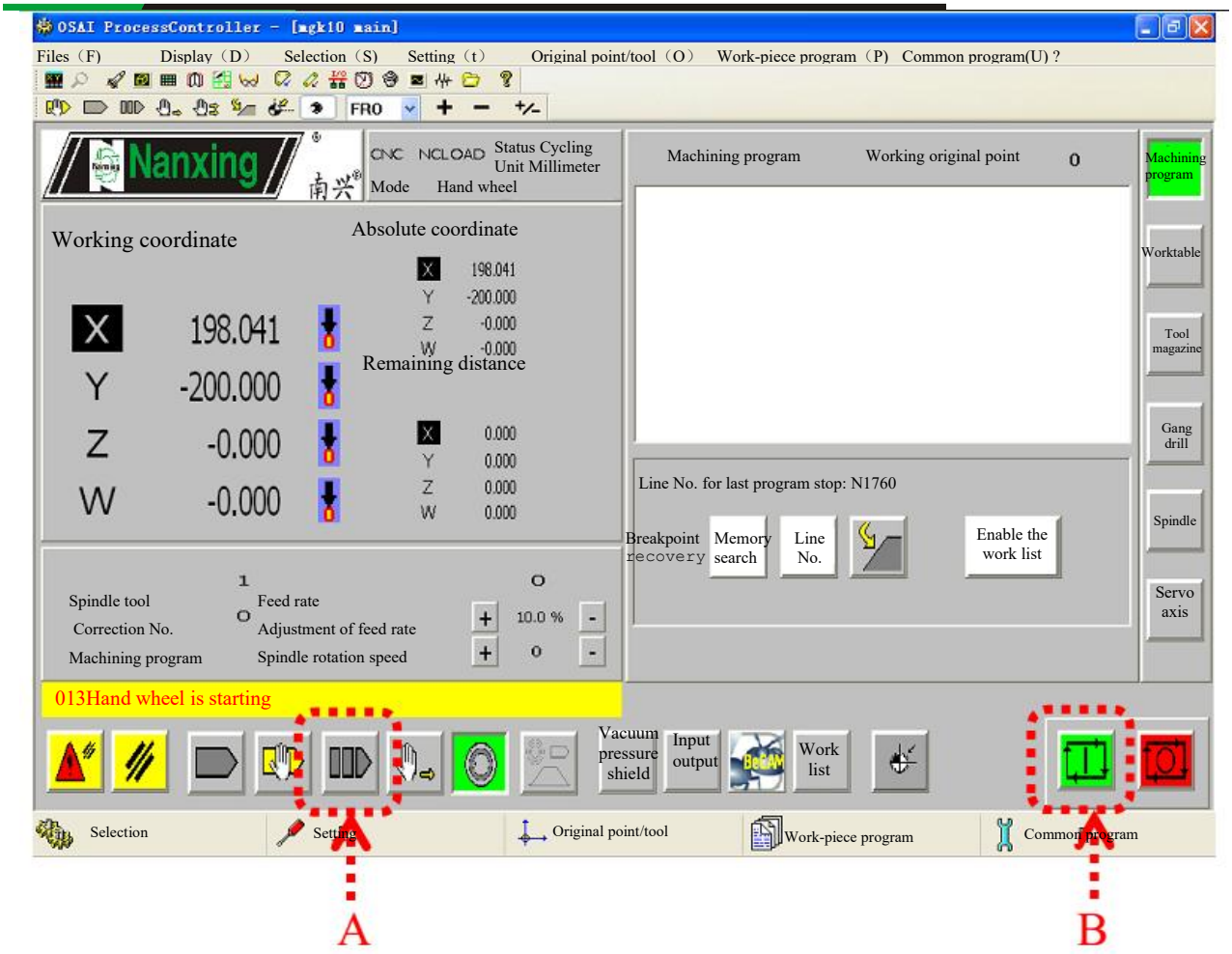
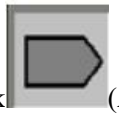
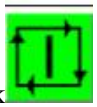



Fig.6.10

## 6.8 Automatic mode

Automatically execute the machining program.

1. Click  (Automatic machining), as shown in Fig.6.11 (A)

2. Click  to execute NC program, as shown in Fig.6.11 (B).

3. If necessary, press  to pause NC program.

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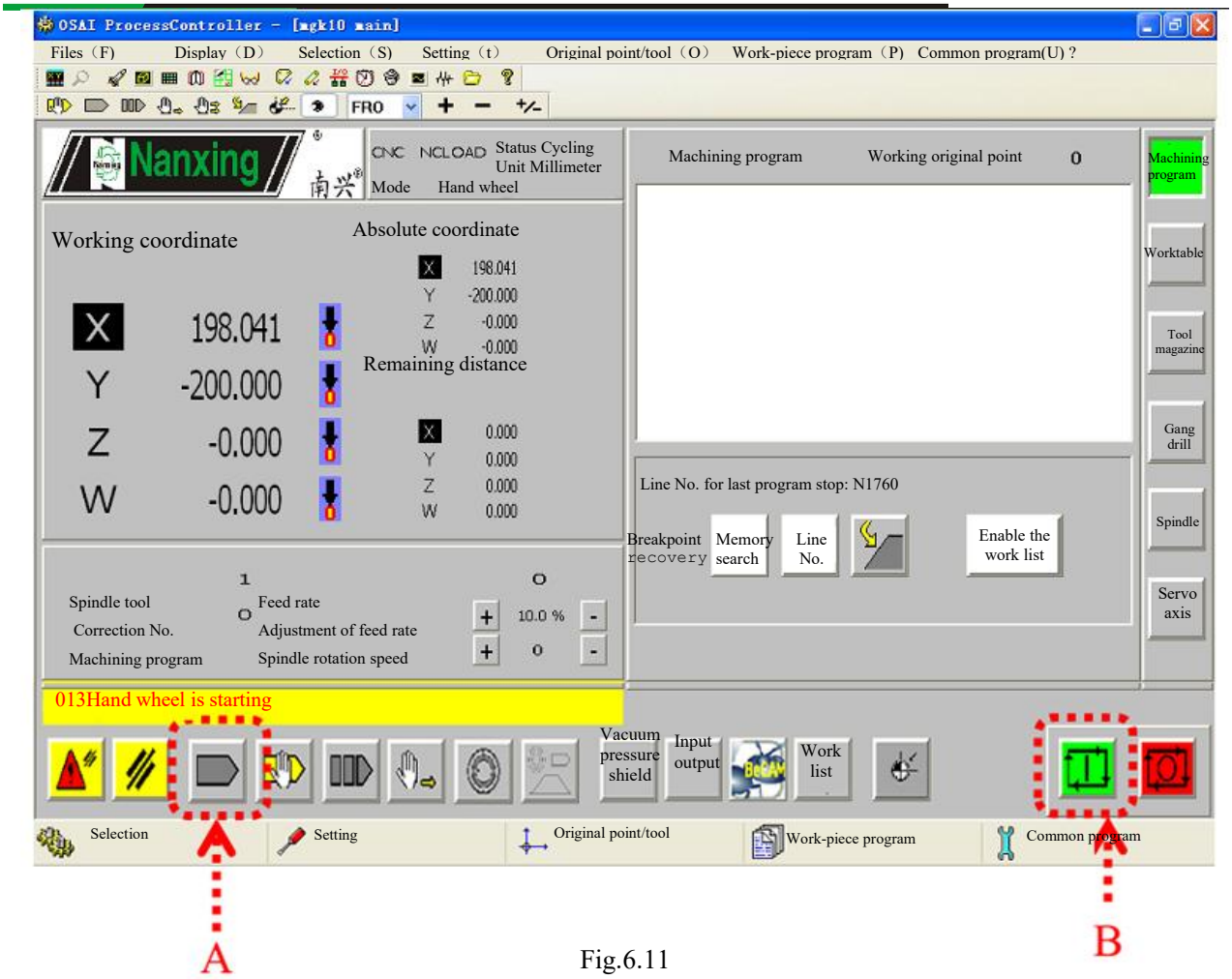
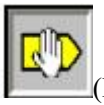



Fig.6.11

## 6.9 MDI function

Execute single line program instructions

1. Click  (MDI), as shown in Fig.6.12 (A).
2. Pop up a window, and input NC code, as shown in Fig.6.13
3. Input operation instruction, and then Click 

to confirm the input, as shown in Fig.6.14
4. Click  (Start-up) to execute the input NC code, as shown in Fig.6.12 (B)

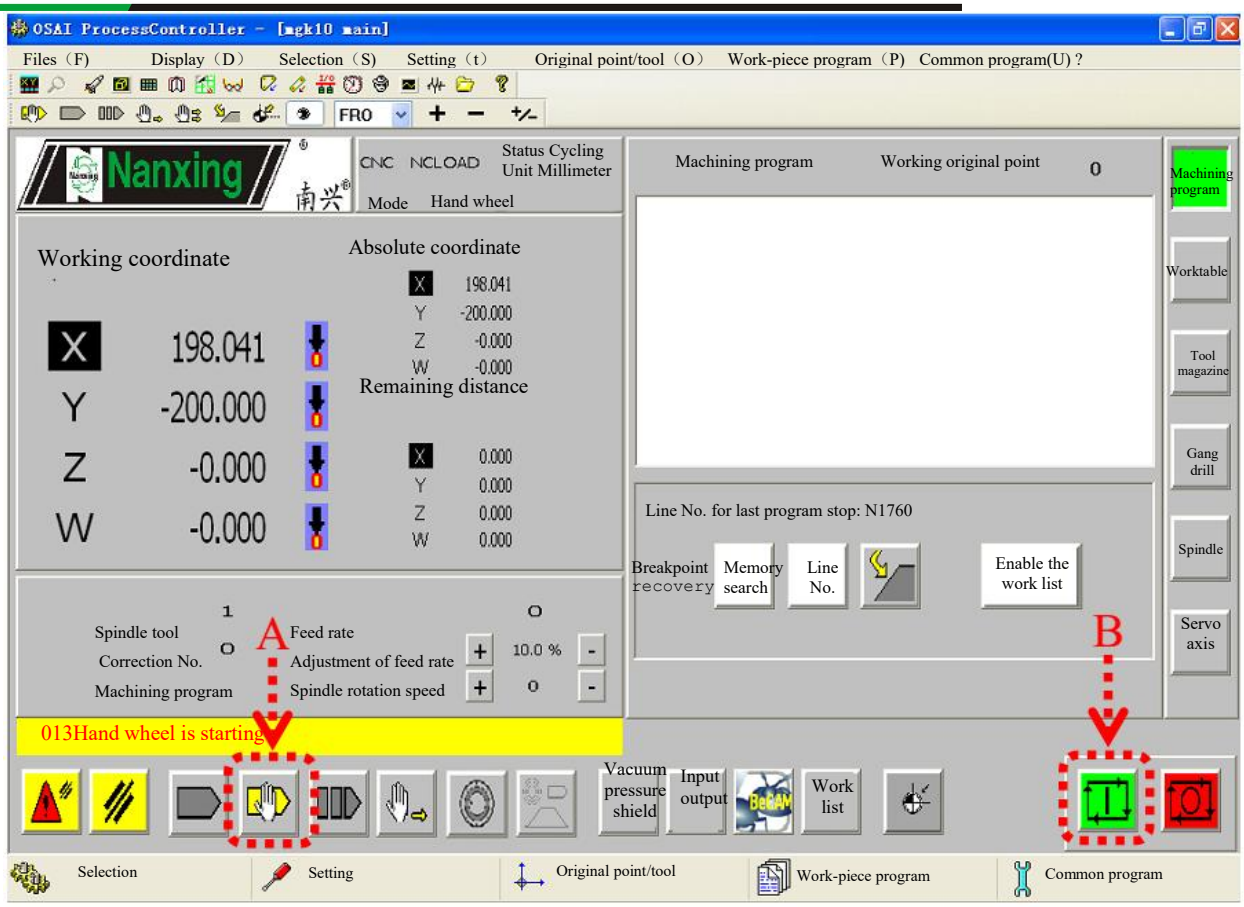



Fig.6.12 Click the button of "MDI" (pop up NC code inputting window)


Fig. 6.13

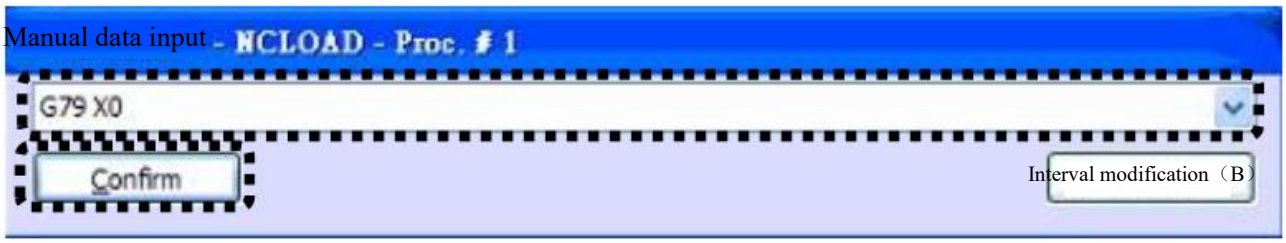
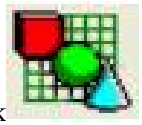



Fig. 6.14 Input NC code, and Click "Confirm"

## 6.10 Machining program


1. Click to enter the interface of machining program.
2. Fig.6.15 (A) shows the starting machining program at present.
3. Function of machining program breakpoint recovery (as shown in Fig.6.15 (A)) can help users find the line No. of program interruption during last machining, and continue to machine from the point of interruption. First start up the last operated machining program, and Click "Memory search", then continue to operate according to the prompts displayed in the screen, until finding the breakpoint.
4. Call the NC code of machining program, as shown in Fig.6.15 (C).

- Click , and select "Management of work-piece program", as shown in Fig.6.16.



- Select the called program, and then Click to call the files, as shown in Fig.6.16.

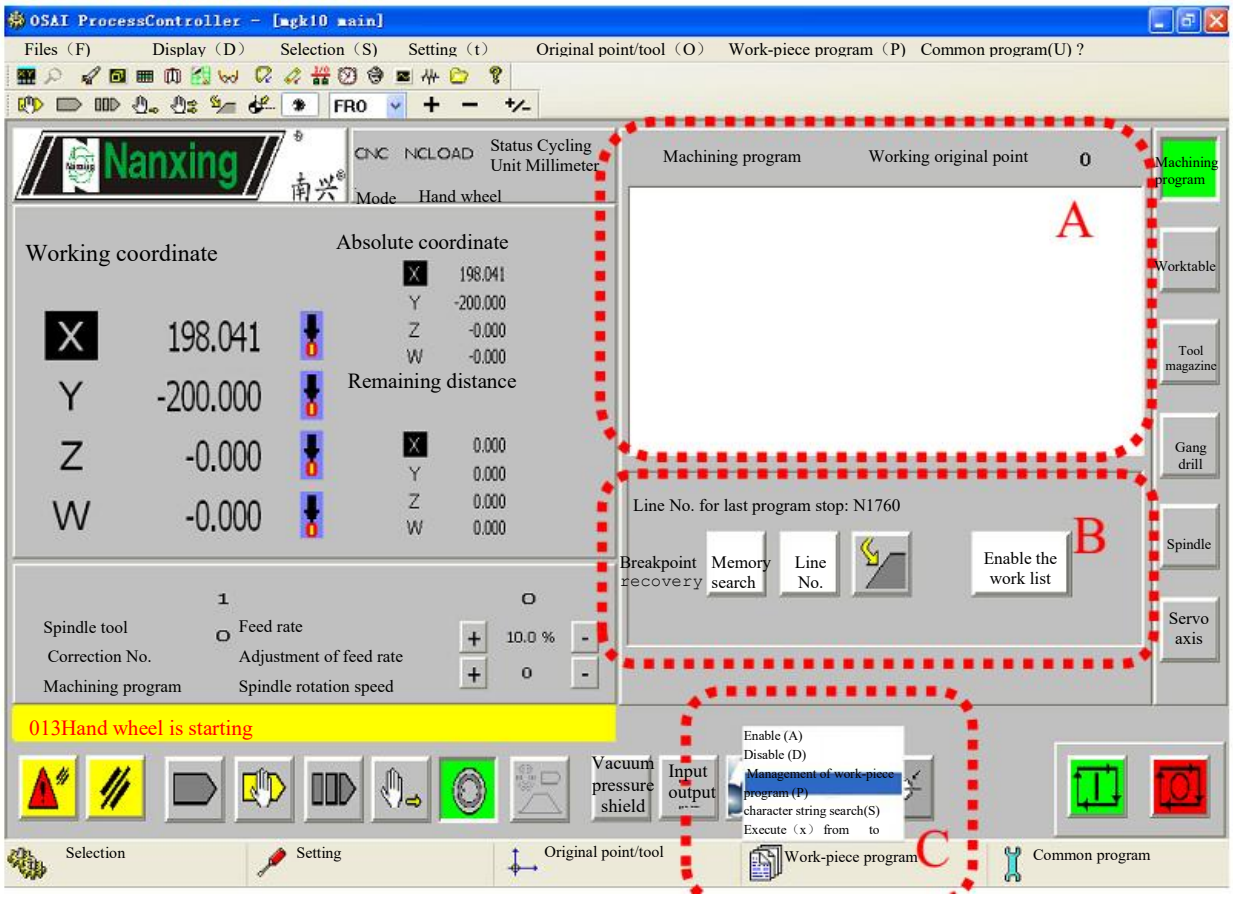



Fig. 6.15

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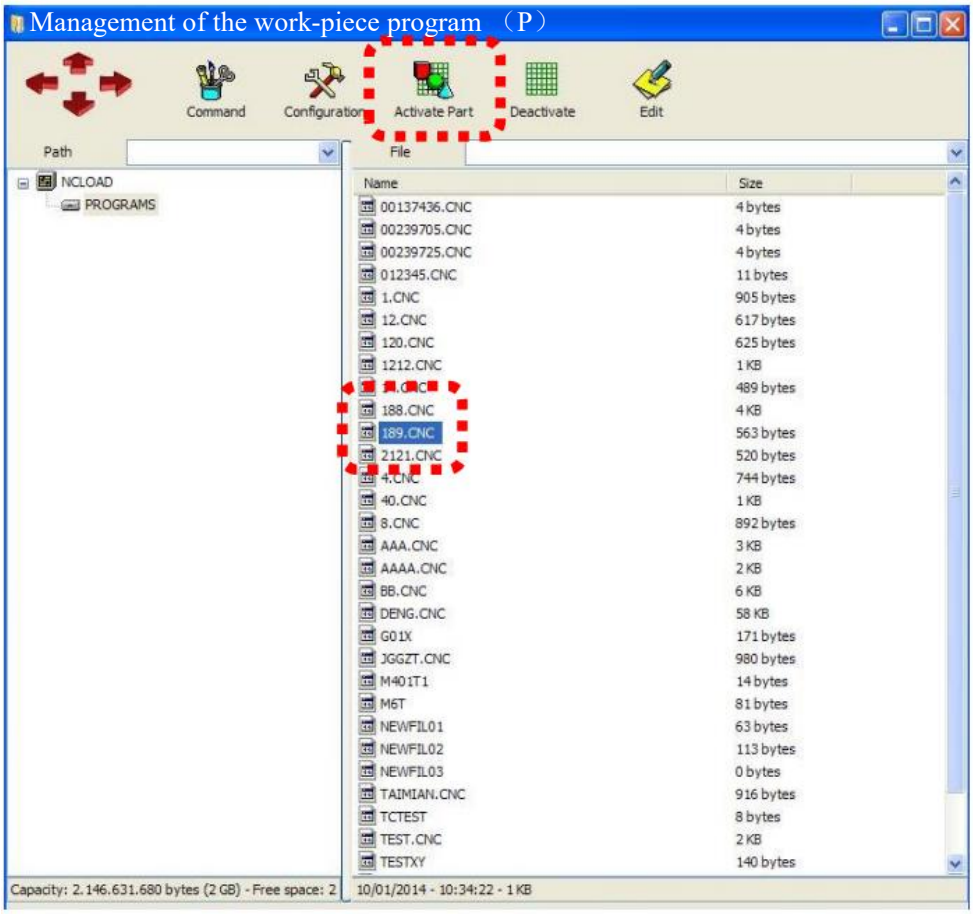



Fig. 6.16

**7.** If there has been a workpiece program already, you must first "Disable" and then call the new workpiece program, as shown in Fig.6.17.

