NCB2412/NCB2412S5

Six-sided CNC Drilling Machine / Five-sided CNC Drilling Machine

User's Guide

Guangdong, China

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1、Foreword

1.1 Definition of Operator

The operators referred to in this manual are defined as follows: Persons or groups assigned to install, operate, adjust, maintain, clean, repair or move the equipment.

Requirements of operators

- Operators should be physically fit and sane, well-informed of and responsible for the risks that may arise from using the equipment.
- Before performing any operation, the employer should provide sufficient information and training to the operators.
- Operators who are not in the best psychological status mustn't perform any kind of operation.

1.1.2 Prohibition of Operators

- To avoid accidents at work, the health status of the operators responsible for manipulating the equipment is very important.

- We think it is most important to emphasize that operators who are not in the best psychological status will cause serious harm to themselves and to other people, animals or properties within their area of work.
- The operators responsible for equipment manipulation mustn't take any substance (e.g., drugs, alcohol, sedatives, etc.) that can affect his or her physical or mental ability.
- If an operator needs to take any item that will lower his or her intelligence for a period of time for any reason, he or she should immediately notify the person in charge of the installation (or manufacturing site) safety to temporarily suspend his or her job.
- The entire suspension and recovery procedure should be supported by adequate medical information.
- The operators mustn't allow unauthorized personnel to access the equipment during operation or to use the equipment under any pretext.
- The operators of this equipment mustn't be under 18 years of age.

- The operators should wear clothing suitable for carrying out the tasks of equipment manipulation.

1.2 Operator Responsibilities

1.2.1 Every employee is responsible for taking care of his/her own safety and health as much as possible, based on the instructions given by the training and employer. The behaviors or negligence in the work involves the safety and health of other people.

1.2.2 All employees must follow the instructions given by their training and the employer:

- Use equipment, instruments, tools, dangerous substances, transportation equipment and other means of production properly;
- Use personal protective equipment properly and return it to its proper place after use;
- Do not disconnect, change or dismantle the installed safety devices, such as those on the equipment, instruments, tools, devices and buildings, and properly use various safety guards;

- Immediately notify the employer and/or specialized personnel responsible for the safety and health of staff that they have every reason to believe that there are serious or imminent danger to safety and health and any deficiencies in protective measures;
- Consult with the employer and/or specialized personnel responsible for the safety and health of staff in accordance with the requirements of the various tasks or the mandatory requirements of the competent authorities, to protect the safety and health of staff in completing their work;
- Consult with the employer and/or specialized personnel responsible for the safety and health of staff in accordance with national practice as required, to enable the employer to ensure safe working environment and conditions and there is no risk in safety and health within the scope of their activities.

The operation and service manual of this equipment should be kept in an easily accessible place by the responsible person in an optimal state and making it accessible to those who need it, as the latter is somehow related to the operation of the equipment.

1.3 Warranty Terms

We guarantee that the equipment has been tested at the factory and obtained good results. The warranty period is twelve months from the date of sale. We are also responsible for defective electrical and electronic components. Rapid and sustained wear and tear (such as gaskets, belts, brushes, fuses, etc.) due to natural causes are not covered by the warranty. The warranty of parts after replacement or maintenance will expire on the date when the entire equipment expires.

In addition, we are not liable for any defects in equipment that result from the violation of the rules contained in this manual and the improper use or handling of the equipment. Therefore, if the malfunction is not caused by the alteration and modification without the written permission of our company, the buyer has the right to request the replacement of defective parts found.

All documents are drafted in accordance with the current safety instructions and regulations. Therefore, it is absolutely necessary to thoroughly read the volumes to achieve the best performance of the equipment and to ensure the long life of all its

parts.

The configuration of some parts or devices described or referenced in this document may differ from the device and the specific settings developed in accordance with specific needs or safety regulations. In this case, various instructions, references or procedures indicate general requirements, but they remain valid. The special tools or instruments provided with the equipment are closely related to the current safety standards of the equipment in each country. We provide dimensioned drawings and pictures only as examples and references to make the text easier to understand. In order to understand the purpose of continuous product improvement and upgrading, we reserve the right to change the functional and aesthetic characteristics of the product, to change the design of any functional part or accessory, or to defer production and delivery without notice. In addition, we reserve the right to introduce any structural or functional modifications and to change the scope of supply of spare parts and accessories without prior notice.

2、Safety Regulations

2.1 Icons Used

Description:

Description of the application or use

Caution:

Safety measures to prevent material damage

Danger:

Hazard description for the prevention of personal injury and/or substantial material damage

Option:

Different structure depending on machine models

Reserve the right to change

2.2 Operation as Prescribed

This equipment has been manufactured in accordance with the technical standards and the recognized safety specifications, but there may be dangers still in use:

a. Personal safety risk to the users or a third parties

b. Danger to the equipment and other physical values. Failure to use the equipment in accordance with the regulations is particularly dangerous.

This equipment is only intended for processing and transportation of the following materials:

a. Wood

b. Woody materials

The use of this equipment according to the regulations must also comply with:

a. All data and procedures described in the operating instructions and on this equipment

b. All generally valid, statutory and other binding safety and accident prevention provisions

c. All environmental protection regulations

This equipment is to be approved for operation only with properly operating dust suction equipment.

2.3 Instructions for Operation Units

The operation site of the equipment should always have the operating procedures and should be easily accessible.

Operating procedures should be supplemented as follows:

a. Accident prevention regulations for wood processing machinery

b. Accident prevention regulations in the country where the operation unit is located

c. Generally valid environmental protection rules and regulations

d. Regulations on wearing personal protective equipment

e. Rules and regulations on exposure to hazardous substances

f. Specific operating rules of the unit:

① Work progress

② Work organization

③ Staff

④ Staff’s permissions

The safety equipment and the safety awareness of personnel at work are subject to inspection without prior notice from time to time, at least once every six months.

Operate in accordance with the operating instructions and all the supplementary

documents.

2.4 Instructions for Machine Operators

2.4.1 Danger

This equipment has been manufactured in accordance with the technical standards and the recognized safety specifications, but there may be dangers still in use.

Danger

Rotating drill is very sharp!

Beware of injuries!

Wrench must be removed immediately after use!

Otherwise it will damage the machine!

Protective device

Only operate this unit with a well-functioning complete protective devices and suction unit.

Danger:

Do not remove or disable the safety device!

If the protective device has to be removed, the operator must re-attach the device immediately after the work is done and check if it functions properly.

When the equipment is idle or cut off for a long time, all the protective devices must be installed in efficient state.

Caution:

⑩ Check for any visible damage or defect on the outside of the equipment at least once per shift, including changes in operating conditions, and immediately notify the competent department or personnel, shut down immediately and protect the equipment if it has any defect.

Safe operation of this equipment

Danger:

Before turning on the equipment and starting production, make sure no one will be harmed.

This is intended for the following situations:

a. Production and operation

b. Reinstallation

c. Adjustment of important safety devices

d. Repair

All works should be done in accordance with the start instructions and operating instructions

During the repair work,

a. Follow the repair instructions; during the production,

b. Do not put any item on the equipment

c. Pay attention to the size of the workpiece

(See Task Identification/Responsibility Handbook)

Danger:

During the operation of this equipment, the following operations may not be carried out:

a. Cleaning

b. Maintenance

c. Repair work

Danger:

a. Do not reach into the feeding area

b. Do not look into the feeding area

c. Do not approach the roller

d. Do not stay in the chip flying area

e. Do not open the machine baffle without safety device

f. Maintain a sufficient distance with moving workpiece

g. Maintain a sufficient distance with moving parts of the equipment

Danger:

Take appropriate measures to prevent malfunctions due to loose pieces or workpiece residues:

a. Completely cut off loose pieces

b. Shut down the equipment with the program and clear the loose pieces

c. Properly position the workpiece clamping device

The workpiece clamping device can only be loosened when the feeding and the tool

are stopped.

Ensure that there is sufficient discharge area if the parts are long.

Before leaving the equipment:

a. Cut off the control voltage

b. Cut off the main switch

c. Locke the main switch

d. Pull out the key from the key switch

e. Cut off the pneumatic device

Caution:

When the function has failure:

a. Cut off immediately

b. Wait for all moving parts to stop

c. Protect the equipment to prevent re-start:

① Electrical; ② Pneumatic

d. Eliminate the problem

e. Check the equipment for damage

Instructions on the equipment shall comply with all safety and hazard instructions

and should be legible.

⚠

Danger:

Risk of injury from catching or pulling in when wearing/keeping the following items:

a. Loose clothes

b. Jewelry

c. Watch

d. Finger ring

e. Long hair

Therefore, the above clothes are prohibited during any operation on the equipment.

2.4.2 Personal Protection Instructions

Use suitable protective equipment that has been inspected by the competent authority.

Ear protectors

Wear ear protectors when working on this equipment for cutting.

Goggles

Wear goggles

a. During installation and commissioning

b. During adjustment and operation

c. When grinding the tools

Safety shoes

Wear safety shoes at work site; never wear casual shoes or sandals.

Dust masks

Wear a dust mask if it is required to process the materials without a suction device.

Protective gloves

a. In contact with chemicals, tools and workpiece with sharp edges

b. When cleaning and handling the parts of the equipment that are hot

2.4.3 Operator Awareness

a. Do not operate this equipment under the influence of narcotics such as alcohol or drugs at all times

b. Inattention and diminished responsiveness can affect more people's safety.

c. Drugs will extend the reaction time.

2.4.4 Fire Risk

There will be fire and explosion risks due to the resulting dust, so the followings are strictly prohibited in the entire production area:

a. Kindling

b. Smoking

c. Welding operations

d. Combustion cutting operations

e. Grinding operations

f. Separation operations

If such operations are required for production reasons, then:

a. Block the area

b. Cut off the entire equipment

c. Carefully clean the dust and combustible materials from the equipment and surrounding

d. Maintain adequate ventilation

e. Get ready fire extinguishing agent

f. Arrange supervisors

After operation, arrange fire-watch personnel to monitor the work area for a sufficient time.

⚠

Danger:

* Explosion hazard!

2.4.5 Cleaning the Equ

a. First cut off the equipment before cleaning

b. Only clean the equipment with a vacuum cleaner or a dry cloth

c. The interior of the switch cabinet should be cleaned by electrical professionals regularly

2.4.6 Work Area

The work area should be absolutely clear.

The following areas should be kept clean:

a. Production equipment

b. Safe area

c. Handle

d. Pedal

e. The floor must be flat and clean without:

① Garbage

② Chips

③ Workpiece residues

④ Fuel

⑤ Wood powder

* Do not place any object on the equipment.

* Work area must have sufficient lighting.

* Raw materials must be ready near work position.

* Stack finished workpieces safely.

2.4.7 Raw Materials

Use wood-based materials without nails, stones or similar inclusions.

⚠

Danger:

Wood is not homogeneous.

Operate carefully:

* Dangers caused by debris, rupture, and flying debris!

2.5 Emission Values

Dust emissions

When the equipment is connected to an efficient suction system (outlet speed not lower than 20 m/s), the dust emission value under normal use is always below the limit of 2 mg/m3 as currently regulated.

Dust emissions from cutting machines:

Do not operate this equipment if the suction unit doesn’t run properly.

If the processing equipment can’t be completely enclosed, wear a dust mask during adjusting and operation.

Danger: Wood dust is harmful to health!

Noise emissions

Emission values for production devices with cutting:

Idling 55dB (A) - 80dB (A)

Processing 75dB (A) - 85dB (A)

Measurement error increment K 5 dB

Emission values for production devices without cutting:

This value is below the measurement.

Description:

The above information is intended to enable operation units to better estimate the hazards and risks.

Safe values at work site

The values mentioned above are the emission values, which are not necessarily the

safe values at work site.

Despite the connection between emission levels and pollution levels, no conclusion can be drawn as to whether additional safety measures need to be taken. The factors that can actually affect the existing pollution level at the site include:

a. Structure of the tool

b. Material being processed

c. Duration of the impact

d. Characteristics of the operating space

e. Other noise sources

f. Number of production devices

g. Other operations nearby

The allowable noise emissions shall be subject to the provisions of the country where the operation unit is located. If, in a few cases, the noise emission exceeds the nationally established limits due to special factors, the operation unit must take additional protective measures.

Description:

Changes in noise emissions can be a sign of failure.

The machine operators should be aware of the usual operating noise and the changes in noise.

⚠

Danger:

Wear ear protectors:

*** Continuous noise can impair hearing!**

2.6 Safety Devices

2.6.1 Emergency Stop

The emergency stop switch should only be activated if there is a danger to personnel and the equipment.

Do not use the emergency switch for general cut off.

The emergency stop switch will check and stop all movements that may bring hazards as soon as possible.

⚠

Danger:

Emergency shutdown does not completely cut off the voltage of the equipment.

The following functions still need electric energy:

a. Motor braking

b. Moving the equipment parts, so as to release the injured

c. Maintain the machine control functions

The following functions still need aerodynamic energy:

a. Fix the equipment parts firmly

Re-connection after emergency stop

a. Exclude the reasons for the emergency stop

b. Remove all the parts from the equipment

c. Release the emergency switch

d. Turn on the equipment according to the instructions

Emergency pause

Emergency pause switch is:

A red button switch on the operation box; the machine will enter the emergency

shutdown and all the movements stop when it is pressed down.

After the emergency stop, turn this button clockwise a certain angle before re-connection to make the red button pop up, and then press the Reset button to make the machine resume work.

2.6.2 Main Switch

The main switch interrupts the power supply to the machine.

The main switch can be protected with a padlock to prevent unauthorized access.

⚠

Danger:

The main switch is not emergency stop switch! Switch off the main switch before carrying out the following tasks:

a. Repair and maintenance

b. Cleaning

c. Repair

d. Installation and commissioning

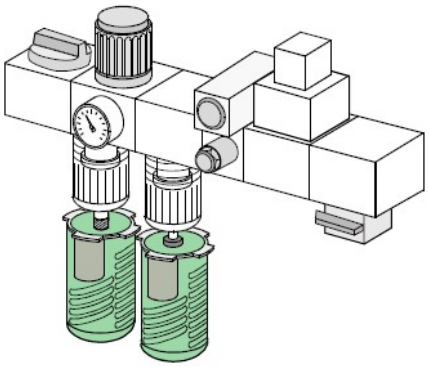
e. Interrupting production

To cut off the equipment:

a. Wait for all the motors to stop

b. Cut off the main power supply

c. Lock the main switch with a lock to prevent unauthorized re-connection



d. Hang the warning sign on the main switch

e. Close all the compressed air shut-off valves

f. Lock the compressed air shut-off valves with locks to pr

reconnection. Operators on each unit must lock the main switch and the

compressed air shut-off valve with locks.

⚠

Danger:

Even if the main switch is cut off, there is still voltage at the input of the switch

cabinet.

* Life risk!

2.6.3 Residual Risks after Cutting off Main Switch

Surplus energy

Even if the main switch is cut off,

* There is still voltage at the terminals in the switch cabinet.

* The power for the machine lighting still has voltage.

* Heating power supply and electronic data storage unit in the switch cabinet still have voltage.

* Capacitors still have voltage.

Therefore, the operations of the switch cabinet are only started five minutes after the main switch is turned off.

Residual pneumatic energy

Exhaust the compressed air system, or else uncontrolled movement may occur.

Kinetic energy

Rotating or moving parts or tools may slip.

Thermal energy

High-speed moving parts will produce high temperatures.

High-altitude potential energy

a. Parts of this equipment will sink from their position.

b. If necessary, use a suitable crane to fix the components.

c. Lamination spring will be released.

d. Tensioned belt will be broken off.

2.6.4 Machine Baffle

Machine cover is used to prevent:

a. Noise

b. Dust

c. Chips

d. Flying workpiece block

e. Squeezing location

f. Rotating tools

The machine cover should always be closed.

Turn off the motor before opening the machine cover.

Wait for the motor to stop.

The protective cover on the machining tool is used for:

a. Contact protection

b. Chip collection device

Do not remove the machine cover or protective cover or impair the function when the equipment is running.

Danger:

Do not touch slipping tools:

* Risk of injury!

The motor can be started only the protective cover has been installed.

Before starting:

Correctly attach the machine cover

2.7 Accidents

If someone is injured at work, please:

a. Keep calm

b. Start emergency cutoff

c. Rescue the wounded from danger

d. Act calmly if someone is caught

e. Add personnel for rescue

f. Perform first aid

g. Notify the ambulance center

h. The telephones nearby have alarm phone number

* The ambulance center provides training courses on first aid.

Suffering from fire

a. Keep calm

b. Call the fire alarm

c. Cut off the power of the equipment

d. Try to extinguish the fire

Prevention instructions:

a. Mark the locations of the fire alarm devices

b. Let the staff understand the functions of the fire alarm devices

c. Let the staff understand the operating procedures of fire alarm

d. Let the staff know the prompt of emergency exits

e. Set up a collection location of staff

f. Let the staff understand the location and operation of fire extinguishers

g. Suitable extinguishers are:

① Powder fire extinguisher

② Carbon dioxide fire extinguisher for electrical components

⚠

Danger:

In a narrow, poorly ventilated room, using carbon dioxide fire extinguisher will have:

* Risk of suffocation!

Clean-up and rectification

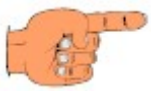
In the event of a fire, the oils, lubricants, plastics and paints of the equipment may produce unhealthy gases and fumes.

After the fire, consult professional cleaning company and service department for advice:

* Erosive fumes can cause the equipment to rust

2.8 Operation of This Equipment

2.8.1 Before Machine Running



Unloading instructions

Follow the unloading instructions on the shipping package.

Transport damage

a. Upon delivery, immediately check if the packaging and the equipment are damaged

b. Report the damage to the shipping company within the prescribed time limit

c. Immediately report the damage to the manufacturer and shipping insurance company

d. Do not put the damaged equipment into production at any time

Storage

a. The equipment must be dry and properly oiled for storage

b. The equipment in storage shouldn't be affected by the climate

c. For prolonged storage, take additional anti-corrosion measures

Preparation for transport

a. Move the equipment to the shipping location (see operating procedures)

b. Separate the equipment from the external connection

d. Remove the tool

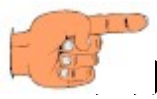
e. Tighten the clips

f. Install the transport protection devices

g. Get ready retainers (see operating procedures)

h. Pay attention to the weight of the equipment (see the shipping order)

2.8.2 Machine Maintenance



Description:

The repair work of this equipment can only be carried out by professionals.

Pay attention to follow the repair instructions

Observe the deadlines set for the following jobs:

a. Regular general inspection

b. Safety device inspection

c. Adjustment work

d. Repair work

e. Replacement of parts

f. Replacement of partial equipment

Before carrying out maintenance, repair and cleaning work, be sure to:

a. Identify the supervising professionals

b. Cut off the power of the equipment

c. Protect the equipment to prevent unauthorized re-connection:

① Protect the main switch with locks

② Protect the compressed air shut-off valves with locks

③ Put warning signs on the main switch and the compressed air shut-off valves

d. Open the machine baffle when all the motors have stopped

During maintenance work, the following parts should be visually inspected:

a. Compressed air pipeline

b. Hydraulic pipes

c. Wires

d. Coolant pipes

e. Dust exhaust hoses

The possible faults include:

a. Loose connection

b. Position not tight

All defects should be reported and excluded by professionals or electrical technicians.

2.8.3 Modification/Change

We are not responsible for material damage and personnel injury caused by unauthorized modifications or changes to this equipment. We do not guarantee the performance of this equipment, and modifications and changes are allowed only with the manufacturer's written consent.

We are not responsible for material damage and personnel injury if the safety devices such as protective fence, safety door, safety door, safety switch and safety cover are disassembled without permission or damaged.

2.8.4 Scrapping Cleanup/Environmental Protection

Observe local regulations for scrapping and clean-up of this equipment or its parts. Scrapping and clean-up should be environmentally compatible. Please commission official disassembly organization to clean up.

Material classification

a. Electrical waste

b. Steel scrap

c. Plastics

d. Composite wood products

Sorting waste is good for the environment

a. Wood

b. Plastics

c. Metal

d. Oil / grease

Danger:

Hot metal chips may ignite other materials.

Such as:

a. Wood chips

b. Oil-soaked cloth

Risk of fire!

2.8.5 Processing Tools

Instructions

a. Wear suitable protective gloves before using tools

b. Do not damage the tools

c. The tools must be transported inside the package or device

d. The tools can only be installed in a clean state

e. Do not reach near the rotating tools

f. Cover the tools when repair the machine

g. Pay attention to the rated revolutions of tools

h. Pay attention to the direction of rotation

i. Pay attention to the tool manufacturer’s instructions

j. Check if the position is fixed after installing the tools

k. Observe the protection and safety regulations regarding access to wood processing tools

l. Do not cut metal saw blade quickly with hard alloy

Danger:

a. Cutting tools have sharp edges

b. Rotating tools are often invisible

Risk of injury!

When working on the tool loaded in this machine, turn off th

protect it from unauthorized restart.

3、Machine Nameplate

4、Structure and Characteristics

The equipment consists of the rack, top machine head processing mechanism, bottom machine head processing mechanism, automatic side-stop mechanism, double-gripper clamp mechanism, operation box, electric box, front floating platform, rear discharge conveyor platform and electrical control system.

