

Eternal Service Eternal quality
Automatic Winding Machine Instruction Manual



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Chapter 1 preparation before use

1. Use environment

- ◆ The equipment should be equipped with ac stabilized power supply and reliable grounding.
- ◆ Mixer temperature keep workplace in - 10 °C ~ 45 °C , should avoid high temperature, dust.
- ◆ Place in dry and non-corrosive gases.
- ◆ The equipment should be placed at a level that is easy to handle when carrying. Do not stack heavy items on equipment.
- ◆ The air source should be kept dry and free of oil and dust. Air pressure must be guaranteed at 4.5 ~ 6.0 M pa.

2. Precautions

2.1 precautions

- ◆ Please read this manual carefully before operating the machine to understand the structure, function, moving parts and characteristics of the machine.
- ◆ When replacing the machine, you must use a fake line. When trying to coil, you must pay attention to whether the manipulator is correct
- ◆ Whether the winding number is correct.
- ◆ The tension, speed and procedure of the line nozzle are related to the procedure. Please check the use condition regularly and replace the best condition of the guaranteed line.
- ◆ The non-professional staff should not open the control box, even if the switch is turned off, there is high pressure inside, and the power plug must be unplugged during maintenance, the maintenance must be repaired by professional maintenance personnel.
- ◆ There is a great danger in all parts of the coiling machine when debugging equipment. Please pay attention to the surrounding personnel and articles.

2.2 warning

Improper use of the machine can cause serious injury or death. The manager, operator and maintenance personnel should read carefully before operation or maintenance. Please keep the book near the machine for easy reference.

Please note the following items when using this machine:

A. Please do not use the machine until it is fully understood.

-
- B. This book should be kept properly and read regularly. If there is any loss, it will not be issued in principle.
 - C. While delivering the machine, you must also deliver the book together.
 - D. The machine will continue to improve, and the details may differ from the book. If there is any unclear, please contact our company or our sales agent.
 - E. When the wiring changes, the electrical construction or electrical wiring should be carried out by the qualified personnel, and the power should be cut off during the operation.
 - F. Never leave your hands or face near the machine when the machine is up or running.
 - G. Be sure to cut off the power when cleaning, component replacement or maintenance.
 - H. Please confirm that there are no people or dangerous things around the machine when doing maintenance.
 - I. When operating online, please pay attention to people or things.

2.3 safety profile

To prevent accident, personal accident and machine damage in machine operation. Our machines are equipped with all kinds of safety devices, and we should never do anything to the machine, such as removing the safety equipment and using the non-normal parts.

Failure to comply with the misoperation of the precautions and the operation of the safety rules will not only result in injuries and damage to the machine, but also may affect your life.

For your own safety, please read this manual before contacting the machine, and properly master all aspects of installation, operation, maintenance method and safety.

2.4 machine setting environment

A. Avoid wind and sand attacks, rain, dust and corrosive organic salts and direct exposure to sunlight. Suggested environment is: indoor temperature 0 ~ 40 °C indoor humidity 45% ~ 75%, the temperature change condensation phenomenon.

B. To smooth the machine, please confirm whether the ground strength is sufficient to withstand the machine weight. Also, the ground should not be inclined or bumpy.

C. The placement of the machine should be far away from water, processing oil, cleaning agents or places prone to such liquids.

D. It is not suitable to be placed together with machines, such as grinding machines, milling machines, lathes, cutting machines, electric drills, etc.

Avoid devices and devices that produce electromagnetic waves. Do not press the emergency stop switch when the spindle speed of the main shaft is not in emergency, otherwise it may cause the main shaft belt to fracture.

E. The machine must not be placed in the stairway, pedestrian walkway, etc.

F. The distance between the machine and the wall is not less than 1.2 meters, so that the line frame can be arranged conveniently.

G. The protruding part of the machine should increase the protection of the guardrail so as not to scratch the personnel.

H. Protection of guardrail between the machine and the line frame should be prevented from being passed, so as not to cause wire cutting or damage to the copper wire.

2.5 precautions for machine operation

1. In order not to be caught by the machine, the clothing should pay attention to the sleeves and the collars. Wear hard hats and prevent long hair down.
2. Don't use smoking or hand in your pocket.
3. Do not wear gloves to avoid being caught in the machine.
4. The hand which is wet with oil and water should not touch the switch, which can cause shock and machine failure.
5. Confirm the function of the switch according to the instruction manual, especially the location of the emergency stop key, which can be pressed immediately in case of emergency danger.
6. Do not exceed the performance, capacity and limit of the machine in use.
7. Surround the machine with bright, dry, uncluttered obstacles. Tidy up the clean environment.
8. To prevent operators from slipping, the ground and channels around the machine should be kept dry.

2.6 the packaging of the machine

- ◆ Packing must be strong, the proposal should be packed in wooden cases, fixed by the four wood, and has the characteristic of moisture proof, shockproof, collision prevention measures.
- ◆ Packaging machine should make sure to close all the power switch, and pull the plug.
- ◆ Machine firmly fixed in the packing box, in order to avoid accidents.

2.7 The safety of the hoisting (handling) of the machine for large lifting machine

- ◆ According to the frame machine will split, respectively in separate lifting rings with cords. The smaller machines lift the whole machine.
- ◆ Weight data due to the different of screw and piston diameter, please refer to technical parameter table.
- ◆ As by modern machinery specialized department is responsible for handling the machine, the customer when transporting machine, should pay attention to the following:
 1. Suitable for machine weight, such as crane, wheel, wire rope, hook, etc.
 2. When using wire rope, pay attention to maintaining the balance of the machine.
 3. Steel wire rope should be used for surface coating. When using unprocessed wire rope, pads should be placed on the area of contact with the machine, and be careful not to damage the broken part.
 4. When using rollers, install in 4 places. To remove the shockproof foot and install the installation hole, please turn over and replace the mounting hole one by one.

2.7 the transport environment of the machine

The machine can be transported in the temperature of the -15 dw C ~ 55, the humidity is less than 80% (no condensate)

Lose, pay attention to rain, dust and mechanical damage.

3. Check items before starting up

- ◆ Power plug

- ◆ Confirm that the voltage of the winding machine is the same as the voltage shown on the nameplate. Please be careful not to use the power supply other than the prescribed voltage. Single phase and three-phase power supply socket is different.

Safety tips: make sure to connect the grounding wire to the machine for safety.

In strict accordance with electricity standards, negligence can lead to personal injury and death!!!

Note: when the power is switched off, the power should be switched on again. Please wait 30 seconds or more to avoid the display of the screen.



Main power switch

Air input is used to provide compressed air to the winding machine. The compressed air standard is 5Kg/cm². The main air filter has a knob that regulates the air pressure.