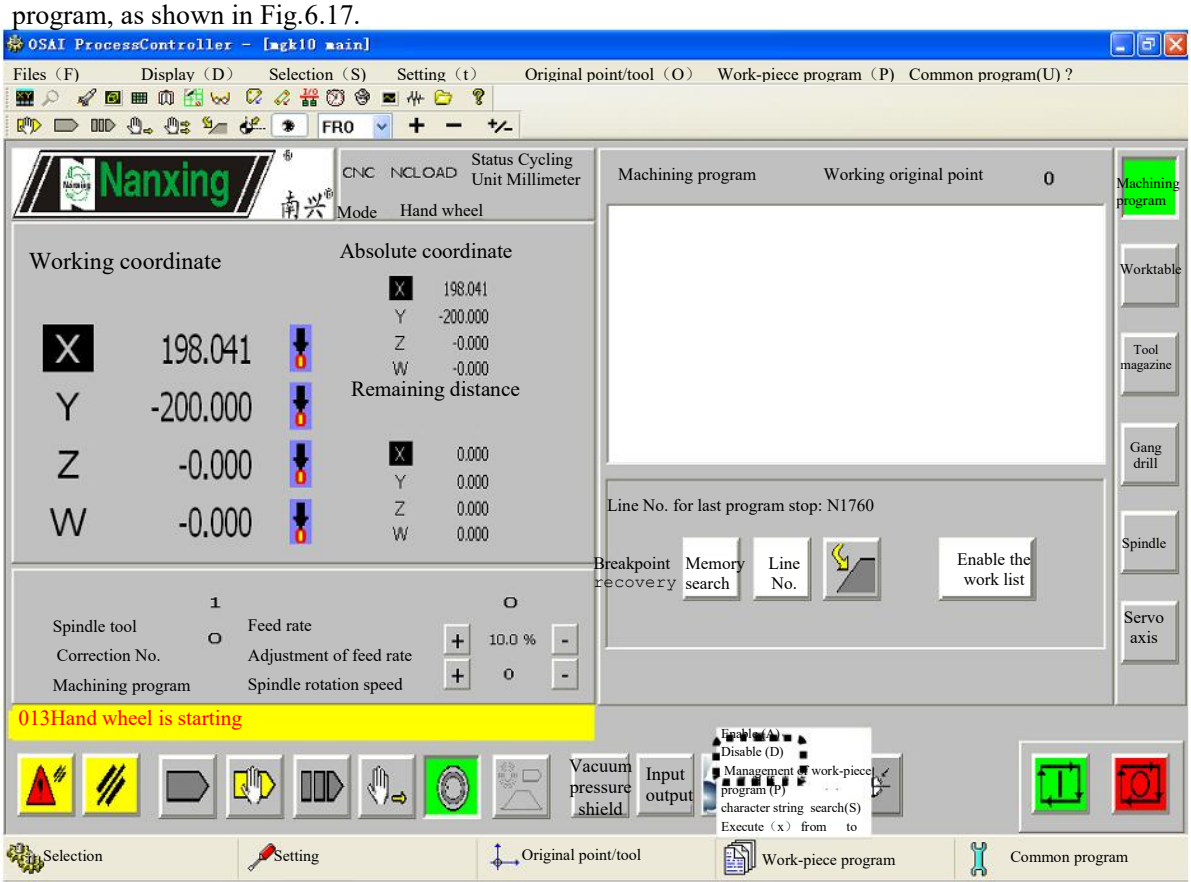
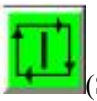


Fig. 6.17

## 6.11 Processing with hand wheel

Rotate hand wheel to execute NC program, and the action can be executed only by rotating the hand wheel, otherwise the machining program will be in the state of feed hold; if the machining program is operated for the first time, users can use this mode to confirm the correctness of machining path.

1. Under  (Automatic mode), Click  (Processing with hand wheel), as shown in Fig.6.18(A) and（B）.
2. Click  (Start-up), as shown in Fig.6.18(C)
3. Rotate the hand wheel, and start to execute NC program machining path.

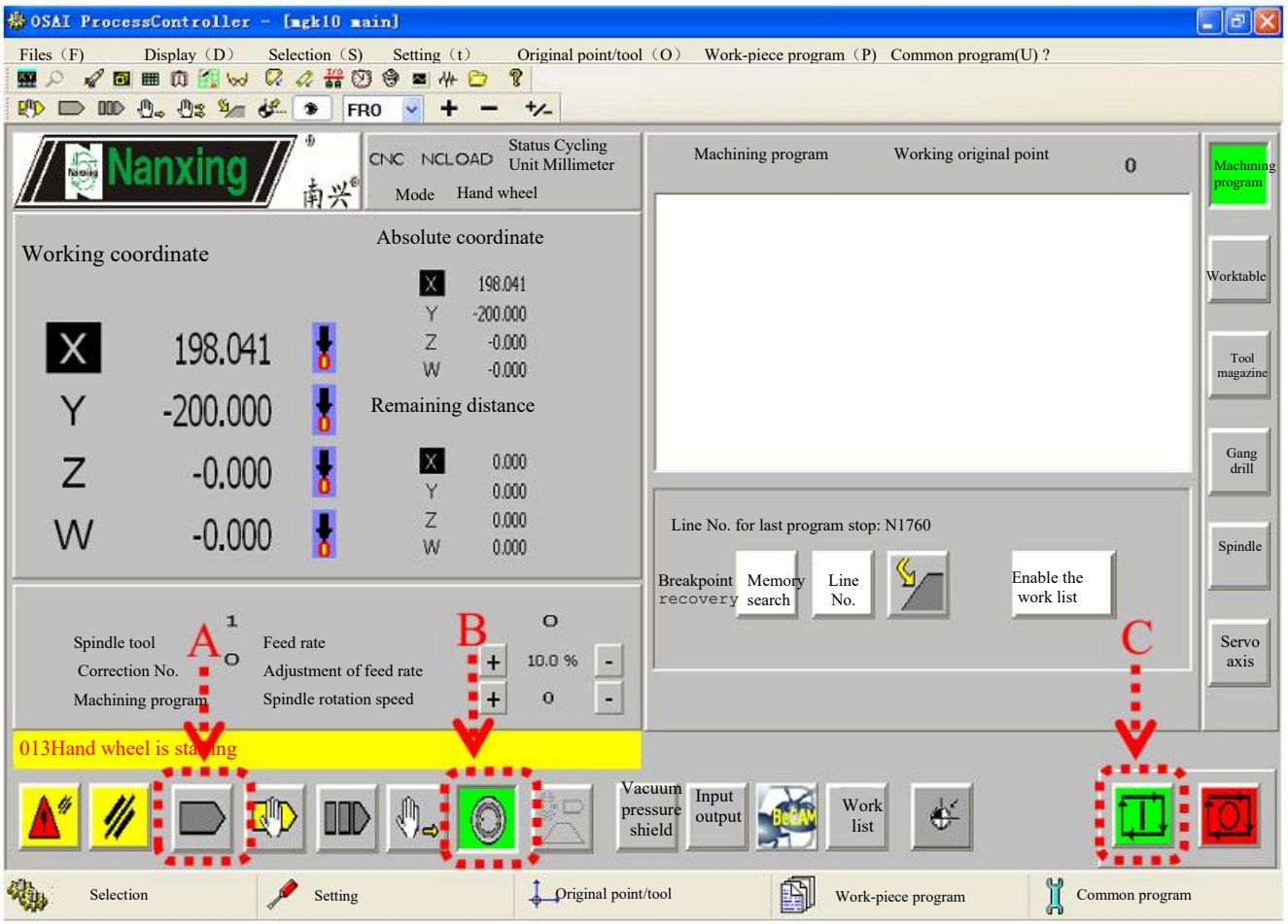



Fig.6.18

## 6.12 Vacuum adsorption of aluminum worktable

Aluminium worktable surface is divided into left and right areas, where the button operation is same.

1. Click 

to enter the interface of worktable manual control, as shown in Fig.6.19(A).

2. Click  to control the start-up and shut-down of side roof, as shown in Fig.6.19(B)

3. Click  to control the rise and fall of positioning cylinder, as shown in Fig. 6.19(C)

3. Click  to control the start-up and shut-down of vacuum adsorption, as shown in Fig.6.19(D)

4. Click  to control the start-up and shut-down of vacuum pump, as shown in Fig.6.19(E)

Annotations: Vacuum pump should avoid frequent start-up and shut-down.

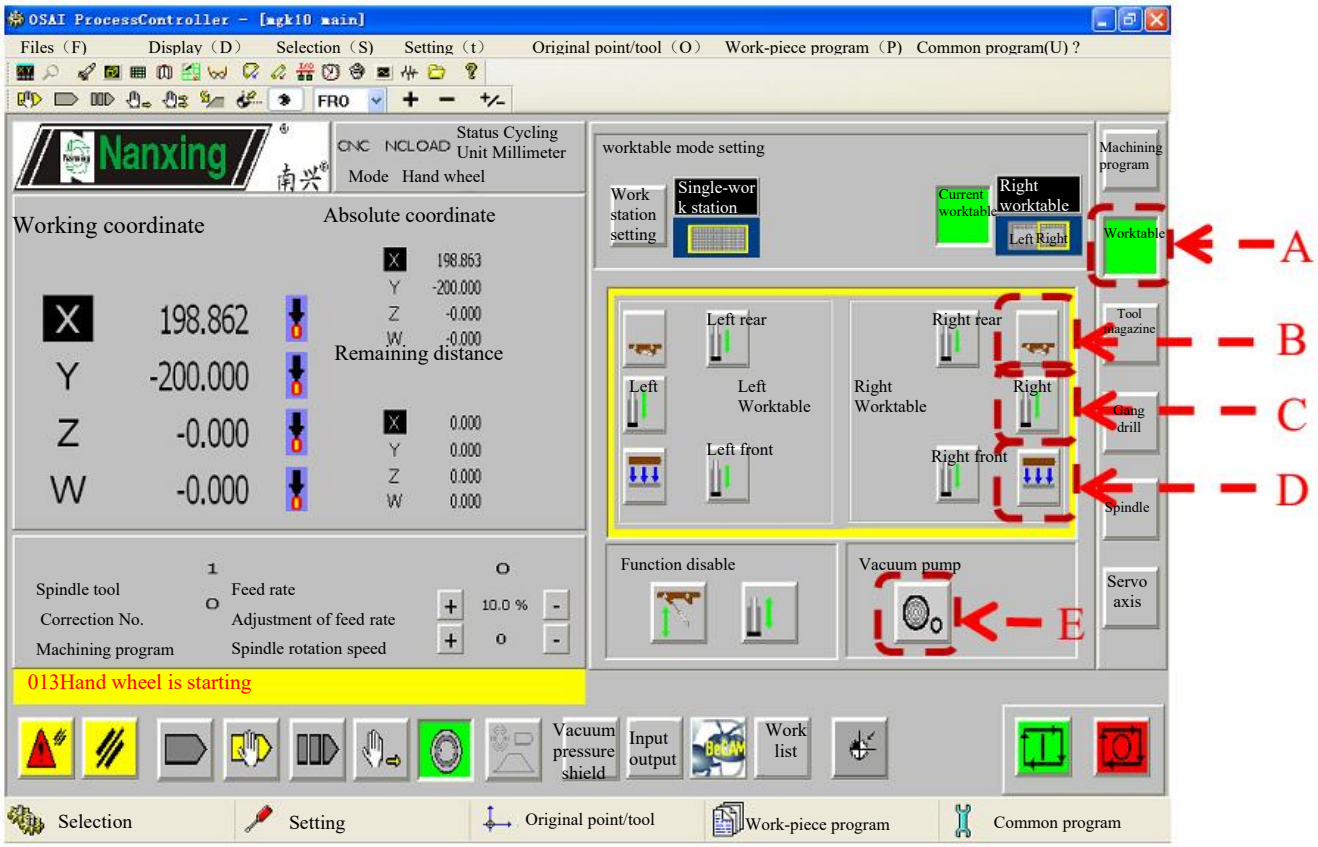



Fig.6.19

## 6.13 Function of gang drill manual operation

1. Click 

to enter the interface of gang drill manual operation

2. Click 

to control the rise of all drilling bit, as shown in Fig.6.20(A)

3. Click 

to control the fall of all drilling bit, as shown in Fig.6.20(B)

4. Click 

to control the start-up and shut-down of gang drill motor, as shown in Fig.6.20(C)

5. Click the button of “Drilling bit" in the area of D to control the rising and falling of corresponding drilling bit.

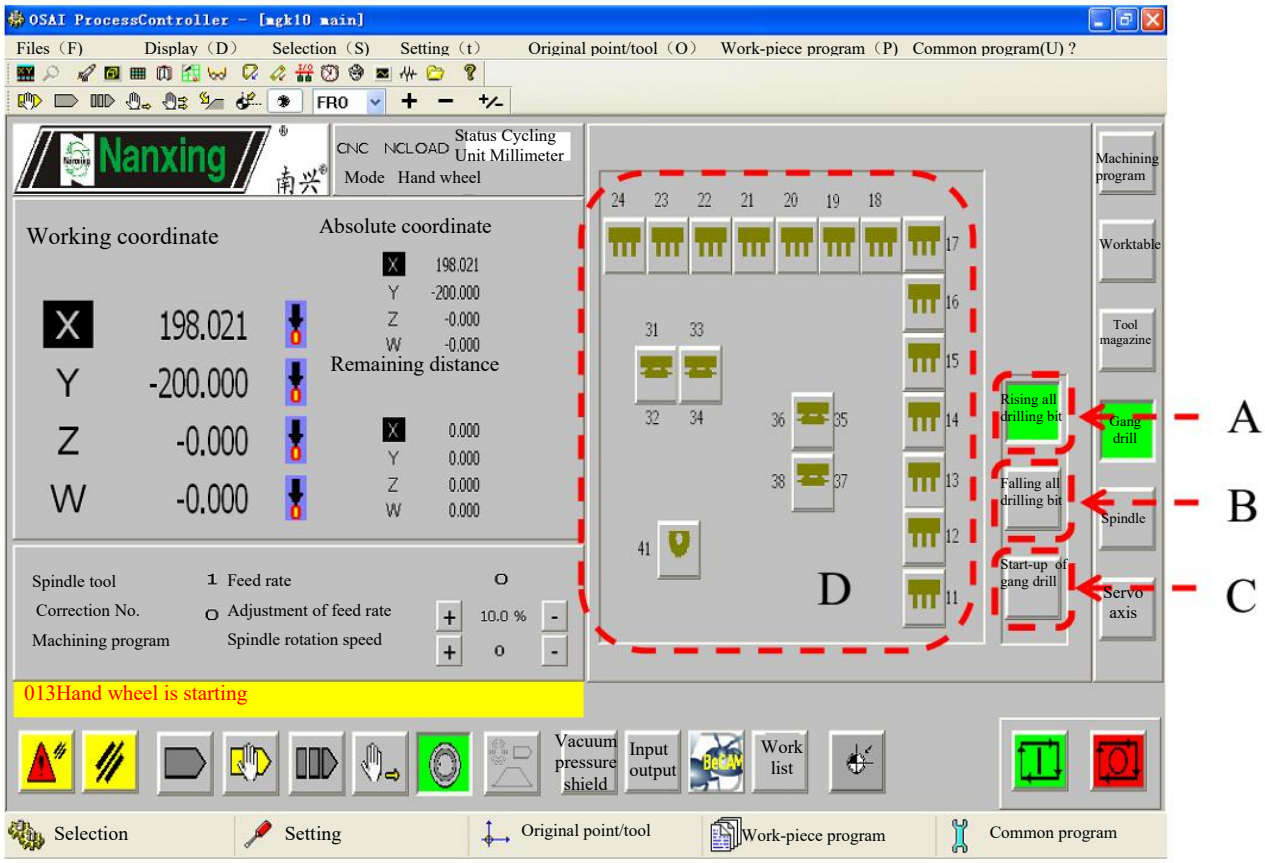


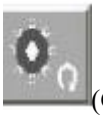
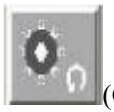

Fig.6.20

## 6.14 Setting the tool No. in tool magazine

1. Click 

to enter the interface of tool magazine manual control

2. Click  (tool magazine forward) to control forward and backward of tool magazine, as shown in Fig.6.21(A).

3. Click  (Clockwise rotation of tool magazine) and  (Counterclockwise rotation of tool magazine) to control the clockwise rotation and counterclockwise rotation of tool magazine (rotate one tool position by clicking the button once), as shown in Fig.6.21(B).

4. If finding the actual code of the tool position towards the spindle directly is not consistent with the numerical in the C area of system, click the area of C to modify it.

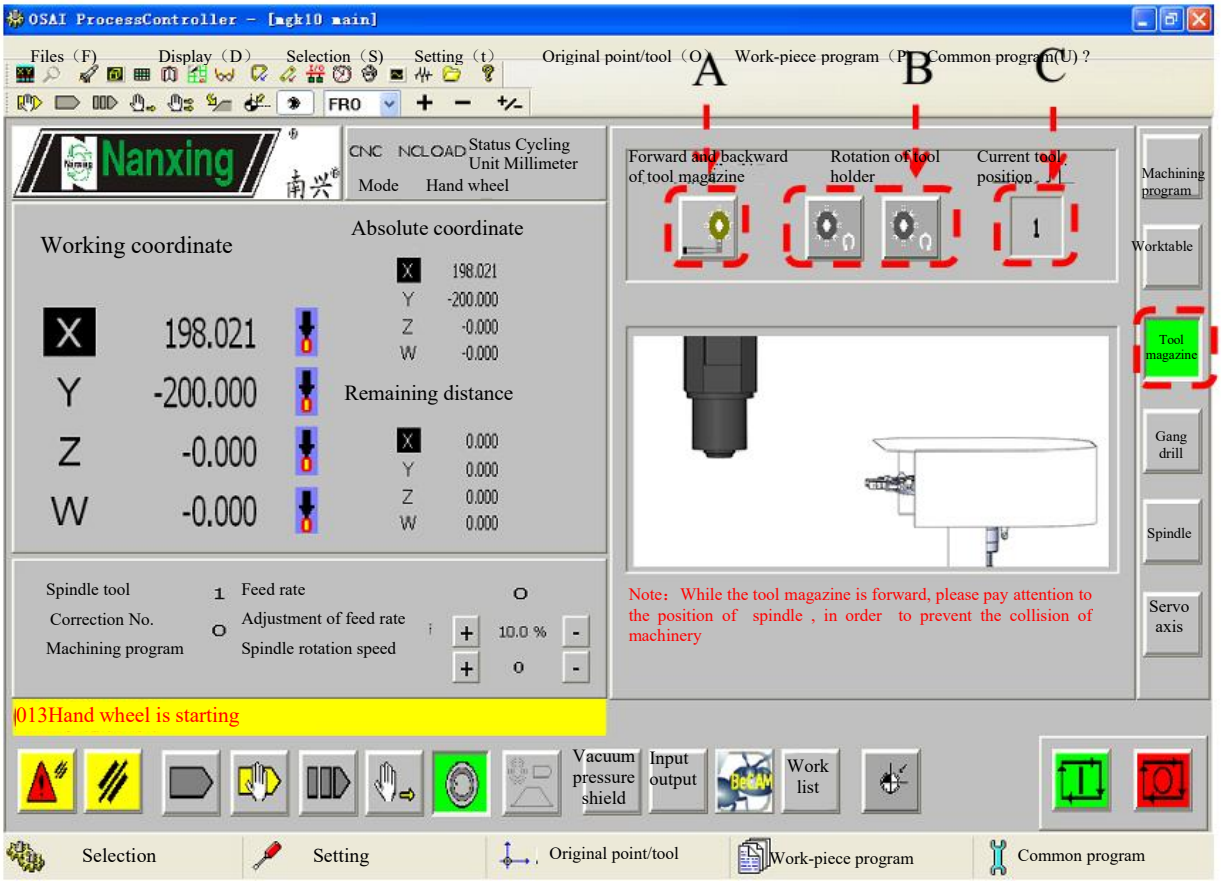



Fig.6.21

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## 6.15 G code table

| Code | Description |
|---|---|
| G00 | Rapid positioning |
| G01 | Straight cutting |
| G02 | Clockwise arc cutting |
| G03 | Counterclock wise arc cutting |
| G04 | Pause |
| G15 | Cancel polar coordinate instruction |
| G16 | Open polar coordinate instruction |
| G17 | Defining the XY plane |
| G18 | Defining the XZ plane |
| G19 | Defining the ZY plane |
| G20 | British system input |
| G21 | Metric system input |
| G27 | Original point return check |
| G28 | Origin return |
| G29 | Original point return instruction |
| G40 | Cancel tool radius correction |
| G41 | Tool radius correction (left compensation) |
| G42 | Tool radius correction (right compensation) |
| G80 | Close the fixed cycle cutting |
| G81 | Drilling cycle |
| G83 | Deep hole peck drilling cycle |
| G84 | Tapping right tooth cycle |
| G85 | Reaming cycle |
| G86 | Boring cycle |
| G90 | Absolute coordinate |
| G91 | Increment coordinate |
| G98 | Original point of fixed cycle return instruction |
| G99 | Reference point (R) of fixed cycle return instruction |