The rack includes machine body and exterior sheet metal parts;

The top machine head processing mechanism includes top Y-axis motion mechanism, Z-axis motion mechanism, top drilling mechanism, upper spindle mechanism and blank holding mechanism, which can process the holes and shapes in the five sides; the top drilling mechanism and top spindle mechanism consist of drill spindle, linear slide, servo motor, synchronous pulley and precision ball screws; the drill spindle consists of 12 vertical spindles, 4 horizontal spindles and an electric spindle, which can drill in the five sides of the plate.

The bottom machine head processing mechanism includes top W-axis motion mechanism, A-axis motion mechanism, bottom drilling mechanism and bottom spindle mechanism, which can process the holes and shapes in the sixth side; the

top drilling mechanism and top spindle mechanism consist of drill spindle, linear slide, servo motor, synchronous pulley and precision ball screws; the drill spindle consists of 9 vertical spindles and an electric spindle, which can drill in the sixth side of the plate.

The automatic side-stop mechanism includes side-stop base, blank stop rubber wheel, linear slide, rack, gear and servo motor; it allows automatic blank positioning and won't damage the plate.

Double-gripper clamp mechanism includes clamp moving seat, upper and lower gripper set, blank holding cylinder, linear slide, rack, gear, servo motor and synchronized pulley, and allows firm clamping with a high degree of moving precision.

Operation box includes rocker arm mechanism, main unit and scanner.

The front floating platform consists of a low-friction table topped with pneumatic floating beads to allow the plate to slide on the table without scratching.

Rear discharge conveyor platform uses power transmission, multi-row floating brush and multi-row high-strength conveyor belt to facilitate flexible processing; electrical

control system consists of control panel, electrical cabinet and pedal from SYNTEC and well-known international brands, which ensure the high accuracy and high cost performance.

This equipment has the following features:

1. Compact structure, good rigidity and high accuracy.
2. Operation is simple and the staff can start operation after a short period of training.
3. Handle small quantities and various kinds of products and have more advantages in this aspect.
4. The equipment uses Windows operating system and SYNTEC control system;
5. One clamping allows drilling in six sides of the workpiece and slotting in the top and bottom surface;
6. Integrated gantry, double beam, high rigidity, 3.5KW high power spindle on each beam, wider processing range;
7. High-speed long double-gripper structure reduces the times of gripper replacement and makes processing more efficient;
8. Different discharge modes are available (front-in front-out or front-in rear-out) to meet different productions;
9. Use central lubrication system to ensure machine operation, extend the machine life and reduce physical strength.

5、Main Technical Parameters

Model		NCB2412	NCB2412S5
Sheet width		50-1200MM	50-1200MM
Sheet length		250-2400MM	250-2400MM
Sheet thickness		12-50MM	12-50MM
Top speed	X-axis	5-110M/MM	5-110M/MM
	Y-axis	5-75M/MM	5-75M/MM
	Z-axis	5-30M/MIN	5-30M/MIN
	V-axis	5-50M/MIN	5-50M/MIN
	U-axis	5-110M/MM	5-110M/MM
	A-axis	5-30M/MIN	
	W-axis	5-75M/MM,	
Gang drills	Vertical drill on top machine head	12	12
	Horizontal drill on top machine head	8	8
	Vertical drill on bottom machine	9 (4 crossing zero)	

	head		
	Rotating speed	4000RPM	4000RPM
Electric spindle		Top-bottom 2*3.5KW,18000RPM	Top 1*3.5KW,18000RPM
Total power		19.45KW	15.45KW
Dimensions (L X W X H) mm		5900x2700x2100 mm	5900x2700x2100 mm

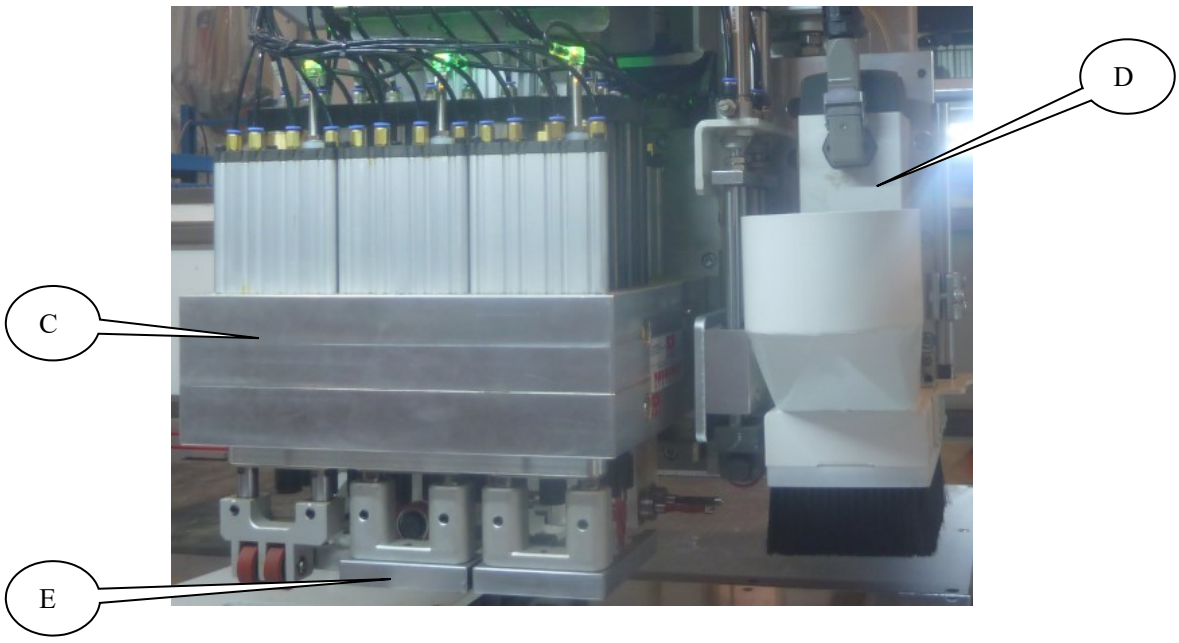
6、Structure and Purpose of Machine Tools

6.1 Composition

The equipment consists of the rack, top machine head processing mechanism, bottom machine head processing mechanism, automatic side-stop mechanism, double-gripper clamp mechanism, operation box, electric box, front floating platform, rear discharge conveyor platform and electrical control system.

6.1.1 The rack includes machine body and exterior sheet metal parts;

6.1.2 The top machine head processing mechanism includes Y-axis motion mechanism, Z-axis motion mechanism, top drilling mechanism, upper spindle mechanism and blank holding mechanism



Y-axis motion mechanism “A” is used for horizontal feeding of the top machine head and is driven by linear slide, rack, gear and servo motor;

Z-axis motion mechanism “B” is used for upper and lower feeding of the top machine head and is driven by linear slide, synchronous pulley, precision ball screw

and servo motor;

Top drilling mechanism “C” is used for drilling and processing of plate material and is controlled by the motor and gas;

Top spindle mechanism “D” is used for slotting and forming of plate material and is controlled by high-speed motor and gas;

Blank holding mechanism “E” is used for processing and positioning of plate material and is controlled by the plastic pressure wheel, pressure plate and gas;

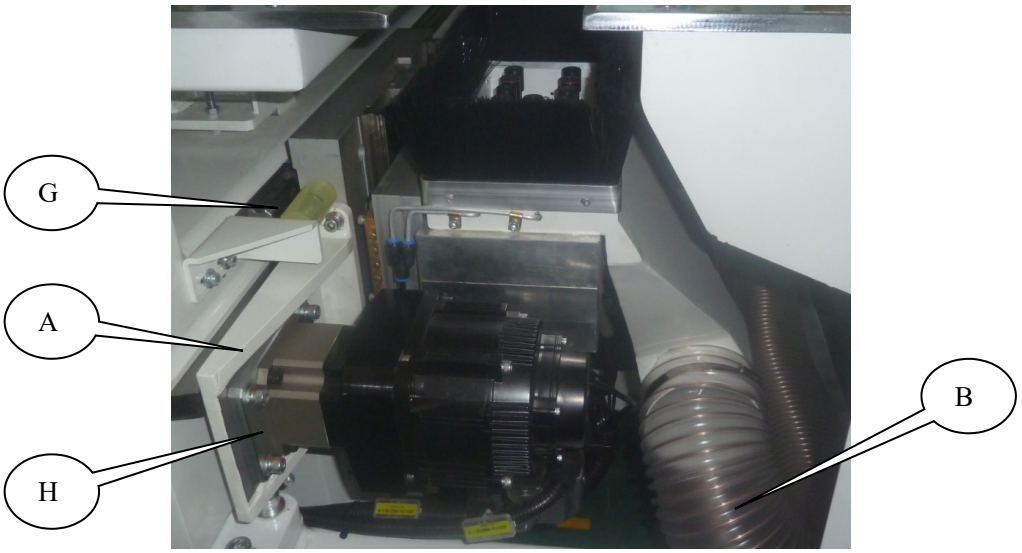
Linear guide “F” is used for sliding of top machine head and slide base;

Ball screw “G” is used for sliding of slide base.

Rack and gear “H” is used for moving of top machine head.

The top drilling mechanism and top spindle mechanism consist of top machine head vertical drill, top machine head horizontal drill and electric spindle. The standard top machine head drill of NCB2412/NCB2412S5 equipment includes 12 independent vertical spindles (32mm center distance); 4 independent horizontal spindles (8 spindles); one independent spindle.

6.1.3 The bottom machine head processing mechanism includes W-axis motion mechanism, A-axis motion mechanism, bottom drilling mechanism and bottom spindle mechanism.



W-axis motion mechanism “A” is used for horizontal feeding of the top machine

head and is driven by linear slide, rack, gear and servo motor;

A-axis motion mechanism “B” is used for upper and lower feeding of the top machine head and is driven by linear slide, synchronous pulley, precision ball screw and servo motor;

Bottom drilling mechanism “C” is used for drilling and processing of plate material and is controlled by the motor and gas;

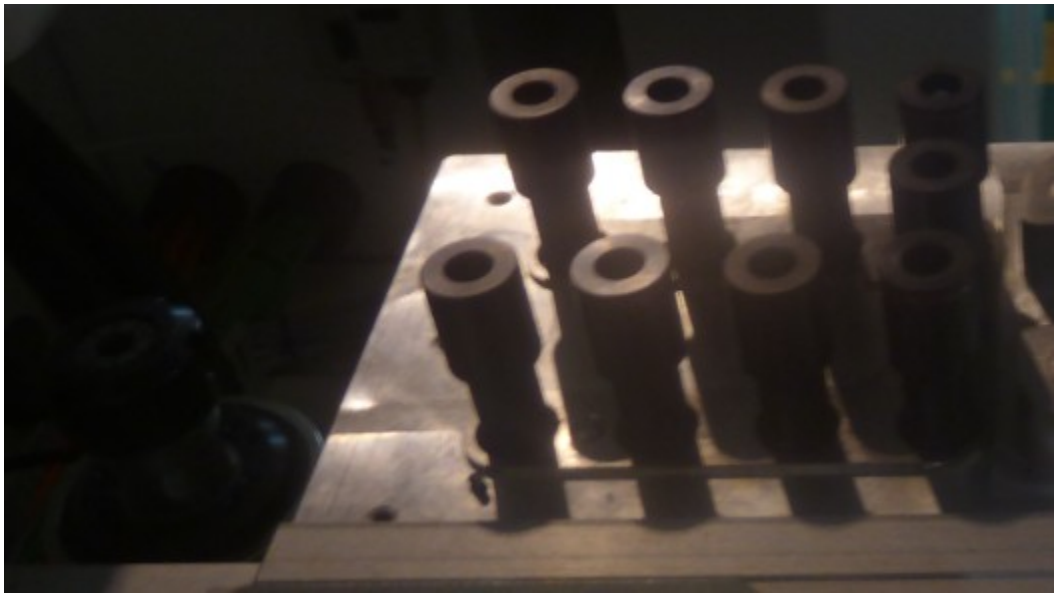
Bottom spindle mechanism “D” is used for slotting and forming of plate material and is controlled by high-speed motor and gas;

Linear guide “F” is used for sliding of bottom machine head and slide base;

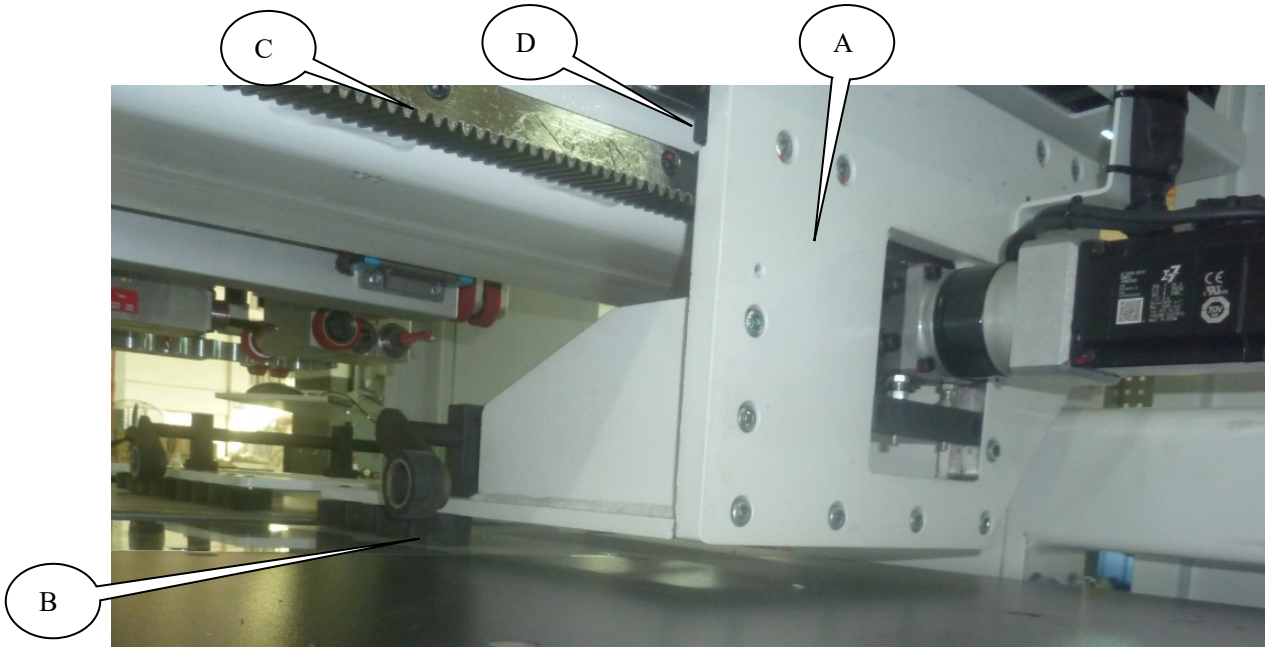
Ball screw “G” is used for sliding of slide base.

Rack and gear “H” is used for moving of bottom machine head.

The bottom drilling mechanism and bottom spindle mechanism consist of bottom machine head vertical drill and electric spindle. The standard bottom machine head drill of NCB2412 equipment includes 9 independent vertical spindles (32mm center distance); one independent spindle. NCB2412S5 equipment doesn’t have bottom drilling mechanism and bottom spindle mechanism.



6.1.4 The automatic side-stop mechanism includes side-stop base, blank stop rubber wheel, linear slide, rack, gear and servo motor.



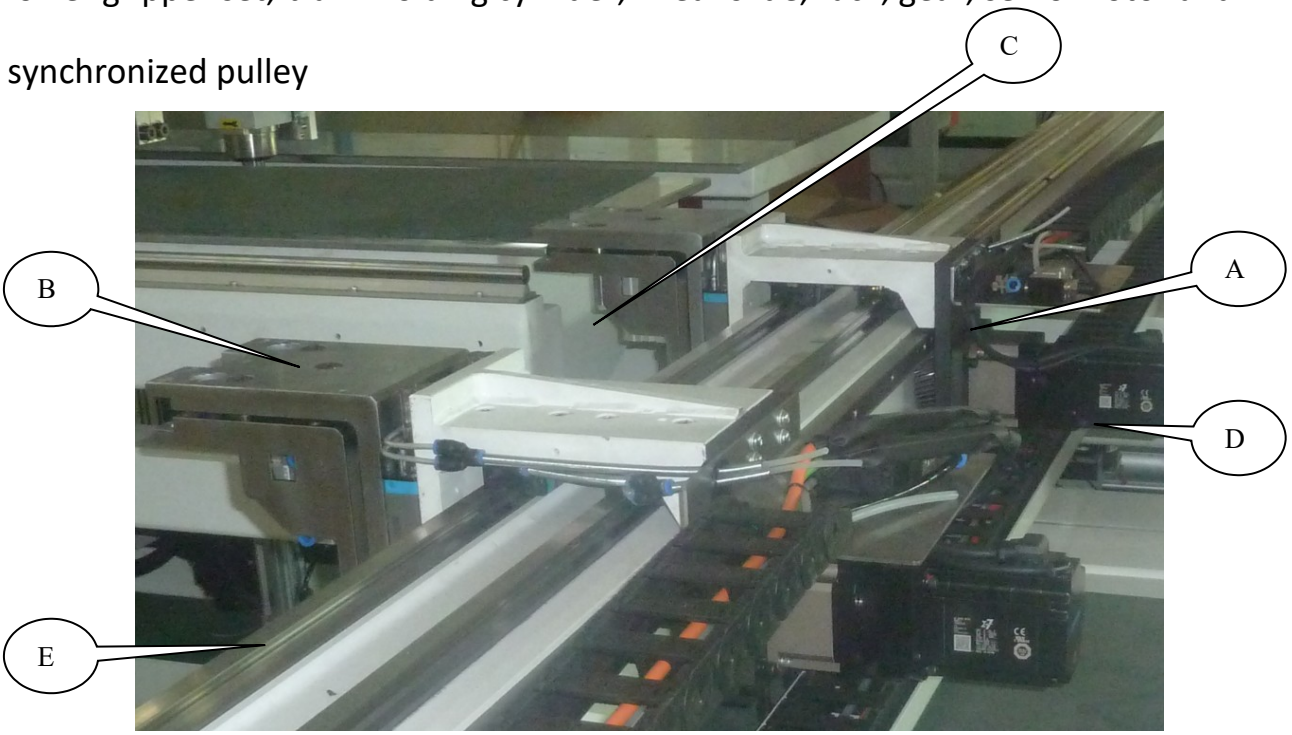
Side-stop base “A” is used for horizontal feeding of side-stop and is driven by linear slide, rack, gear and servo motor;

Blank stop rubber wheel “B” is used to fix side surfaces of the blank and hold on the top surface;

Rack and gear “C” is used for side-stop movement.

Linear guide “D” is used for sliding of side-stop;

6.1.5 Double-gripper clamp mechanism consists of clamp moving seat, upper and lower gripper set, blank holding cylinder, linear slide, rack, gear, servo motor and synchronized pulley



Clamp moving seat “A” is used for longitudinal feeding of the mechanism and is driven by linear slide, rack, gear and servo motor;

Upper and lower gripper set “B” is used to clamp the clamping plate and is driven by linear slide and cylinder;

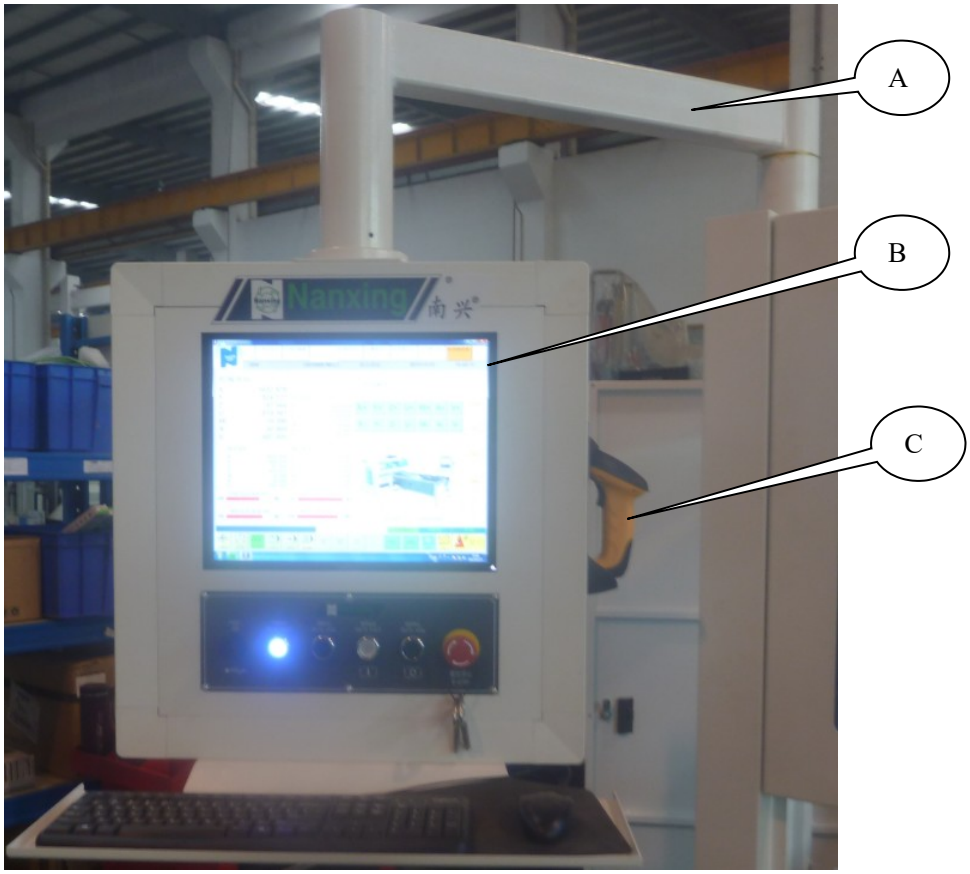
Blank holding cylinder “C” used to clamp the clamping plate and is driven by linear slide and cylinder;

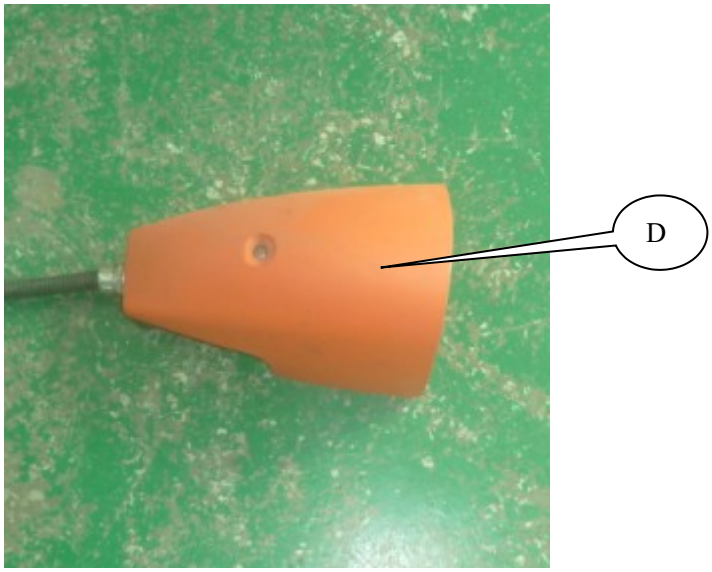
Rack and gear “D” is used for double-gripper movement.