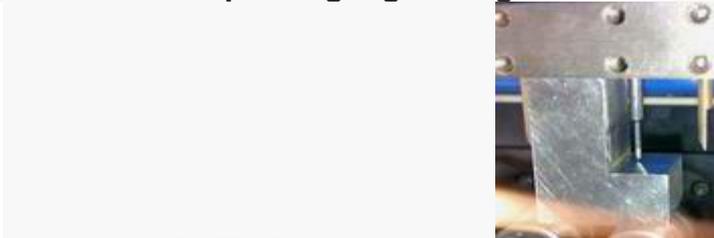


Main air pressure valve

Another is to control the pressure valve of the clamp cylinder

◆ the installation of nozzle

Please install a special gauge using the line nozzle to install the online nozzle



Correct gauge usage

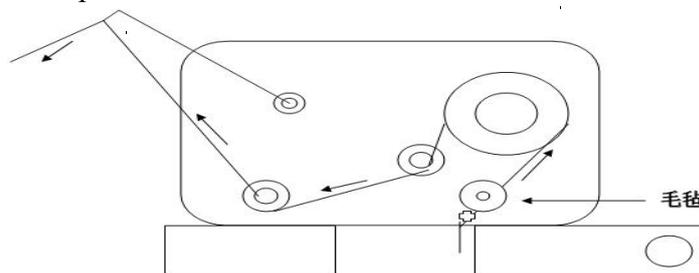
Installation and replacement of winding clamp

- ◆ The winding clamp is installed on the main shaft of the winding machine, please pay attention to the installation direction and correct the transfer of jig.

The correct line direction of enameled wire

Place the enameled wire line with the wire line specification on the wire rack, and please set the copper wire cover.

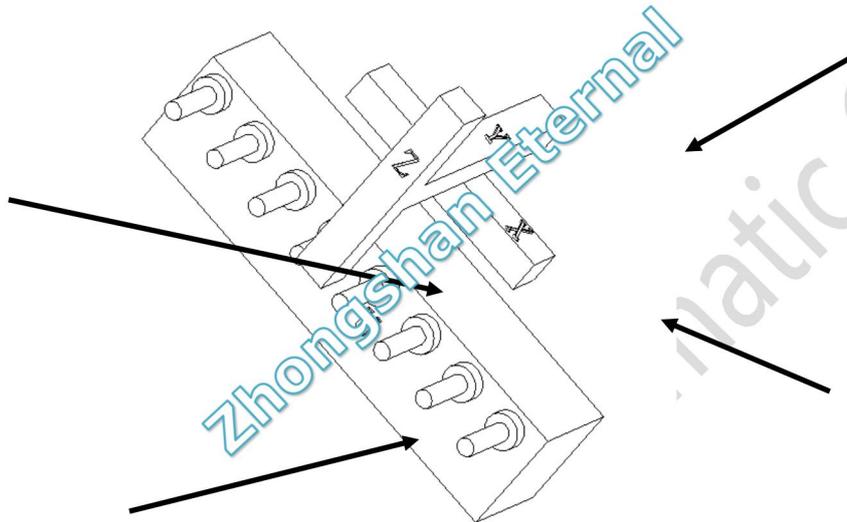
Press the following picture to pass the enameled wire from MTCS.



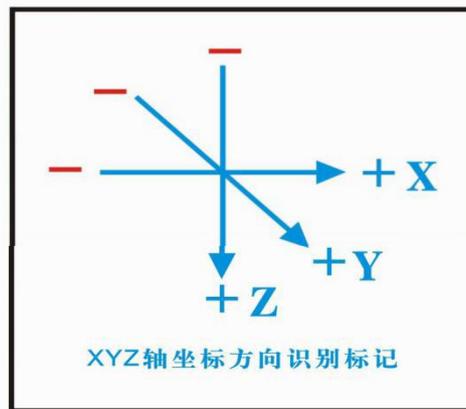
Please refer to the instructions of the tension-er for the specific adjustment method

Chapter ii construction and working principle of winding mechanism

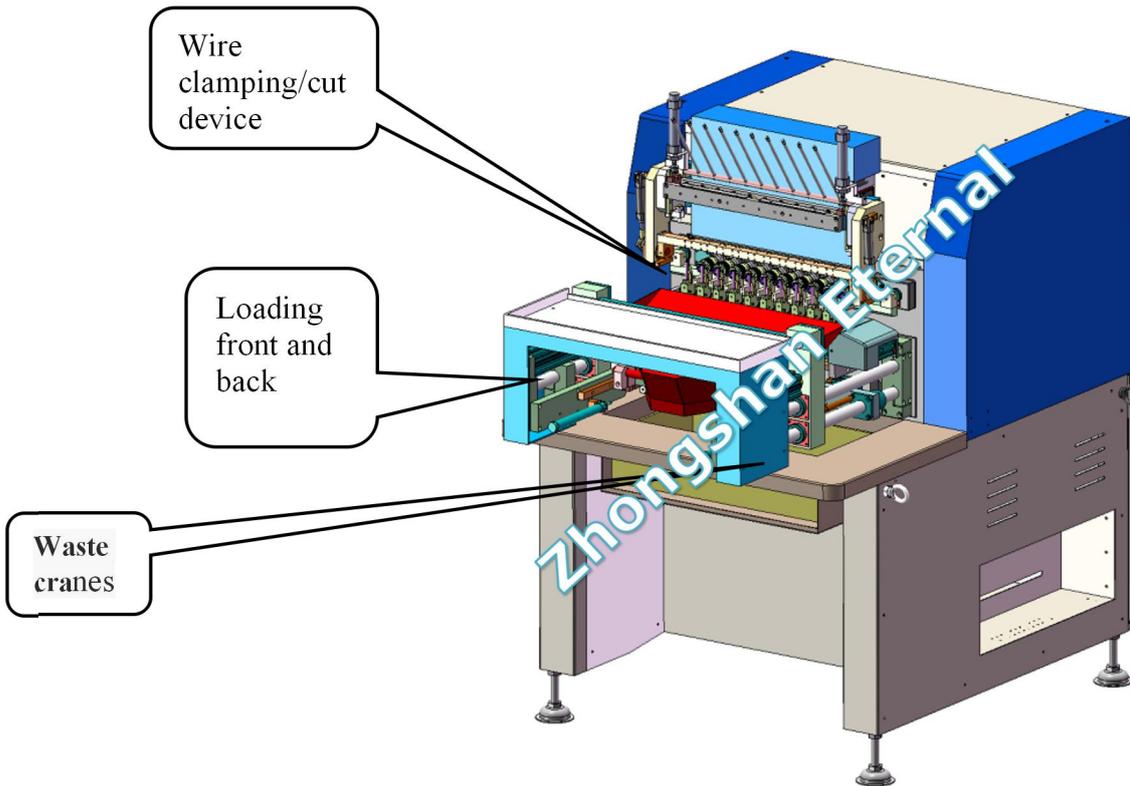
1. Schematic diagram of 3D manipulator



The axes are shown below



2. Equipment complete machine drawing

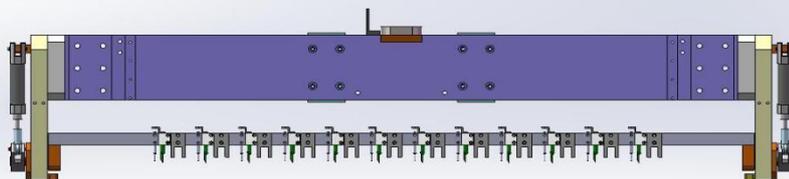


3. Detailed description of the equipment of the whole machine (different machines use different configurations)

Waste wire box: collection of coil end wire

The lower material and the wire-billed rotating device: the lower material will go around the good products through the mechanical staff to the conveyor belt.