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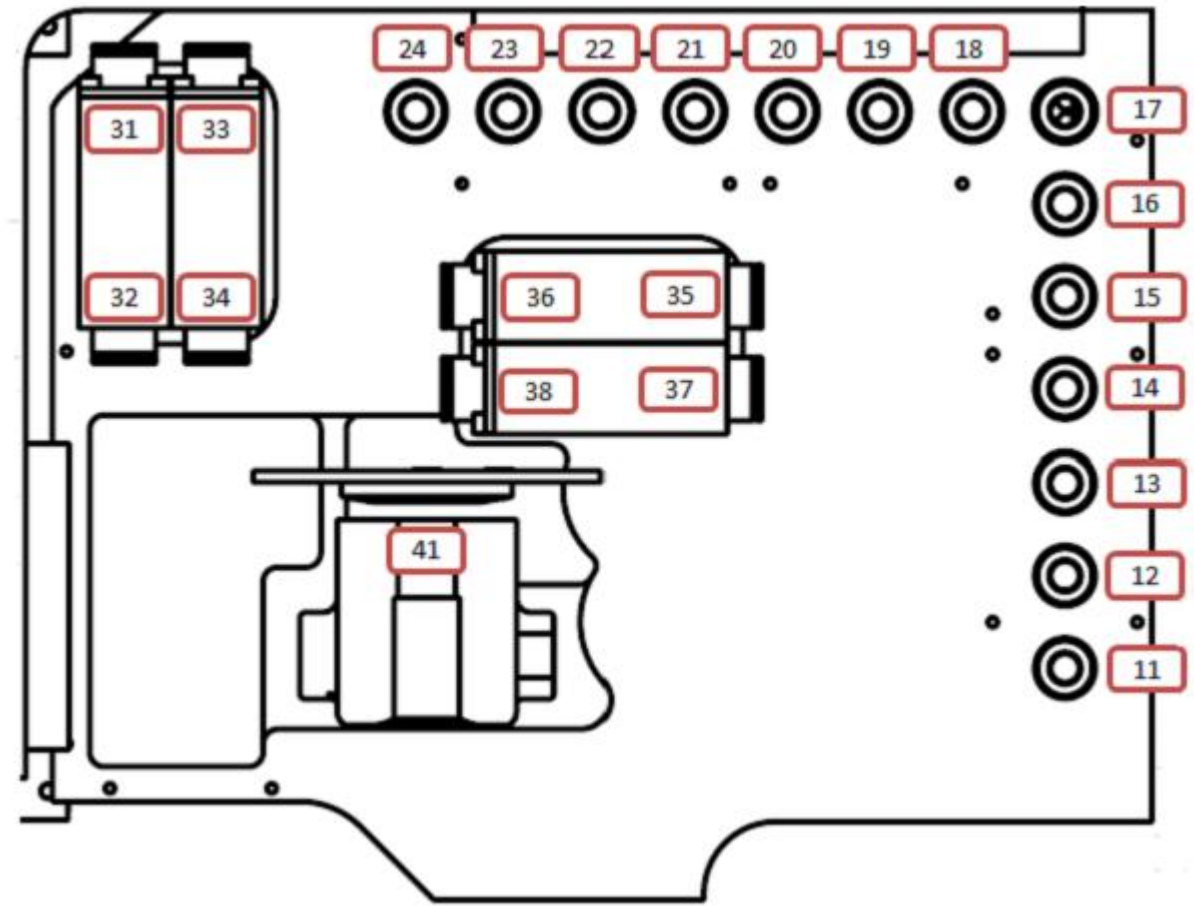
## 6.16 M code table

| Code | Description | Code | Description |
|---|---|---|---|
| M00 | 程序暂停<br>Program Stop | M70 | Universal output is on (tool - checking instrument blowing is on) |
| M03 | 主轴正转<br>Spindle ON CW | M71 | Universal output is off (tool - checking instrument blowing is off) |
| M04 | 主轴反转<br>Spindle ON CCW | M82 | Allow all axis to move while falling the saw blade |
| M05 | 主轴停止<br>Spindle OFF | M83 | Cancel M82 |
| M06 T_ | 主轴换刀<br>Tool Change | M90 | Rotate the tool magazine to the position of the spindle tool No. (used in the tool change MACRO) |
| M13 | 排钻组运转<br>Boring head ON | M91 | Rotate the tool magazine to the position of the design tool No. (used in the tool change MACRO) |
| M15 | 排钻组停止<br>Boring head OFF | M92 | Use servo tool magazine（used in the tool change MACRO) |
| M20 | Clip the spindle tool | M130 | Workpiece adsorption |
| M21 | Loosen the spindle tool | M131 | Workpiece release |
| M48 | 毛刷上<br>Brush up | M138 | Sucker release |
| M49 | 毛刷下<br>Brush down | M139 | Sucker adsorption |
| M50 | Starting up vacuum pump1 | M142 | Worktable positioning cylinder up |
| M51 | Shutting down vacuum pump1 | M143 | Worktable positioning cylinder down |
| M52 | 主轴头上<br>Spindle up | M170 | A worktable workpiece adsorption |
| M53 | 主轴头下<br>Spindle down | M171 | A worktable workpiece release |
| M62 T_ | 排钻钻头上<br>Boring all head up | M172 | B worktable workpiece adsorption |
| M63 T_ | 排钻钻头下<br>Boring head down | M173 | B worktable workpiece release |

## 6.17 T code table




Vertical drilling tool No.:11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24

Horizontal drilling tool No.:Y -direction:31/32, 33/34; X-direction:35/36, 37/38

Saw blade tool No.:41

6.17.1 Examples of the vertical drilling pop-up:

Pop-up No.11 vertical drilling: T11

Pop-up No.20 vertical drilling: T20

Pop-up No.11, 12, 13, 15 vertical drilling: T11/12, 13, 15

6.17.2 Examples of the horizontal drilling pop-up:

Pop-up No.31 horizontal drilling: T31

Pop-up No.36 horizontal drilling: T36

Pop-up No.31, 33 horizontal drilling: T31/33

6.17.3 Examples of the saw blade pop-up:

T41

6.17.4 When T code and M63 are used at the same time, it will also start up the tool compensation while popping up the corresponding tool

M63 T11: Pop- up No.11 vertical drilling and start up No.11 tool compensation at the same time.

M63 T11/12, 13, 15: Pop- up No.11, 12, 13, 15 vertical drilling and start up No.11 tool compensation at the same time.

M63 T31/33: Pop- up No.31, 33 horizontal drilling and start up No.31 tool compensation at the same time.

6.17.5 Tool recovery: T0 (recover all the tools, and cancel the tool compensation)

Note: For four groups of tools such as vertical drilling, X-direction horizontal drilling, Y-direction horizontal drilling and blade saw, prohibit the pop-up in any combination of them.

## 6.18 Setting the coordinate system

1. Click "Control menu",as shown in Fig.6.22 (A)- Click the menu, as shown in Fig.6.23 (B)-Enter ten groups of setting field for coordinate system(UAO 1-UAO 9)- Select the coordinate system to be set(Origin)- input the numeric of axis to be set (Axis X, Axis Y, Axis Z) -After confirmation, press "Apply" to complete the setting.
2. Click the original point to be set, and input the measured absolute coordinate X and Y, then Click "Apply" to save the results as shown in Fig. 6.24. Annotations: Absolute coordinate X and Y of original point1 have been set at the factory, and if no special need, do not change it.


Fig. 6.22

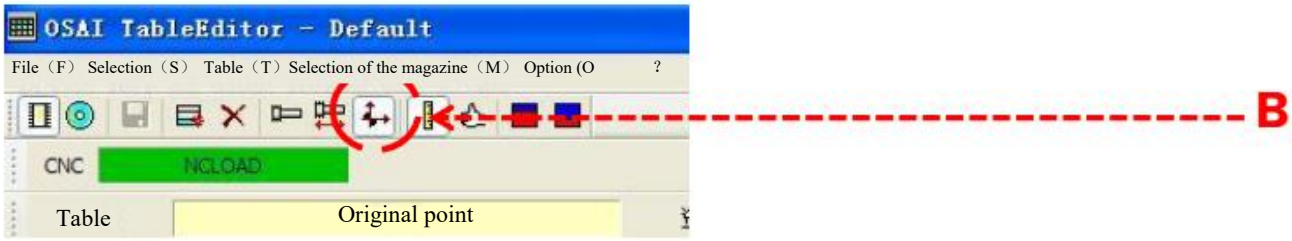



Fig. 6.23

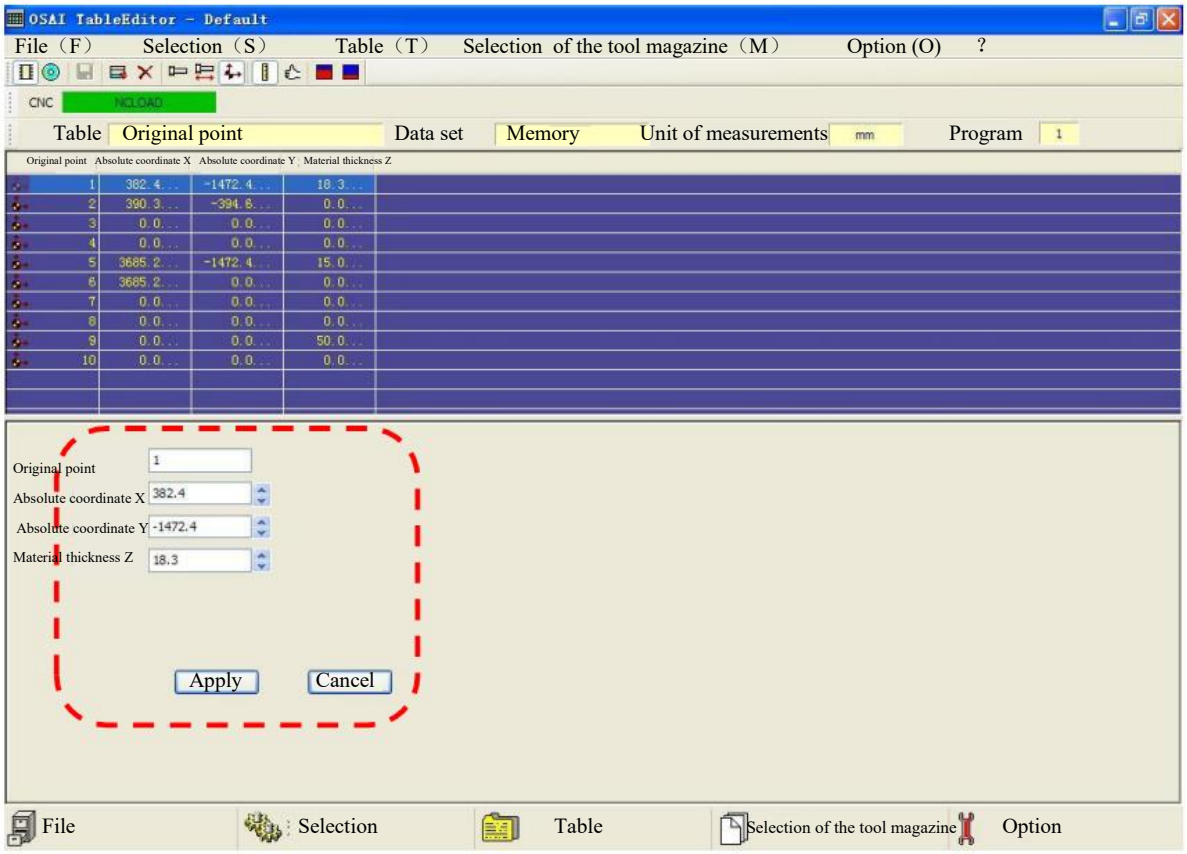



Fig. 6.24

2. In the CAM software, if setting the material top surface to zero point, the thickness of the material should be input into Z (thickness of the material), which shall be saved, as shown in Fig. 6.25; if setting the material bottom surface to zero point, the thickness of the material should be input into Z (thickness of the material), which shall be saved, as shown in Fig. 6.26.

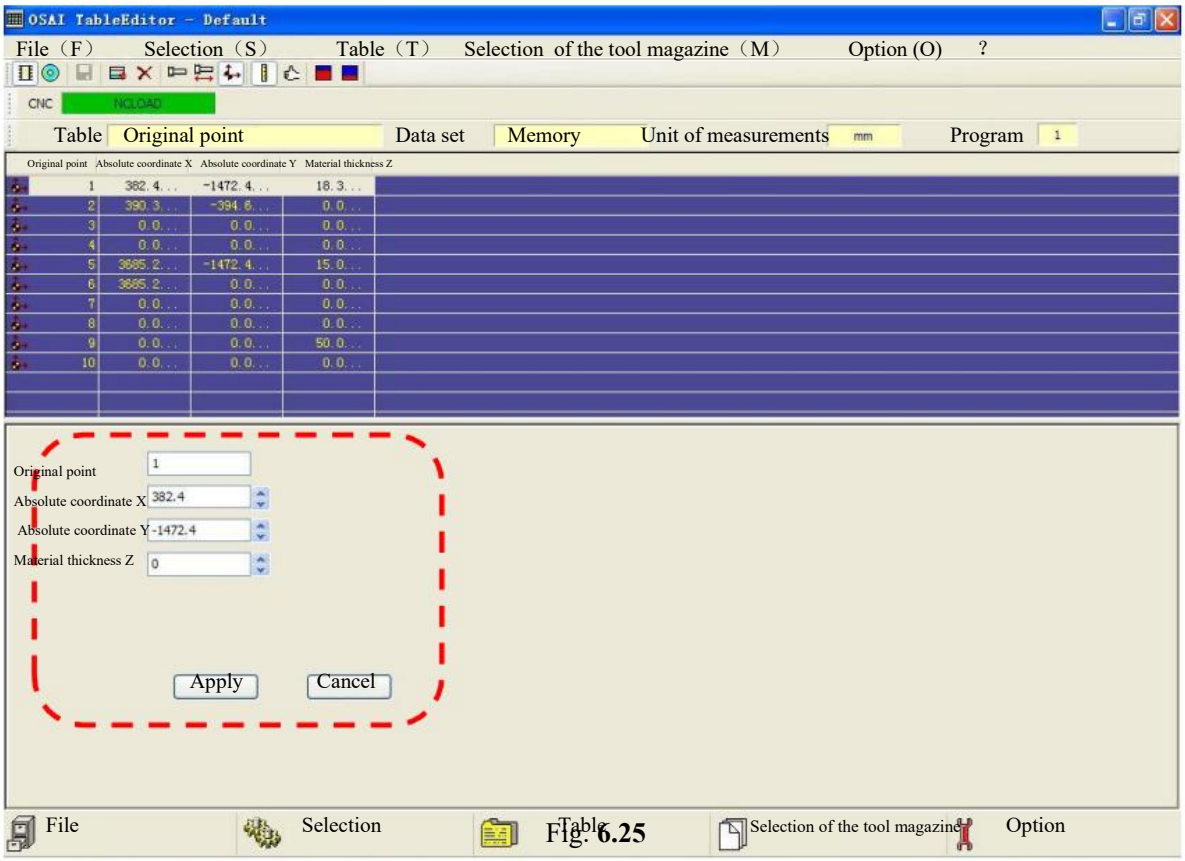



Fig. 6.25

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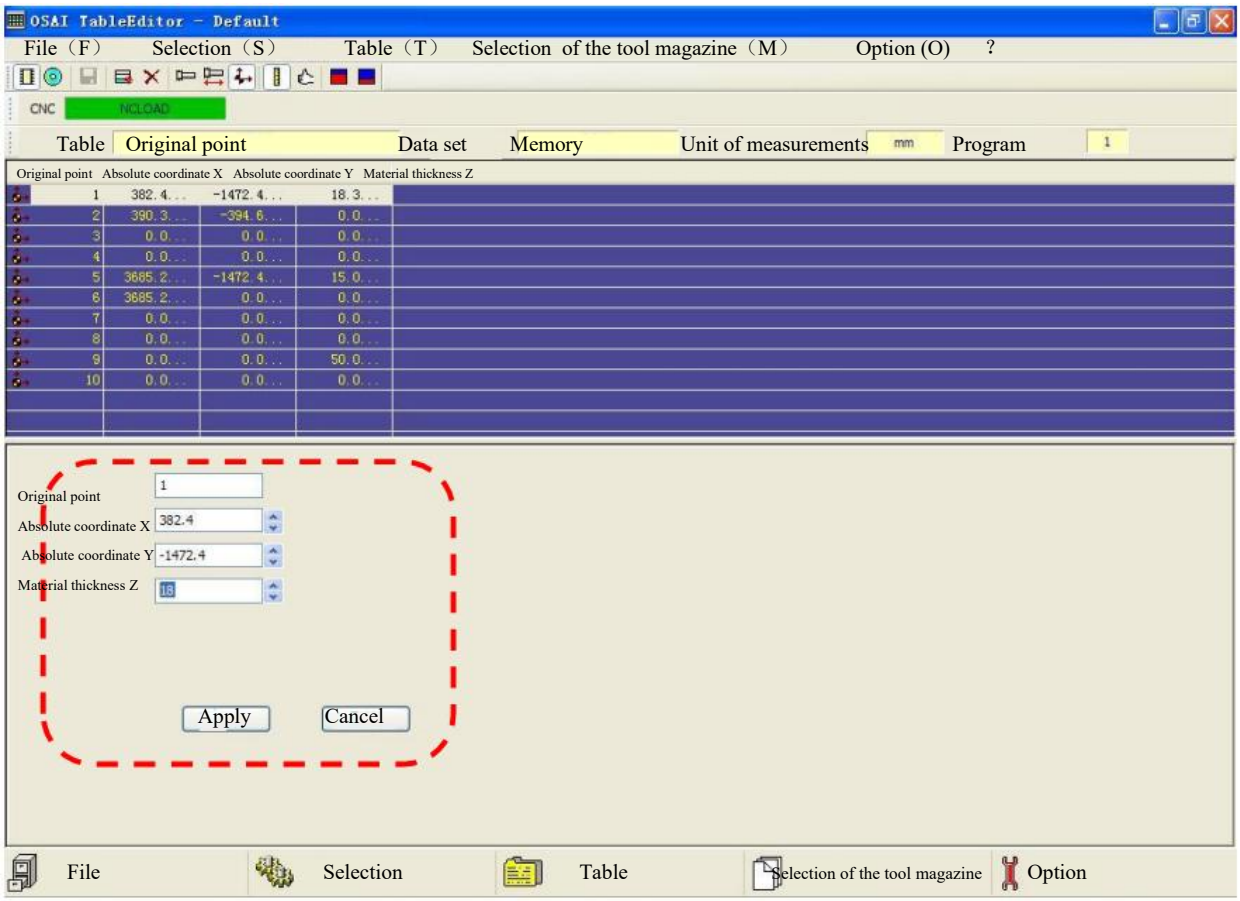


Fig.6.26

## 6.19 Setting the tool compensation

Setting the X-direction tool compensation

Annotations: X-direction tool compensation has been set at the factory, and if no abnormity of dimensions, do not change it.

1) Click the menus as shown in the following figures in proper sequence to enter the interface of setting the X-direction tool compensation



2) Tool 1-10 are the spindle tool, whose X-direction compensation is set to 0 (with no nee of change).

3) Tool11-24 are vertical drilling tools of gang drill. For them, correct the "X-offset" according to the X-direction deviation when drilling, and then save the data, as shown in Fig.6.27.

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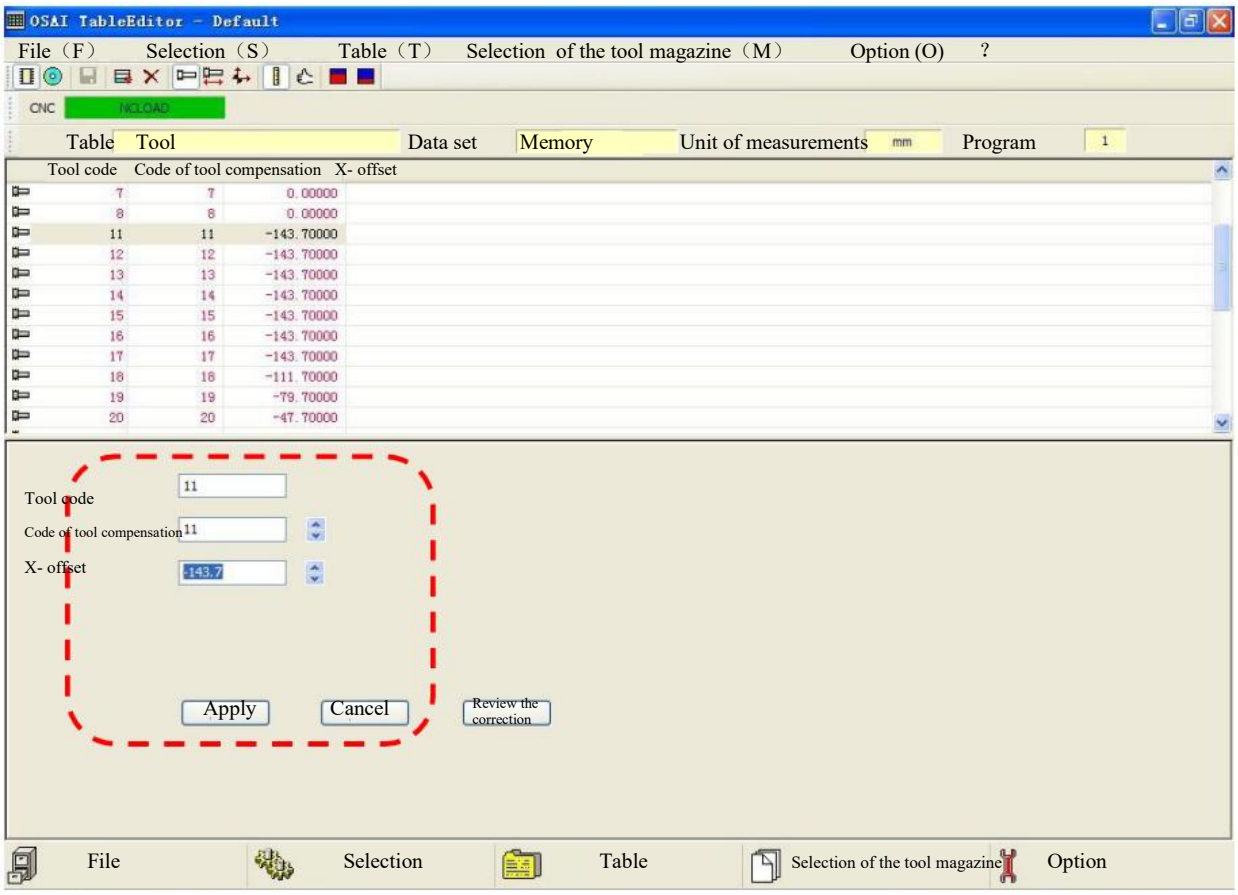



Fig.6.27

4) Tool 31-34 are Y- direction horizontal drilling tools of gang drill. For them, correct the "X-offset " according to the X-direction deviation when drilling; Tool 35-38 are X- direction horizontal drilling tools of gang drill. For them, correct the "X-offset " according to the depth deviation when drilling, as shown in Fig.6.28.