Linear guide “E” is used for sliding of double-gripper;

6.1.6 Operation box consists of rocker arm mechanism, main unit, scanner and foot

switch.





Rocker arm mechanism “A” is used for console support;

Main unit “B”

Scanner “C” is used to identify the stored program bar code;

Foot switch “D” is used to start the program machining process.

6.1.7 Electrical box consists of electrical parts.

6.1.8 Front floating platform consists of floating pedestal, deck and fan;

Floating pedestal “A”, deck “B”, fan “C”;

6.1.9 Rear discharge conveyor platform consists of power transmission, multi-row floating brush and multi-row high-strength conveyor belt;

Power transmission “A”, multi-row floating brush “B”, multi-row high-strength conveyor belt “C”;

6.1.10 Electrical control system consists of electrical parts.

6.2 Motion Axes of Equipment

6.2.1 Movement Direction of Motorized Unit of the Equipment

The motorized unit of the equipment can be moved in the following directions:

“X” axis: Longitudinal movement of the gripper unit; (controlled axis)

“U” axis: Longitudinal movement of the gripper unit; (controlled axis)

“Y” axis: Lateral movement of top machine head; (controlled axis)

“Z” axis: Vertical movement of the gripper part (controlled axis)

“Z” axis: Downward stroke of the vertical compression member; (controlled axis)

“Z” axis: Vertical movement of drill spindle; (controlled axis)

“Z” axis: Vertical lifting of the upper spindle; (controlled axis)

“A” axis: Vertical movement of bottom machine head; (controlled axis)

“A” axis: Vertical movement of the gripper; (controlled axis)

“A” axis: Vertical movement of drill spindle; (controlled axis)

“A” axis: Vertical lifting of the lower spindle; (controlled axis)

“V” axis: Lateral sliding of automatic stop unit; (controlled axis)

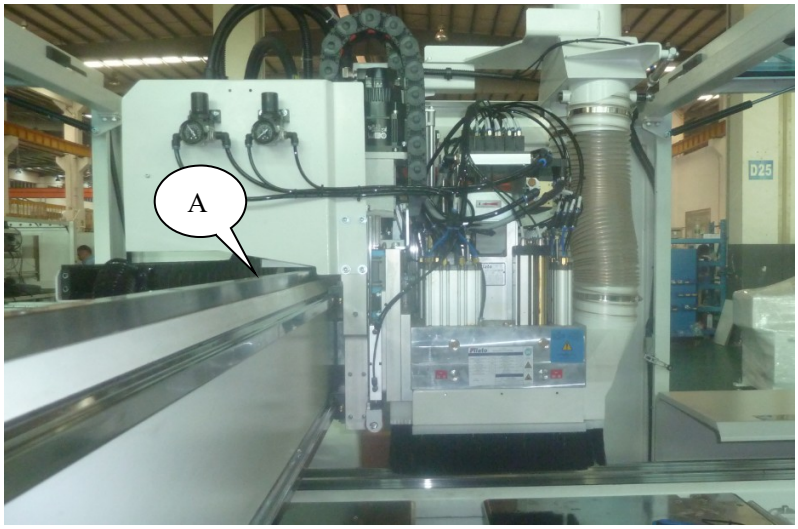
“W” axis: Lateral movement of bottom machine head; (controlled axis)


NCB2412SS
Nanxing

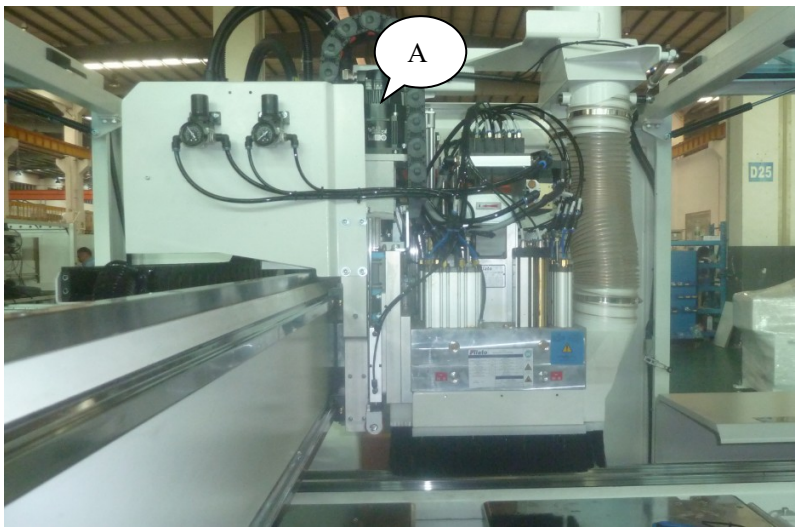
6.2.2 Description of Motion Axes

Work platform double-gripper (“X” axis, “U” axis) is driven by rack, slide and gear, and axis “A” is driven by two servo motors.

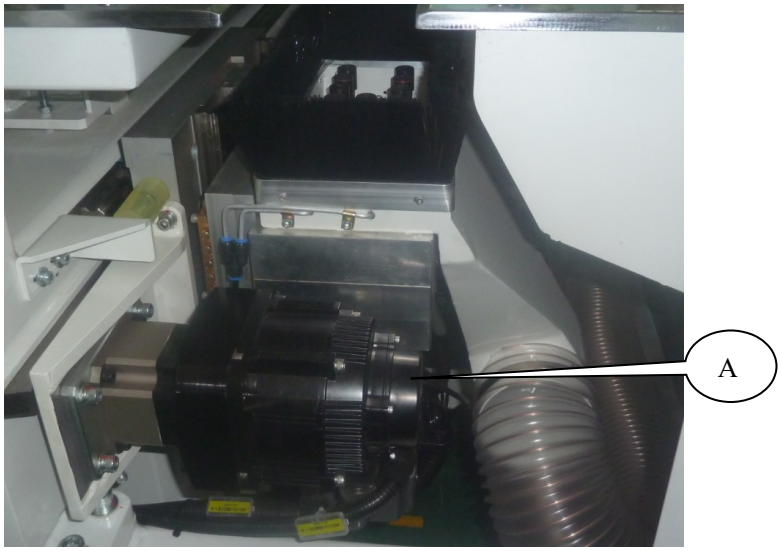
The sliding of top machine head (“Y” axis) is driven by rack, slide and gear, and axis “A” is driven by one servo motor.



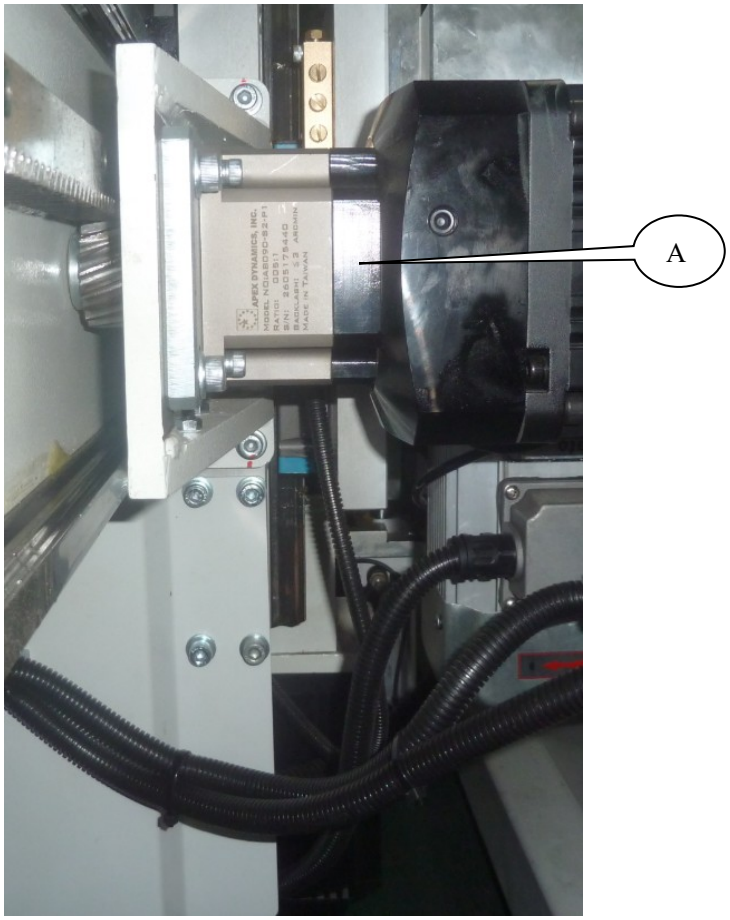
The sliding of the upper spindle (“Z” axis) is driven by slide rail and precision ball screw, and axis “A” is driven by one servo motor.



The sliding of bottom machine head (“W” shaft) is driven by rack, slide and gear, and axis “A” is driven by one servo motor.



The sliding of the lower spindle (“A” axis) is driven by slide rail and precision ball screw, and axis “A” is driven by one servo motor.



The sliding of the automatic side-stop mechanism (“V” axis) is driven by rack, slide and gear, and axis “A” is driven by one servo motor.

6.3、机器长、宽、高尺寸及操作位置图 6.3 Machine Length, Width, Height and Operating Position

Width: 2700mm
Length: 5900mm
Height: 2100mm

6.4、Loading/Unloading and Handling of Machine Tools

Equipment is placed on the pallet for shipping. Pallet can only be transported by forklift or pallet conveyor. The fork foot of the forklift must be long enough and should be inserted underneath the base close to the support. To avoid accidents during transport, the equipment must be securely fastened to the truck with ropes or other suitable means.

Note: During transport, it is important that the equipment should be protected from falling and bumping and should remain stable throughout the transport period.

Insert the fork foot underneath the base close from appropriate position so that the center of gravity of the equipment is between the two forks and ensure that the equipment is stable during lifting.

6.5、Installation and Commissioning

6.5.1 Preparation of Installation Area

6.5.1.1 Installation Requirements

Equipment has been designed to maintain its level on its own support feet.

The installation area should be equipped with power supply and gas source connector.

Before installation, verify whether the ground can withstand the weight of the equipment.

➢

The installation area must be level in horizontal and vertical direction, the allowable horizontal tolerance is +0.25mm/m, and the maximum inclination is +0.3% in all directions.

6.5.1.2 Machine Positioning

（+/-0.01mm)。

Take a professional level gauge (about 0.05mm/m) and a constant thick slab (+/-0.01mm).

Put the machine in the work position and start leveling:

Place the slab in the lengthwise direction of the workbench and make a cross and place it on the level gauge to check the position.

Adjust with the thread helix of each foot “A”.

6.5.2 Assembly

The machine has been assembled at the factory, and only the incoming power and gas need be connected.

6.5.2.1 Connection of User Incoming Power

Before connecting incoming power, first make sure that the power used by the user is consistent with the power (three-phase AC 380V) used by this machine; use a 4-core rubber cable with at least 4×6mm^2 cross section or an armored cable, or the cable can be inserted into a metal pipe to reduce magnetic interference.

The correct wiring procedure is as follows:

Set the main switch of the work area where the machine is installed to “OFF”;

Set the machine’s main switch to “OFF”, and then open the power inlet box of the machine.

➢

First, connect one end of the cable to the power inlet box of the machine. Insert the three phase cables into L1, L2 and L3 holes on the power inlet box of this machine respectively; connect the ground wire of the cable (yellow/green) to the PE hole of the ground wire (yellow/green) in the power inlet box of this machine.

➢

Connect the other end of the cable to the user power supply according to the sequence of L1, L2, and L3 phase in the power inlet box of the machine; connect the corresponding ground wire PE (yellow/green) to the user’s ground terminal.

6.5.2.2 Connection of Ground Wire

The grounding of the metal machine is done by an electrically isolated connector.

Grounding phase connection must comply with the CEI64-8 specifications.

The connection to the grounding phase must be free of mechanical tensile stresses and corrosion.

6.5.2.3 Gas Pipe Connection

Install a gas pipe for the FRL group, which is positioned on the base.

The gas source must be connected to the start of the FRL air group with an automatic connector;

Pull out the knob “A” until it is locked (about 5 mm) to accept the pressure in the air compressor.

Turn the knob until pressure gauge “B” displays 0.6MPa.

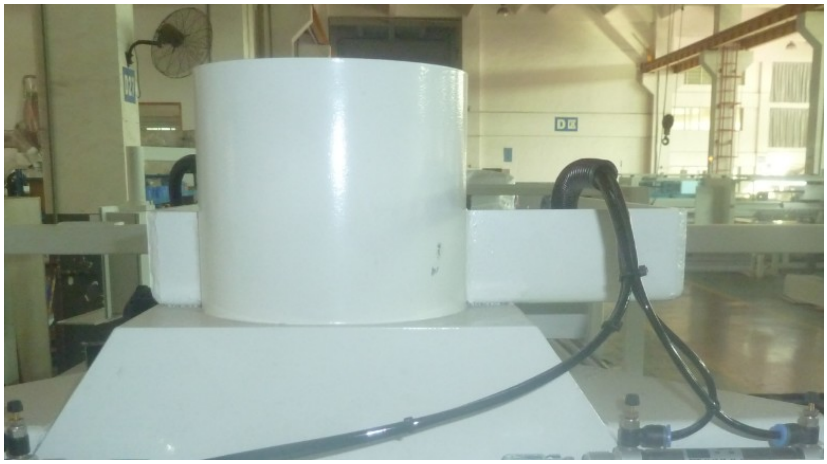
After adjusting, press knob “A” to stop rotating;

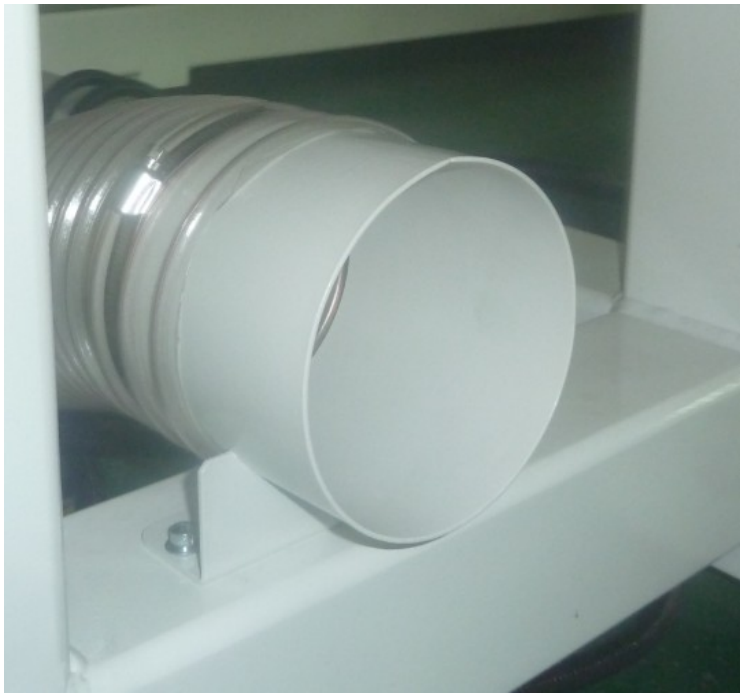
During work, check and adjust the pressure if necessary.

6.5.2.4 Suction Port Connection

Suction device connections are located on the edge. Connect with soft disc of 150mm upper diameter and 125mm lower diameter and lock with a metal hose clamp.

Good suction equipment is very important to ensure the high quality work and products because the machine needs to be connected to a reliable suction device at any time.





6.6、Operating Guide

6.6.1 Introduction

6.6.1.1 Start-up Process

a. Please connect the main circuit breaker

b. Press the Ready button to start the power; when the software is ready, press the Ready button again to turn on the servo power, and the Ready button indicator turns on.

c. Press the emergency stop button to disconnect the control part, and then the machine can’t start. When operating, please release the button to get ready.

6.6.1.2 Operation Panel

Panel Description:

A. USB port

B. Servo start button

C. Servo stop button

D. Program start button

E. Program stop button

F. Emergency stop button

6.6.1.3 Pneumatic Connection

Please provide air cylinder and adjust the pressure to 0.6-0.7MPa.

6.6.1.5 Machine Features

Panel size:

Minimum panel length: 200mm

Minimum panel width: 50mm

Maximum panel width: 1200mm

Minimum panel thickness: 12mm

Maximum panel thickness: 50mm

7、Machine Operation Instructions

Note: IPC, monitor, mouse and keyboard are the core components of the equipment, and the operation can be done by just touching gently. If the corresponding incidental function is not executed after the touch, the program execution condition is not established, and isn't key failure. Do not touch the same function button repeatedly in a short time. Do not touch the above components forcibly.

IPC uses Windows 7 genuine operating system, which is safe, reliable and stable. The machining center uses SYNTEC control system, featuring high control precision and fast running speed.

Operating steps of automatic loading/unloading machining center:

- The machining center uses AC three-phase four-wire power supply. Before turning on the machine, make sure that the power is connected correctly and the phase sequence is correct.
- Connect the gas source; the normal working pressure of the machine is 0.5-0.7MPa.
- Power on: Turn on the power switch, and the industrial computer will automatically start; press the servo start button, and the servo start button indicator turns on.
- When the industrial computer is started up and the three-color lamp on the top

of the cabinet is lit, run the Fox-CNC-NX software and start operation.

- The machine adopts manual feeding and automatic processing mode.
- The machine enters Fox-CNC-NX mode by default and starts processing directly with Fox-CNC-NX software.
- You can also turn off Fox-CNC-NX mode, and put the processing files into the NCFiles folder on desktop.
- Select the file to be processed, depress the pedal in automatic mode, and the equipment runs automatically.

In case of any emergency, press the emergency stop button and the machine stop all actions.

8、Operation Panel Instructions

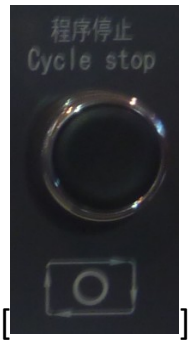
8.1 Function Description of Button Board

[ ]: USB port. It is used to upload the NC files to be processed. (Note: The port can’t be used for other purposes. Please scan virus before uploading from USB flash drive and make sure that the drive isn’t attacked by virus)

]: Servo start button switch. When this button indicator is off, press it to turn on the servo power and the button indicator turns on.

]: Servo stop button switch. When this button is pressed down, the servo power cuts off and the servo start button indicator turns off.

]: Cycle start button. When the button indicator is off, press this button to start the cycle and the button indicator turns on.



]: Cycle stop button. Press this button to stop the cycle and the button indicator turns off.

[

]: Emergency stop button. Press this button to stop the machine immediately in case of emergency. (Note: This button is only used in emergency situations)

Second Part: Machine Operation

1 . Interface

The software enters manual mode interface by default

1.1 Machine Tool Status Display

1. Machine tool ready

The so-called machine tool ready refers that the machine communication is normal and no failure is found; it is in standby mode and processing can be started.

2. Machine tool in processing

In processing refers that the machine is processing plate, and extreme care is needed to prevent injury of workers during processing.

3. Machine tool suspended

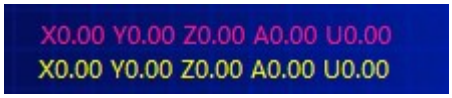
Machine tool suspended usually appears when the software generates cycle, and the machine starts to execute the cycle and waits for the worker to put the plate. The worker needs to issue confirmation signal before the machine continues further processing.