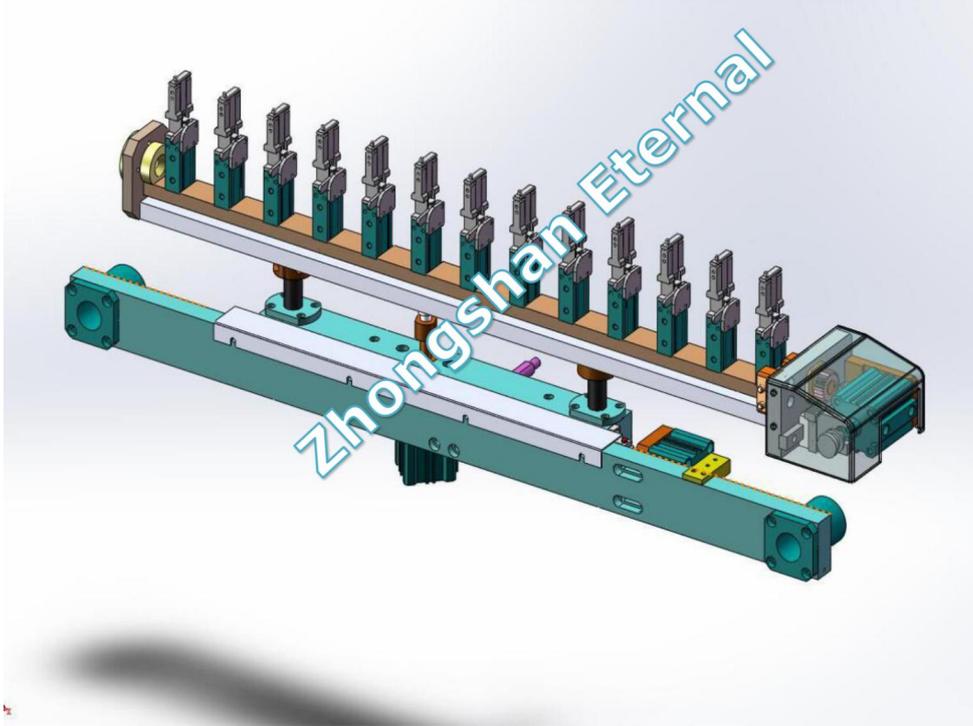
The line mouth swivel to complete the vertical and horizontal products of the corner action



The blanking sheet is rotated with the wire

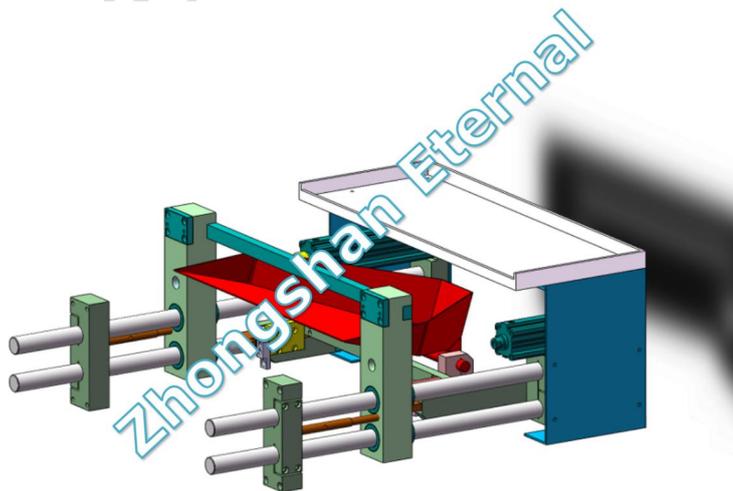
Wire clamping , wire break device: when the winding is finished, the wire holder is clamped on the wire, waiting for the next round of winding

The thread that will be entangled in the skeleton stitches to meet the customer's product needs



Wire clamping & cut device

Front and back feeding device: transmission skeleton to the main shaft of the winding machine, realizing the action of the material, and the finishing of the finished product.



Chapter iii operation instructions and programming of winding machine

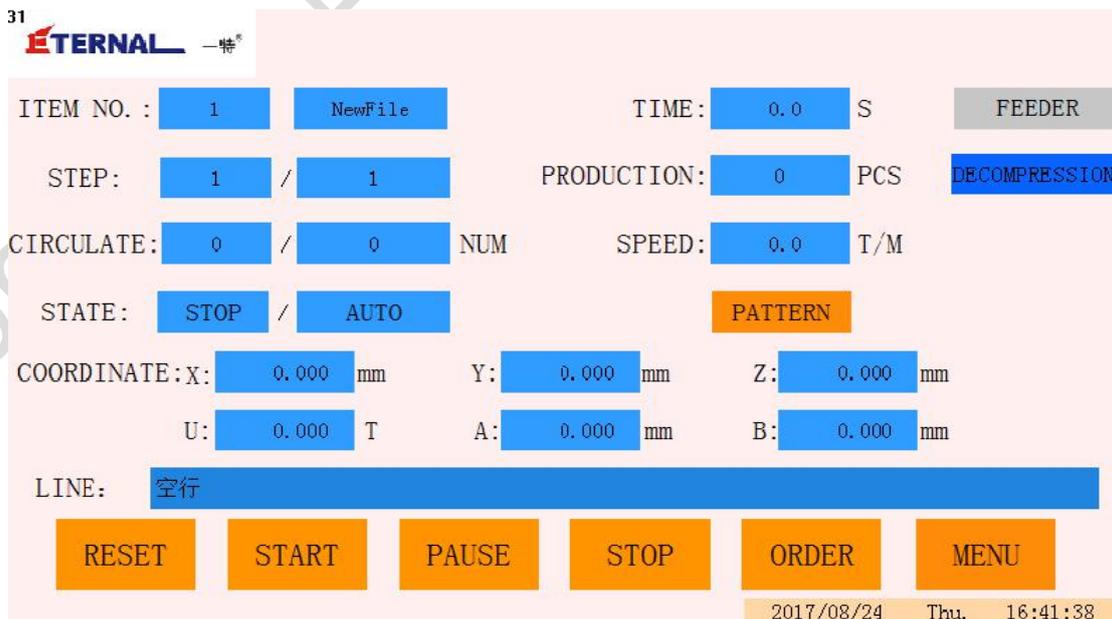
1. Start preparation

Connect the compressed air, open the winding machine source, the winding machine begin to reset, the touch screen display information is as follows:

Open the power supply after the touch screen will be displayed as shown in the figure below, in the main picture on the manufacturer's contact phone number and address, can be obtained from the above contact methods manufacturer technical support, in this picture has six buttons, the following will detail the functions and operation method of winding machine.



Click **OPERATION** enter the production screen as shown below:



Please click **RESET**, Each cylinder returns to its original position, and the servo axis returns to

its origin in turn. If not return to zero and click **START** directly, It will pop up and require a reset



prompt, When you close, reset.

Tip: if the automatic return to zero is allowed in the parameter setting, the reset action will be completed automatically when the power is switched on.

2. Equipment operation

Winding start:

Install the skeleton in the correct installation direction on the fixture, press **START**, winding start.

Cut down power:

Turn off the main power switch when the winding is over (the cycle has stopped).

Operation button:

The operating key of the winding machine is directly below the touch screen, and there are three buttons, which in turn are start/stop, make an appointment, and stop urgently.



Start: this is the start button of the program, in the state of zero completion, press this button, the winding machine will start action.

Pause: this is the pause button of the program. In the process of running the winding machine, press the button, the program of the winding machine will be suspended, if you want to continue to run the start button.