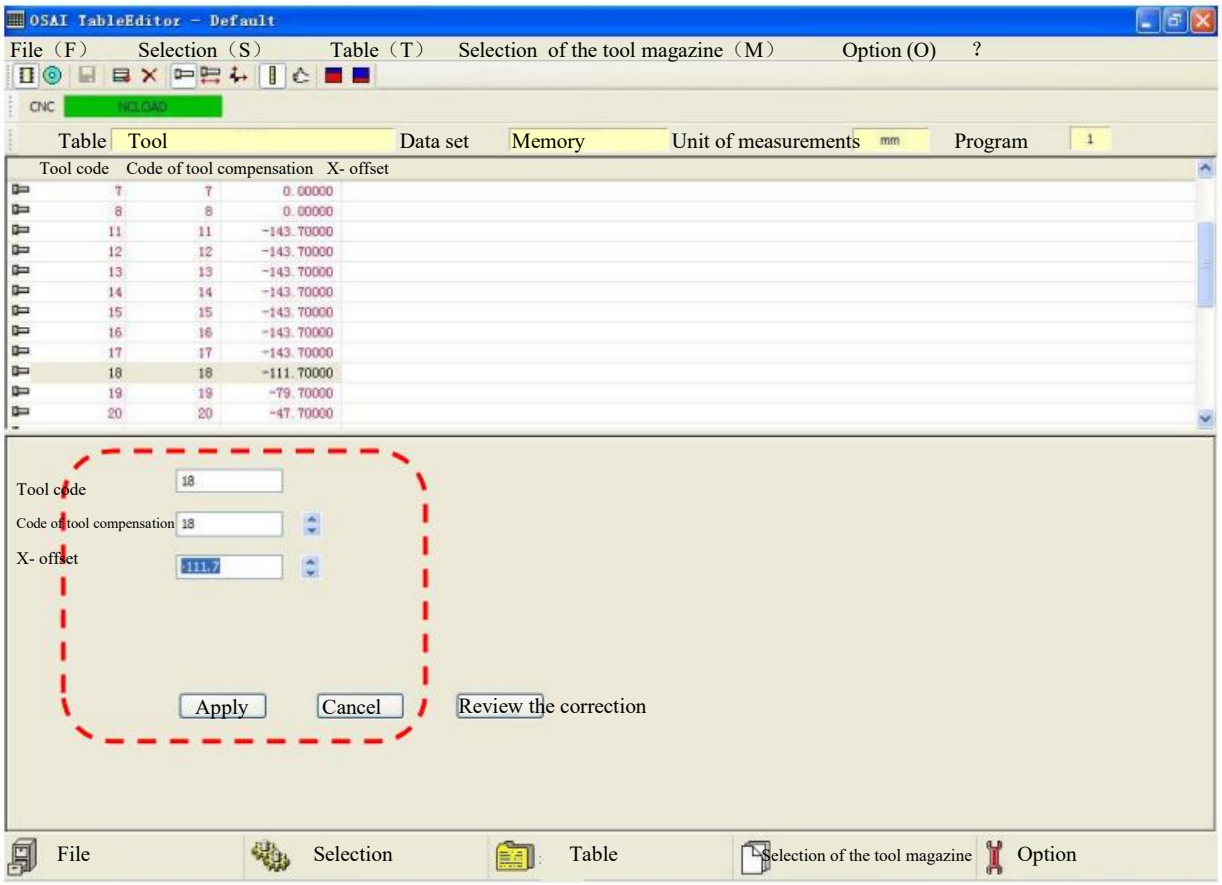
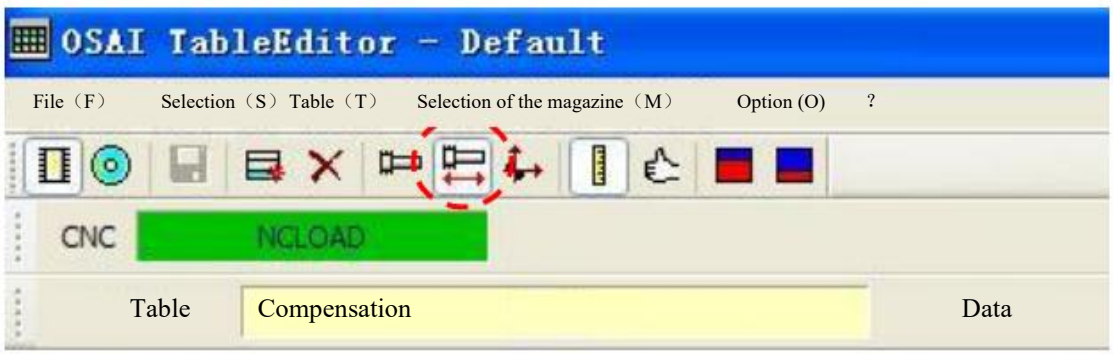



Fig. 6.28

Setting the tool compensation along Y, Z direction

1) Click the menus as shown in the following figures in proper sequence to enter the interface offs**etting the** Y, Z-direction tool compensation.

2） Tool 1-10 are the spindle tool, whose Y-direction compensation is set to 0 (with no need of change); whose Z-direction compensation can be obtained through automatic tool checking program (with no need of manual adjustment).

3） Tool 11-22 are vertical drilling tools of gang drill. For them, correct the "Y-offset " according to the Y-direction deviation when drilling and correct the "Z-offset " according to the depth deviation when drilling ,then save the data, as shown in Fig.6.29.

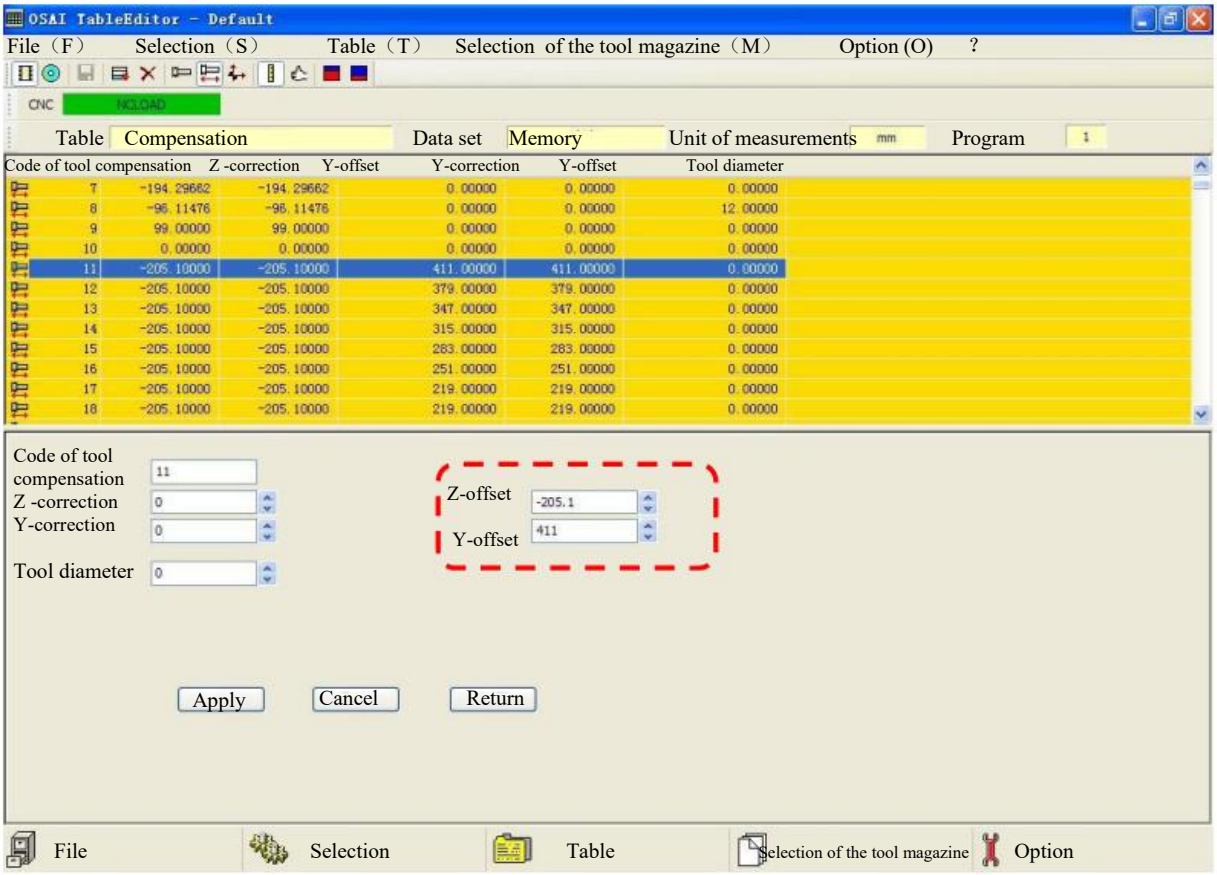



Fig. 6.29

4） Tool 31-34 are Y- direction horizontal drilling tools of gang drill. For them, correct the "Y-offset " according to the depth deviation when drilling and correct the "Z-offset" according to the Z- direction deviation when drilling; Tool 35-38 are X- direction horizontal drilling tools of gang drill. For them, correct the "X-offset" according to the Y-direction deviation when drilling, and correct the "Z-offset " according to the Z- direction deviation when drilling as shown in Fig.6.30.

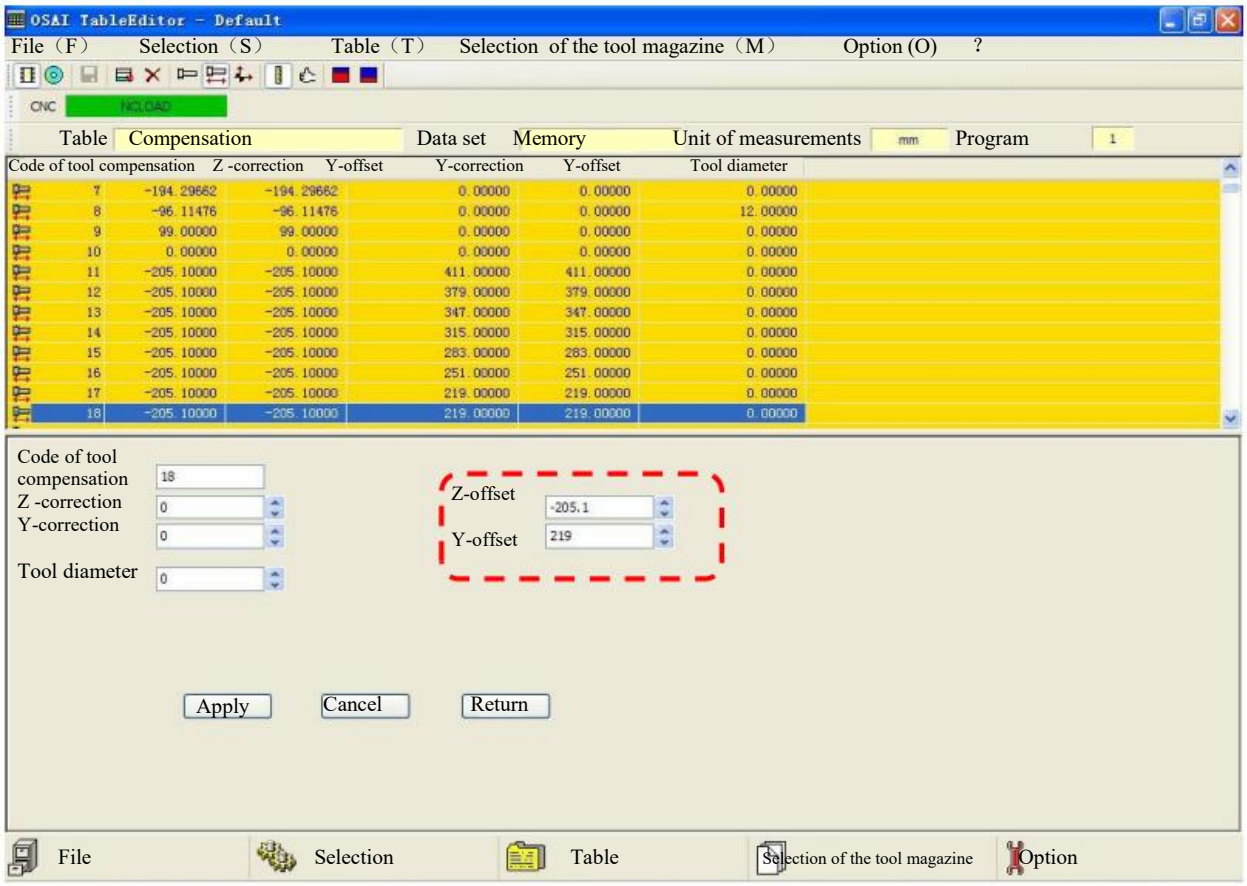
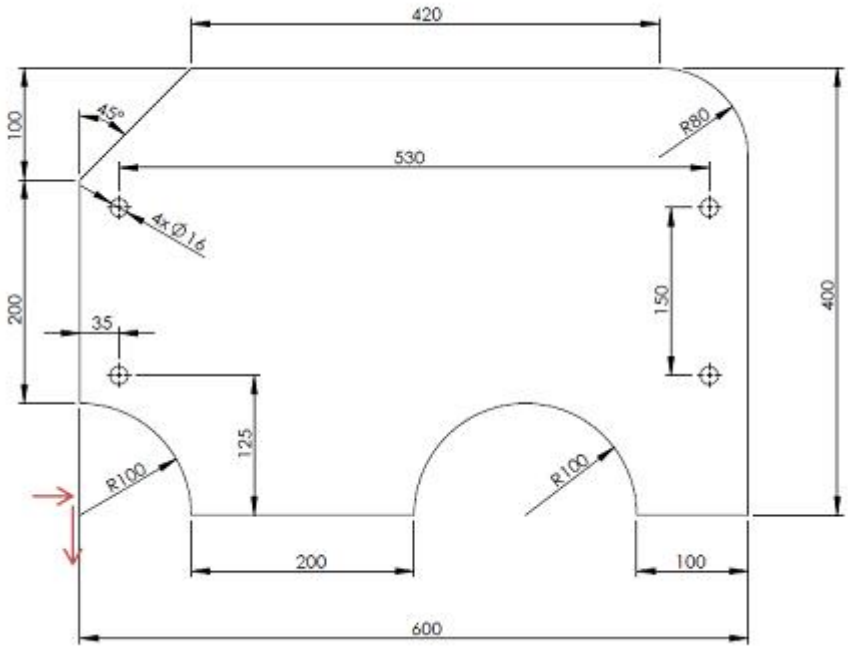



Fig. 6.29

## 6.20 Examples of written program



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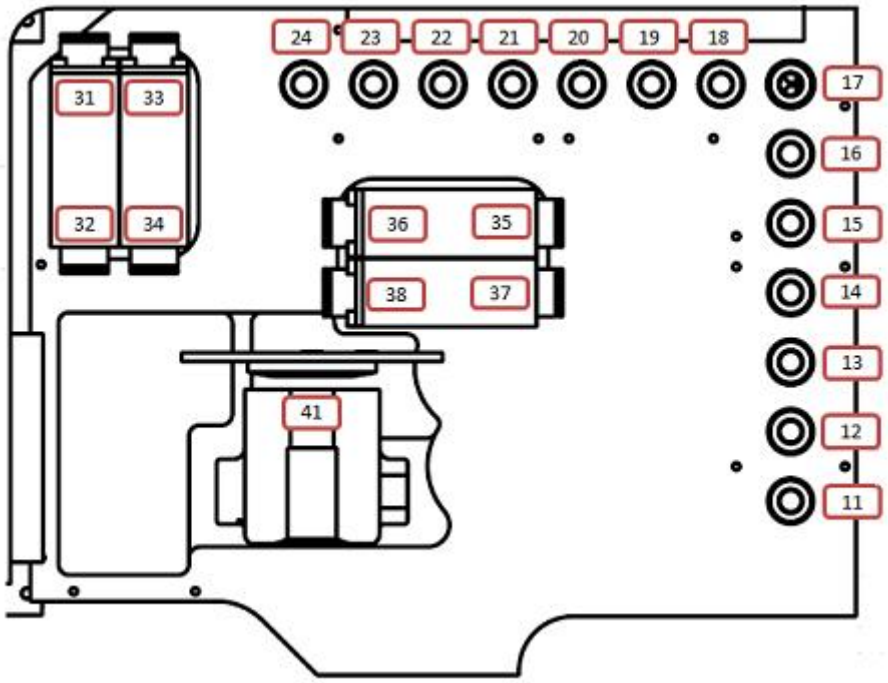
| **Program content** | **Description** |
|---|---|
| G90 | Absolute value programming |
| G80 | Cancel the cycle |
| G79 Z0 | Rising Z-axis to Z0 position |
| M170 | Switching on vacuum suction |
| (UAO,1) | Working coordinate1 |
| M06 T2 | Selecting the tool NO. 2 |
| M53 | Spindle cylinder down |
| M03 S12000 | Spindle rotation speed:12, 000 RPM |
| G17 | XY-working plane |
| G0 X50. Y0. | Moving to the external cutting location rapidly |
| G0 Z15. | Positioning to the surface of workpiece rapidly |
| G1 Z-12. F1500 | Cutting depth:12mm Speed :1500 mm/min |
| G1 X100. Y0. F3000 | Straight cutting speed 3000 mm/min |
| G1 X300. Y0. | |
| G2 X500. Y0. R100 | Arc cutting (clockwise) |
| G1 X600. Y0. | |
| G1 X600. Y320. | |
| G3 X520. Y400. R80 | Arc cutting (counterclockwise) |
| G1 X100. Y400. | |
| G1 X0. Y300. | |
| G1 X0. Y100. | |
| G2 X100. Y0. R100 | Arc cutting (clockwise) |
| G1 X100. Y-50. | Leaving form the work-piece to the cutting location |
| G0 Z35. | Ending the cutting and leaving the tool from the surface of work-piece |
| M05 | stop the rotation of spindle |
| M52 | Spindle cylinder up |
| G79 Z0 | |
| M63 T16 | Selecting N0.16 drilling bit of gang and drill cylinder down |
| M13 | Starting the operation of drilling hole |

| | |
|---|---|
| G0 X35. Y125. | Moving to the external cutting location rapidly (location of the first hole) |
| G0 Z20. | Move Z-axis to 20mm above the work-piece surface rapidly |
| G81 Z-10.5 R12. F1000 | Drilling hole cycle depth:10.5 mm speed :1000 mm/min |
| X35. Y125. | Drilling hole |
| X35. Y275. | |
| X565. Y275. | |
| X565. Y125. | |
| G0 Z35. | Ending the drilling hole and moving Z- axis to the work-piece surface rapidly |
| G80 | Cancel the drilling hole cycle |
| M62 | Drilling bit cylinder up |
| M15 | Stop the operation of drilling hole |
| G79 Z0. | Rising Z-axis to the original point of machinery |
| G79 Y0. | Returning Y-axis to the original point of machinery |
| M171 | Releasing the vacuum suction |
| M30 | Program end |

※ Gang drill No.and location



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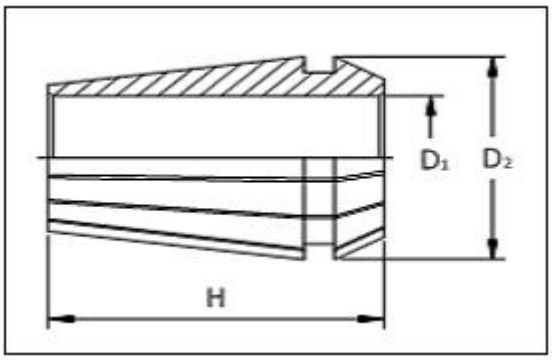
ISO30 HSK F63




| Type | D1 | H | D2 |
|---|---|---|---|
| ER 32 | 3-20 | 40 | 33 |
| ER 40 | 3-25 | 46 | 41 |

6.22.2 Wood shaving tool

a. Prohibited to use the tools with damage or poor balance.

b. Make sure the tools are sharp.

c. Before installing the tools into the tool holder, please make sure that the bonding surface is clean.

d. Tools must be clearly marked with manufacturer trademark, machining specification, max. rotation speed and other test data.

e. Tools should be kept properly, on which there should be no not be no fouling or scratches.

6.22.3 Drilling bit

The tools used for porous drilling are 10 mm drilling bit.

For the adjacent drilling shaft, the rotation direction is different from each other, which is divided into right-hand and left-hand, therefore attention should be paid while purchasing and installing them.

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## 6.21 Fixing the work-piece

This machinery fixes the work-piece through the suction produced by the vacuum pump. The method is to place the pre- machined work-piece on the vacuum suction block of worktable, and fix them through the suction produced by the vacuum pump.

In process of machining, if tools need to pass through the work-piece, adjust the location of the vacuum suction block on the worktable, in order not to hurt the vacuum suction block.

**Note: Before machining, confirm the work-piece must be sucked firmly, and if not sucked properly, force to machine the work-piece, which may result in flying the work-piece off to cause personnel injuries.**

## 6.22 Tool holder and tool

### 6.22.1 Tool holder

The tool holders used in the machinery are ISO 30 and HSK F63 taper handle, which must meet the following requirements:

a. The handle taper should be in accordance with the standard of DIN69871.

b. Dynamic balance grade must reach the spindle maximum rotation speed.

c. For the pull head, its accuracy and pattern of must comply with the requirements, which can be used only after the heat treatment.

d. Confirm there are no fouling or scratches, which shall influence the balance and combined with the spindle.

e. The specifications of clamping head are ER32, ER40, as shown in the following figure.