4. Machine tool fault

When deactivated or fault is displayed, please check the cause, which may be:

1. Emergency stop switch on the machine is pressed down
2. Machine collision
3. Lower machine isn't started

1.2 Coordinate System

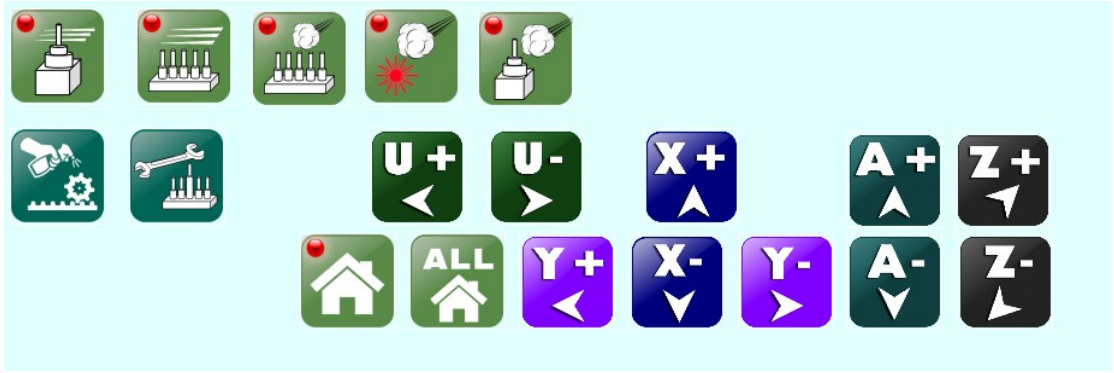


There will be a small plane coordinate system and the name of each axis, as the distribution and direction of each axis shown in the figure below

The axis where the gripper is located is the X-axis

The track on which the drill pack moves up and down is the Z-axis

The track on which the drill pack moves left and right is the Y-axis



1.3 Processing Speed

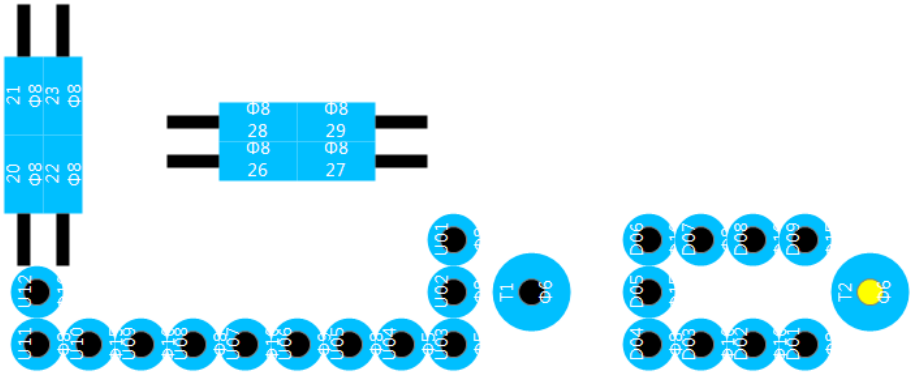
加工速度分为空走速度和正在加工时的速度，所谓的空走速度就是指的钻包没有进行加工板件时行走的速度，加工速度指的是加工板件时钻包行走的速度，例如主轴在开槽时的速度

Processing speed includes idle speed and the speed in processing. The so-called idle speed refers to the speed that the drill pack isn't processing; processing speed refers to the speed when the drill pack is processing plates, such as the speed when the spindle is slotting.

1.4 Alarm Log

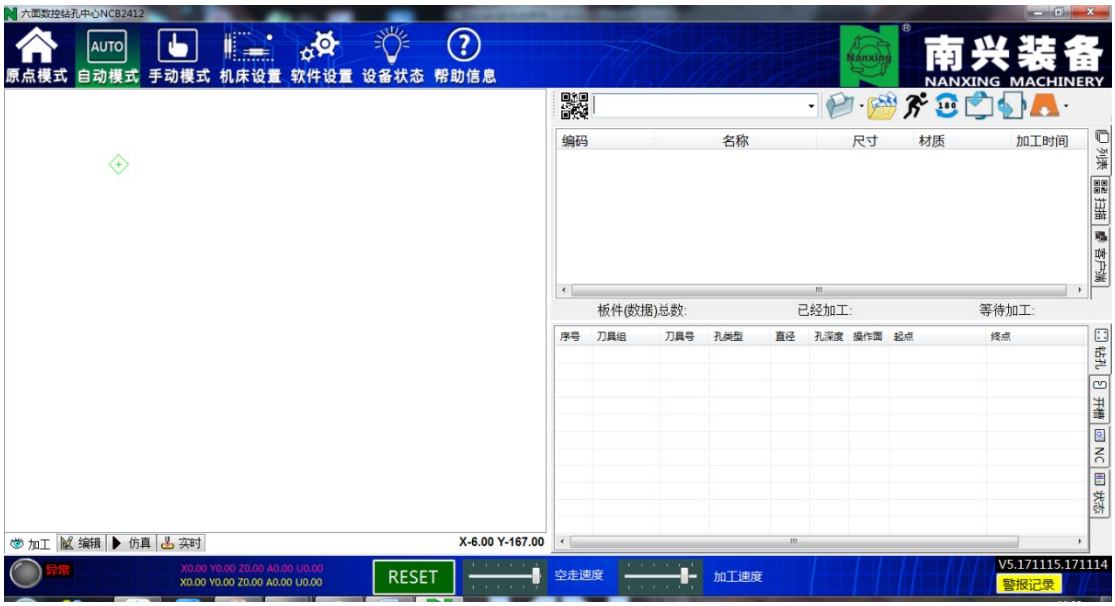
Alarm log is to record historical alarm information, such as under-pressure, over travel limit, etc.

1.5 Drill Pack Arrangement



Drill pack arrangement corresponds to the drills on the machine, and the position and diameter of each drill are clear at a glance.

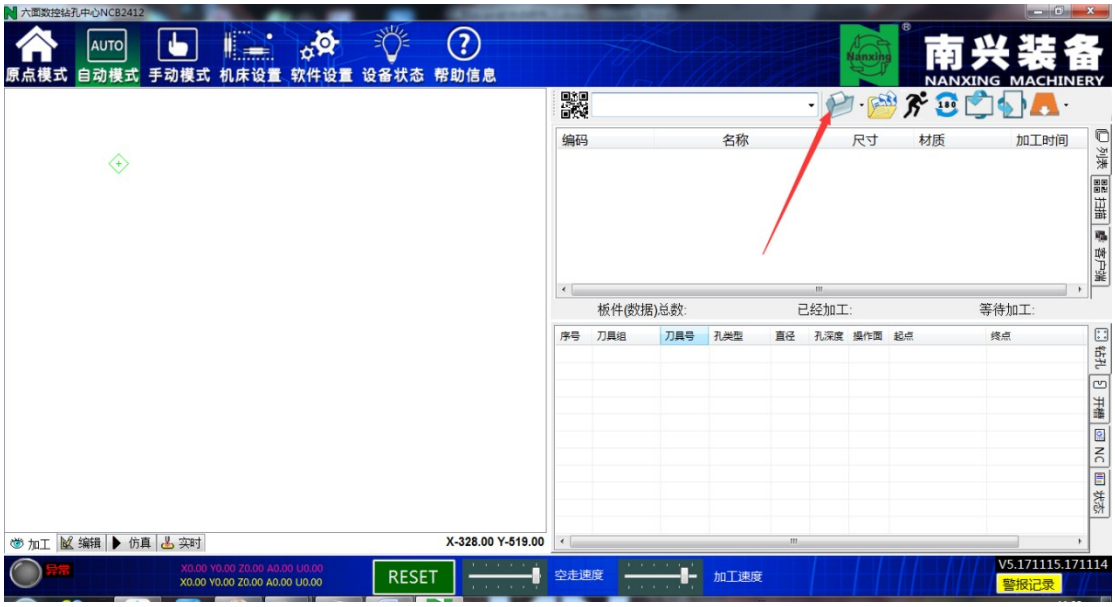
2、II. Auto Mode



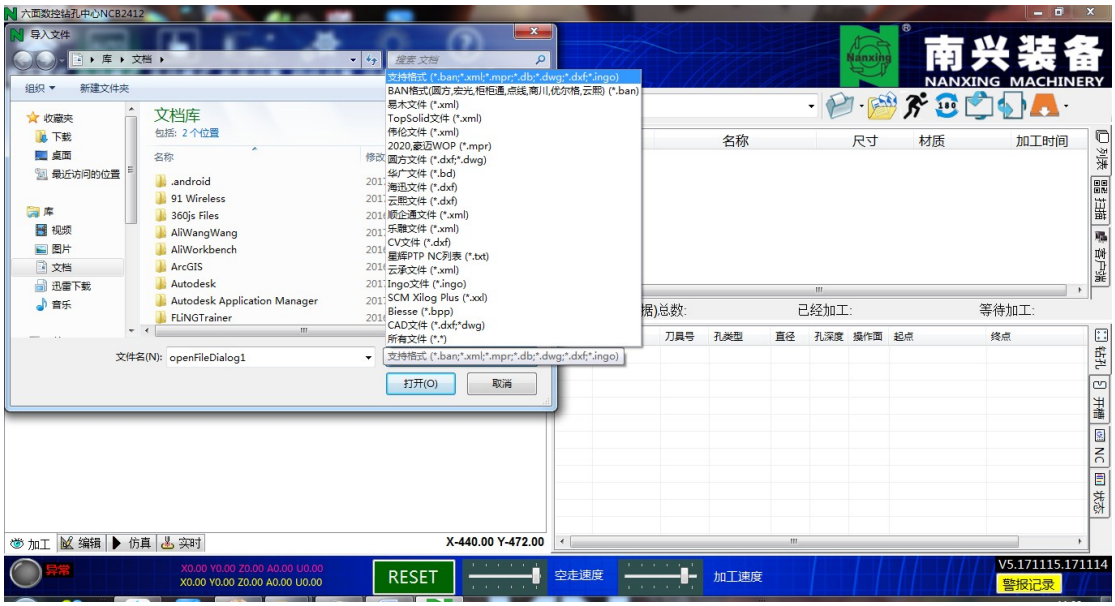
2.1 Data Import

2.1.1 Loading Data

Click the Load Data button to open a single data; it is applicable when a data file has the information of a number of plates.

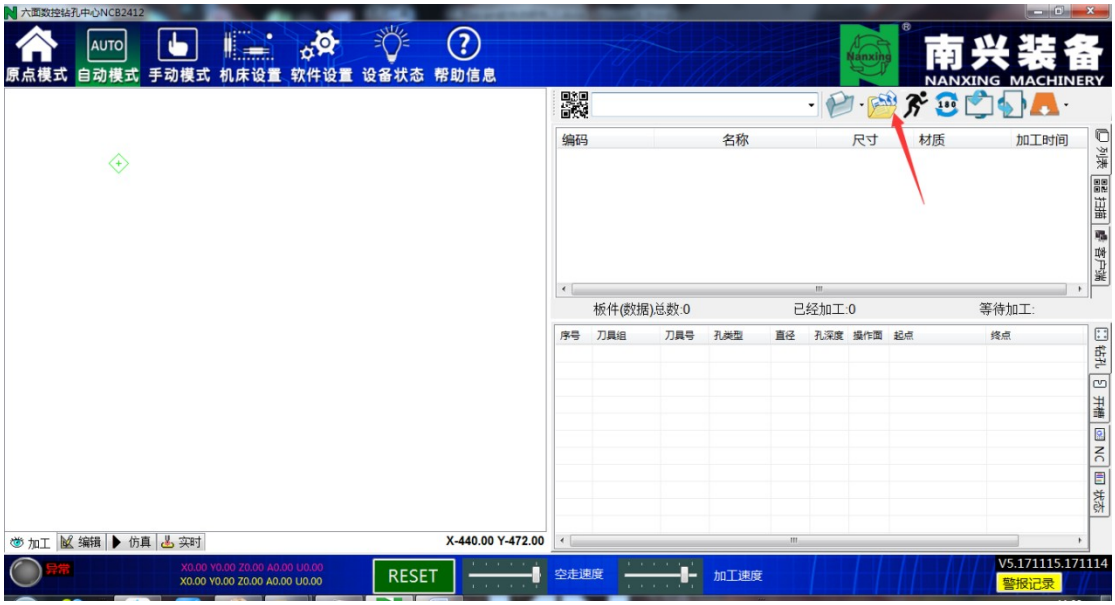


2.1.2 Compatible Formats for Data Loading



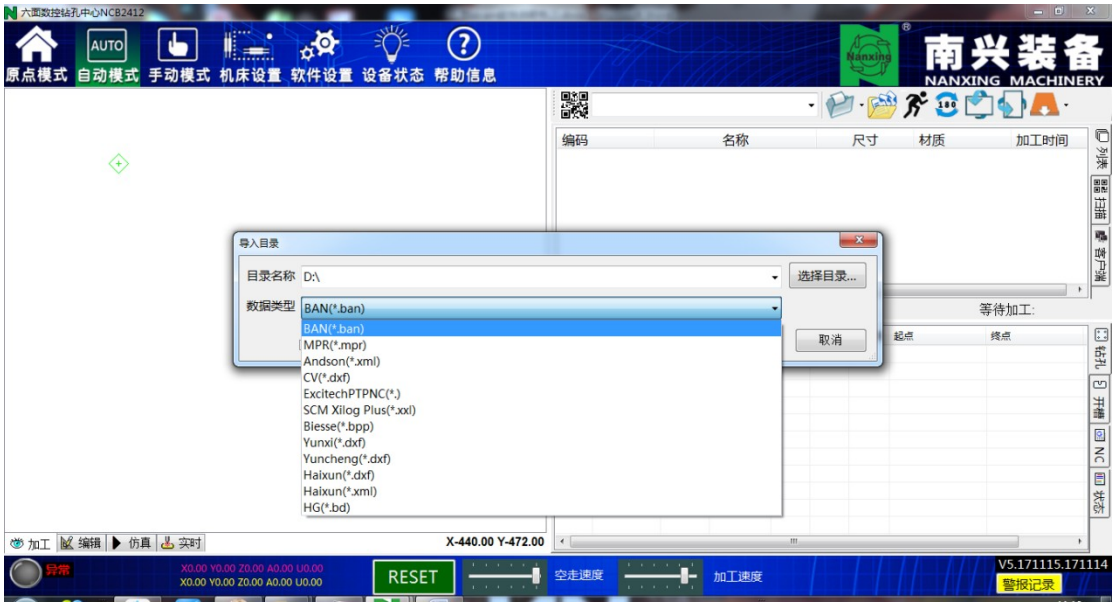
When loading data, select the corresponding format, and then select and open the file; there are many supported formats, such as BAN, xml and MPR.

2.1.3 Importing Order Catalog



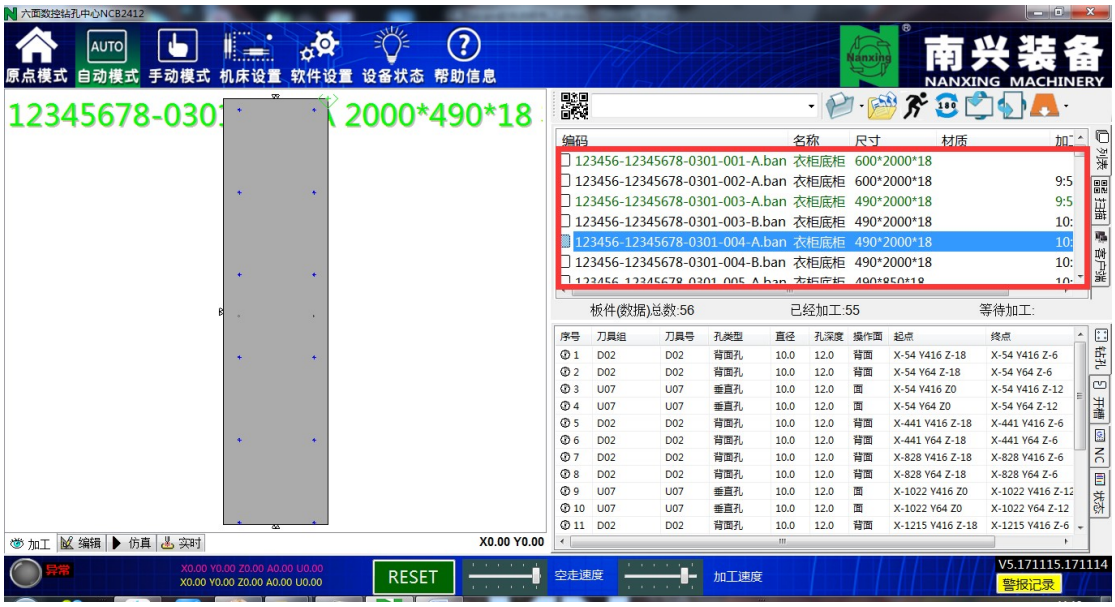
Click the Import Order Catalog button to load multiple data at the same time; it is applicable when a file only contains the information of one plate, or one cabinet contains multiple files.

2.1.4 Compatible Formats for Importing Order Catalog



Click Import Order Catalog, and then select the data type and file path; the current supported data types include mpr, ban, and xml.

2.2 Data List



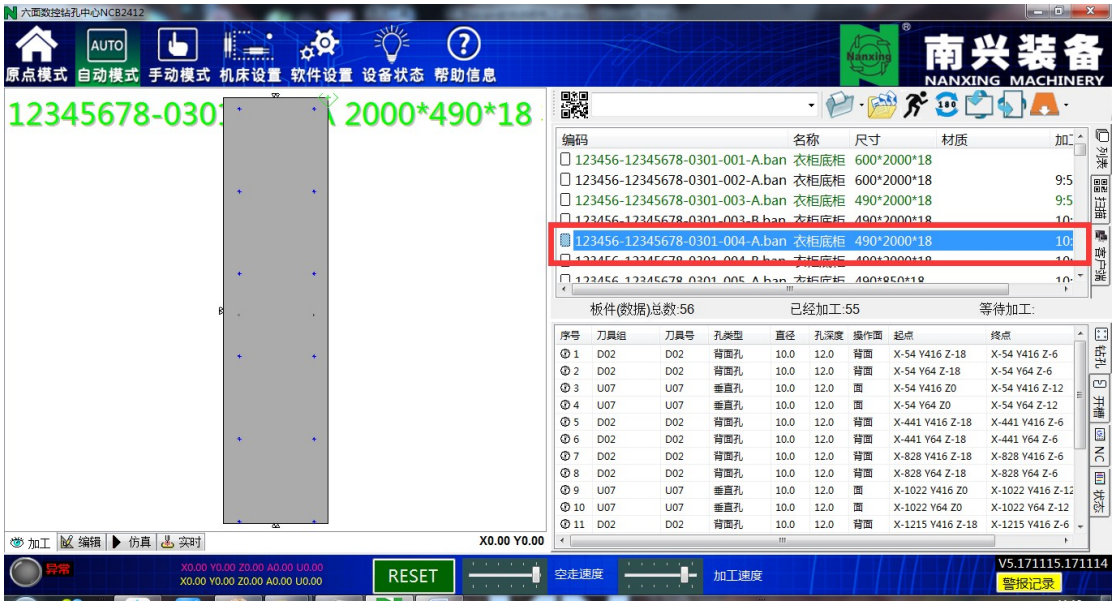
In the red check box is the data list, which shows the name, code, size, and processing time of the imported data.

2.3 Direct Processing

2.2.1 Double-click to process

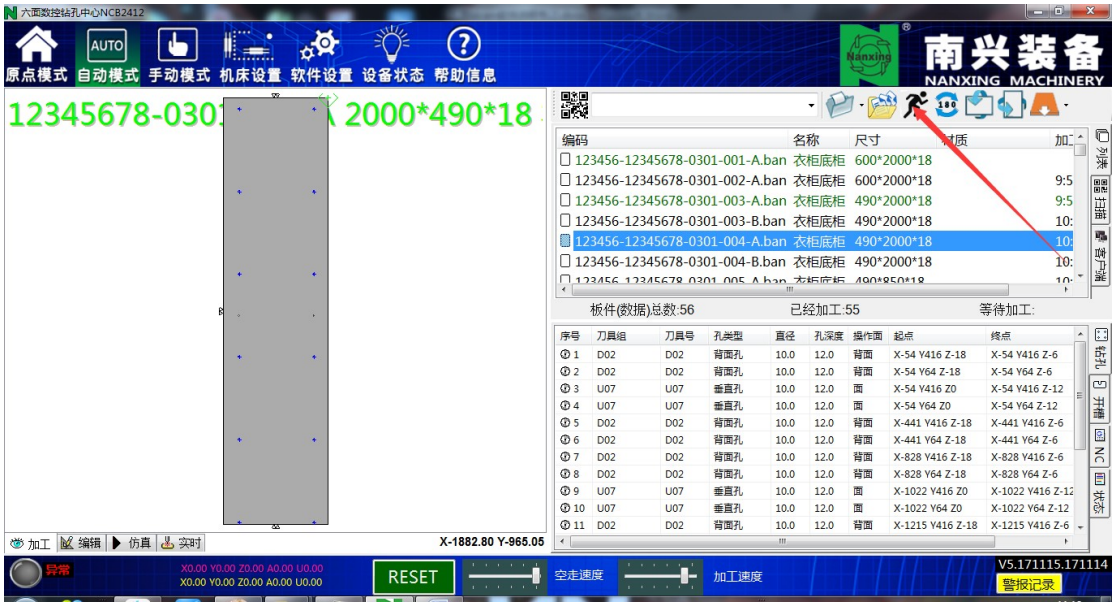
Direct processing is divided into two modes. The first is to double-click the plate in Plate Info and start the machine processing directly.

When the cycle is successfully generated, you can view the information of each hole in the information list, including the coordinate depth and diameter of each hole and the tool selected for processing.