Reservation: is this program reservation switch, when a device application at run time, press the button, at the end of the execution coiling procedure, need not press the start key, coiling the opportunity to get to the next cycle, open and cancel there will be light show.

Stop: this is the stop button, in the execution of the program and the reset wait for the action, no matter what state of the winding machine is in the emergency stop button winding machine stop working.

The choice of running mode: Press the run mode button **PATTERN** There are three running mode options:



Automatic mode:

This means that under the automatic run state, press the start button, the controller will continue to run the program to the end continuously from the first line of the current selection process.

Single action:

This means that under the single action state, press the start button, the controller will start to run gradually from the first instruction of the currently selected program, and each click the start button to run the one-step instruction. Long press the start button, the program will run continuously and release stop.

Single operation is generally used when checking programs and modifying programs.

Cycle mode:

This means that under the loop run state, press the start button, the controller will run continuously from the beginning to the end of the selected program. The number of cycles is the

number of values in the cycle **CIRCULATE: 0 / 0 NUM**. The previous number is the number of cycles currently in circulation. The latter number is the number of cycles.

Note: after the mode switch, you need to return zero.

3.Alarm information

If the equipment alarm is flashing, the device appears abnormal, and the picture below shows detailed alarm information. After the alarm appears, the device will automatically enter the suspended state, and if the equipment is handled properly, it can continue to process the unfinished process. Note that if some serious alarms are not to be produced, such as a servo drive alarm, you must be out of power before you can continue to work.

Alarm prompt

125 ETERNAL 一特® The lock shaft no close

ITEM NO. : 1 NewFile TIME : 0.0 S FEEDER

STEP : 1 / 1 PRODUCTION : 0 PCS DECOMPRESSION

CIRCULATE : 0 / 0 NUM SPEED : 0.0 T/M

STATE : STOP / AUTO PATTERN

COORDINATE : X : 0.000 mm Y : 0.000 mm Z : 0.000 mm

U : 0.000 T A : 0.000 mm B : 0.000 mm

LINE : 空行

RESET START PAUSE STOP ORDER MENU

2017/08/25 Fri. 09:21:39

4、Other information

4.1 Target output:

CIRCULATE : 0 / 0 NUM

This refers to the number of targets produced during the production process, and the blue box on the right to jump out of the digital input keyboard. The data shown previously is the number of cycle that have been completed. (in proportion to the multiples of different models

0			
1	2	3	-
4	5	6	CLR
7	8	9	ESC
.	0	OK	

4.2 Production:

PRODUCTION: PCS This refers to the actual number of items completed, and the blue box on the left side of the loop can zero or subtract the current display data



4.3 File selection:

ITEM NO. : Here is the program that displays the current run, and the number in the blue box is the number of the program, and clicking on it will show all the programs that are already on the machine. The controller can accommodate 900 random programs and select program number to switch different types of programs. The second box shows the name of the file, which helps you quickly find the program you want.
Step NO.:



4.4 General steps

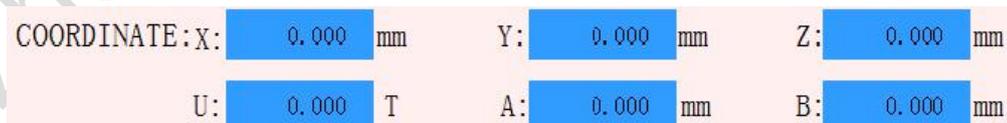
The second box shows how many lines the current program has.

4.5 The current step:

The first box refers to which row the current program runs. At the same time, the current step will also be displayed.

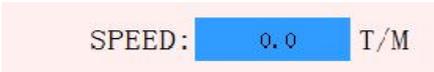


4.6 Current coordinates:



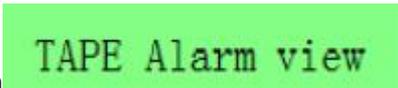
The current coordinates show the current coordinates of all axes in real time. The U axis is the rotation axis, the unit is the circle, and the other axis units are mm.

4.7 Real-time speed:

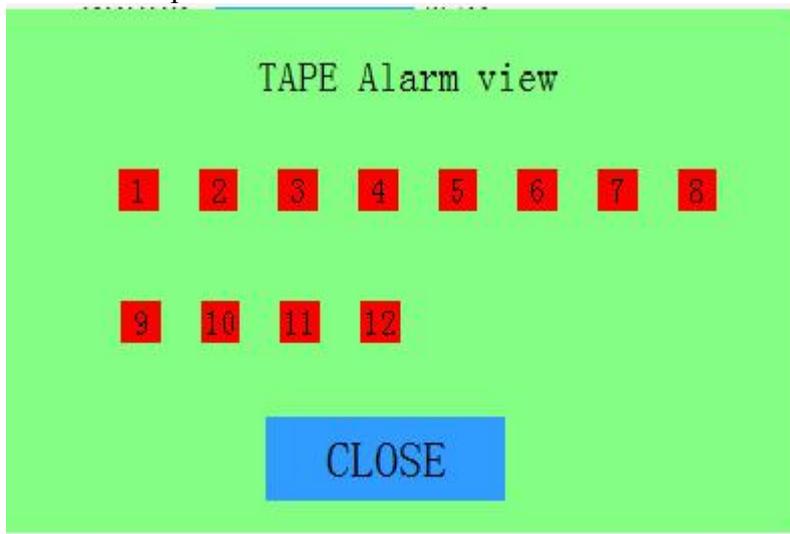


The real-time speed monitoring is the rotation speed of the u-axis.

4.8 Check the tapping test:



Press the button **TAPE Alarm view** Can check each detection photoelectric switch state of the glue machine, also can clear the tape alarm.



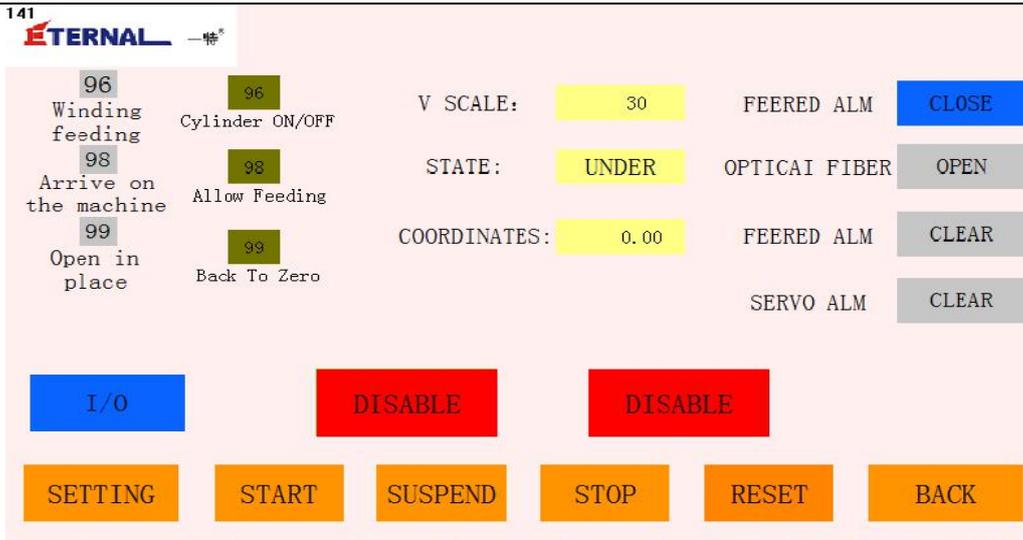
Type E material:

Compared with the old system, the number of controllable axis of the new system is far greater than that of the old system, with a series of controllers including 4, 8, and 16 axes, which can also be expanded, theoretically capable of controlling 128 axes at most. Therefore, the upper material machine controls from the original two controllers to a controller control, the speed is faster, the operation is simpler. And the upper feeding machine control program has been modularized to choose whether to use the feeding machine. Flexible increases.