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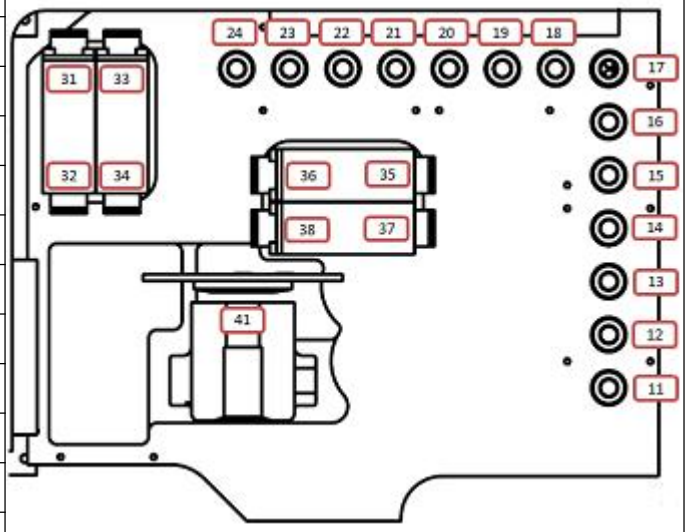
| Tool No. | X | Y | Machining surface |
|---|---|---|---|
| T11 | 0 | 0 | Top |
| T12 | 0 | 32 | Top |
| T13 | 0 | 64 | Top |
| T14 | 0 | 96 | Top |
| T15 | 0 | 128 | Top |
| T16 | 0 | 160 | Top |
| T17 | 0 | 192 | Top |
| T18 | -32 | 192 | Top |
| T19 | -64 | 192 | Top |
| T20 | -96 | 192 | Top |
| T21 | -128 | 192 | Top |
| T22 | -160 | 192 | Top |
| T23 | -192 | 192 | Top |
| T24 | -224 | 192 | Top |
| T31 | -325 | 215 | Front |
| T32 | -325 | 105 | Back |
| T33 | -293 | 215 | Front |
| T34 | -293 | 105 | Back |
| T35 | -105 | 128 | Left |
| T36 | -215 | 128 | Right |
| T37 | -105 | 96 | Left |
| T38 | -215 | 96 | Right |
| T41 | -220 | 68 | Top |



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6.22.2 Wood shaving tool

a. Prohibited to use the tools with damage or poor balance.

b. Make sure the tools are sharp.

c. Before installing the tools into the tool holder, please make sure that the bonding surface is clean.

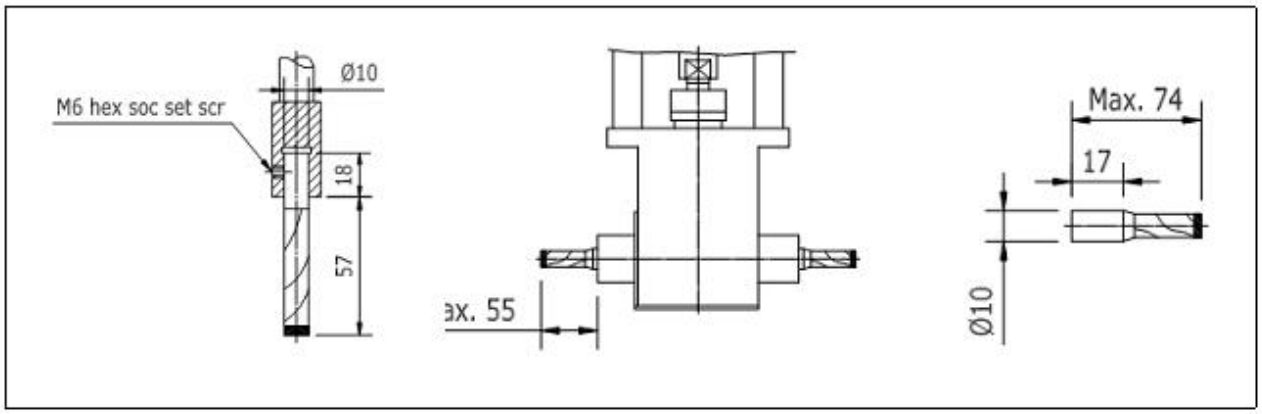
d. Tools must be clearly marked with manufacturer trademark, machining specification, max. rotation speed and other test data.

e. Tools should be kept properly, on which there should be no not be no fouling or scratches.

6.22.3 Drilling bit

The tools used for porous drilling are 10 mm drilling bit.

For the adjacent drilling shaft, the rotation direction is different from each other, which is divided into right-hand and left-hand, therefore attention should be paid while purchasing and installing them.



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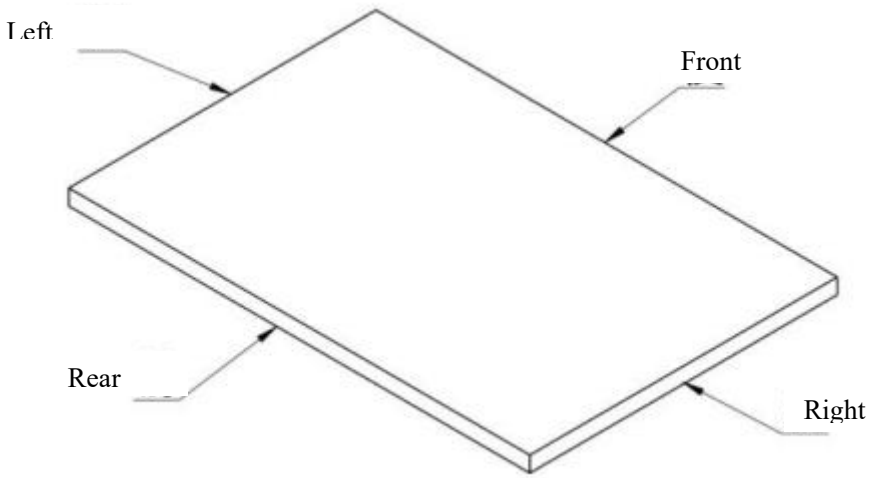

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# 7. Maintenance of machinery

This chapter is with regard to the pre maintenance, mainly for the maintenance technicians. All safety regulations are to protect machinery and prevent the accident. Please technicians do routine maintenance and safety inspection according to the following instructions:

## 7.1 General rule

In order to do a good job in maintenance work, please read and do the following work.

### 7.1.1 Preparations before maintenance

- At the beginning of maintenance, please check the machinery status first.
- Make a plan table for working area, working sequence, schedule and items.
- When doing maintenance work, please refer to repair detail list, structure drawing and function.
- Record the normal repair, maintenance and repair results.

### 7.1.2 Matters need attention for maintenance

- Please wear appropriate and safe work clothes.
- In the maintenance of machinery, please place the warning signs, in order to avoid other personnel to operate the machinery, which shall cause danger
- Please use the appropriate tools for the maintenance of machinery.
- When more than two personnel maintain the machinery, if need to move the machinery, they should inform each other clearly.
- Please use oil provided by our company or with the same level for maintenance.
- When the parts are damaged, please use the parts specified by original manufacturer or the proper parts for repair and maintenance.
- Please switch off the power supply before doing maintenance work.
- Do not arbitrarily change the parameter setting value set by machinery manufacturers.

## 7.2 Inspection and repair

Correct and periodic maintenance, inspection and daily cleaning shall make machinery work accurately, the operating function normal and prolong its service life.

### 7.2.1 Maintenance

- The machinery run-in period is about 100 h. During this period, please consider to control the machinery feeding speed, spindle rotation speed, feeding depth, in order to avoid the overload of spindle motor or servomotor and pay attention to abnormal voice at any time.
- Because during the run-in period, the parts of the friction will make grease become dirty, please add the grease after that.

### 7.2.2 Daily maintenance

- Clean the machinery every day, and keep the work environment clean.
- Water in the filter of FRL must be discharged, as shown in Fig.A.
- Check whether the amount of oil in the oil cup of FRL is enough, as shown in Fig.B.

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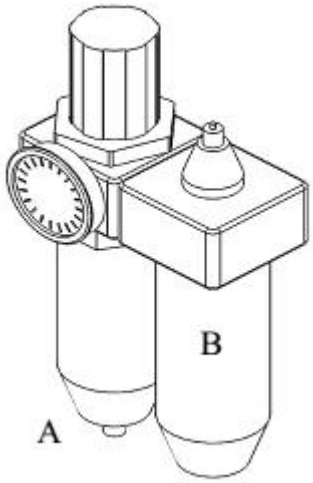


- Clean the strainer in cartridge filter of vacuum machine or blowing machine.
- Check the tool holder, nut and tool bundle are in good condition, and there should be no rust or scratches on the jointing surface.
- Clean the strainer of cooling fan for the electric box.
- Clean the dust cover for ball screw under the worktable.

7.2.3 Monthly maintenance

Items need lubricating oil and clean

- Sliding block of linear rail for the spindle.
- Clean and lubricate the rails of each axis.

7.2.4 Quarterly maintenance and repair

- Please supply grease to rack nuts of X, Y, Z-axis quarterly
- Supply grease to the rear and front bearings of rack quarterly.
- Check all the screws to review whether the screws are loose.
- Check whether the adjusting screws for X -axis reducer are loose.

7.2.5 Other miscellaneous

- Clean and check the brush of the spindle; if the brush is shorter than 10mm, please replace it with new one.
- Please switch off the power supply before cleaning the electrical cabinet. When cleaning the controller, please wipe with the dry cloth.
- Do not use the gasoline, solvent or other inflammable to clean the parts of the equipment; please use the non-flammable and nontoxic solvent that is certified as qualified.

## 7.3 Lubrication

The machine can be maintained in a good state by regular lubrication. The proper lubricating oil can reduce friction and overheat. When using the lubricating oil, the attention shall be paid to the following items:

- When adding the lubricating oil, please clean the oil bottle to prevent the foreign matter from falling into it.
- When pouring the oil into the oil bottle, please use the 60-100 screen for filtering.
- The oil products or equivalent oil products provided by us shall be used and it is prohibited to mix the oil at

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different levels to lubricate, in order to avoid poor operation of the machine or poor lubrication.

### 7.4 Maintenance of electric spindle

1. The conical surface of the knife handle and the female conical surface of the electric spindle shall be kept clean completely at any time, and shall be free from any dust, grease, coolant, oil, metal shavings or corrosion. At the beginning of using the electric spindle, please check the above requirements. The above surface shall be cleaned with clean soft cloth after the end of the work every day.
2. Some material to be machined is sticky, such as wax etc. When machining such material, it easily sticks to the space between the conical surface of the knife handle and the female conical surface of the electric spindle so that the electric spindle loses the dynamic balance seriously. Therefore the electric spindle will vibrate rapidly when rotating at high speed, resulting in rapid damage of the bearing.
3. Please do not use the compressed air to clean the female conical surface of the electric spindle, otherwise the dust may enter the bearing of the electric spindle and then cause the bearing being damaged.
4. In case that the electric spindle will not be used for a period, please ensure that it shall not be affected by the natural environment, especially the moisture, dust and the damage of the air or storage environment in other forms

### 7.5 Maintenance of multi-axis drilling device

Each time when it runs for 200 h, inject 5g lubricating oil into the zerk as shown in Fig. 7.1(A).

Each time when it runs for 100 h, inject 8g lubricating oil into the zerk as shown in Fig. 7.2(B).

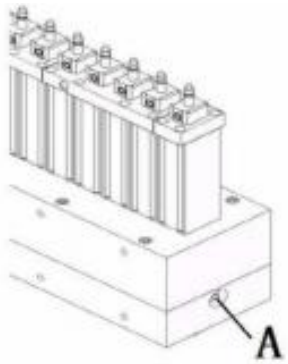


Fig.7.1

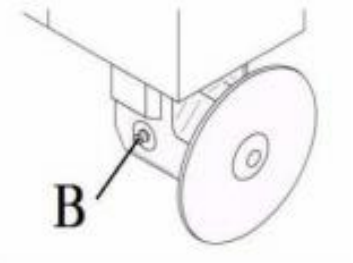


Fig. 7.2

**Note: the zerk shall be cleaned before lubricating. The zerk shall be free from any dirt. For more detailed information, please refer to detailed installation, use and maintenance manual.**

### 7.6 Maintenance of the ball screw

The dust and other sundries attached to the ball screw shall be cleaned each shift. After running for 20000 h, the lubricating grease of bearing seat of Z-axis lead screw must be replaced.

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**Note: the work cannot be conducted by any person other than the repair personnel of Nangxing.**

### 7.7 Maintenance of linear guideway

Each time when it runs for 200 h, add grease to each linear guideway and oilgears.

1. Add the grease to each zerk with the grease gun till the grease overflows.

2. Clean the overflowing grease with the soft cleaning cloth.

If the sliding block or guideway surface is too dry, it means insufficient lubrication, so it should lubricate once again or shorten the lubrication interval. In order to protect the worktable and workpiece, the machine tool shall be placed outside of the working range.

### 7.8 Maintenance of vacuum pump

The location for placing the pump shall be isolated from other production equipment, and shall be ventilated and filled with dry air. The minimum interval between the vacuum pump and the objects around shall be 100mm, to ensure there is enough air for cooling. The ambient temperature shall not exceed 45℃.

a. The maintenance can only be conducted by professional repair personnel according to Fig. 7.3, 7.4, 7.5.

b. Switch off the power switch before maintenance. Since compressed air makes the vacuum pump generate high temperature, it shall let it cool down before maintenance, as shown in Fig.7.3(B).

c. Remove the right front shield, take out the filter elements F1, F2, F3 and clean the filter elements (replace in case of much more greasy dirt) and the inside casing of the filter elements with the air blow gun, as shown in Fig.7.3 and 7.4 (C), (D), (E), (F), (G), (H).

d. After the vacuum pump runs for 3000 h, it should remove the blind flange and check the width of the blades; if the width is less than 41mm, the blade shall be replaced; the dirt around the blade shall be cleaned, as shown in Fig7.4 and 7.5. (I), (J), (K), (L), (M), (N).

e. After the vacuum pump runs for 3000 h, add 5g grease to two zerks with the grease gun, as shown in Fig.7.5 (O), (P) in (such maintenance shall be conducted in the running state).

**Note: the above operation must be carried out by professional repair personnel! And such operation must be conducted after the machine is stopped and power is cut off.**

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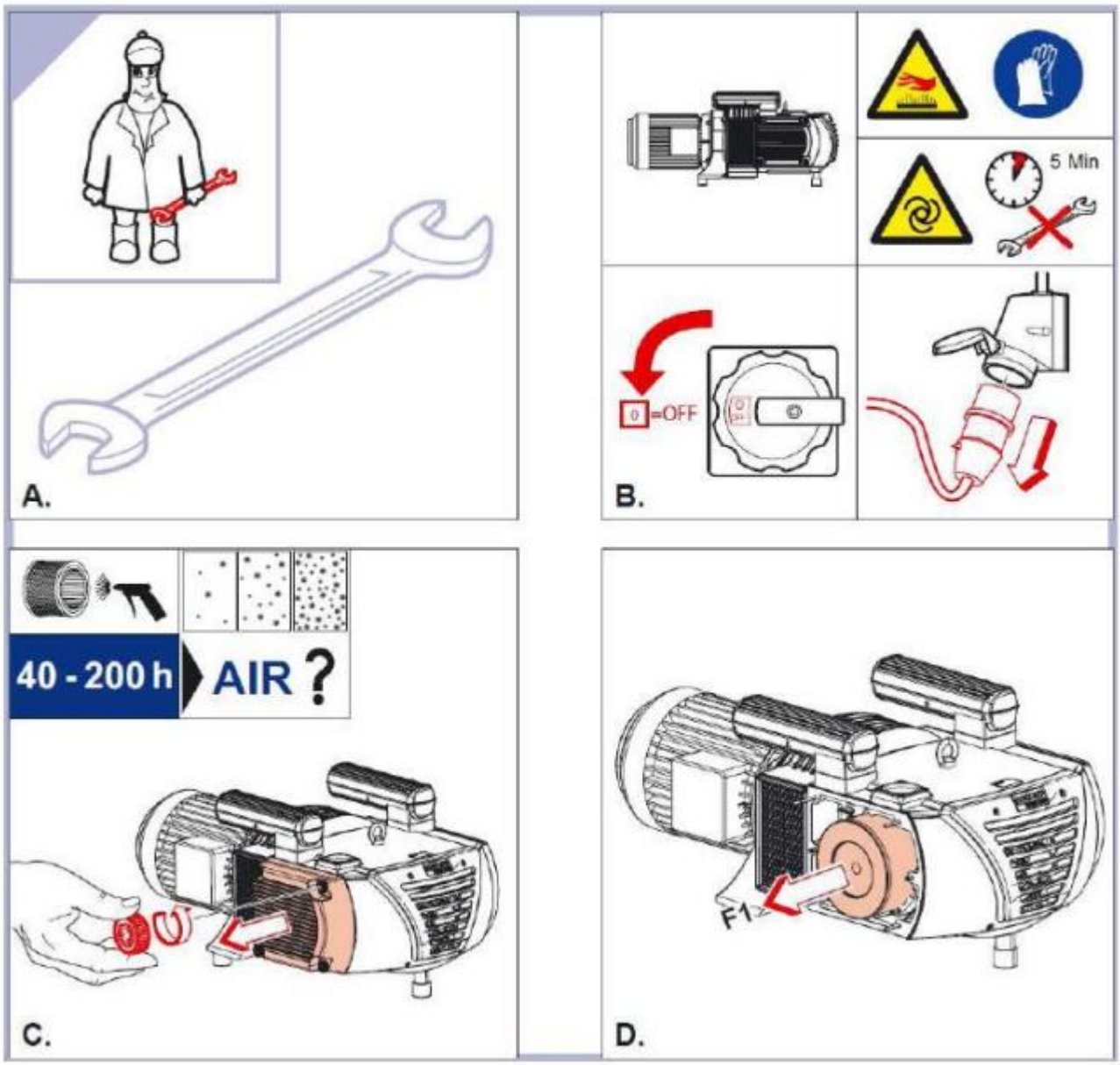


Fig.7.3

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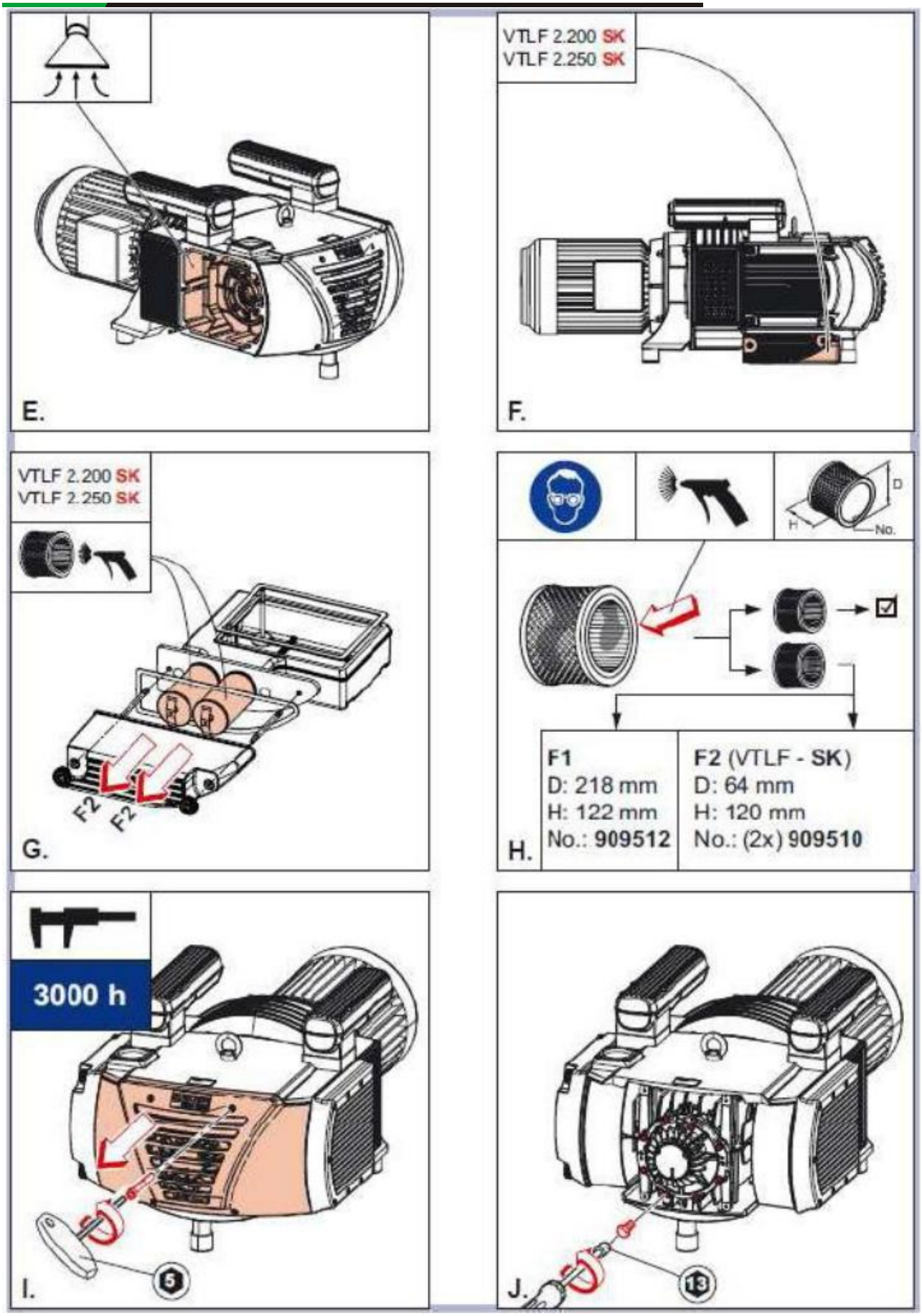