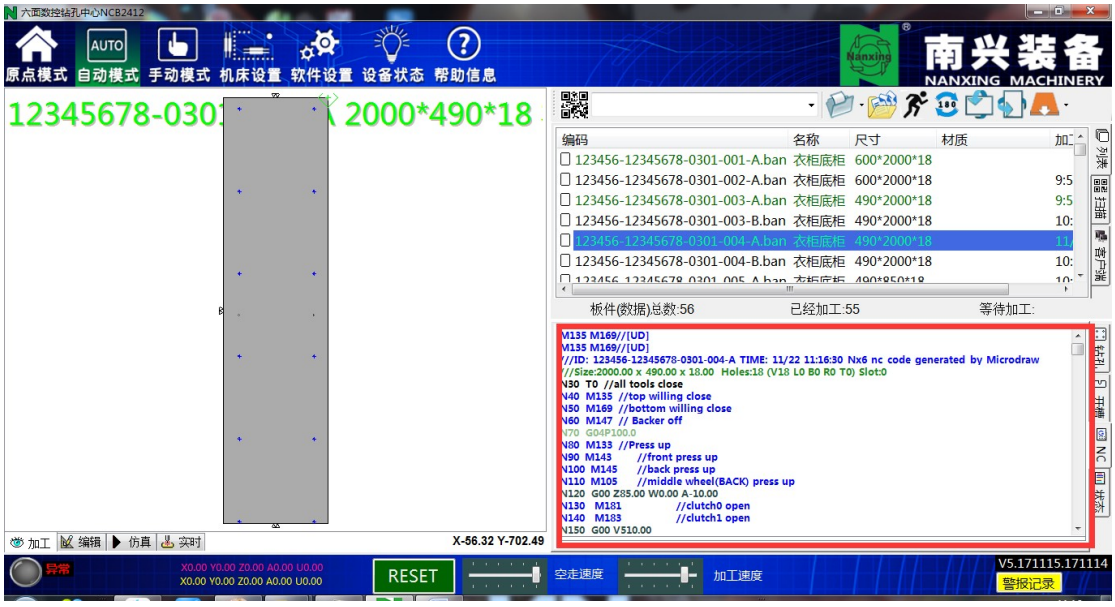
3.2.2 Generate NC Code Button

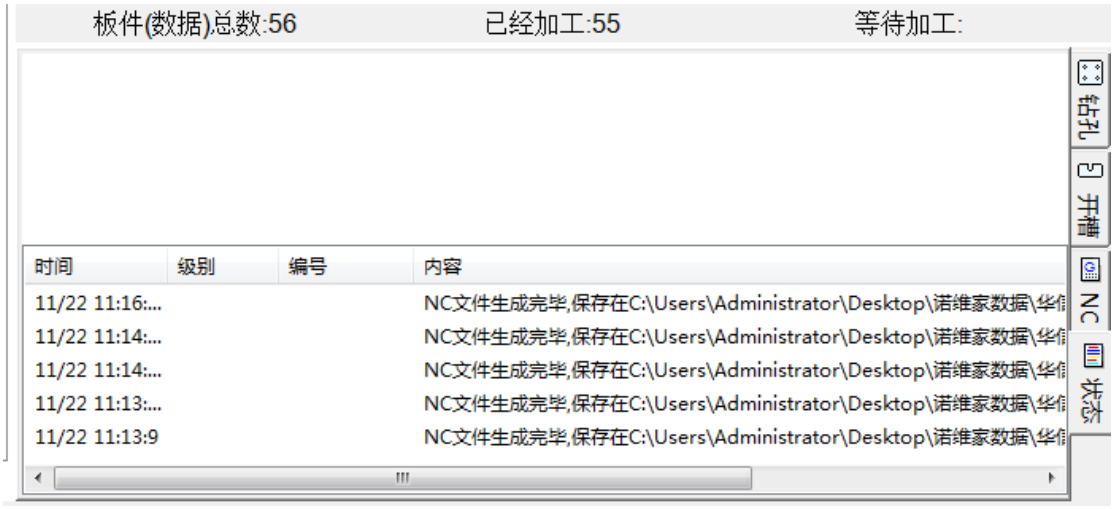
In the plate list, select a plate that needs to be processed, press the Generate NC Code button  to generate the corresponding NC code and start the machine for processing.



2.3.3 Cycle and Status Information

When the cycle is successfully generated, click NC on the right side of the hole information to view the corresponding NC code. When you click the information bar on the right, you can view the time when the corresponding plate successfully generated the cycle.





2.4 Scan Processing

2.4.1 Continuous Scanning

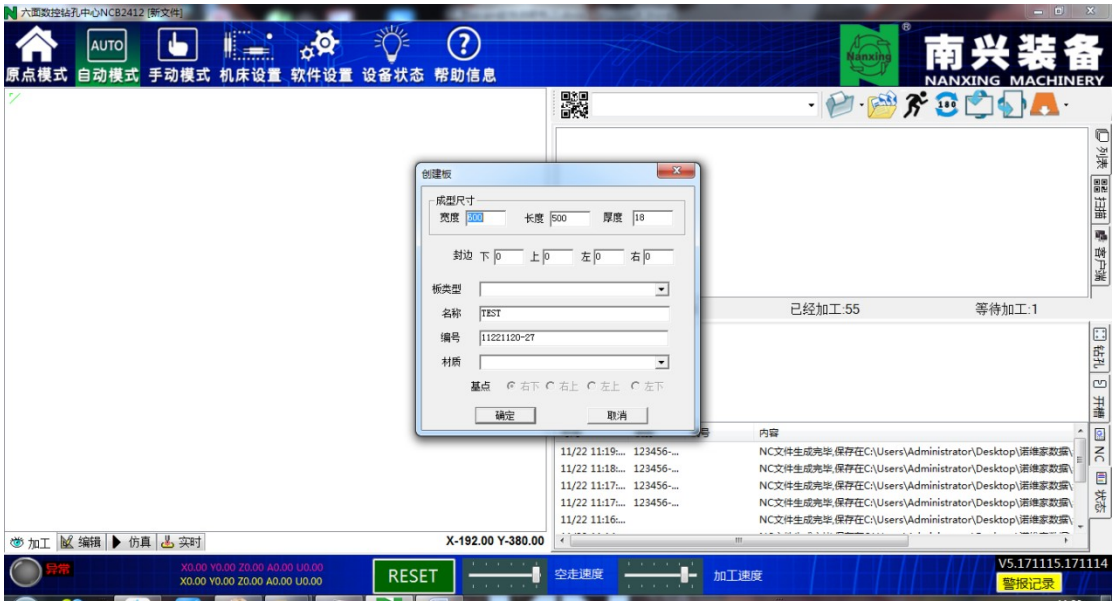
When continuous scanning is selected, you can continuously scan multiple plates. On the right side of single plate information, you can view the information of multiple processing plates, and the status bar will change according to the actual status. The first bar code is NC ready state after scanning, and the machine is waiting to start for processing. When the machine is started, the status changes from NC ready to processing. In the list, we can check whether it is special-shaped and how many holes are in the plate. The surfaces shown are those to be processed. When surface A is shown, only one surface needs to be processed. When surface AB is shown, the plate needs to be turned over for processing.

The capital letters AB on the plate indicate that both sides of the plate need to be processed.

2.5 Edit & Create

2.5.1 Create a Plate

Press Ctrl + N to create a plate, input the plate size and thickness (as shown in the figure), and then click OK.



2.5.2 Create a Vertical Hole

Left-click on the plate and press V to create a vertical hole.

Press V, and click the left mouse button to select the reference point. Click again to select the hole location (as shown in the figure DX and DY are the distances relative to the reference point in the X, Y direction); enter the number of holes diameter, and then click OK.

2.5.3 Create a Horizontal Hole

Press H to create a horizontal hole.

Press H, and click the left mouse button to select the reference point. Click again to select the hole location (as shown in the figure DX and DY are the distances relative to the reference point in the X, Y direction); enter the number of holes diameter, and then click OK.

You can select whether to create three-in-one hole.

2.5.4 Create Slot

Press S to create an offset slot.

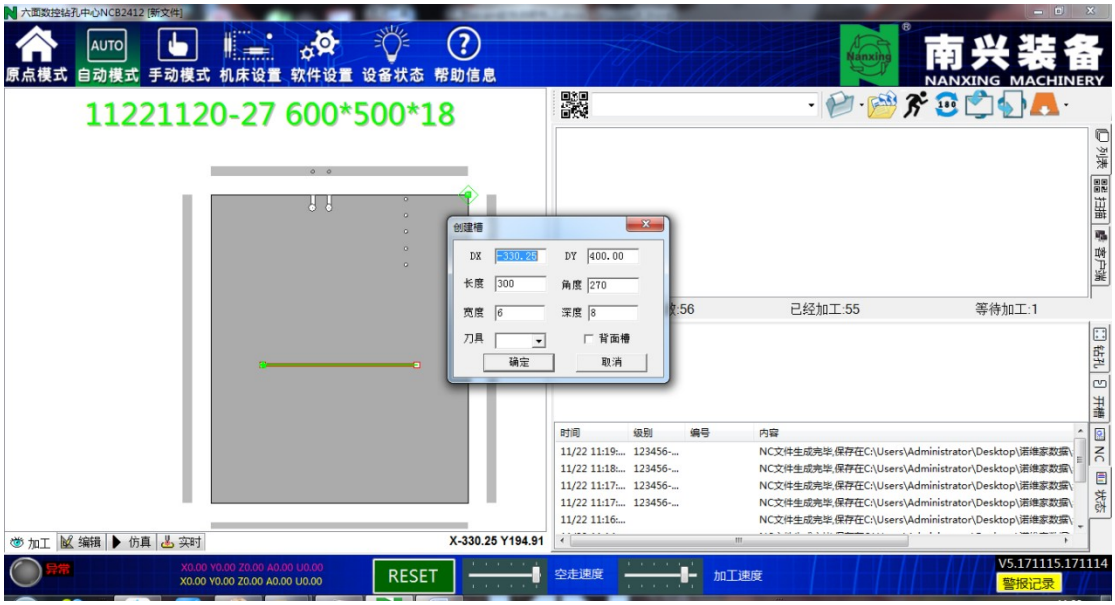
Press S, click the plate edge with the left mouse button to select the reference edge, and click again to select the slot position (as shown in the figure)

Enter the depth and width of the slot. “Deduct” is the length to be subtracted. The value on the left indicates subtracting from the left, and the value on the right indicates subtracting from the right; click OK finally

2.5.5 Modify Hole/Slot Info

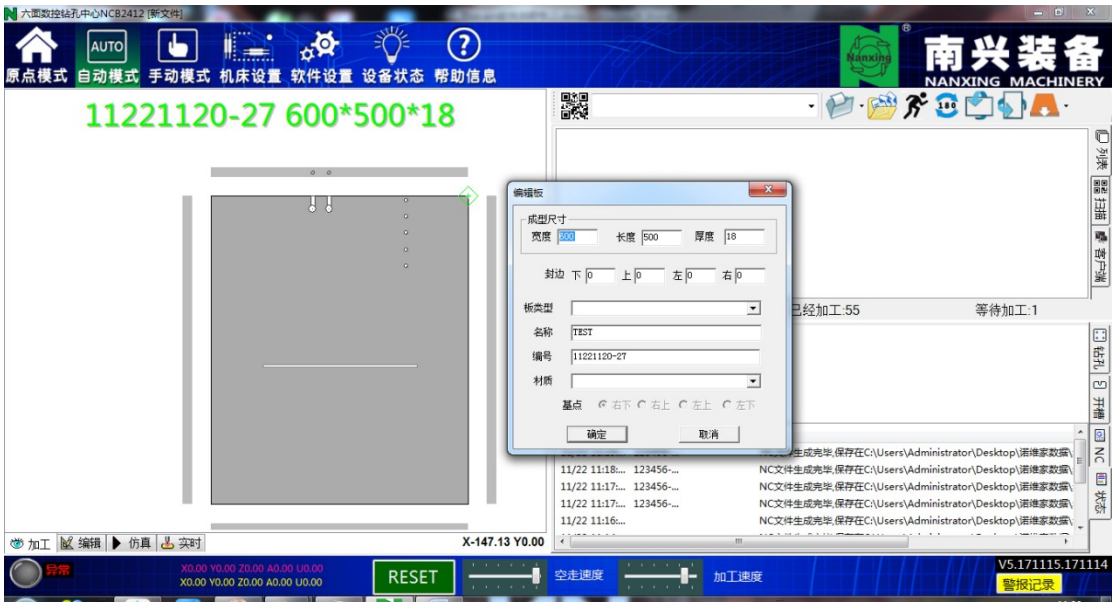
Double-click the hole that needs to be modified on the plate that has been created to pop up the hole information; you can edit it and then click OK to modify the hole information.

Double-click the slot on the plate that has been created to view the slot information; you can edit it and then click OK to modify the selected slot.



2.5.6 Modify Plate Info

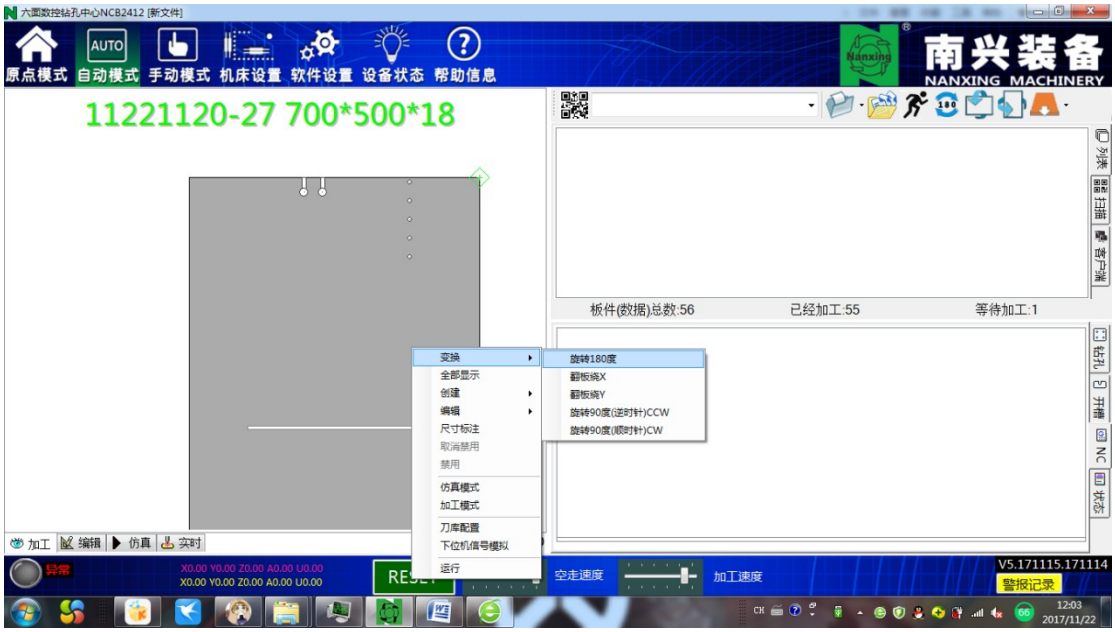
Double-click the slot edge to pop up the plate information dialog box, then modify the information of current plate, and click OK to save it.



2.6 Common Options

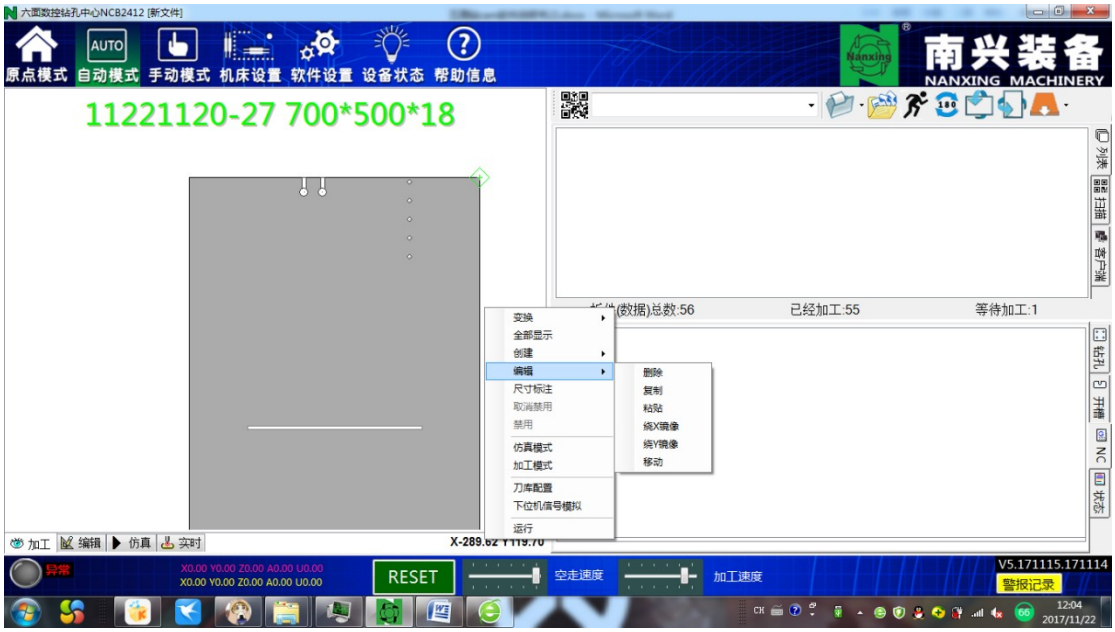
2.6.1 Transformation

In the panel display, click the right mouse button to select Transform to rotate and turn over the current plate.



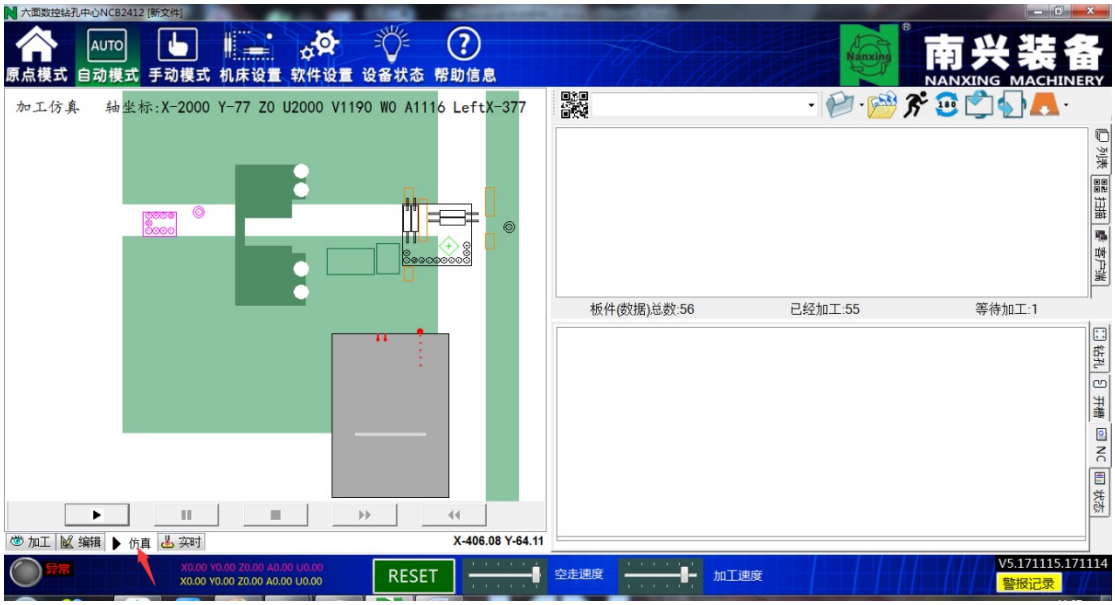
2.6.2 Edit

When a plate needs mirroring of holes, click the right mouse button to select Edit, select to mirror in X or Y direction. It is mainly used for left plate and right plate. For example, if a right plate is needed temporarily and the data of left plate is available, select all holes and then select “Mirror in X direction” to regenerate the NC code.



2.6.3 Simulation Mode

If the processed plate is found to be wrong, but the software shows that it is right, please select the simulation mode to check if the processing is consistent with the actual process. Enter the simulation mode, and click the Play button  on the lower left corner to start simulation. In the simulation process, you can check every action of the roller, pressure plate, gripper and drill.



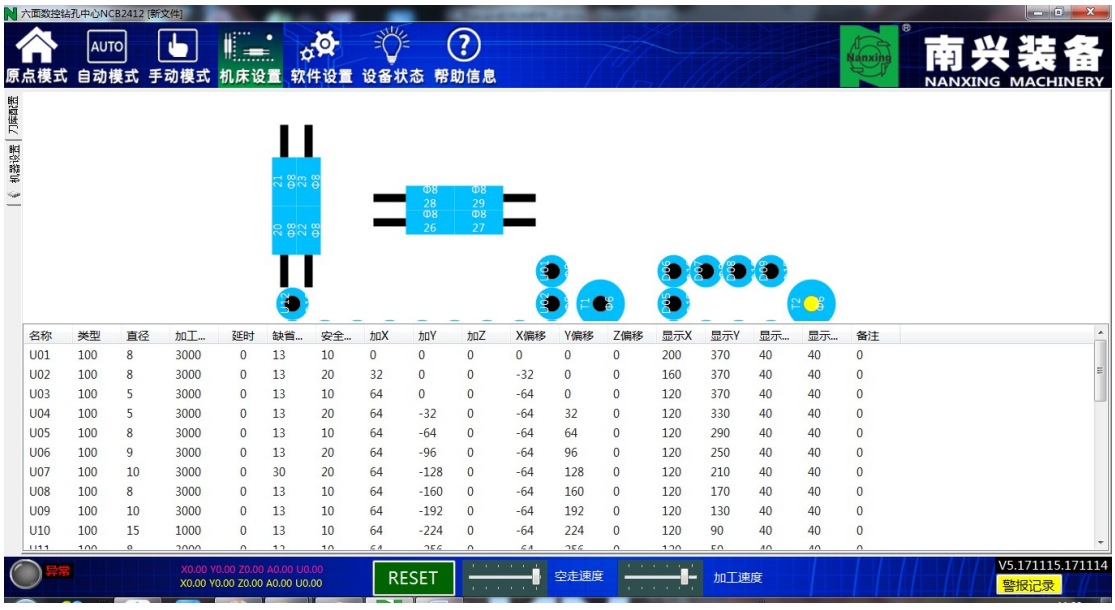
To start processing again, enter the processing mode to regenerate the NC code, and then start the processing.