Click **SETTINGS** → **OTHER** → **FEEDER** **PERMIT** on the main interface can choose whether to open the feeding machine.



Press the button of E type feeding **FEEDER** Enter the control interface of type E. The E type is made into a separate module, and each function key and the state light are separated from the winding machine, which is independent and connected.



The start, pause, stop and reset of the feeding machine and the action program of the winding machine have been solidified in the program, so it is easy to operate simply by setting the various coordinate points.



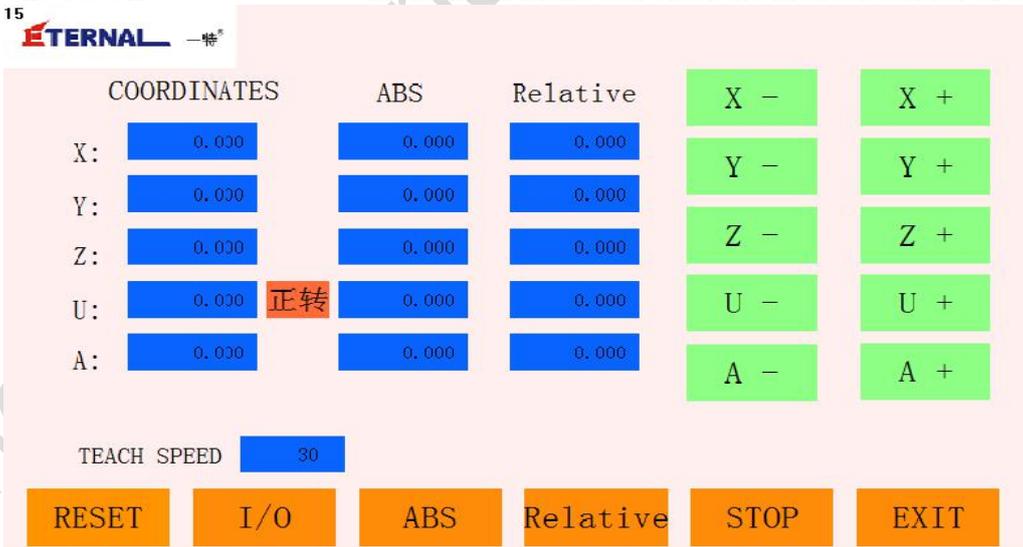
Click button of I/O Can enter the manual control interface of the feeding machine. The following is a detailed description.

5.Manual control

Manual control servo axis



Click the button MANUAL in the main menu can enter the manual control of each axis.



Coordinates:

Display the current work piece coordinates of each axis of XYZU. The axis coordinates can be defined here, and the corresponding arrow keys are pressed by the seat mark. Press and hold the motor to do continuous motion, release the key motor to stop motion. The spindle rotation direction U + is clockwise, U - counterclockwise.

Absolute coordinates and relative coordinates:

Manually fill in the required coordinates in absolute coordinates or relative coordinates, press

ABS

or **Relative**

It can be positioned on the set coordinates and can be used when precise positioning is required. **正转** This button is only valid for the absolute positioning of the U axis, which can change the direction of U axis. Column: the absolute positioning of the U axis is 10 degrees, and the coordinate of the U axis is 10 degrees after the absolute positioning is selected. If you choose to reverse this position the u-axis is at -350 degrees.

Speed ratio:

Manual speed can be adjusted to the scale of the speed scale, **Speed ratio** **30**, 30 is manual speeds of up to 30% of the maximum speed.

In addition, there is zero and stop operation in the manual state, and click the return button to return to the main interface.

Manually control the cylinder:

I/O

Click button can enter IO manual control



Click the yellow button to control the corresponding cylinder to open and close the action. The red indicator refers to the trip detection of the cylinder in the open and closed mode. The detection in this case must be written to the program when editing the program, and each output has one or two Input tests.

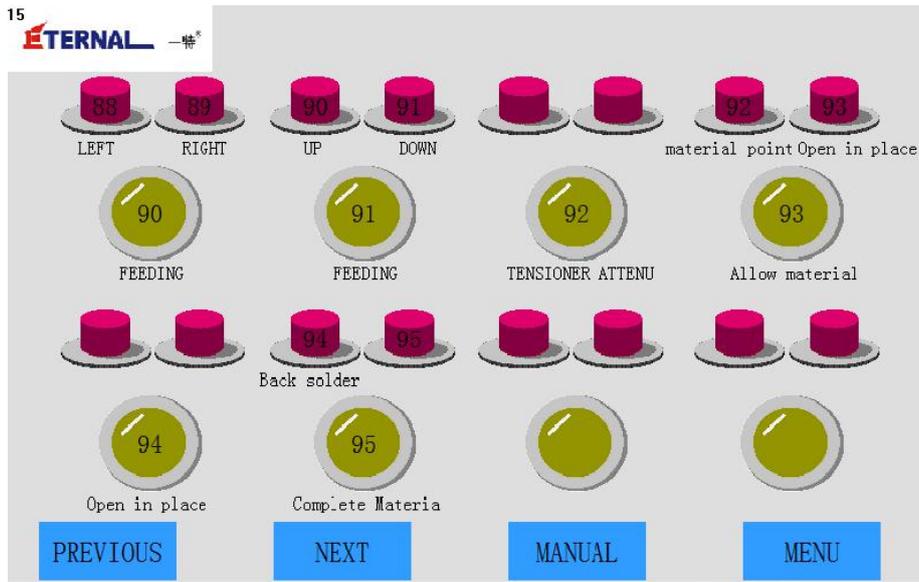
NEXT

Click can enter manual control of other cylinder.



NEXT

Then click **NEXT** enter manual control of other cylinder.