Fig.7.4

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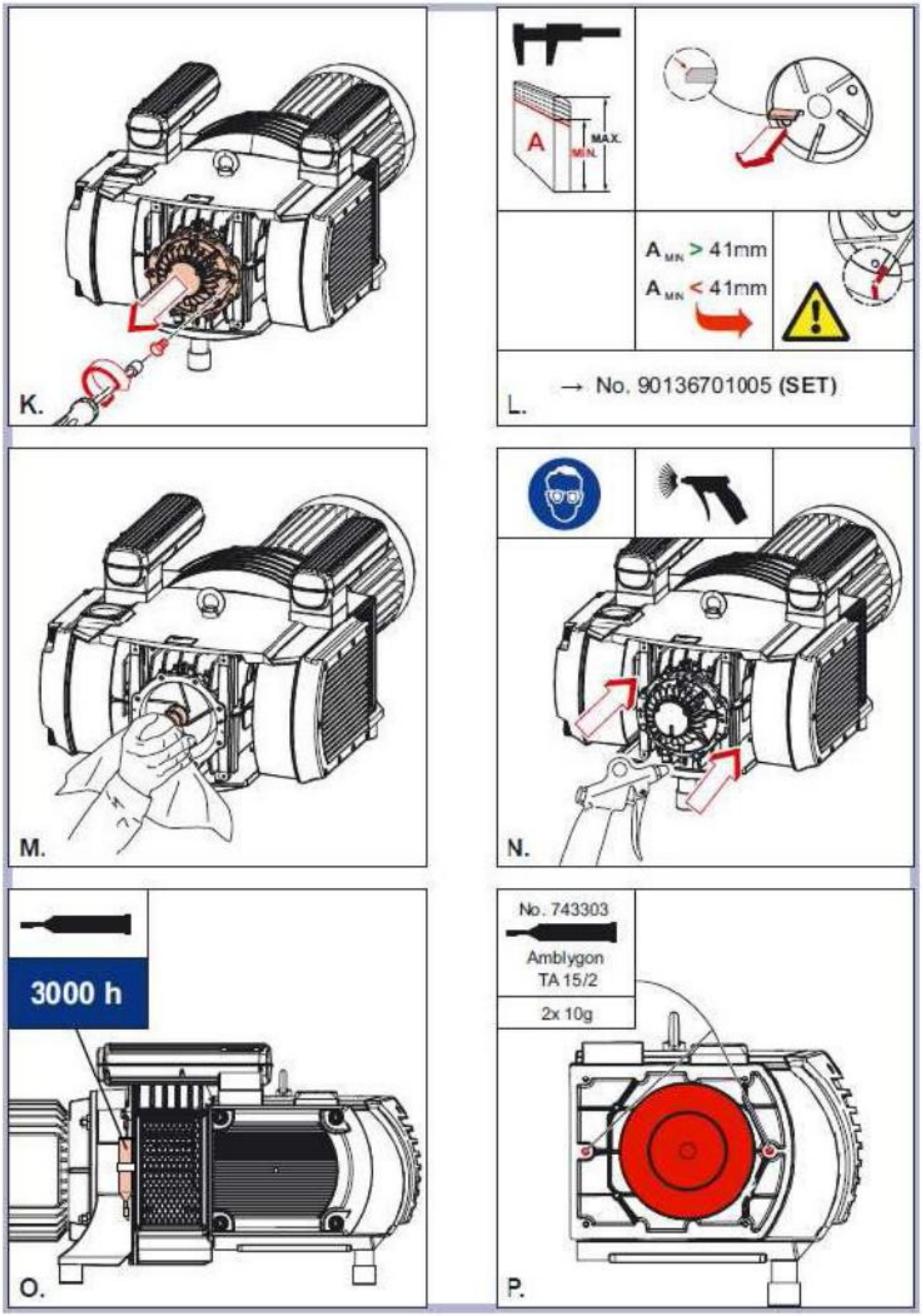


Fig.7.5

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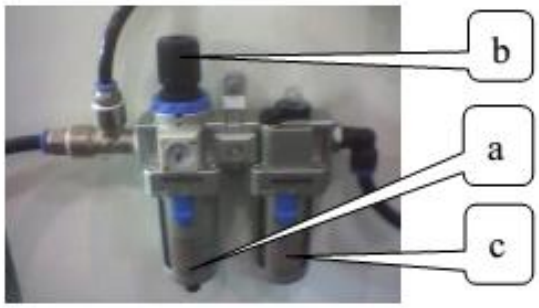
●7.9 Maintenance of FRL for air supply




As shown in the figure on the right

a: Air conditioning filter

b: Adjusting knob

c: Atomized lubricator

Operation of switch valve: open the air source by anticlockwise rotating by 90°.

Close the air supply by pressing down the switch valve and clockwise rotating by **90**°.

FRL unit can be used to lubricate the cylinder, so it is not necessary to maintain the cylinder again. The oil level of the atomized lubricator shall be inspected each week, and filled up to the turbine oil if necessary, in order to maintain normal lubrication of the pneumatic components. Adjust the flow of the lubricating oil by adjusting knob. In case of the reference value of 1000 L/min, adjust the atomized lubricator to 1-2 oil drops every minute. The pressure of the compressed air shall be within the range of 5-6 bar. When the system pressure (as indicated by the pressure gage) is reduced significantly, it should clean or replace the filter element in real time. Inspect the air cleaner of the compressed air regularly and discharge the condensate in the container.

**Note: in case of maintaining the equipment, the system shall be in pressure-free state.**

●7.10 Pressure-regulating device

The filter for pressure regulating is shown as the figure on the right.

Inspect the filter for compressed air regulating each week, and discharge the condensate in the container; clean or replace the filter element regularly.

**Note: the set pressure shall not be changed without permission!**

●7.11 Maintenance of lubricant pump

Inject the lubricating oil into the lubricant pump on a regular basis.

In case that the lubricating oil in the lubricant pump is lower than the lowest scale, inject the lubricating oil into the zerk.

**Note: for more information, please refer to the detailed instruction manual.**

●7.12 Electrical cabinet

The electrical cabinet is an important part that can ensure normal operation of the electrical system even the whole machine tool. Only the good daily maintenance can guarantee continuous and reliable operation of the equipment.

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Maintenance:

1. Regularly inspect the sealing gasket of the door, cover, lock of and around the door frame of the electrical cabinet and ensure them in good state.
2. Clear away the gathered dust in the electrical cabinet and keep the surface of the electrical components clean.
3. Repair or replace the electrical components that are about to damage.
4. Upon maintenance, clear up the internal wiring to make it be tidy and perfect.

**Note: for more information, please refer to the detailed instruction manual.**

**Note: the above operation must be conducted by electrician.**

**The operation cannot be conducted until the machine is stopped and the power is cut off.**

**It is not allowed to clean the electric appliances by using the compressed air!**

● 7.13 Air-conditioner of the cabinet

The equipment is equipped with a 2000 W cabinet air conditioner (as shown in figure on the right). According to the operating requirements of the electrical cabinet, the refrigeration temperature of the air conditioner has been set as 30°C when delivery.

Maintenance:

Regularly inspect whether the external filter screen of the air conditioner is blocked or not. The dust on the screen must be cleared away in real time if necessary, otherwise the air conditioner may be out of order due to insufficient heat dissipation, which will have a strong impact on the normal operation of the electrical appliance within the equipment cabinet.

**Note: the set temperature cannot be adjusted without permission, so as to avoid affecting normal operation of the electrical appliance due to moisture condensation arising from lower temperature within the electrical cabinet. Maintenance cannot be conducted until the machine is stopped and the power is cut off!**

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# 8. Trouble removal

## 8.1 Switch on the main power supply

8.1.1 In case of switching on the main power supply, no display on the screen:

a. Firstly measure whether the supply voltage is correct or not by the electricity meter.

b. Whether the power line and signal line of the screen are connected properly.

8.1.2 In case of switching on the power supply of the controller, no display on the screen:

a. Whether the power supply DC24Vof the controller is correct or not.

b. Whether the power line and signal line of the screen are connected properly.

8.1.3 In case of implementing to the mechanical origin, any axis of the machine cannot go back to the origin:

a. Check whether the servo driver system is normal or not, whether there is an alarm or not.

b. Whether the zeroing signal location can operate normally or not.

8.1.4 Error message when opening the controller

Eliminate according to the description and then press the reset key to clear the error message.

## 8.2 The mechanical function is abnormal

8.2.1 The X, Y and Z-axis cannot move axially or with abnormal noise.

a. Check whether the servo driver system is normal or not, whether there is an alarm, causing the servo motor cannot run.

b. The coupling gets loose or damaged, causing it cannot run.

c. The reduction gear or gear gets loose.

d. The rotating gears, teeth bank and sliding block are damaged.

8.2.2 The spindle cannot rotate

a. Check whether the converter is normal, whether there is an alarm, causing that the spindle motor cannot run.

b. The starting circuit connected to the converter is normal or not.

c. Whether the starting spindle of the plc-output can output normally or not.

d. Whether the power line connected from the converter to the motor is damaged or broken or not.

e. The converter parameter is set wrongly.

8.2.3 The spindle runs with loud noise

a. The balance of the tool used does not meet standard requirements, so replace it with standard tool.

b. The machine is not warmed up usually, which has caused that the spindle bearing was damaged.

c. The tool is not sharp enough, because it is not replaced timely, which has caused that the spindle bearing

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was damaged.

d. The spindle speed is too high and does not meet the highest speed of the tool.

e. The spindle speed is matched improperly with the cutting speed.

8.2.4 Spindle overheating

a. The spindle fan fails or the heat dissipation channel is blocked, causing poor heat dissipation.

b. The spindle load is too much, which reduces the cutting output.

c. The tool is not sharp enough.

8.2.5 Stalling during cutting

a. The feeding speed of cutting is too fast, the spindle speed is not high enough, matching improperly.

b. The spindle load is too much, which reduces the cutting output.

c. The tool is not sharp enough.

8.2.6 The up and down cylinder cannot be operated or is not smooth

a. The air pressure is not enough, and the lubricating oil for the three-point combination is not enough either.

b. The oil seal within the cylinder has been damaged.

c. he solenoid valve winding has been damaged.

d. The circuit is broken and the voltage command cannot be transmitted to the solenoid valve.

8.2.7The tool cannot be changed automatically

a. The air pressure is not enough, and large air consumption is required when changing tool, so enough air pressure is required.

b. The reed induction switch in place of the cylinder does not function, including up and down reed induction switch of the spindle and brush.

c. The solenoid valve winding has been damaged.

## 8.3Abnormal operation

8.3.1 Insecure sorption of vacuum

a. The carbon brush pieces of the vacuum machine have been consumed and cannot produce enough flow and pressure, so it should replace them.

b. The filter is not cleaned and blocked.

c. The vacuum tube is cracked, resulting in air leakage.

d. The worktable is not cleaned up, resulting in air leakage from the gap.

e. The surface of workpiece is not flat or bending.

8.3.2 The tool gets loose or broken

a. The specification of the chuck is wrong, which causes that the tool cannot be clamped.

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b. The nut is not locked tightly

c. The tool is too long.

d. The feeding speed is too fast.

e. The single cutting amount is too large.

8.3.3Travel limit appears

a. Under manual operation, the machine exceeds the travel range by manual operation and must be moved back in reverse direction.

b. Under automatic operation, the value of the program is incorrect or the working size is too big, which exceeds the machine range.

c. The coordinate of the workpiece is set wrongly or does not meet requirements, causing X, Y-axis exceeds the travel range.

d. The compensation value of the tool length is incorrect or has not been set, causing Z-axis exceeds the travel range.

## 8.4 Bad quality of machined workpiece

8.4.1 The machining workpiece deviates

a. The coordinate of the workpiece is selected wrongly or the set value is wrong.

b. The vacuum suction is not enough, causing the machining workpiece moves.

c. The set value of diameter of the tool is entered wrongly.

8.4.2 Insufficient precision of machining workpiece

a. The level of the machine tool is poor and needs to be re-calibrated.

b. The perpendicularity between the spindle and the worktable is not enough and needs to be re-calibrated.

c. The perpendicularity between X and Y-axis is not enough and needs to be re-calibrated.

b. The axial back clearance is too big and needs to be re-calibrated.

d. The servo responsivity is too low and needs to be adjusted, but please note that the vibration of the machine cannot be produced.

8.4.3 Poor surface of machining workpiece

a. The workpiece surface is rough which may be arising that the tool is not balance or not sharp enough.

b. The spindle speed is not enough, with obvious tool marks on the surface. It should increase the rotate speed.

c. The tool is not kept properly, the unfilled corner is found on the blade. It should replace it with good one.

**Note: for detailed setting, maintenance, alarm information etc. of the cabinet air conditioner, please refer to the operation instruction of the cabinet air conditioner delivered with the machine.**

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# Appendices

● CNC alarm removal manual

The alarm of MGK10 CNC machining center is composed of PLC alarm and CNC alarm.

The alarm information with a yellow background is PLC alarm (Fig.1) which can be cleared away by PLC reset key (Fig.2) after removing the fault.


(Fig. 1)

(Fig. 2)

The alarm information with a red background is CNC alarm (Fig.3) which can be cleared away by CNC reset key (Fig.4) after removing the fault.


(Fig. 3)

(Fig.4)

**Note: after removing the alarm, in case of inspecting the circuit, such operation shall be conducted by the professional electrician with qualification certification and please contact the supplier at the same time!**

**Annotations: if the alarm information cannot be obtained from the list, please contact the supplier.**

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## PLC Alarm List

| | |
|---|---|
| 001 | Emergency stop |

The equipment is in emergency stop state.

1. If the alarm is at the same time as the other alarms, please remove other alarms firstly;
2. It should confirm that all emergency stop buttons is in loosened state, and the electric cabinet door is in off state.
3. Press the “servo start” button, then the button lamp is on;
4. Click the button “remove emergency stop” on the lower right corner with the mouse, then the emergency stop should be removed. If the emergency stop has not been removed, it should check the emergency stop link on page 6 of the circuit diagram and contact the supplier.

| | |
|---|---|
| 002 | Standby alarm point |

| | |
|---|---|
| 003 | Later on...the machine being opened |

The machine is being opened, and the alarm will be removed automatically later.

| | |
|---|---|
| 004 | Standby alarm point |

| | |
|---|---|
| 005 | Loading of the left worktable not completed |

Check the left worktable for the following items:

1. The vacuum pressure shall be reached (the vacuum pump shall be opened);
2. The registration mast shall be in declining state;
3. The supporting plate shall be in declining state;
4. The sucker shall be in suction state;
5. The workpiece shall be in suction state.

| | |
|---|---|
| 006 | Loading of the right worktable not completed |

Check the right worktable for the following items:

1. The vacuum pressure shall be reached (the vacuum pump shall be opened);
2. The registration mast shall be in declining state;
3. The supporting plate shall be in declining state;
4. The sucker shall be in suction state;
5. The workpiece shall be in suction state.

| | |
|---|---|
| 007 | Standby alarm point |

| | |
|---|---|
| 008 | Encoder port of the hand wheel set wrongly |

Turn off the computer, cut off the equipment power supply and power on the equipment again after 10 seconds. if the alarm is still not removed, please contact the supplier.

| | |
|---|---|
| 009 | Hand wheel opened wrongly |

Turn off the computer, cut off the equipment power supply and power on the equipment again after 10 seconds. if the alarm is still not removed, please contact the supplier.

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| | |
|---|---|
| 010 | Attention! Overtravel |

Check whether the travel switch of X, Y, Z, W-axis is pressed to the limit stop or not. If pressed, please select the hand wheel mode and move the axis in overtravel state from the overtravel location.

| | |
|---|---|
| 011 | Not zeroing |

Click the zeroing button to make the equipment return to zero.

| | |
|---|---|
| 012 | Spindle being in manul operation |

The alarm is the prompt information when the spindle is rotating under manual operation mode; if exit from the manual operation state, the alarm will be removed automatically.

| | |
|---|---|
| 013 | Hand wheel being enabled |

The alarm is the prompt information when the equipment is in the hand wheel mode; if exit from the hand wheel mode, the alarm will be removed automatically.

| | |
|---|---|
| 014 | Service life expired-please contact the machine manufacturer |

Please contact the supplier.

| | |
|---|---|
| 015 | Waiting for the spindle to stop |

After the spindle stops rotating, the alarm will be removed automatically.

| | |
|---|---|
| 016 | Attention please! Idle mode of the hand wheel already enabled. |

The alarm is the prompt information when the equipment is in hand wheel idle mode; in case of exit from the hand wheel idle, the alarm will be removed automatically

| | |
|---|---|
| 017 | Automatic zeroing |

The equipment is returning to zero automatically; after zero resetting, the alarm will be removed automatically

| | |
|---|---|
| 018 | Feed hold |

Due to non-compliance of the machining conditions, the equipment suspends feeding.

If other alarms are produced at the same time, please remove relevant alarms.

| | |
|---|---|
| 019 | Lubrication fault |

The lubricating system fails, please contact the supplier

| | |
|---|---|
| 020 | Tool magazine not returned |

The tool magazine is not in return state.

1. Check whether the pressure of the compressed air reached the standard or not;
2. It should confirm the actual location of the tool magazine, if the tool magazine has reached the returned location, check whether the sensor indicator light in the returned location of the tool magazine is on or not, if not, the sensor fails or the wiring gets loose; if on, check the E305 input point of “input and output” interface is bright in green light or not, if not, the wiring gets loose.

   The loose wiring above shall be checked according to page 26 of the circuit diagram;
3. If the tool magazine has not reached the returned location, please contact the supplier.

| | |
|---|---|
| 021 | Tool magazine prohibited to rotate |

The tool magazine is in prohibited rotating state.

1. If the tool magazine is not in return state, the rotating will be prohibited.

2. Check the sensor in the returned location of the tool magazine.

| | |
|---|---|
| 022 | Warning! The spindle stops rotating temporarily |

Because the conditions are not met, the spindle stops rotating temporarily.

1. The equipment shall be operated after removing other alarm information produced at the same time.

2. The last program of the spindle rotating is not performed completely;

3. If the alarm is still not removed, please contact the supplier.

| | |
|---|---|
| 023~024 | Standby alarm point |

| | |
|---|---|
| 025 | X-axis overtravel |

Check whether the travel switch of the X-axis is pressed to the limit stop or not, if pressed, select hand wheel or JOG manual mode, and move the X-axis from overtravel location.

If the travel switch of the X-axis is not pressed to the limit stop, it should check the wiring of the limit switch according to page 19 of circuit diagram; if the fault cannot be removed, please contact the supplier.

| | |
|---|---|
| 026 | Y-axis overtravel |

Check whether the travel switch of the Y-axis is pressed to the limit stop or not, if pressed, select hand wheel or JOG manual mode, and move the Y-axis from overtravel location.

If the travel switch of the Y-axis is not pressed to the limit stop, it should check the wiring of the limit switch according to page 19 of circuit diagram; if the fault cannot be removed, please contact the supplier.

| | |
|---|---|
| 027 | Z-axis overtravel |

Check whether the travel switch of the Z-axis is pressed to the limit stop or not, if pressed, select hand wheel or JOG manual mode, and move the Z-axis from overtravel location.

If the travel switch of the Z-axis is not pressed to the limit stop, it should check the wiring of the limit switch according to page 19 of circuit diagram; if the fault cannot be removed, please contact the supplier.

| | |
|---|---|
| 028 | W-axis overtravel |

Check whether the travel switch of the W-axis is pressed to the limit stop or not, if pressed, select hand wheel or JOG manual mode, and move the W-axis from overtravel location.

If the travel switch of the W-axis is not pressed to the limit stop, it should check the wiring of the limit switch according to page 19 of circuit diagram; if the fault cannot be removed, please contact the supplier.

| | |
|---|---|
| 029~032 | Standby alarm point |

| | |
|---|---|
| 033 | Servo loop not formed |

Turn off the computer, cut off the equipment power, 10 seconds later, power on the equipment again, if the alarm is still not removed, please contact the supplier.

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| | |
|---|---|
| 034 | Servo driver fault |

Confirm whether the action of the equipment before producing an alarm is abnormal or not, e.g. mechanical impact etc.;

1. Check the LED display of the servo driver, if the alarm information is flashing, write down the alarm information and view the servo manual;
2. Press the red button of thermorelay-3QF1 to cut off the power supply of the servo driver, 10 seconds later, press the black button, the servo driver is powered on; if the alarm information of the driver is still flashing, please contact the supplier;
3. Remove the emergency stop: if the former alarm is caused by mechanical impact, it should move the impacted shaft to the safe location in hand wheel mode and then confirm the equipment state; if no abnormality, the production can be conducted.
4. In case that such alarm is produced once again after removing the emergency stop, please contact the supplier.

| | |
|---|---|
| 035 | X-axis driver fault |

Confirm whether the action of the equipment before producing an alarm is abnormal or not, e.g. mechanical impact etc.;

1. View the LED display of servo driver-3U1, if the alarm information is still flashing, write down the alarm information and refer to the servo manual;
2. Press the red button of thermorelay-3QF1 to cut off the power supply of the servo driver, 10 seconds later, press the black button, the servo driver is powered on; if the alarm information of the driver is still flashing, please contact the supplier;
3. Remove the emergency stop: if the former alarm is caused by mechanical impact, it should move the impacted shaft to the safe location in hand wheel mode and then confirm the equipment state; if no abnormality, the production can be conducted.
4. In case that such alarm is produced once again after removing the emergency stop, please contact the supplier.

| | |
|---|---|
| 036 | Y-axis driver fault |

Confirm whether the action of the equipment before producing an alarm is abnormal or not, e.g. mechanical impact etc.;

1. View the LED display of the servo driver-3U2, if the alarm information is still flashing, write down the alarm information and refer to the servo manual;
2. Press the red button of thermorelay-3QF1 to cut off the power supply of the servo driver, 10 seconds later, press the black button, the servo driver is powered on; if the alarm information of the driver is still flashing, please contact the supplier;
3. Remove the emergency stop: if the former alarm is caused by mechanical impact, it should move the impacted shaft to the safe location in hand wheel mode and then confirm the equipment state; if no abnormality, the production can be conducted.
4. In case that such alarm is produced once again after removing the emergency stop, please contact the supplier.