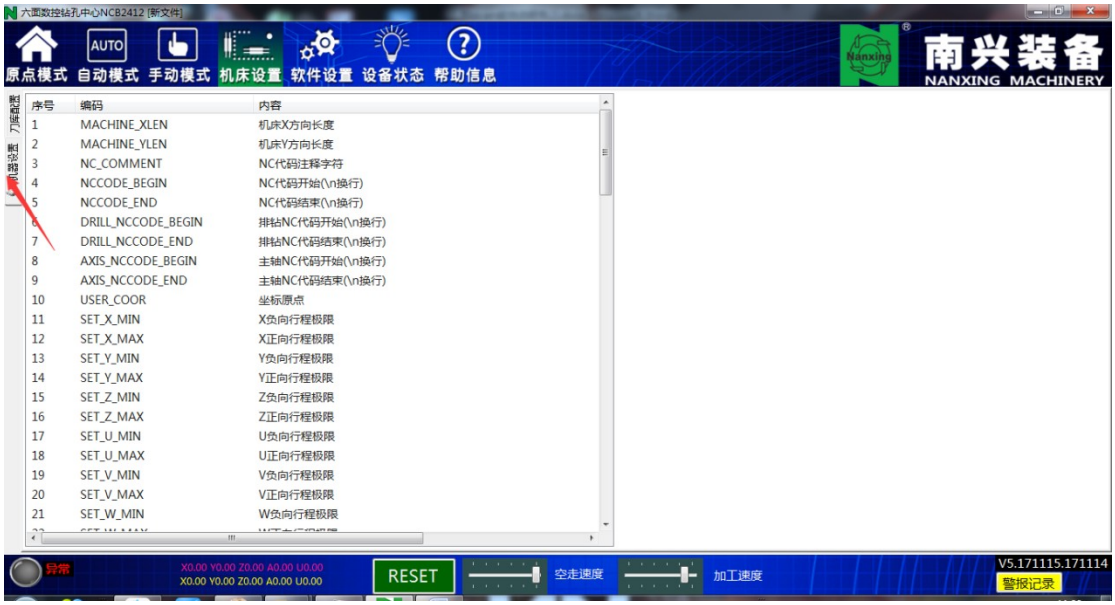
2.6.4 Plate Out Mode

Available plate-out modes are front, rear or auto; the default option is front.

3、 Tool Changer Settings and Precision Adjustment

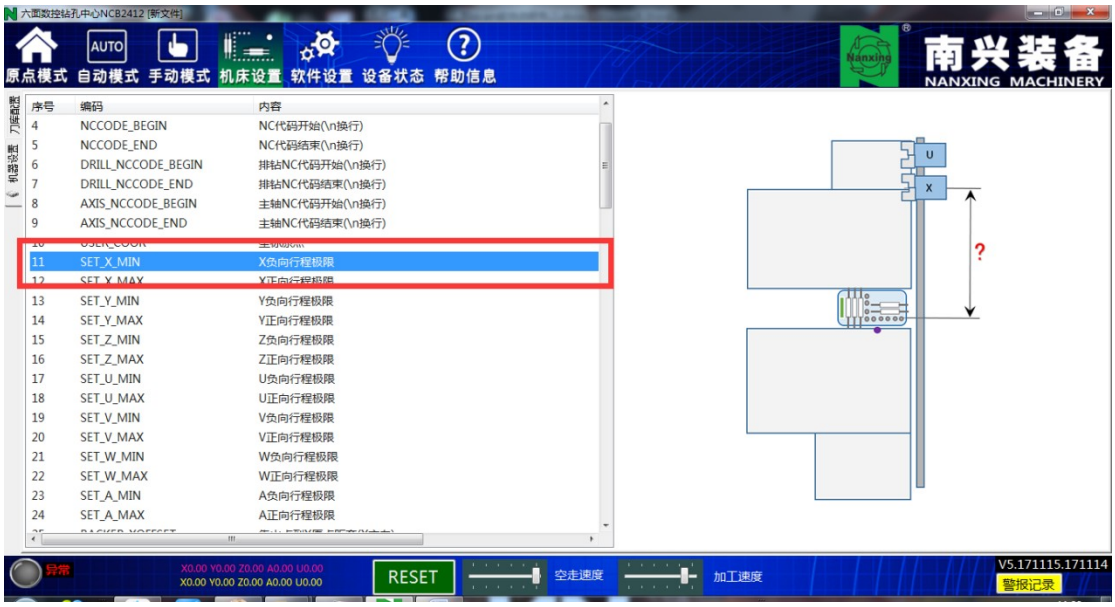
Common tool setting options



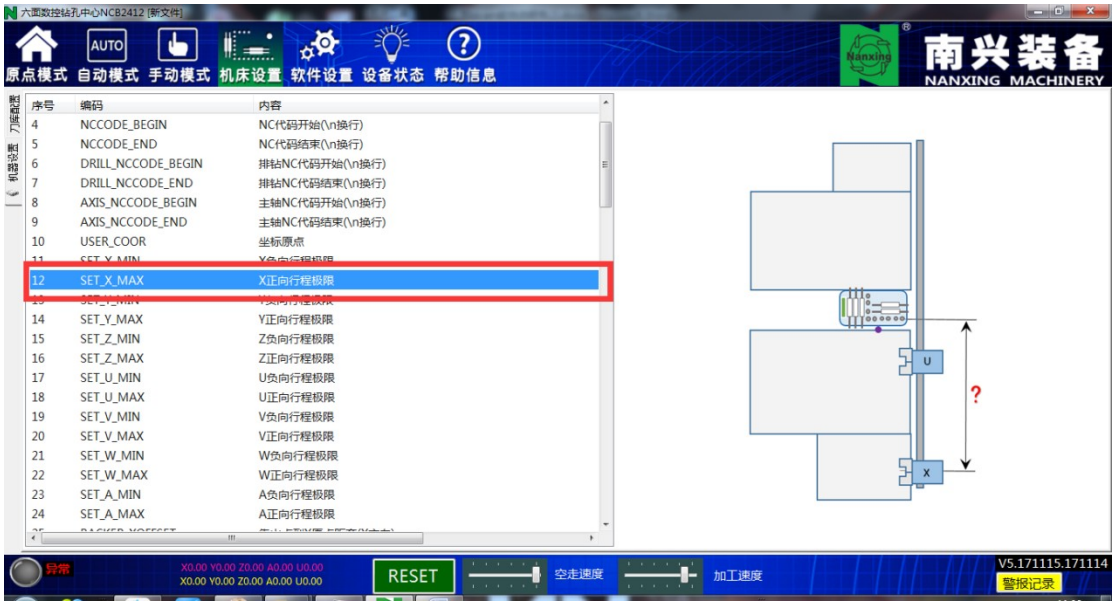


The tool changer has two options, tool changer configuration and machine configuration.

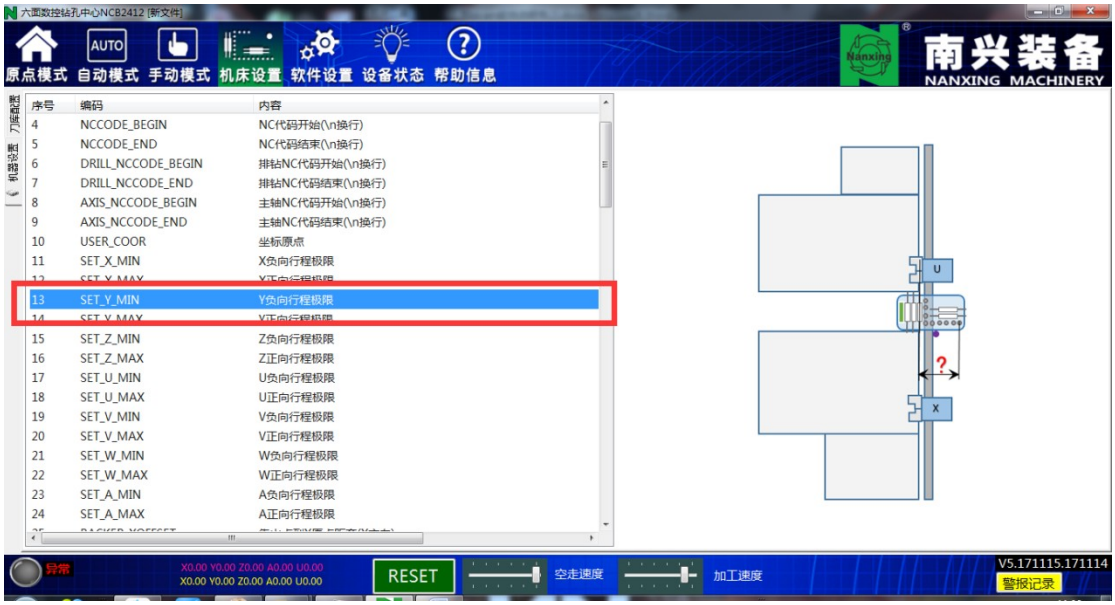
Tool changer setting refers to adjusting the accuracy of each tool, and machine setting refers to the relevant settings of the machine.



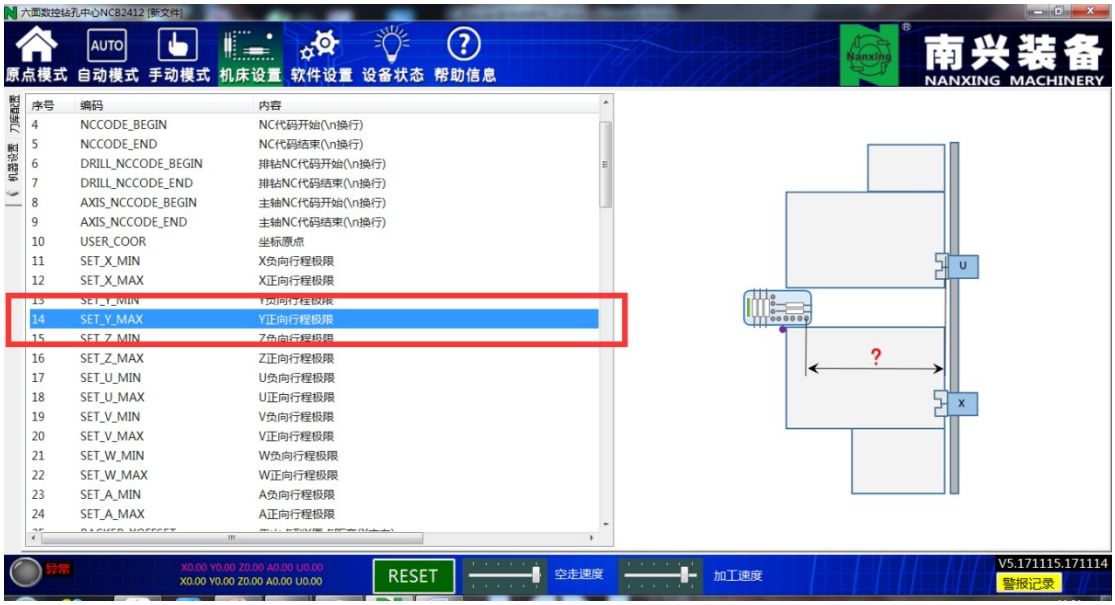
X negative travel limit is the limit to which the drill pack moves to X-



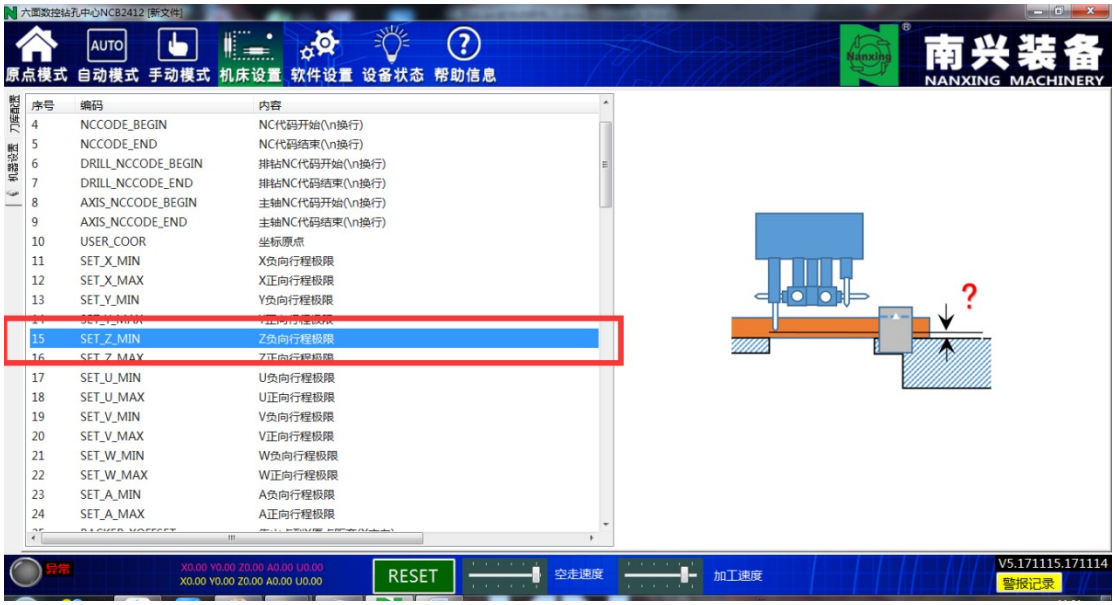
X positive travel limit is the limit to which the drill pack moves to X+



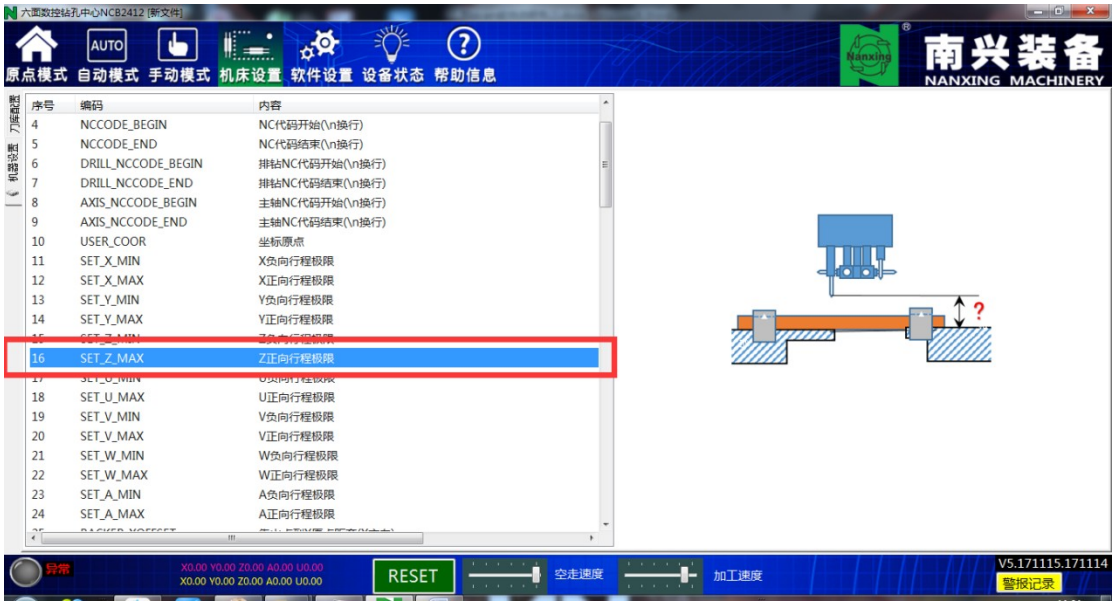
Y negative travel limit is the limit to which the drill pack moves to Y-



Y positive travel limit is the limit to which the drill pack moves to Y+

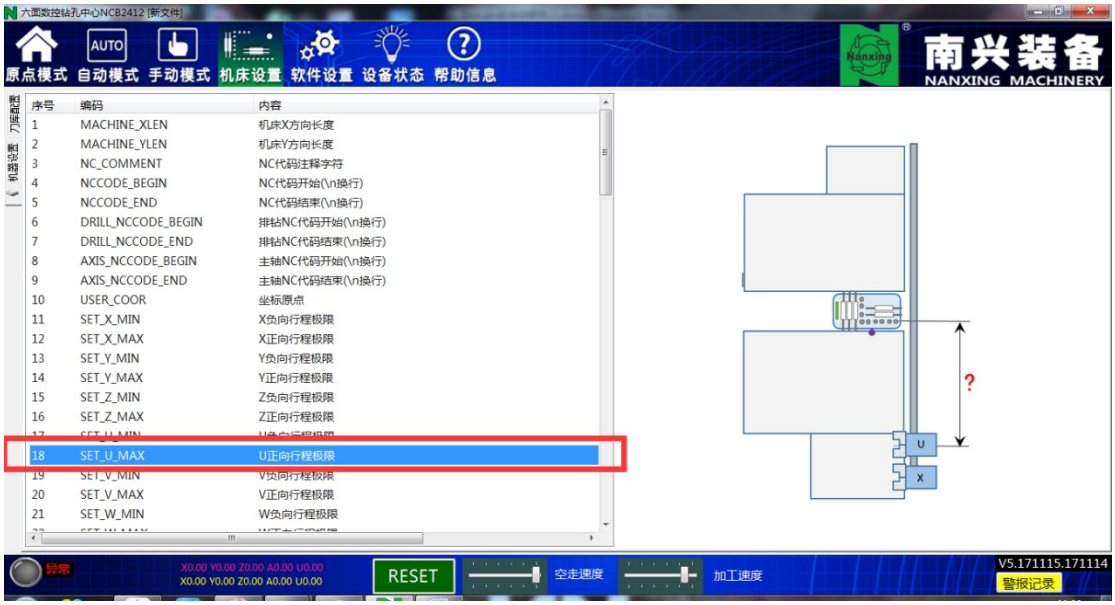


Z negative travel limit is the limit of the drill pack to the plate

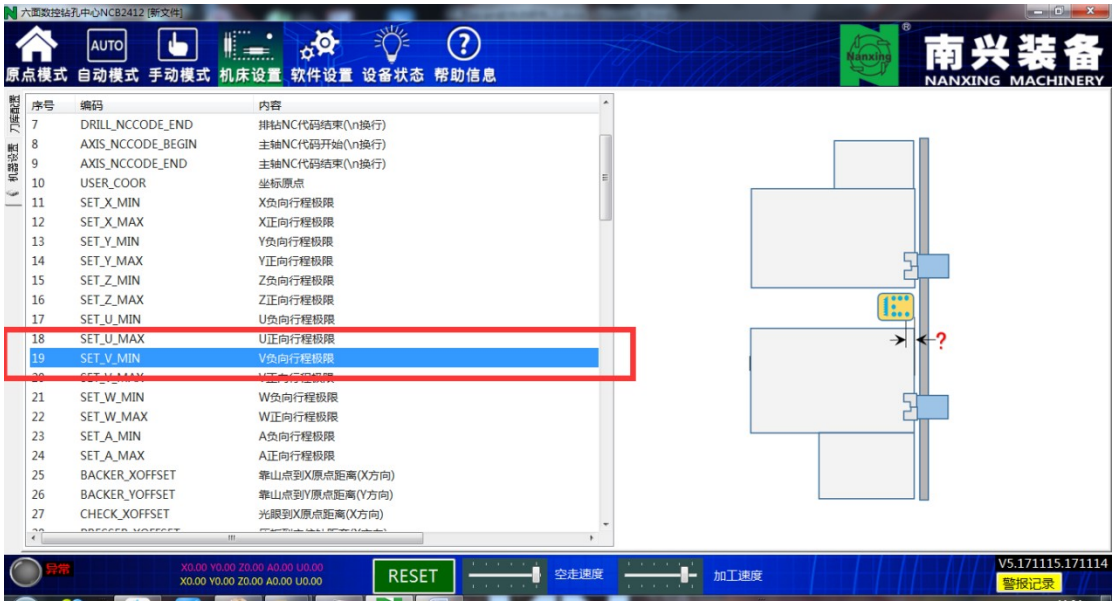


Z positive travel limit is the depth limit of the vertical hole of the drill pack