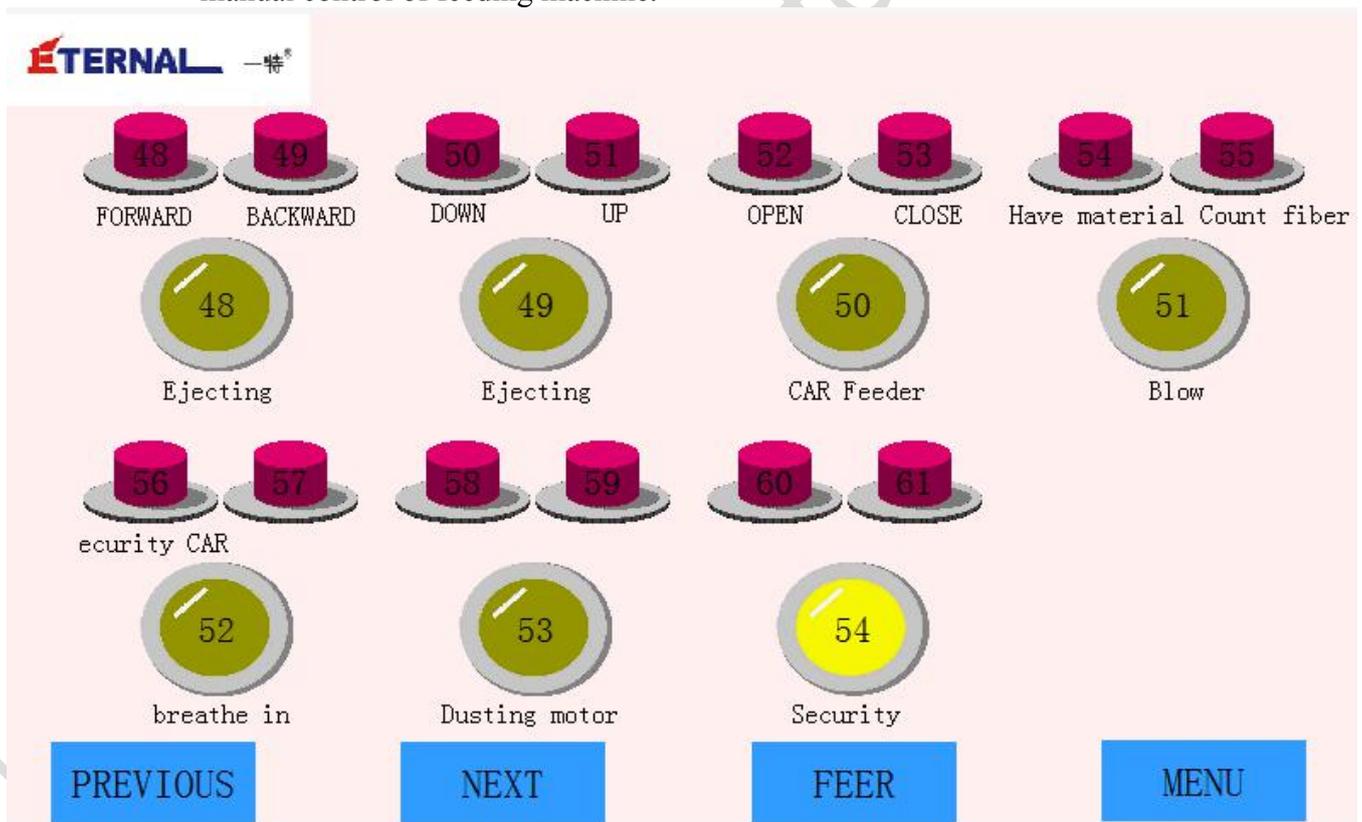


OPERATION

E type feeder

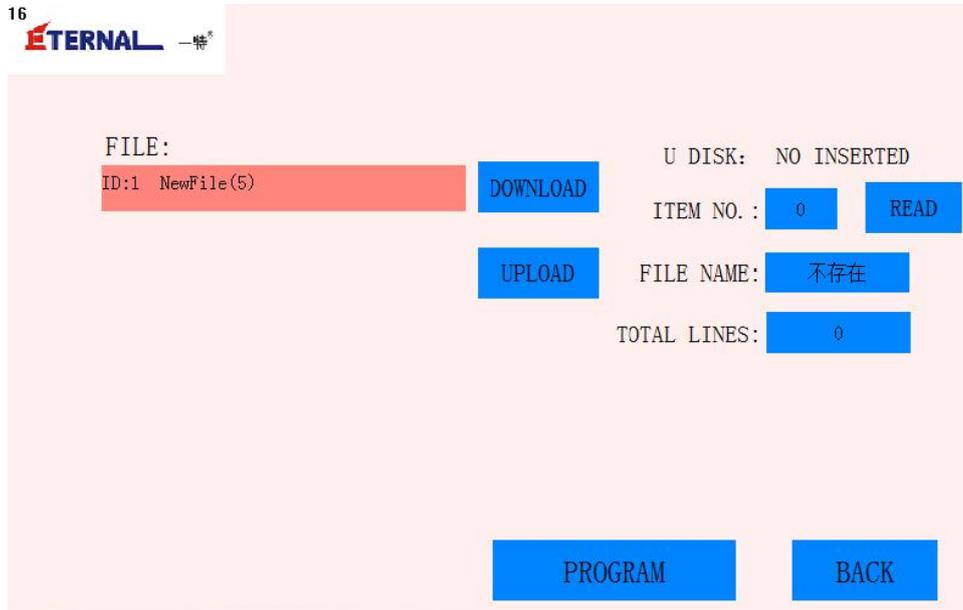
I/O

Click the button **OPERATION** → **E type feeder** → **I/O** in the main menu can enter the manual control of feeding machine.



4.8 Upload and download the program:

Press the button **DOWNLOAD** in the main menu can enter the page of uploading and downloading the program.



U disk status

When a USB flash drive is connected, the USB flash drive displays a USB flash drive.

U disk ID

The box on the right of the U disk ID displays the file number in the U disk, and the file number can be selected.

Internal file list

The box on the right of the file shows the file number in Flash, and the file number can be selected.

reading

Click the “read” button on the right to read the size of the current file in the U disk file and the number of lines of G code.

<< The upload

After clicking the upload button, the system will download the current file in the U disk to the file displayed in Flash.

Download >>

After clicking the download, the system will upload the files displayed in Flash to the files displayed in the U disk.

Note:USB FLASH disk, FLASH file number valid range:

0-900: the number of the disk file, corresponding to the file SD0. Bin-sd900. BIN. SD999. BIN is the parameter file.

Note: the uploads of USB flash drive can be used to download the files of U disk. Too many U disk files may slow down the upload speed.



The USB port is on the controller

Fault diagnosis:

I/O

Click **I/O** on the main page can quickly enter the IO operation interface to view the IO interface when you write the program.

5.Parameter setting

SETTINGS

Click **SETTINGS** on the main page can enter the control interface to enter the parameters of the controller to set the screen



SPEED

The speed parameters of each axis are mainly set, including the starting speed, speed of operation, acceleration, reduction speed, reduction speed, and anti-hunting speed. Click the

SAVE

button **SAVE** to take effect after each speed setting is completed.

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	X AXIS	Y AXIS	Z AXIS	U AXIS	A AXIS	B AXIS
STARING SPEED	5.0	5.0	5.0	5.0	5.0	5.0
WORKING SPEED	100.0	100.0	100.0	100.0	100.0	100.0
ACCELERATION	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0
DECELERATION	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0
RESET SPEED	10.0	10.0	10.0	10.0	10.0	10.0
	5.0	5.0	5.0	5.0	5.0	5.0

SAVE BACK MENU

Note: please do not change the parameters when the company's maintenance personnel are not present.

TEACH

The main setting is manual speed, single moving distance, chamfer mode, chamfer radius and S curve time.