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| | |
|---|---|
| 037 | Z-axis driver fault |

Confirm whether the action of the equipment before producing an alarm is abnormal or not, e.g. mechanical impact etc.;

1. View the LED display of the servoDriver-4U2, if the alarm information is still flashing, write down the alarm information and refer to the servo manual;
2. Press the red button of thermorelay-3QF1 to cut off the power supply of the servo driver, 10 seconds later, press the black button, the servo driver is powered on; if the alarm information of the driver is still flashing, please contact the supplier;
3. Remove the emergency stop: if the former alarm is caused by mechanical impact, it should move the impacted shaft to the safe location in hand wheel mode and then confirm the equipment state; if no abnormality, the production can be conducted.
4. In case that such alarm is produced once again after removing the emergency stop, please contact the supplier.

| | |
|---|---|
| 038 | W-axis driver fault |

Confirm whether the action of the equipment before producing an alarm is abnormal or not, e.g. mechanical impact etc.;

1. View the LED display of the servo driver-6U1, if the alarm information is still flashing, write down the alarm information and refer to the servo manual;
2. Press the red button of thermorelay-3QF1 to cut off the power supply of the servo driver, 10 seconds later, press the black button, the servo driver is powered on; if the alarm information of the driver is still flashing, please contact the supplier;
3. Remove the emergency stop: if the former alarm is caused by mechanical impact, it should move the impacted shaft to the safe location in hand wheel mode and then confirm the equipment state; if no abnormality, the production can be conducted.
4. In case that such alarm is produced once again after removing the emergency stop, please contact the supplier.

| | |
|---|---|
| 039 | Tool magazine driver fault |

Confirm whether the action of the equipment before producing an alarm is abnormal or not, e.g. mechanical impact etc.;

1. View the LED display of the servo driver-5U1, if the alarm information is still flashing, write down the alarm information and refer to the servo manual;
2. Press the red button of thermorelay-3QF1 to cut off the power supply of the servo driver, 10 seconds later, press the black button, the servo driver is powered on; if the alarm information of the driver is still flashing, please contact the supplier;
3. Remove the emergency stop: if the former alarm is caused by mechanical impact, it should move the impacted shaft to the safe location in hand wheel mode and then confirm the equipment state; if no abnormality, the production can be conducted.
4. In case that such alarm is produced once again after removing the emergency stop, please contact the supplier.

| | |
|---|---|
| 040 | Standby alarm point |

| | |
|---|---|
| 041 | Failure of convertor |

Please contact the supplier.

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| | |
|---|---|
| 042 | Overtravel |

Check whether the travel switch of **X**, **Y**, **Z**, **W**-axis is pressed to the limit stop or not. If pressed, please select the hand wheel mode and move the axis in overtravel state from the overtravel location.

| | |
|---|---|
| 043～045 | Standby alarm point |

| | |
|---|---|
| 046 | Recoverable CNC emergency stop |

If other alarm information produced at the same time are removed, the problem cannot still be resolved, please contact the supplier.

| | |
|---|---|
| 047 | Reading I/O definition file error |

Turn off the computer, cut off the equipment power, 10 seconds later, power on the equipment again, if the alarm is still not removed, please contact the supplier.

| | |
|---|---|
| 048 | I/O module error |

Turn off the computer, cut off the equipment power, 10 seconds later, power on the equipment, if the alarm cannot be removed, please contact the supplier.

| | |
|---|---|
| 049 | Number of the tool not found in tool table |

1. Check whether the tool number compiled in the program is correct or not;

2. Check whether there is the tool number compiled in program in the tool table or not.

| | |
|---|---|
| 050 | Compensation number not found in tool compensation table |

1. Check whether the tool compensation number compiled in program is correct or not;

2. Check whether there is the tool compensation number compiled in program in the tool table.

| | |
|---|---|
| 051 | Incorrect tool number |

The tool number compiled in program does not conform to the provisions.

| | |
|---|---|
| 052 | Spindle speed exceeds the range |

The spindle speed written in program is beyond the value permitted by the system (lower than or higher than the value specified by the system).

| | |
|---|---|
| 053 | Spindle speed not written in program. |

The spindle speed is not written in program (S code).

| | |
|---|---|
| 054 | Tool number not written in tool changing program |

The tool number (T code) is not written in tool changing program.

| | |
|---|---|
| 055 | Tool compensation cleared wrongly |

Clear the tool compensation without success, and click CNC reset key to retry the machining program.

| | |
|---|---|
| 056 | Tool compensation started wrongly |

Start the tool compensation without success, and click CNC reset key to retry machining program.

| | |
|---|---|
| 057 | Program restarted wrongly |

After implementing special operation, restart the program without success, click CNC reset key to retry machining program.

| | |
|---|---|
| 058 | MDI failure |

Manual data input mode is enabled without success, click CNC reset key to retry; if the alarm is not removed, please contact the supplier.

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| | |
|---|---|
| 059～061 | Standby alarm point |

| | |
|---|---|
| 062 | Saw prohibited to move in case of not rising |

The equipment is equipped with the saw blade with the sawing function in X-direction, so when the saw blade is declining, it should prohibit moving in Y-direction.

If it indeed needs to move in Y-direction when the saw blade is declining for the purpose of process, M82 code shall be added at the beginning of the machining program so as to cancel the limitation in prohibiting moving in Y-direction, and M83 code shall be added at the end of the procedure to cancel M82 code.

| | |
|---|---|
| 063～064 | Standby alarm point |

| | |
|---|---|
| 065 | Spindle initialization error |

Turn off the computer, cut off the equipment power, 10 seconds later, power on the equipment again, if the alarm is still not removed, please contact the supplier.

| | |
|---|---|
| 066 | Abnoraml automatic zeroing |

Click CNC reset key to retry; if the alarm cannot be removed, please contact the supplier.

| | |
|---|---|
| 067 | Overload of vacuum pump |

If the vacuum pump is overloaded, please cut off the equipment power and check the vacuum pump; clear away the dust and other foreign objects in the vacuum pump according to the equipment maintenance manual, and then replace the filter screen, add lubricating oil. After that, close the vacuum pump thermorelay-7QF1 within the electrical cabinet, and power on the equipment to open the vacuum pump; if the alarm still cannot be removed, please contact the supplier.

| | |
|---|---|
| 068 | Low vacuum pressure |

The vacuum pressure is lower than the set value of the system. Check whether there is vacuum absorption hole not sealed on the worktable or not.

| | |
|---|---|
| 069 | Insufficient vacuum pressure of the left worktable |

The vacuum pressure of the left worktable is lower than the set value of the system. Check whether there is the vacuum absorption hole not sealed on the left worktable or not.

| | |
|---|---|
| 070 | Insufficient vacuum pressure of the right worktable |

The vacuum pressure of the right worktable is lower than the set value of the system. Check whether there is the vacuum absorption hole not sealed on the right worktable or not.

| | |
|---|---|
| 071～072 | Standby alarm point |

| | |
|---|---|
| 073 | Overload of gang drill |

In case of overload of the gang drill, confirm whether the machining materials conform to the machining capacity of the equipment and the gang drill rotates abnormally or not.

After that, close the gang drill thermorelay-6QF1 within the electrical cabinet, and retry machining; if the alarm still cannot be removed, please contact the supplier.

| | |
|---|---|
| 074～076 | Standby alarm point |

| | |
|---|---|
| 077 | Unknown tool of the spindle |

The spindle tool item of the operation interface shows that the number of the spindle tool is 0, i.e. the system records that there is no tool on the spindle at that time, so it needs to dismantle the tool on the spindle and press PLC reset key.

| | |
|---|---|
| 078 | Spindle tool lost |

1. If there is no tool on the spindle at that time, click MDI mode (manual data input mode), input “M106T0”, click for confirmation, and click the program start button in combined worktable mode, then the alarm can be removed;
2. If there is tool on the spindle, please check whether the air pressure reaches the start air presure 0.6Mpa required by the equipment; dismantle the tool by manual, wipe the conical surface of the knife handle with soft cloth, and assemble the tool on the spindle by manual after cleaning; open the “Input output” interfaces, if the green lamp of E307 input point is on, the alarm is removed; if the input point is grey, please contact the supplier. Note: the conical surface of the knife handle shall be kept dry and clean, so as to prevent rusting.

| | |
|---|---|
| 079 | Tool number used by the program and spindle tool number not congruent |

Confirm that the automatic tool changing procedure M06Tx is used in machining program; press CNC reset key and then retry; if the alarm still cannot be removed, please contact the supplier.

| | |
|---|---|
| 080 | Standby alarm point |

| | |
|---|---|
| 081 | Low air pressure |

Check whether the air pressure reaches the air pressure required by the equipment: 0.6MPa.

| | |
|---|---|
| 082 | Overload of converter |

Confirm whether the machining materials conform to the machining capacity of the equipment and the spindle rotates abnormally or not.

After that, close the converter thermorelay-4QF1 within the electrical cabinet, and retry machining; if the alarm still cannot be removed, please contact the supplier.

| | |
|---|---|
| 083 | Spindle motor overheating |

1. Confirm whether the machining materials conform to the machining capacity of the equipment and the spindle rotates abnormally or not.
2. After the emergency stop is removed, confirm whether the spindle fan rotates or not; if not, it should check the circuit according page 23 of the circuit diagram; if the fault cannot be removed, please contact the supplier;
3. After the emergency stop is removed, confirm that the spindle fan is rotating; after waiting for 2 minutes, if the alarm still cannot be removed by pressing PLC reset key, please contact the supplier.

| | |
|---|---|
| 084 | Standby alarm point |

| | |
|---|---|
| 085 | Spindle tool locked without success |

Confirm whether there is tool on the spindle and dispose by referring to the alarm 078;

| | |
|---|---|
| 086 | Standby alarm point |

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| | |
|---|---|
| 087 | Sindle rotate speed error |

The spindle rotate speed does not reach the program design speed within prescribed time (10 seconds). If you need to confirm whether there is abnormality when the spindle is rotating, please contact the supplier.

| | |
|---|---|
| 088 | Spindle stoped with error |

The spindle does not stop rotating within prescribed time (10 seconds). If you need to confirm whether there is abnormality when the spindle is rotating, please contact the supplier.

| | |
|---|---|
| 089 | Personnel entering by mistake detected in left work area. |

1. Confirm whether there is someone entered the left work area by mistake or not;

2. Align the grating sensor in the left work area by hand (all red lamps of two sensors shall be on).

| | |
|---|---|
| 090 | Personnel entering by mistake detected in right work area |

1. Confirm whether there is someone entered the right work area by mistake;

2. Align the grating sensor in the right work area by hand (all red lamps of two sensors shall be on).

| | |
|---|---|
| 091∽096 | Standby alarm point |

| | |
|---|---|
| 097 | Abnormal three-phase power supply |

1. Confirm three-phase supply voltage and phase sequence;

2. Confirm whether the wiring of three-phase electric monitor-1K1 gets loose or not;

3. If the alarm still cannot be cleared, please contact the supplier.

| | |
|---|---|
| 098∽100 | Standby alarm point |

| | |
|---|---|
| 101 | Power supply of the servo driver missing |

Please contact the supplier.

| | |
|---|---|
| 102 | Servo driver not be enabled |

After the emergency stop is removed, confirm whether the green lubricator lamp of the intermediate relay-3KA1 is on or not, if not, the following reasons may be considered:

1. The wiring of the intermediate relay gets loose;

2. The intermediate relay is damaged.

| | |
|---|---|
| 103 | Servo driver fault |

Refer to the alarm information 035∽039.

| | |
|---|---|
| 104~128 | Standby alarm point |

| | |
|---|---|
| 129 | Motor of cutting conveyor belt overloaded |

Confirm whether there is abnormality existed when the conveyor belt is running, e.g. the conveyor belt is blocked by large wood shavings, then clear away; after that, close the motor thermorelay-8QF1 of the conveyor belt and restart the conveyor belt; if the alarm still cannot be removed, please contact the supplier.

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| | |
|---|---|
| 130 | Saw blade not rising |

1. Check the actual state of the saw blade; if not rising, it needs to click the saw blade button on the gang drill operation interface to produce the saw blade, then the subsequent operation can be conducted;
2. If the saw blade has been rising actually, it should confirm whether it rises in place by hand. If the saw blade rises in place, it needs to confirm whether the indicator lamp of the sensor above the saw blade is on or not, if not, it needs to finely adjust the sensor downward.

| | |
|---|---|
| 131 | Start button and selected work area not congruent |

The alarm happens in double-position process and single worktable mode, the start button pressed at that time is inconformity with the worktable selected by the operation interface.

| | |
|---|---|
| 132 | Invalid combination of drill and saw |

Vertical drill of the gang drill, horizontal drill in X-direction, horizontal drill in Y-direction and saw blade cannot be combined in pairs for use.

| | |
|---|---|
| 133 | Attention that another work area will be started in succession |

This is the prompt information to prompt that the program start button of next work area has been pressed, and the machining task of next worktable will be conducted automatically after completion of machining of current worktable; if you need to cancel such task, please press the program start button of the next worktable once again.

| | |
|---|---|
| 134～136 | Standby alarm point |

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| | |
|---|---|
| EE001 | Servo error axis |

The following error exceeds the set value.

1. After the emergency stop is removed, move the axis again; if the absolute coordinate does not change, it means that the axis does not move, so it should check whether the axis is blocked by foreign object, whether the gear rack connected to the axis is abnormal and the sliding block is abnormal or not;
2. After the emergency stop is removed, move the axis once again; if the absolute coordinate changes and the alarm occurs again, it should check whether all joints on the front side of controller within the electric cabinet, all joints of the servo driver and all joints of the motor get loose or not after pressing the emergency stop button or cutting off the equipment power supply;
3. If the alarm still cannot be removed, please contact the supplier.

| | |
|---|---|
| EE002 | Skew Error Axis |

The following error of the driven shaft exceeds the set value.

| | |
|---|---|
| EE003 | Encoder phase error |

Encoder phase error

1. Press the CNC reset key;
2. After pressing the emergency stop button or cutting off the equipment power supply, check whether all joints on the front side of controller within the electric cabinet, all joints of the servo driver and all joints of the motor get loose or not
3. If the alarm still cannot be removed, please contact the supplier.

| | |
|---|---|
| EE004 | Timeout tolerance error |

Timeout tolerance error

1. After the emergency stop is removed, move the axis again; if the absolute coordinate does not change, it means that the axis does not move, so it should check whether the axis is blocked by foreign object, whether the gear rack connected to the axis is abnormal and the sliding block is abnormal or not;
2 After the emergency stop is removed, move the axis once again; if the absolute coordinate changes and the alarm occurs again, it should check whether all joints on the front side of controller within the electric cabinet, all joints of the servo driver and all joints of the motor get loose or not after pressing the emergency stop button or cutting off the equipment power supply;
3. If the alarm still cannot be removed, please contact the supplier.

| | |
|---|---|
| EE005 | Inpos tolerance error |

Tolerance error.

1. After the emergency stop is removed, move the axis again; if the absolute coordinate does not change, it means that the axis does not move, so it should check whether the axis is blocked by foreign object, whether the gear rack connected to the axis is abnormal and the sliding block is abnormal or not;
2. After the emergency stop is removed, move the axis once again; if the absolute coordinate changes and the alarm occurs again, it should check whether all joints on the front side of controller within the electric cabinet, all joints of the servo driver and all joints of the motor get loose or not after pressing the emergency stop button or cutting off the equipment power supply;
3. If the alarm still cannot be removed, please contact the supplier.

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| | |
|---|---|
| EE006 | Broken wire detection |

The system detects that the communication wire fails.

1.Close the system, cut off the equipment power supply to check whether all joints of the controller and the servo driver get loose or not;

2. If the alarm still cannot be removed, please contact the supplier.

| | |
|---|---|
| EE007 | Watch dog axis |

The axillare is abnormal.

Close the system, cut off the equipment power supply, 1 minute later, re-power on; if the alarm still cannot be removed, please contact the supplier.

| | |
|---|---|
| EE008 | Divide by zero axis |

The internal calculation of CNC is abnormal.

Close the system, cut off the equipment power supply, 1 minute later, re-power on; if the alarm still cannot be removed, please contact the supplier.

| | |
|---|---|
| EE009 | Invalid command axes |

Invalid command.

Close the system, cut off the equipment power supply, 1 minute later, re-power on; if the alarm still cannot be removed, please contact the supplier.

| | |
|---|---|
| EE010 | Escape found axis |

The coprocessor is abnormal.

Close the system, cut off the equipment power supply, 1 minute later, re-power on; if the alarm still exists, please contact the supplier.

| | |
|---|---|
| EE011 | Software overtravel limit with HPG |

Software overtravel limit with HPG.

Shake the hand wheel anticlockwise to exit the alarm.

| | |
|---|---|
| EE012 | HPG software overtravel exit |

As a prompt information, it prompts that the hand wheel operation exits the soft limit; press CNC reset key to clear the alarm.

| | |
|---|---|
| EE013 | WatchDog - CAN I/O module |

CNC communication error.

Close the system, cut off the equipment power supply to check whether the communication cable joint between the controller and I/O modules gets loose or not. After being confirmed ok, re-power on; if the alarm still cannot be cleared, please contact the supplier.

| | |
|---|---|
| EE014 | CAN communication error |

CNC communication error.

Close the system, cut off the equipment power supply to check whether the communication cable joint between the controller and I/O modules gets loose or not. After being confirmed ok, re-power on; if the alarm still cannot be cleared, please contact the supplier.

| | |
|---|---|
| EE015 | WatchDog - FastWire I/O module |

The alarm is not applicable to the equipment.

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| | |
|---|---|
| EE016 | FastWire communication error |

The alarm is not applicable to the equipment.

| | |
|---|---|
| EE020 | Plus shutdown request |

CNC receives the restarting request and is implementing. If the controller is not restarted by human at that time, please contact the supplier.

| | |
|---|---|
| EE021 | Plus watch dog |

PLC is abnormal.

Close the system, cut off the equipment power supply, 1 minute later, re-power on; if the alarm still cannot be removed, please contact the supplier.

| | |
|---|---|
| EE022 | Plus divide by zero |

PLC calculation is abnormal.

Close the system, cut off the equipment power supply, 1 minute later, re-power on; if the alarm still cannot be removed, please contact the supplier.

| | |
|---|---|
| EE023 | Plus invalid op-code |

PLC is abnormal.

Close the system, cut off the equipment power supply, 1 minute later, re-power on; if the alarm still cannot be removed, please contact the supplier.

| | |
|---|---|
| EE024 | Plus I/O ring failure |

PLC I/O link is abnormal.

Close the system, cut off the equipment power supply, to check whether the communication cable joint between the controller and I/O modules gets loose or not. After being confirmed ok, if the alarm still cannot be cleared, please contact the supplier.

| | |
|---|---|
| EE025 | Plus coprocessor exception or WinPlus Exception |

PLC is abnormal.

Close the system, cut off the equipment power supply, 1 minute later, re-power on; if the alarm still cannot be removed, please contact the supplier.

| | |
|---|---|
| EE026 | Plus realtime task overrun |

PLC is abnormal.

Close the system, cut off the equipment power supply, 1 minute later, re-power on; if the alarm still cannot be removed, please contact the supplier.

| | |
|---|---|
| EE027 | Axis hw overtravel limit reached |

The axis touches the hard limit when moving.

Move the servo axis anticlockwise by hand to exit the hard limit position.

| | |
|---|---|
| EE028 | Exit over travel hardware |

The axis touches the hard limit when moving.

This is the prompt information to prompt that the manual operation exits the hard limit; press CNC reset key to clear the alarm.

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| | |
|---|---|
| EE029 | Too many no wait requests from Logic |

PLC is abnormal.

Close the system, cut off the equipment power supply, 1 minute later, re-power on; if the alarm still cannot be removed, please contact the supplier.

| | |
|---|---|
| EE030 | Ghost interrupt |

PLC is abnormal.

Close the system, cut off the equipment power supply, 1 minute later, re-power on; if the alarm still cannot be removed, please contact the supplier.

| | |
|---|---|
| EE031 | Front Panel anomaly |

The universal surface plate is abnormal.

Close the system, cut off the equipment power supply, 1 minute later, re-power on; if the alarm still cannot be removed, please contact the supplier.

| | |
|---|---|
| EE032 | False interrupt |

PLC is abnormal.

Close the system, cut off the equipment power supply, 1 minute later, re-power on; if the alarm still cannot be removed, please contact the supplier.

| | |
|---|---|
| EE033 | Unrecoverable Remote I/O Failure |

I/O communication is abnormal.

Close the system, cut off the equipment power supply, 1 minute later, re-power on; if the alarm still cannot be removed, please contact the supplier.

| | |
|---|---|
| EE034 | Recoverable Remote I/O Failure |

I/O communication is abnormal.

Close the system, cut off the equipment power supply, 1 minute later, re-power on; if the alarm still cannot be removed, please contact the supplier.

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| | |
|---|---|
| HD001 | Configuration file not found |

Configuration file not found.

The alarm is produced arising from illegal exit after entering AMP parameter setting interface. So it should restart CNC to enter the emergency mode and then enter AMP parameter setting interface once again to save and exit according to normal steps. After that, restart CNC to enter the general mode.

| | |
|---|---|
| HD002 | File dispatcher not found |

File distributor not found.

Please contact the supplier.

| | |
|---|---|
| HD003 | No configured cards |

No configured cards.

Please contact the supplier.

| | |
|---|---|
| HD004 | System time out on memory |

Self-inspection of CNC hardwire overtimes.

Please contact the supplier.

| | |
|---|---|
| HD005 | Diagnostic time out |

Self-inspection of CNC hardwire overtimes.

Please contact the supplier.

| | |
|---|---|
| HD006 | Time out on card bootstrap. |

Bootstrap program overtimes.

Please contact the supplier.

| | |
|---|---|
| HD007 | PAK not found |

PAK not found.

Please contact the supplier.

| | |
|---|---|
| HD021 | Dual port error |

Dual port error.