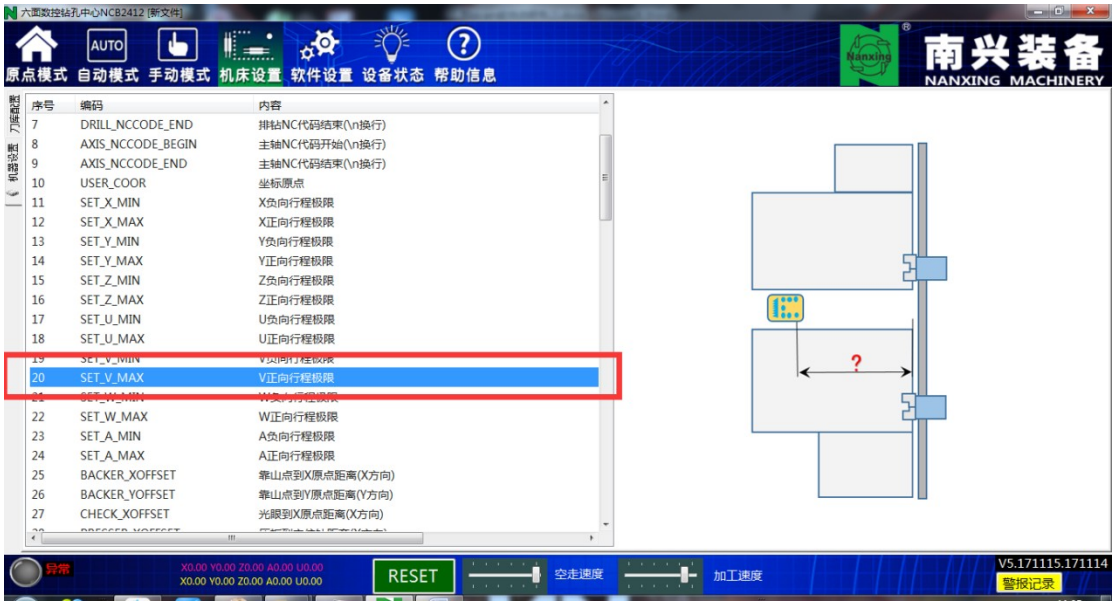
u negative travel limit is the limit position of the gripper moves to negative direction



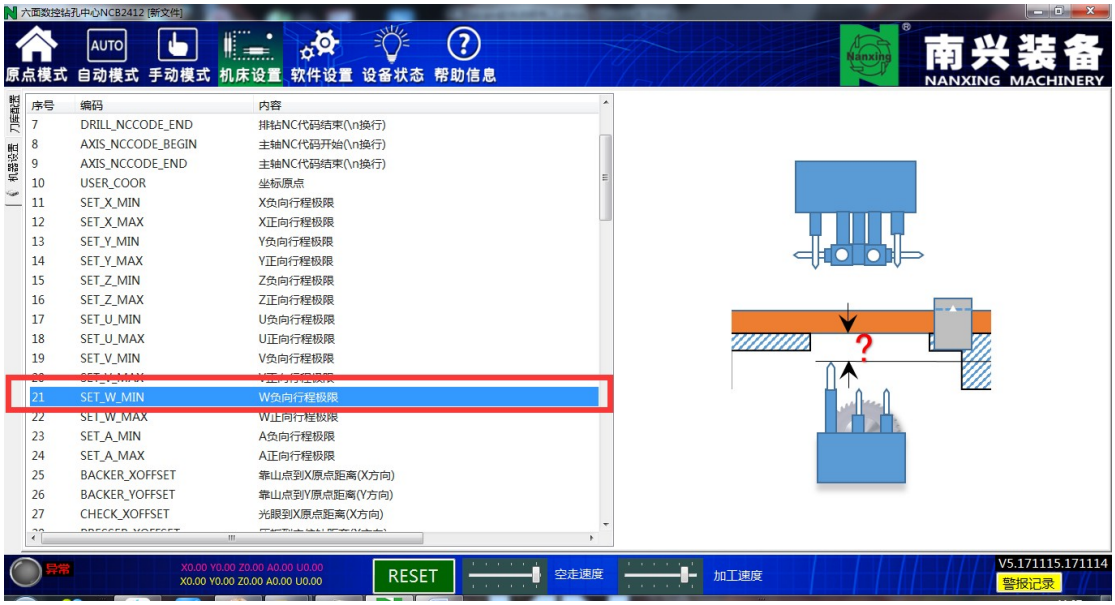
u positive travel limit is the limit position of the gripper moves to positive direction



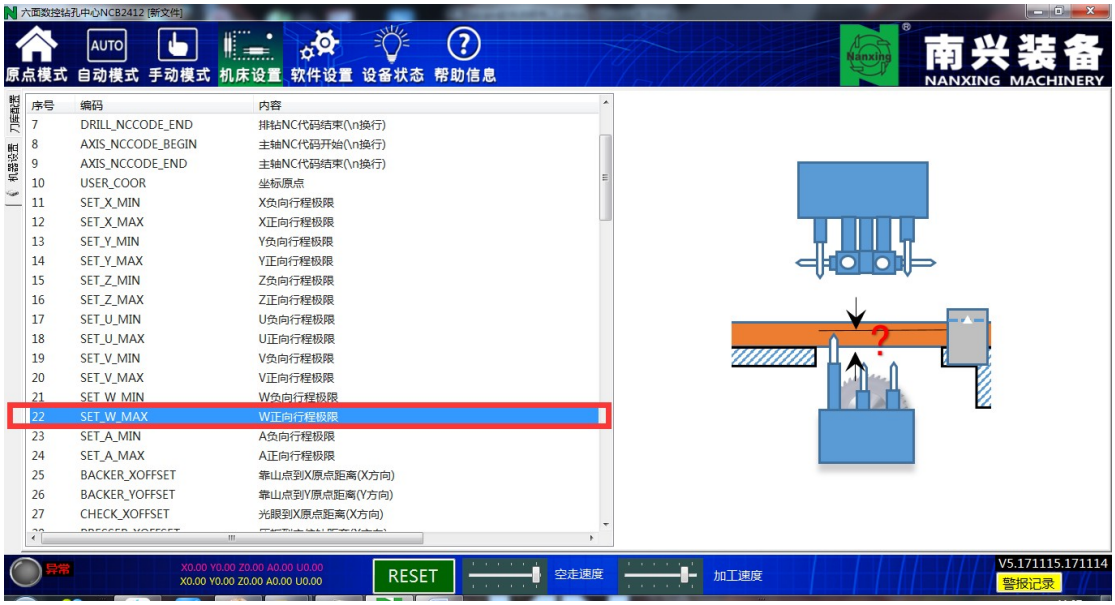
v negative travel limit is the limit of the side-stop moves to negative direction



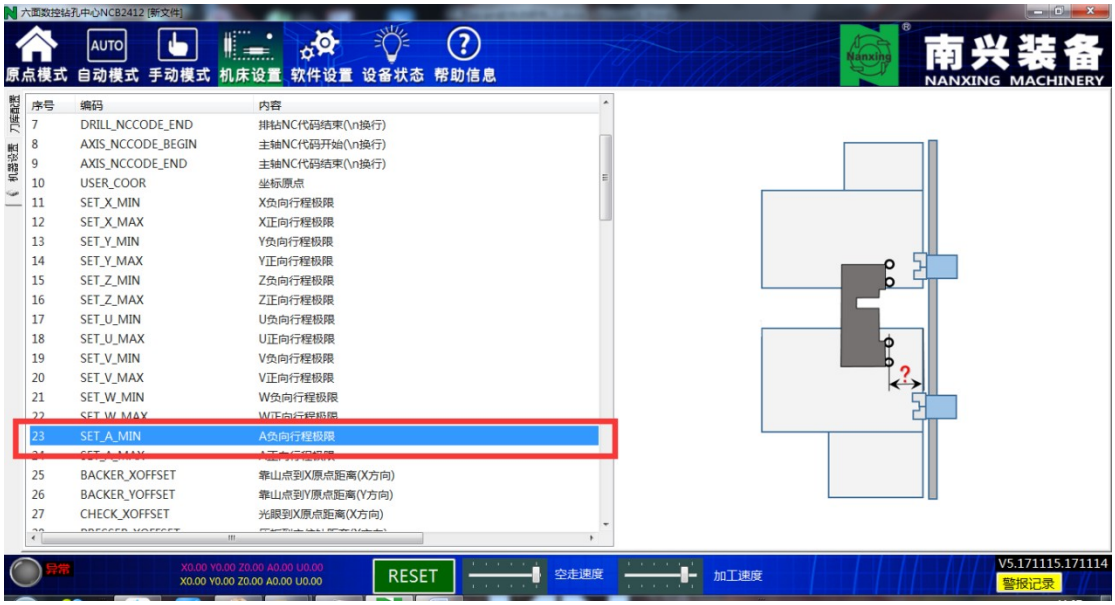
v positive travel limit is the limit of the side-stop moves to positive direction



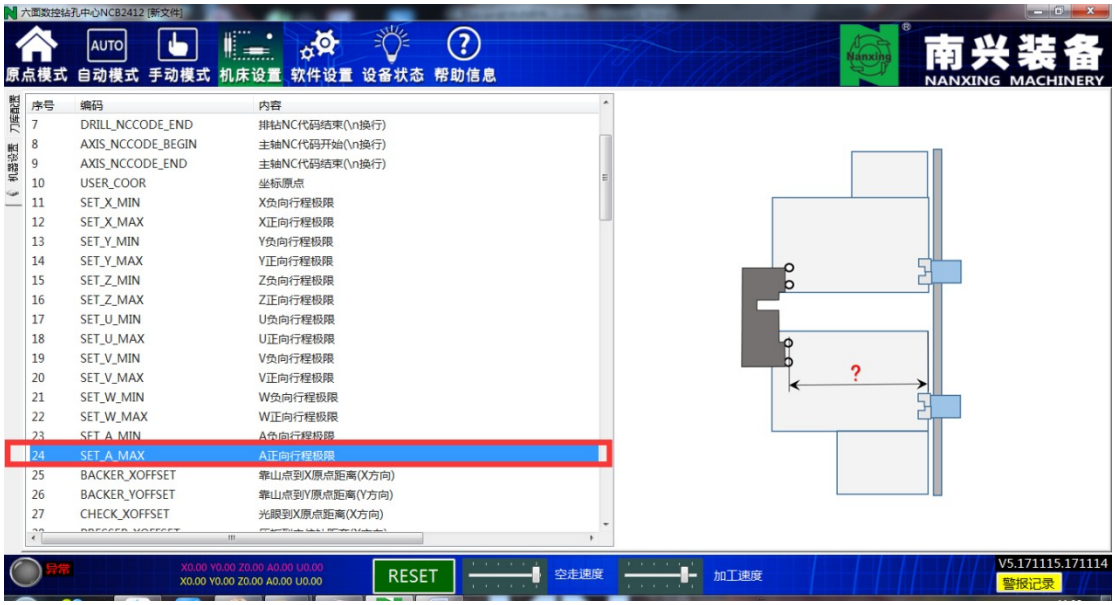
w negative travel limit is the limit of the side-stop moves to negative direction



w positive travel limit is the limit of the side-stop moves to positive direction



A negative travel limit is the limit of the side-stop moves to negative direction



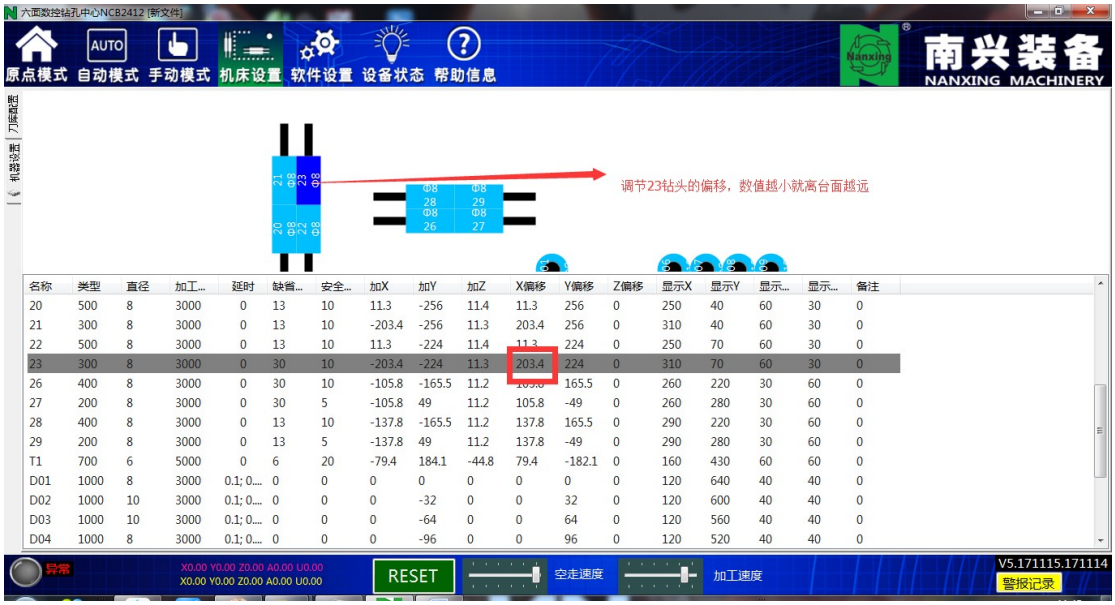
A positive travel limit is the limit of the side-stop moves to positive direction

Vertical tool setting and precision adjustment

Compensation settings in X/Y direction when drilling vertical holes;

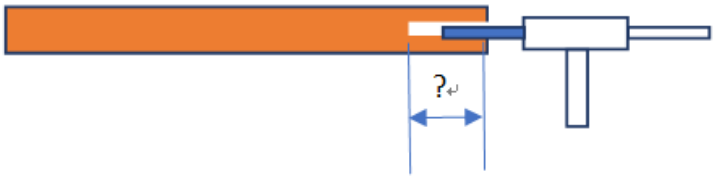
Horizontal tool (X+ X- Y+ Y) settings and precision adjustment

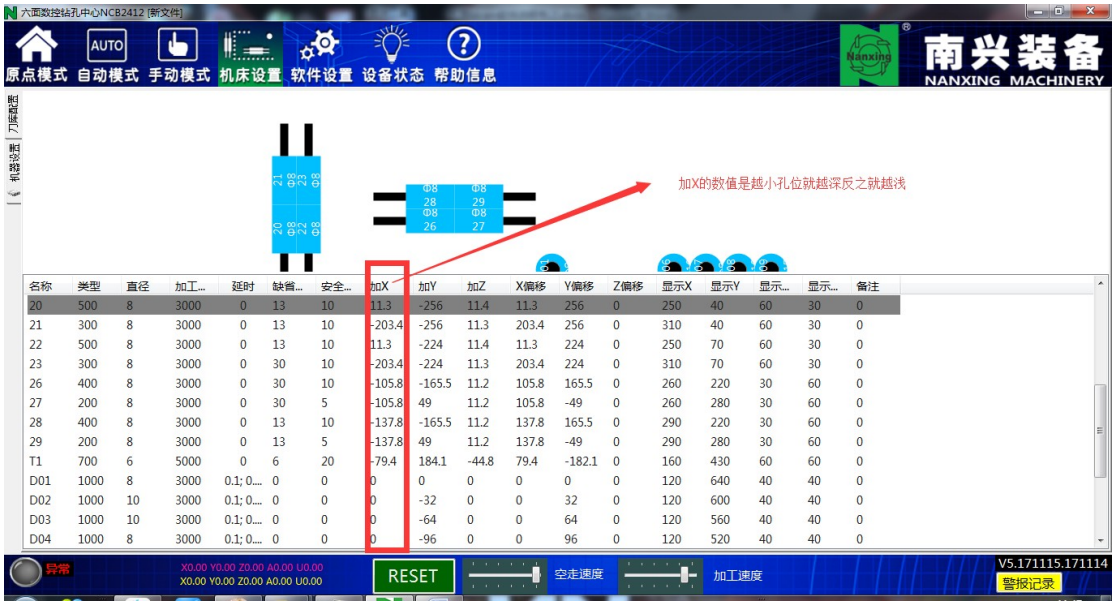
The distance between plate edge and the tool when drilling horizontal holes in X+ direction;



名称	类型	直径	加工...	延时	缺省...	安全...	加X	加Y	加Z	X偏移	Y偏移	Z偏移	显示X	显示Y	显示...	显示...	备注
20	500	8	3000	0	13	10	11.3	-256	11.4	11.3	256	0	250	40	60	30	0
21	300	8	3000	0	13	10	-203.4	-256	11.3	203.4	256	0	310	40	60	30	0
22	500	8	3000	0	13	10	11.3	-224	11.4	11.3	224	0	250	70	60	30	0
23	300	8	3000	0	30	10	-203.4	-224	11.3	203.4	224	0	310	70	60	30	0
26	400	8	3000	0	30	10	-105.8	-165.5	11.2	105.8	165.5	0	260	220	30	60	0
27	200	8	3000	0	30	5	-105.8	49	11.2	105.8	-49	0	260	280	30	60	0
28	400	8	3000	0	13	10	-137.8	-165.5	11.2	137.8	165.5	0	290	220	30	60	0
29	200	8	3000	0	13	5	-137.8	49	11.2	137.8	-49	0	290	280	30	60	0
T1	700	6	5000	0	6	20	-79.4	184.1	-44.8	79.4	-182.1	0	160	430	60	60	0
D01	1000	8	3000	0.1; 0....	0	0	0	0	0	0	0	0	120	640	40	40	0
D02	1000	10	3000	0.1; 0....	0	0	0	-32	0	0	32	0	120	600	40	40	0
D03	1000	10	3000	0.1; 0....	0	0	0	-64	0	0	64	0	120	560	40	40	0
D04	1000	8	3000	0.1; 0....	0	0	0	-96	0	0	96	0	120	520	40	40	0

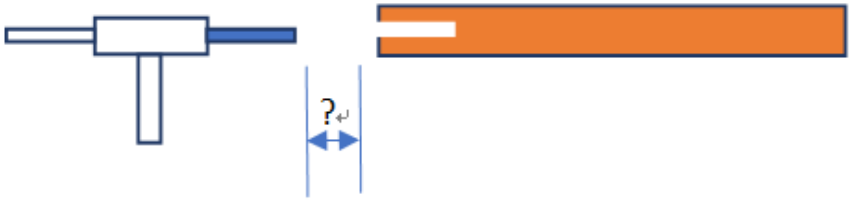
Compensation setting of depth in X+ horizontal hole

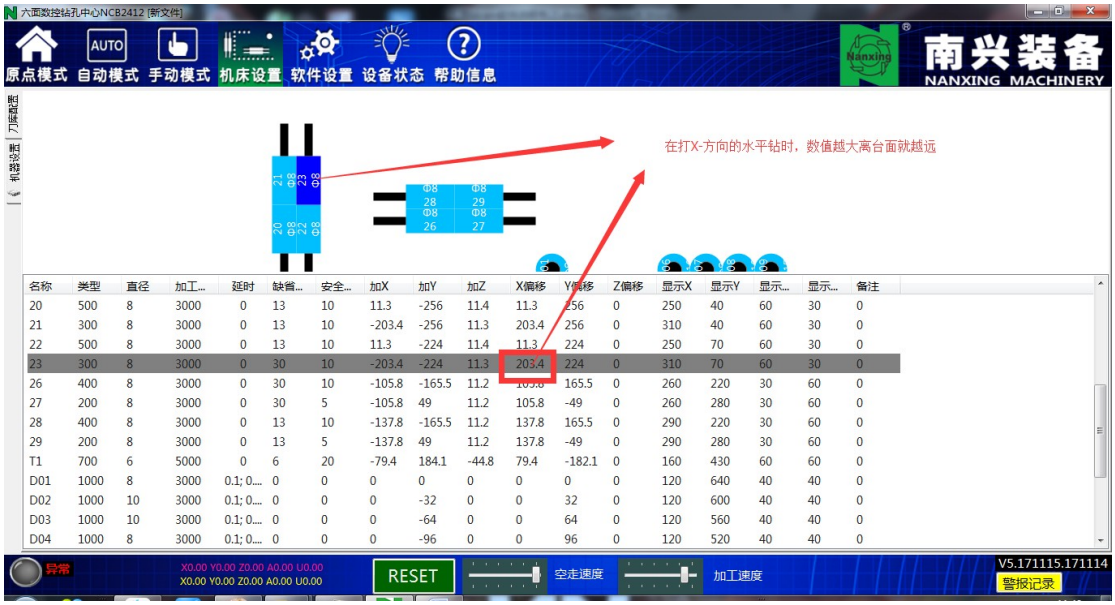




名称	类型	直径	加工...	延时	缺省...	安全...	加X	加Y	加Z	X偏移	Y偏移	Z偏移	显示X	显示Y	显示...	显示...	备注
20	500	8	3000	0	13	10	11.3	-256	11.4	11.3	256	0	250	40	60	30	0
21	300	8	3000	0	13	10	-203.4	-256	11.3	203.4	256	0	310	40	60	30	0
22	500	8	3000	0	13	10	11.3	-224	11.4	11.3	224	0	250	70	60	30	0
23	300	8	3000	0	30	10	-203.4	-224	11.3	203.4	224	0	310	70	60	30	0
26	400	8	3000	0	30	10	-105.8	-165.5	11.2	105.8	165.5	0	260	220	30	60	0
27	200	8	3000	0	30	5	-105.8	49	11.2	105.8	-49	0	260	280	30	60	0
28	400	8	3000	0	13	10	-137.8	-165.5	11.2	137.8	165.5	0	290	220	30	60	0
29	200	8	3000	0	13	5	-137.8	49	11.2	137.8	-49	0	290	280	30	60	0
T1	700	6	5000	0	6	20	-79.4	184.1	-44.8	79.4	-182.1	0	160	430	60	60	0
D01	1000	8	3000	0.1; 0....	0	0	0	0	0	0	0	0	120	640	40	40	0
D02	1000	10	3000	0.1; 0....	0	0	0	-32	0	0	32	0	120	600	40	40	0
D03	1000	10	3000	0.1; 0....	0	0	0	-64	0	0	64	0	120	560	40	40	0
D04	1000	8	3000	0.1; 0....	0	0	0	-96	0	0	96	0	120	520	40	40	0