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	X	Y	Z	U	A	B
DISTANCE	1.00	1.00	1.00	1.00	1.00	1.00
TEACH SPEED	100.0	100.0	100.0	16.7	100.0	100.0
CHAMFER MODE	32	0	0	0	0	0
CHAMFER RADIUS	5	5	5	5	5	5
S CURVE	20.0	20.0	20.0	20.0	20.0	20.0

SAVE BACK MENU

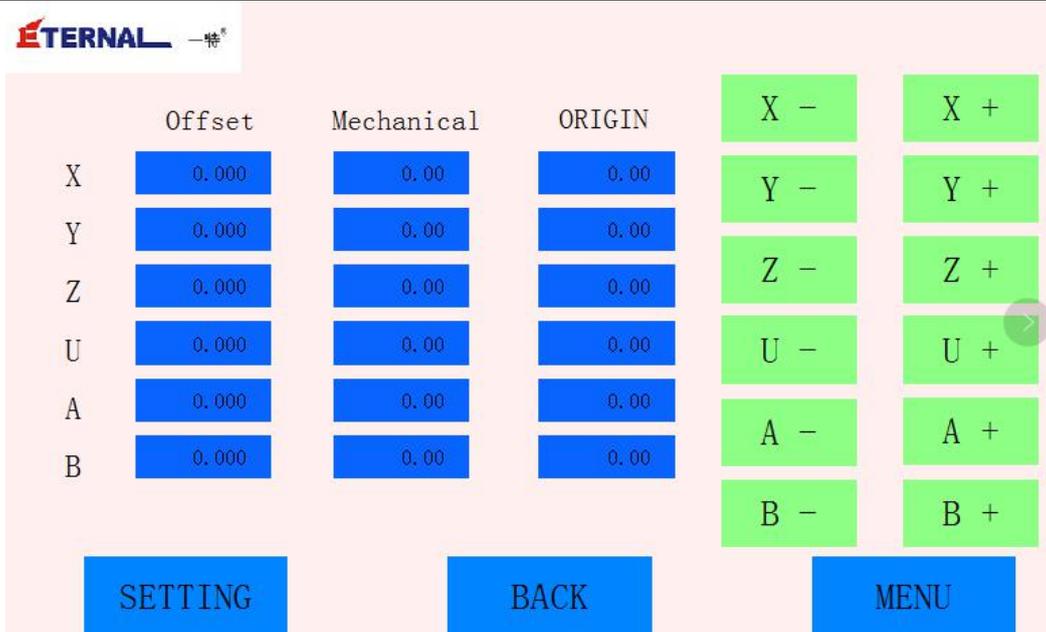
Note: please do not change the parameters when the company's maintenance personnel are not present.

I/O CHECK

Monitor all IO ports on the controller,

ZERO POINT

Set the origin of the work piece for each servo axis



Coordinates offset can be clicked input coordinates, click **SETTING** the coordinates can be set to the zero point of the artifact. The mechanical coordinates show the coordinates of the current axis, and the zero point of the work piece shows the current zero point coordinates. In addition, the manual axis can be manually moved to the appropriate position set as the zero point of the work

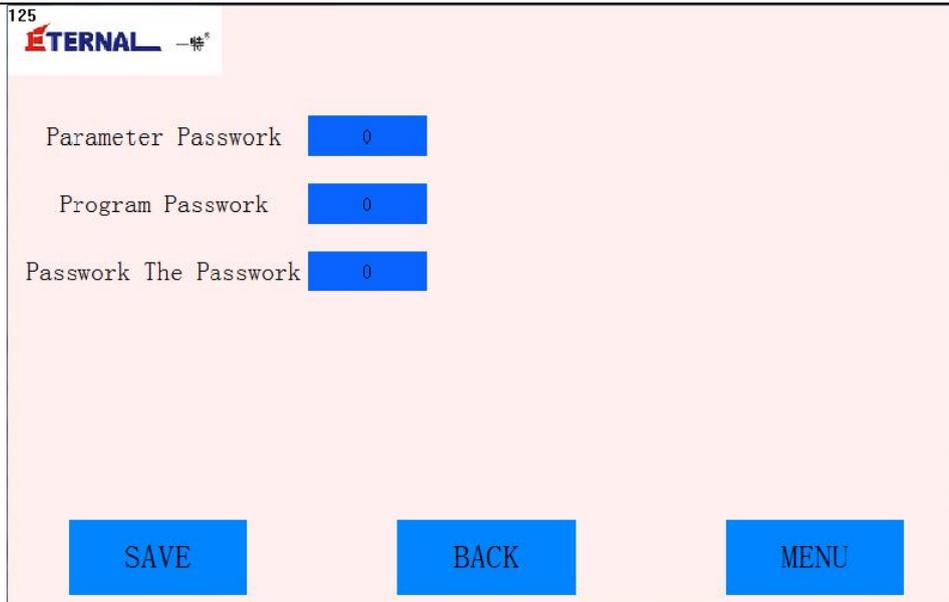
piece. **PASSWORD** can set three passwords:

Parameter setting password: to set the entry of interface **SETTINGS**, Password is 0 for no password, can enter the parameter setting interface directly.

Edit Settings password: to set the entry of interface **PROGRAM**, The password is 0 for no password and can go directly to the program editing interface.

Password set password: Passwords that are typically set for administrators, to set the entry of

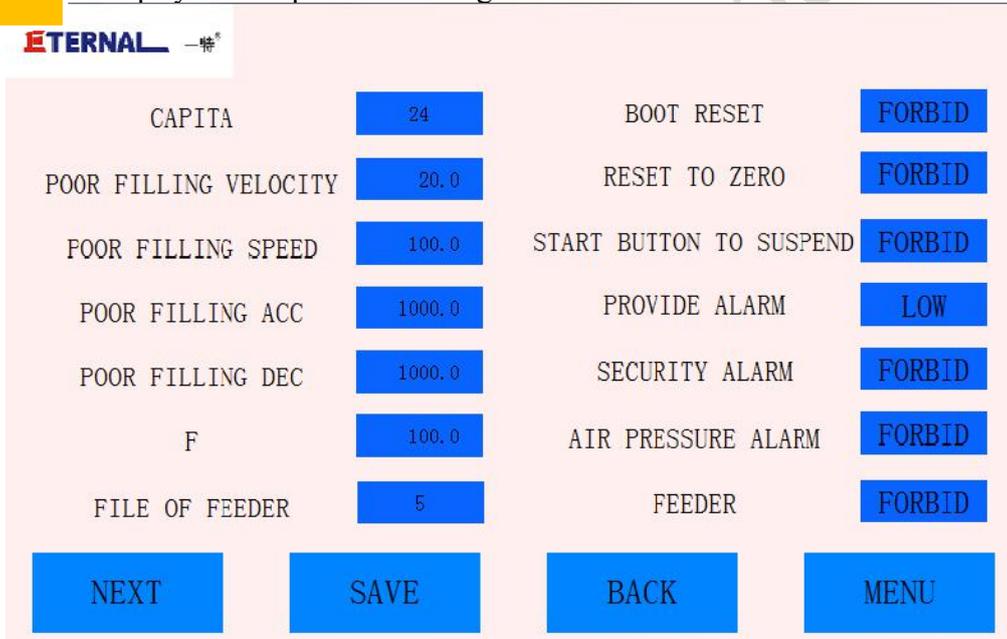
interface **PASSWORD**. Password is 0 for no password, can enter the parameter setting interface directly.



After setting, click the save button to take effect.

Others

Set up system-dependent Settings



The number of winding machines is related to the quantity of production, and the number of production per cycle increases the setting value of the number of winding machine

The value of task F is set at the set value (set value) %

At present, the file number of the feeder machine is optional 1 and 2, 1 for the type E, and the 2 is the engineering material procedure, which is related to the mechanical mechanism and cannot be modified casually.