Please contact the supplier.

| | |
|---|---|
| HD022 | File not found |

File not found

Please contact the supplier.

| | |
|---|---|
| HD023 | Path not found |

Path not found.

Please contact the supplier.

| | |
|---|---|
| HD024 | File format error (1) |

File format error.

Please contact the supplier.

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| | |
|---|---|
| HD025 | Programme too large |

Dual-port memory overflows.

Please contact the supplier.

| | |
|---|---|
| HD026 | Timeout on download |

Board card not respond after initialization.

Please contact the supplier.

| | |
|---|---|
| HD027 | Software error |

Software error.

Please contact the supplier.

| | |
|---|---|
| HD028 | Insufficient system memory |

No board memory to load project

Please contact the supplier.

| | |
|---|---|
| HD029 | File format error (2) |

File format error.

Please contact the supplier.

| | |
|---|---|
| HD030 | No board memory to load project |

No board memory to load project

Please contact the supplier.

| | |
|---|---|
| HD042 | Dual port has been reset |

Dual port has been reset.

The alarm is the information to prompt that dual port has been reset; if the reset action is not conducted by human, please contact the supplier.

| | |
|---|---|
| HD049 | RAM check error |

DMA error.

Please contact the supplier.

| | |
|---|---|
| HD050 | DMA error |

DMA error.

Please contact the supplier.

| | |
|---|---|
| HD051 | NPX errror |

NPX error.

Please contact the supplier.

| | |
|---|---|
| HD052 | Time unit error |

Time unit error.

Please contact the supplier.

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| | |
|---|---|
| HD053 | Erdc error |

CNC encoder is abnormal.

Please contact the supplier.

| | |
|---|---|
| HD054 | PLUS bit 13 not present during boot up |

Axis card is abnormal.

Please contact the supplier.

| | |
|---|---|
| HD056 | Ram size mismatch |

Ram size mismatch.

Please contact the supplier.

| | |
|---|---|
| HD061 | Loaded bootstrap programme |

The initialization programme is abnormal and the abnormality is not found.

| | |
|---|---|
| HD062 | Check ram |

Check ram

| | |
|---|---|
| HD063 | Loaded diagnostic |

Loaded diagnostic

| | |
|---|---|
| HD064 | Ethernet board |

Network card detected.

| | |
|---|---|
| HI002 | Extension too long |

Extension of the machining program is too long.

Check whether the extension of the machining program exceeds 3 characters or not.

| | |
|---|---|
| HI003 | Logic name too long |

Logic name too long.

Check whether the logical name of the machining program exceeds 48 characters.

| | |
|---|---|
| HI004 | The file name already exists |

The file name already exists.

The machining program already exists.

| | |
|---|---|
| HI005 | Extension error |

Extension error.

The extension of the machining program does not conform to regulations.

| | |
|---|---|
| HI006 | File already opened |

File already opened.

The machining program already opened; retry starting after closing.

| | |
|---|---|
| HI007 | File already opened for writing |

File already opened.

The machining program already opened; retry starting after closing.

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| | |
|---|---|
| HI008 | ISO file protected or opened |

ISO file already opened or written protection.

Check the document name or access level.

| | |
|---|---|
| HI009 | The current directory is empty |

The current directory is empty.

| | |
|---|---|
| HI010 | Char not allowed for file name |

The document name includes illegal character.

Check the document name and delete the illegal character.

| | |
|---|---|
| HI011 | Page number out of table |

Page requested out of data table.

Check and correct the page.

| | |
|---|---|
| HI012 | Parameter index out of table |

Required parameter address out of current variable table.

Check and correct the variable address.

| | |
|---|---|
| HI013 | Error during value assignment |

Error during value assignment.

Confirm the value assignment is within the range permitted by the variable.

| | |
|---|---|
| HI014 | Variable name does not exist |

Variable name does not exist.

Check and correct the variable name.

| | |
|---|---|
| HI015 | Wrong block number format |

Wrong line number format.

Check and correct the line number format.

| | |
|---|---|
| HI016 | Wrong axis limits |

Wrong servo axis limitation.

Check and correct special axis limitation.

| | |
|---|---|
| HI017 | Error during axes reading |

Error during reading axis configuration.

Please contact the supplier.

| | |
|---|---|
| HI018 | Duplicate axis name |

Duplicate axis name.

Check and correct the axis name.

| | |
|---|---|
| HI019 | Error in plane rotation axis |

The name of the axis on the plane of rotation is wrong.

Check and correct the axis name.

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| | |
|---|---|
| HI020 | Command not allowed from logic |

Command not allowed.

Check and correct command name.

| | |
|---|---|
| HI021 | Value out of range |

Value out of range.

Check and correct variable assignment.

| | |
|---|---|
| HI022 | Syntax Error |

Syntax error.

Check and correct the parameter in machining program.

| | |
|---|---|
| HI023 | Format Error |

Format error.

Check and correct the parameter in machining program.

| | |
|---|---|
| HI024 | Undefined symbol |

Undefined symbol,

Check and correct the symbol in machining program.

| | |
|---|---|
| HI025 | Overflow |

Overflow caused by too long sentence.

Check and correct the machining program.

| | |
|---|---|
| HI026 | Division by zero |

Division by zero.

Check and correct the machining program.

| | |
|---|---|
| HI027 | End of file |

End of file.

| | |
|---|---|
| HI028 | Beginning of file |

Beginning of file.

| | |
|---|---|
| HI029 | Part program not select |

Machining program not selected.

Please operate after selecting machining program.

| | |
|---|---|
| HI030 | Wrong axis name |

Wrong axis name.

Check and correct the machining program.

| | |
|---|---|
| HI031 | Failed to write variable |

Variable writen-in unsuccessfully.

Check and correct the input data.

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| | |
|---|---|
| HI032 | Failed to read variable |

Varaible read unsuccessfully.

Check and correct the variable name.

| | |
|---|---|
| HI033 | Offset not defined for the axis |

Offset not defined for the axis

Check and correct the offset table.

| | |
|---|---|
| HI034 | Error from PLUS environment |

Internal error of the system.

Close the system, cut off the equipment power supply, 1 minute later, re-power on; if the alarm still cannot be removed, please contact the supplier.

| | |
|---|---|
| HI035 | Error from servo environment |

Internal error of the system.

Close the system, cut off the equipment power supply, 1 minute later, re-power on; if the alarm still exists, please contact the supplier.

| | |
|---|---|
| HI036 | Command & sys state not congruent |

Command & sys state not congruent.

Check and correct the command or change system state.

| | |
|---|---|
| HI038 | Data Entry not configured |

Internal error of the system.

Close the system, cut off the equipment power supply, 1 minute later, re-power on; if the alarm still exists, please contact the supplier.

| | |
|---|---|
| HI039 | Axis not referenced |

Not zeroing.

Please return to zero firstly before operation.

| | |
|---|---|
| HI040 | Too many files in directory |

Too many files in directory.

Number of files in directory reaches maximum limit, delete unused files.

| | |
|---|---|
| HI041 | Access denied. Check security. |

Access denied, security checked.

Enter correct password and retry.

| | |
|---|---|
| HI042 | Access denied to User directory |

Access denied to user directory

Enter correct password and retry.

| | |
|---|---|
| HI043 | Access denied to SYS directory |

Access denied to SYS directory

Enter correct password and retry.

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| | |
|---|---|
| HI044 | Access denied to OEM directory |

Access denied to OEM directory.

Enter correct password and retry.

| | |
|---|---|
| HI045 | Not enough memory! |

Internal error of the system.

Close the system, cut off the equipment power supply, 1 minute later, re-power on; if the alarm still exists, please contact the supplier.

| | |
|---|---|
| HI046 | Illegal argument for TAN |

Illegal argument for TAN

Check and correct the syntax.

| | |
|---|---|
| HI047 | Illegal argument for SQR |

Illegal argument for SQR.

Check and correct the syntax.

| | |
|---|---|
| HI048 | ISO file already exist |

ISO files existed already.

Change.dfp document name.

| | |
|---|---|
| HI050 | Logical names doesn't exists |

Logical names don't exists.

Close the system, cut off the equipment power supply, 1 minute later, re-power on; if the alarm still exists, please contact the supplier.

| | |
|---|---|
| HI051 | Press Enter to confirm the block |

Press Enter to confirm the block.

Before starting the program, it should press Enter to confirm the command.

| | |
|---|---|
| HI052 | Failed to write on System History |

Failed to write on System History.

Close the system, cut off the equipment power supply, 1 minute later, re-power on; if the alarm still exists, please contact the supplier.

| | |
|---|---|
| HI053 | TCP activation not congruent |

TCP activation and system not congruent.

Close the system, cut off the equipment power supply, 1 minute later, re-power on; if the alarm still cannot be removed, please contact the supplier.

| | |
|---|---|
| HI054 | Axis not configured |

Virtual axis not configured.

Change the name of virtual axis in machining program or configure virtual axis in AMP.

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| | |
|---|---|
| HI055 | Driver not permitted |

Driver request not permitted.

Being trying to access the protected driver.

| | |
|---|---|
| HI056 | Part program not exists |

Machining program not existed.

Check the machining program name.

| | |
|---|---|
| HI057 | Error in message visualization |

Error in message visualization.

Close the system, cut off the equipment power supply, 1 minute later, re-power on; if the alarm still exists, please contact the supplier.

| | |
|---|---|
| HI058 | Char not allowed for directory names |

Character of directory path is wrong.

Check and change the directory path.

| | |
|---|---|
| HI059 | Path name too long |

Path name too long.

Check and change the path name, not exceeding 30 characters.

| | |
|---|---|
| HI060 | Dos name too long |

Dos name too long.

Check and change DOS name.

| | |
|---|---|
| HI061 | Driver not ready or not configured |

Driver not ready or not configured.

Check whether the driver name to be tried to access is correct or not.

| | |
|---|---|
| HI062 | Wrong path name |

Wrong path name.

Check and change the path name.

| | |
|---|---|
| HI065 | File protected or opened |

File protected or already opened.

Check the file.

| | |
|---|---|
| HI066 | File not found |

File not found.

Check document name.

| | |
|---|---|
| HI067 | File delete failed. |

File delete failed.

Check consistency of document setting.

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| | |
|---|---|
| HI069 | File rename failed |

File rename failed.

Check consistency of document setting.

| | |
|---|---|
| HI070 | File copy failed |

File copy failed.

Check consistency of document setting.

| | |
|---|---|
| HI071 | Insufficient space on disk |

Insufficient space on disk.

Add usable disk space.

| | |
|---|---|
| HI072 | Process not configured |

Processor not configured.

Configure processor or change processor name in AMP.

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| | |
|---|---|
| NC001 | Syntax Error |

Syntax error.

Syntax error in machining program or MDI command detected.

| | |
|---|---|
| NC002 | Wrong number of axes for G code |

Wrong number of axes for G code.

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC003 | Canned cycle parameters missing |

Canned cycle parameters missing.

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC004 | Missing parameters for G code |

Missing parameters for G code.

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC005 | Missing J and/or K for G83 cycle |

Missing J and/or K for G83 cycle.

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC006 | Missing I and/or J for G2/G3 code |

Missing I and/or J for G2/G3 code.

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC007 | Probing cycle parameters missing |

Tool setting cycle parameters missing.

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC008 | Format error |

Format error.

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC009 | Undefined symbol |

Undefined symbol.

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC010 | Overflow |

Overflow.

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC011 | Function not allowed |

Function not allowed.

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC012 | Wrong use of axis slave<br>A slave axis previously declared in the UDA block is programmed directly in a part programme or input in an MDI block. |

Slave axis used wrongly.

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC013 | Operand not allowed in canned cycle |

Operand not allowed in canned cycle.

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC014 | K parameter not allowed in G84 |

K parameter not allowed in G84.

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC015 | Wrong programming of G2/G3 code |

Wrong programming of G2/G3 code.

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC016 | Illegal number of operands |

Illegal number of operands.

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC017 | Illegal number of virtual axis |

Illegal number of virtual axis.

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC018 | Illegal number of axes in G33 code |

Illegal number of axes in G33 code

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC020 | G not allowed |

G code not allowed in threading cycle.

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC021 | Operand not allowed with G code |

Operand not matched with G code.

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC022 | Block & system state not congruent |

Block & system state not congruent.

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC024 | G and program state not congruent |

G code and program state not congruent

Canned cycle G code cannot be used with G code for tool compensation starting, threading and interpolation plane at the same time. Check machining program or syntax in MDI command.

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| | |
|---|---|
| NC025 | G and dynamic mode not congruent |

G and dynamic mode not congruent

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC026 | G41/G42 & part program state not congruent |

G41/G42 code & program state not congruent

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC027 | G needs spindle with converter |

G code needs spindle of encoder.

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC028 | G not congruent with feedrate mode |

G code not congruent with feedrate mode.

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC029 | Operand & part program state not congruent |

Operand & program state not congruent.

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC030 | M & dynamic mode not congruent |

M code is congruent with the current dynamic mode (e.g. M code cannot be anything but G0 dynamic mode before implementing).

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC031 | M/T/S & motion type not congruent |

M/T/S & motion type not congruent.

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC032 | Probing cycle operands inhibited |

Probing cycle operands inhibited.

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC033 | Missing third axis for helix |

Missing third axis for written helix machining program.

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC034 | Expedite function without motion |

Expedite function without motion.

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC035 | Feed or speed not programmed |

Feedrate or rotational speed not programmed in machining program.

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC036 | Z-axis not found for G87 cycle |

Z-axis not found for G87 cycle.

Check machining program or syntax in MDI command.

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| | |
|---|---|
| NC037 | Read only variable |

Read only variable.

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC038 | Part programme record too long |

Machining program record too long.

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC039 | Part programme access denied |

Machining program access denied.

Check whether the machining program is opened or used by another procedure or not.

| | |
|---|---|
| NC040 | P.P. block not allowed from serial line |

Machining program block not allowed from serial line

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC041 | Wrong serial line configuration for EPS |

Wrong line configuration.

Check machining program or syntax in MDI command.

| | |
|---|---|
| NC042 | Nesting of IF greater then 5 |

Nesting of IF greater then 5

Check and correct the syntax.

| | |
|---|---|
| NC043 | ELSE not allowed |

ELSE function used illegally.

Check and correct the syntax.

| | |
|---|---|
| NC044 | ENDIF not allowed |

ENDIF function used illegally.

Check and correct the syntax.

| | |
|---|---|
| NC048 | Illegal argument for TAN |

Illegal argument for TAN

Check and correct the syntax.

| | |
|---|---|
| NC049 | Illegal argument for SQR |

Illegal argument for SQR.

Check and correct the syntax.

| | |
|---|---|
| NC050 | Too many programmed axes |

Too many programmed axes.

Check and correct the syntax.

| | |
|---|---|
| NC051 | Division by zero |

Division by zero.

Check and correct the syntax.

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| | |
|---|---|
| NC052 | String too long |

String too long.

Check and correct the syntax.

| | |
|---|---|
| NC053 | Label duplicated |

Label repeated in programme.

Check and correct the syntax.

| | |
|---|---|
| NC054 | Undefined label |

Undefined label.

Check and correct the syntax.

| | |
|---|---|
| NC055 | Label too long |

Label too long.

Check and correct the syntax.

| | |
|---|---|
| NC056 | Programme table overflow |

Too many subprogram.

Change setting in PROCESS CONFIGURATION of AMP.

| | |
|---|---|
| NC057 | Label table overflow |

Too many labels.

Change setting in PROCESS CONFIGURATION of AMP.

| | |
|---|---|
| NC058 | End of program |

End of program.

| | |
|---|---|
| NC059 | Beginning of program |

Beginning of program.

| | |
|---|---|
| NC060 | Nesting of RPT greater than 5 |

Nesting of RPT greater than 5.

Check and correct the syntax.

| | |
|---|---|
| NC061 | Nesting of subroutine greater than 4 |

Too many subprogram.

Check and correct the syntax.

| | |
|---|---|
| NC062 | Nesting of EPP greater than 5 |

Nesting of EPP greater than 5.

Check and correct the syntax.

| | |
|---|---|
| NC063 | RPT/EPP cycle open at end of file |

RPT/EPP syntax error.

Check and correct the syntax.

| | |
|---|---|
| NC064 | ERP without RPT |

RPT/ERP syntax error.

Check and correct the syntax.

| | |
|---|---|
| NC065 | Error during part program file handling |

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Machining file handled wrongly.

Check and correct the syntax.

| | |
|---|---|
| NC066 | Part program not found |

Nachining program not found

Check and correct syntax or machining program.

| | |
|---|---|
| NC067 | Part program not selected |

Machining program not selected.

Retry starting after starting the machining program.

| | |
|---|---|
| NC068 | Processor number out of range |

Processor number out of range.

Check and correct the syntax.

| | |
|---|---|
| NC069 | Paramacro modal already active |

Macroprogram to be operated being used.

Retry after closing macro command.

| | |
|---|---|
| NC070 | Paramacro not configured |

Macroprogram not configured.

Configure macroprogram in AMP and contact the supplier.

| | |
|---|---|
| NC071 | Different boards for master and slave axes |

Different boards for master and slave axes.

Please contact the supplier.

| | |
|---|---|
| NC072 | Compensation already activated |

Electronic cam already activated.

Disable electronic cam firstly when loading table.

| | |
|---|---|
| NC073 | Too many points in the table |

New table must be bigger than or equal to the original table so as to overlap it.

Change operation sequence or clear memory firstly before operation.

| | |
|---|---|
| NC074 | Insufficient memory on axis card |

Insufficient memory on axis card.

Table dimensions reduced.

| | |
|---|---|
| NC075 | Error reading electronic cam table |

Error reading electronic cam table.

Check name.

| | |
|---|---|
| NC076 | Wrong number of points in the table |

Wrong number of points in the table.

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| | |
|---|---|
| NC077 | Error opening electronic cam table |

Error opening electronic cam table.

Check path name.

| | |
|---|---|
| NC078 | Software option not installed |

Software function not installed.

| | |
|---|---|
| NC079 | Software option not available. Check security |

Software function not applicable.

Check security settings.

| | |
|---|---|
| NC080 | Axis not referenced |

Axis not zeroing.

Retry after zeroing.

| | |
|---|---|
| NC081 | Undefined DPP for probing cycle |

Undefined DPP for too setting cycle.

Retry after restarting system, if the problem cannot be resolved, please contact the supplier.

| | |
|---|---|
| NC082 | Too many "Expedite" M codes |

Too many M code.

M code in block more than 1.

| | |
|---|---|
| NC083 | Undefined M code |

Undefined M code.

Please contact the supplier.

| | |
|---|---|
| NC084 | Circle not congruent |

Circle not congruent with the geometry.

Wrong diameter or terminal point, check machining program.

| | |
|---|---|
| NC086 | Helix pitch not congruent |

Helix not congruent with the geometry.

Check machining program.

| | |
|---|---|
| NC087 | Axes of plane needs same scale factor |

Plane coordinate axis requires the same scaling factor.

Check machining program, use SCF command to change the scaling factor.

| | |
|---|---|
| NC088 | Profile not congruent |

Profile given by programme design not congruent.

Check machining program.

| | |
|---|---|
| NC089 | Wrong direction on profile |

Wrong direction on profile.

G41-G42 tool path offsets reversely.

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| | |
|---|---|
| NC090 | Err. disabling tool compensation |

Err. disabling tool compensation

Check machining program.

| | |
|---|---|
| NC091 | Too many blocks to resolve |

Additional plane movement in G41-G42 more than 2.

Check machining program.

| | |
|---|---|
| NC098 | Probing cycle not executed |

Tool setting cycle not completed.

If the tool setting point cannot be found within tool setting safety distance, please contact the supplier.

| | |
|---|---|
| NC099 | Probe has not been released |

No action for contact of tool setting gauge.

Please contact the supplier.

| | |
|---|---|
| NC100 | Hardware overtravel |

Hardware overtravel.

Exit overtravel state by JOG manual mode, and check machining program.

| | |
|---|---|
| NC101 | Positive software overtravel |

Positive direction soft limit overtravel.

Check machining program.

| | |
|---|---|
| NC102 | Positive hardware overtravel limit |

Positive direction overtravel.

Exit overtravel state by JOG manual mode, and check machining program.

| | |
|---|---|
| NC103 | Negative hardware overtravel limit |

Negative direction overtravel.

Exit overtravel state by JOG manual mode, and check machining program.

| | |
|---|---|
| NC104 | Positive software overtravel limit |

Positive direction soft limit overtravel.

Exit overtravel state by JOG manual mode, and check machining program.

| | |
|---|---|
| NC105 | Negative software overtravel limit |

Negative direction soft limit overtravel.

Exit overtravel state by JOG manual mode, and check machining program.

| | |
|---|---|
| NC109 | Error in exit HOLD: mode changed |

Exit and feed hold states error.

Firstly exit feed hold state, then change mode.

| | |
|---|---|
| NC110 | Block not allowed in HOLD |

MDI command prohibited to be implemented under feed hold state.

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| | |
|---|---|
| NC118 | Negative software overtravel |

Negative direction soft limit overtravel.

Check machining program.

| | |
|---|---|
| NC119 | Command not allowed during search in memory |

Command not allowed during search in memory

| | |
|---|---|
| NC123 | Bad select mode for cycle |

Mode selection error when starting programme.

It is required to click programme to start under automatic or MDI mode.

| | |
|---|---|
| NC125 | Data length out of range |

Command length out of range.

Command length entered in MDI is 1-127 characters.

| | |
|---|---|
| NC141 | New tool request failed |

Tool taken unsuccessfully.

Check T code in machining program.

| | |
|---|---|
| NC142 | M executed failed |

M code executed unsuccessfully.

Check M code in machining program.

| | |
|---|---|
| NC156 | End of search in memory |

End of search in memory.

| | |
|---|---|
| NC142 | M executed failed |

M code executed unsuccessfully.

Check M code in machining program.


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