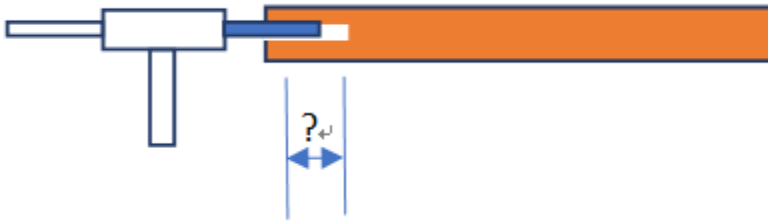
The distance from the leftmost edge of the plate to the drill when drilling horizontal holes in X- direction

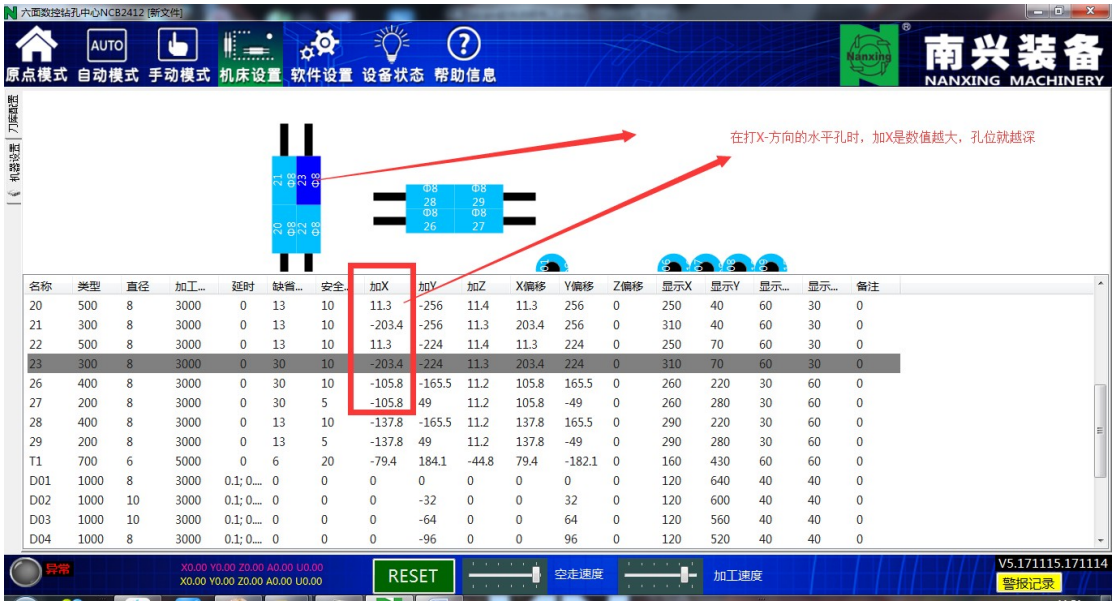




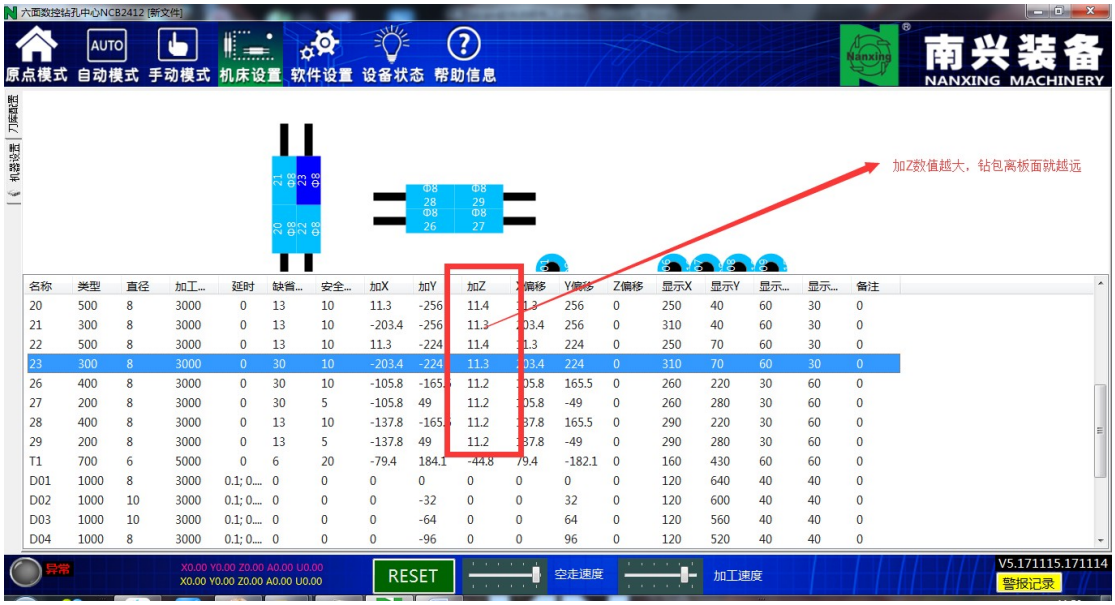
名称	类型	直径	加工...	延时	缺省...	安全...	加X	加Y	加Z	X偏移	Y偏移	Z偏移	显示X	显示Y	显示...	显示...	备注
20	500	8	3000	0	13	10	11.3	-256	11.4	11.3	256	0	250	40	60	30	0
21	300	8	3000	0	13	10	-203.4	-256	11.3	203.4	256	0	310	40	60	30	0
22	500	8	3000	0	13	10	11.3	-224	11.4	11.3	224	0	250	70	60	30	0
23	300	8	3000	0	30	10	-203.4	-224	11.3	203.4	224	0	310	70	60	30	0
26	400	8	3000	0	30	10	-105.8	-165.5	11.2	105.8	165.5	0	260	220	30	60	0
27	200	8	3000	0	30	5	-105.8	49	11.2	105.8	-49	0	260	280	30	60	0
28	400	8	3000	0	13	10	-137.8	-165.5	11.2	137.8	165.5	0	290	220	30	60	0
29	200	8	3000	0	13	5	-137.8	49	11.2	137.8	-49	0	290	280	30	60	0
T1	700	6	5000	0	6	20	-79.4	184.1	-44.8	79.4	-182.1	0	160	430	60	60	0
D01	1000	8	3000	0.1; 0....	0	0	0	0	0	0	0	0	120	640	40	40	0
D02	1000	10	3000	0.1; 0....	0	0	0	-32	0	0	32	0	120	600	40	40	0
D03	1000	10	3000	0.1; 0....	0	0	0	-64	0	0	64	0	120	560	40	40	0
D04	1000	8	3000	0.1; 0....	0	0	0	-96	0	0	96	0	120	520	40	40	0

Depth compensation setting when drilling horizontal holes in X- direction

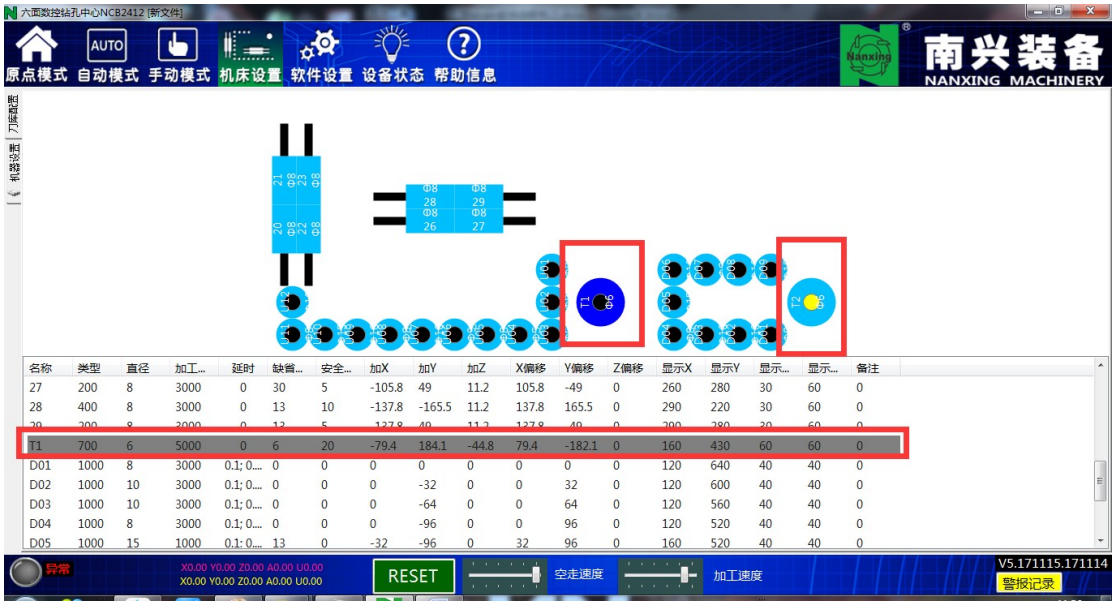




Setting of horizontal hole in Z direction

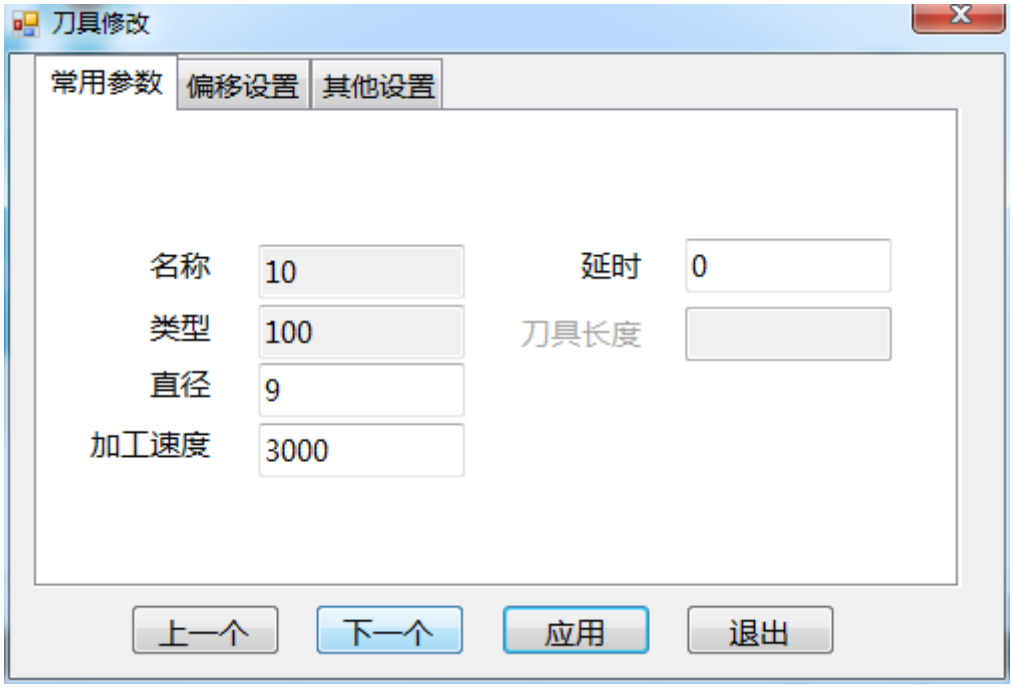


Milling tool setting and precision adjustment



Plus Y is to adjust the precision of the Y direction, plus Z is to adjust the depth of the slot, and plus X is to adjust the precision of the X direction.

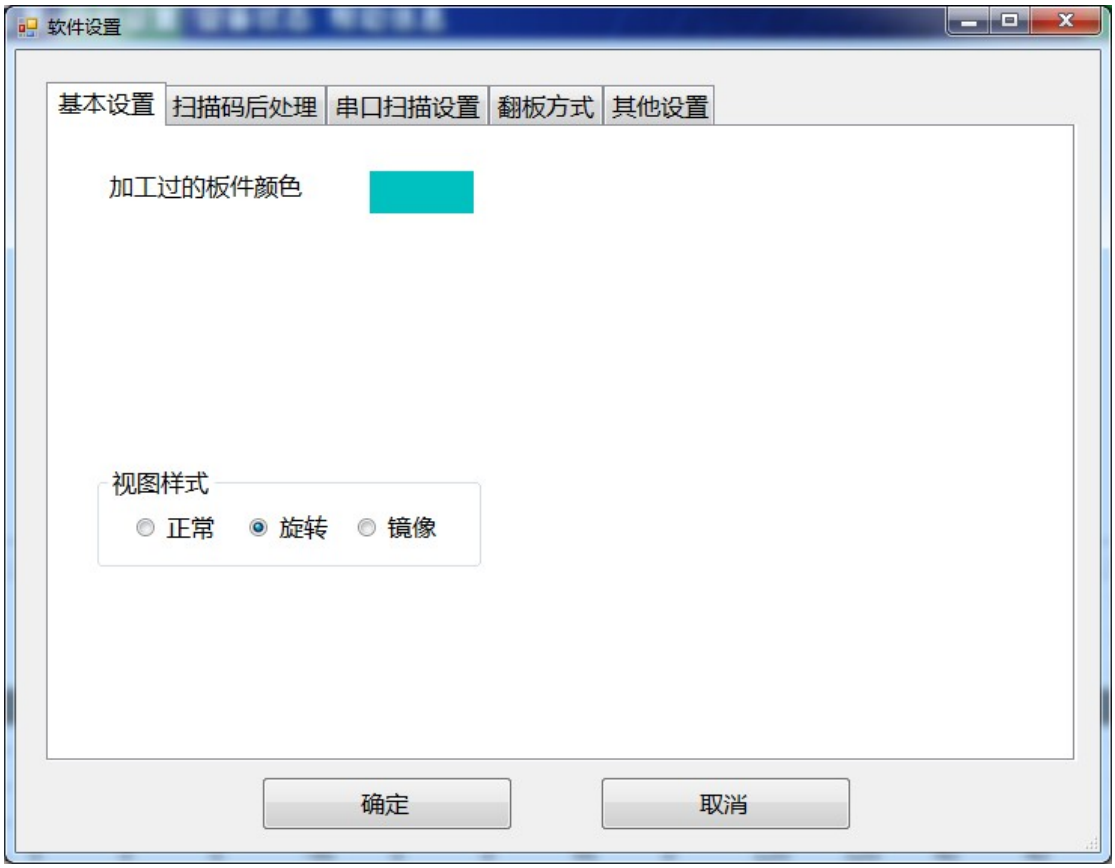
If the holes or slots are found with deviation in X direction in the process of debugging, we can modify plus X direction; similarly, if the depth is inappropriate, we can modify plus Z direction. Safety height refers to the distance from the tool to the plate surface.



延时是在打孔刀具收回时停留在孔中的时间，直径是指你安装刀具的大小尺寸，加工速度是指这把刀的旋转速度。
The delay is the time that the tool stays in the hole before it is retracted. The diameter is the size of the installed tool. The processing speed is the rotation speed of the tool.

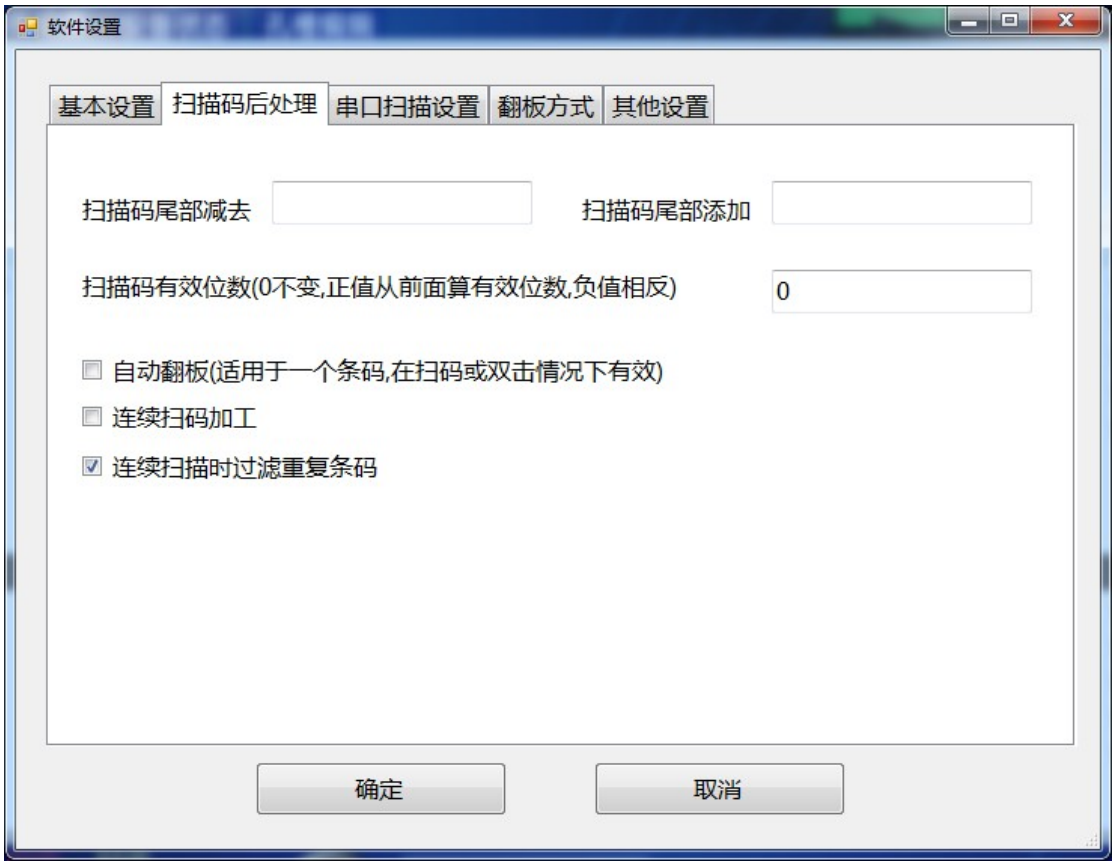
4、System Settings

Description of common options



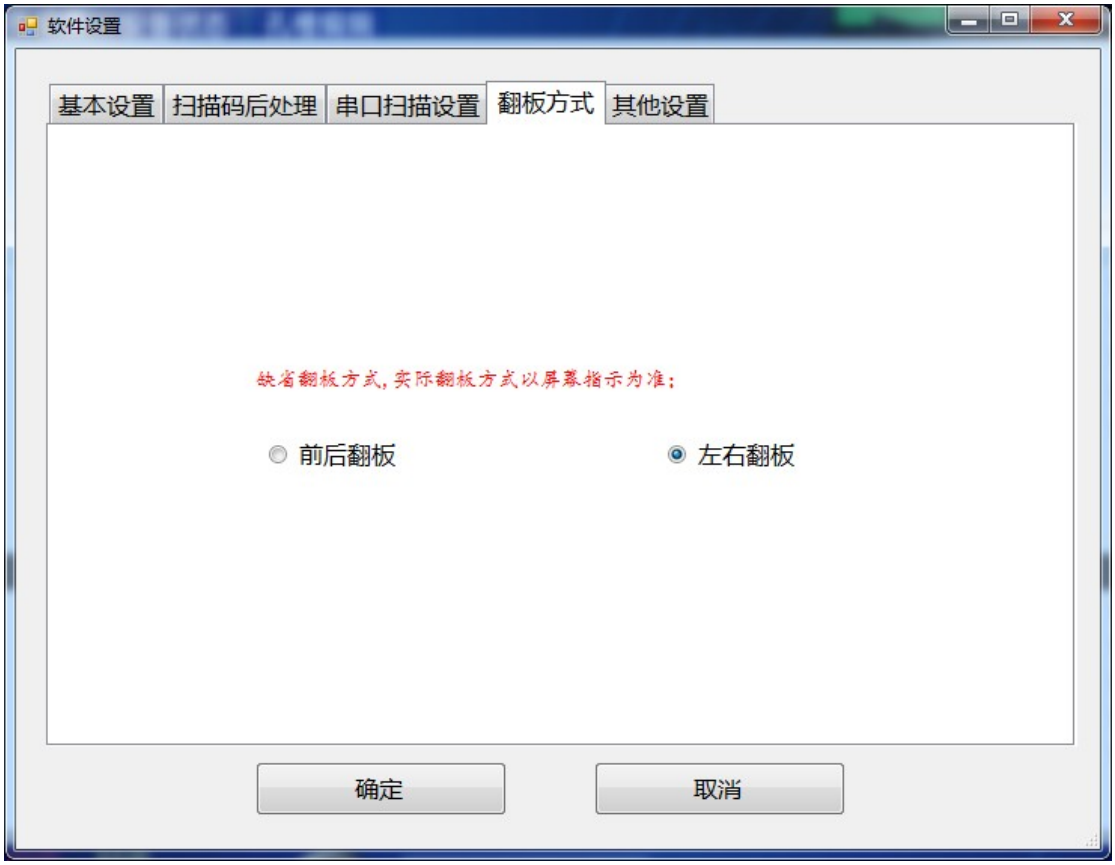
Basic settings:

The color of the plate displayed during processing



Processing after scanning:

For example: Delete the last digit 1 of 1000001; you can also add corresponding value depending on the missing or extra value in scanning



Turn-over method:

You can set to turn over the plate longitudinally or horizontally

5、Machine Status

View in the status bar of the equipment if the system or software has any problem.