The upper feeding machine can allow the operation and prohibition of feeding machine.

Alarm clearance can hide the current alarm.

After setting the parameters, the save key must be saved to enter into force.

VENDOR

Internal use.

UPDATE

You can update the controller with U disk file, insert the U disk click program upgrade, and the controller will automatically find the mian. Zar file in the U disk to upgrade.

5. Program editing

Click **PROGRAM** can enter the interface of program editing, The content is shown in figure 7-1.

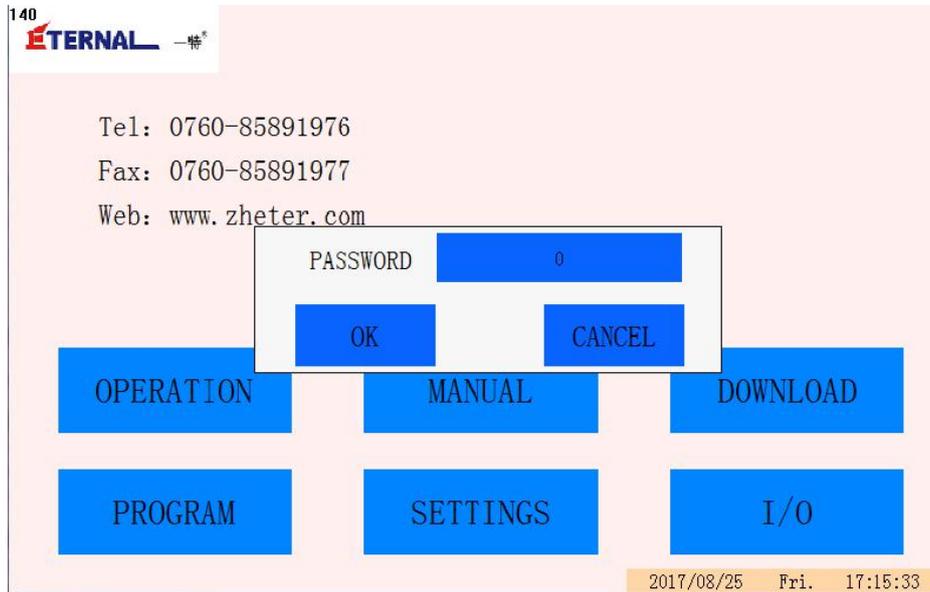


Figure 7-1 program editor enters the interface

Enter the correct password, and then click OK as shown in figure 7-2. You can select the required file to click edit, then click New file, As shown in figure 7-3.

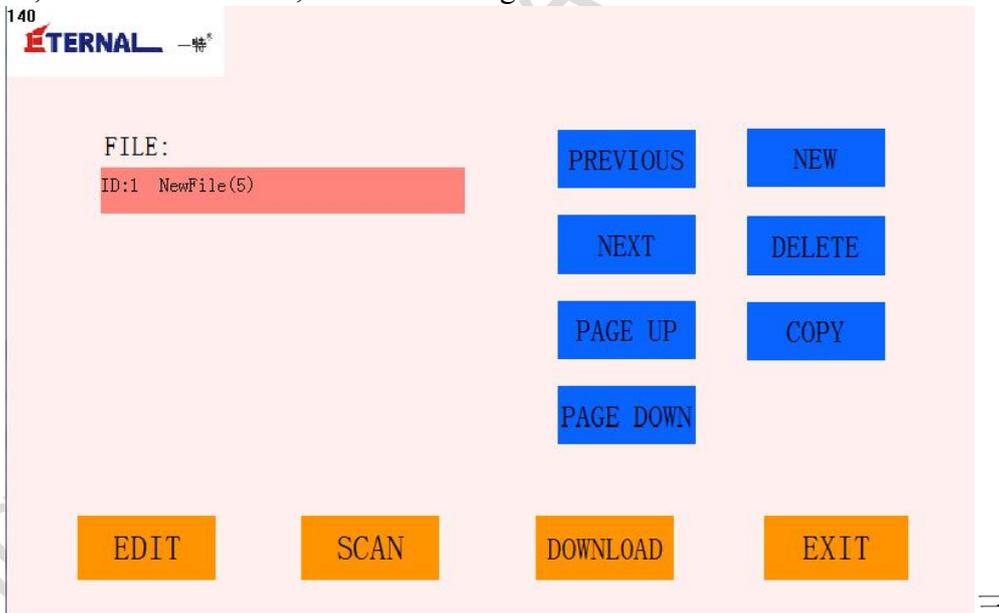


Figure 7-2 File display interface

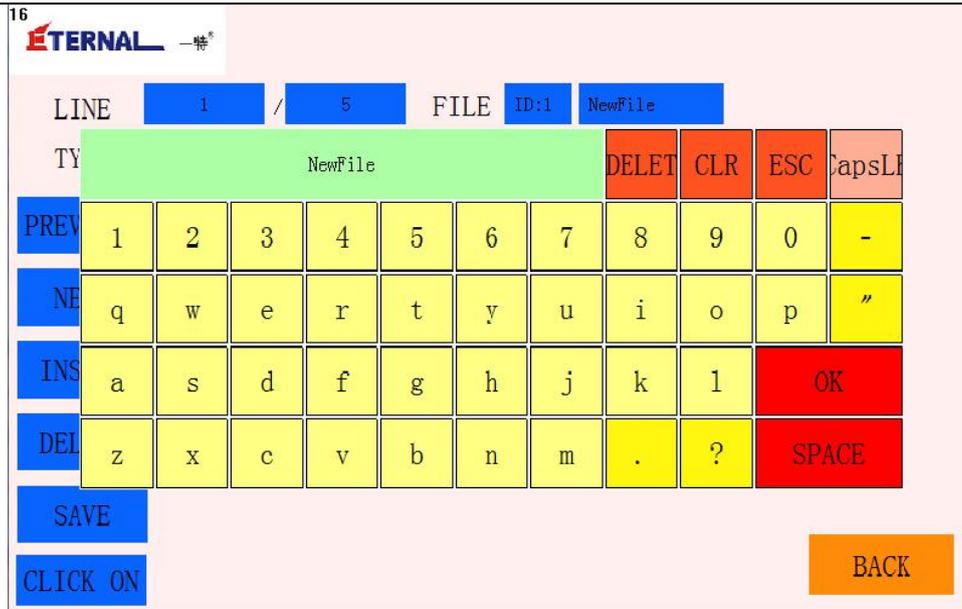


Figure7-3 File name modification interface

Filename setting

The file name of the current file can be modified according to the user's needs, but the filename must not exceed 16 characters.

save

Click the save button to save the relevant parameter Settings for the current file.

return

Click the return button, and the interface returns to the interface shown in figure 7-2.

EDIT

Click edit button to enter G code edit interface, optional instruction and input instruction mode to edit the program, the editor may select according to the need when editing the program.

SCAN

Click browse to browse the current numbered program, As shown in figure 7-4

DOWNLOAD

Click upload download to upload the program to USB flash drive and copy it to other machines.

EXIT

Click the main menu to return to the main interface.

As shown in figure 7-4, the code editing interface is shown in the interface:



Figure 7-4 G Code edit interface

Display the data

Program number, total number of rows, current row. (Note: the display data only shows that it cannot be modified)

Insert row

Click the insert row button and the new program is displayed at the top right of the interface. You can enter the line number and G code type after N, and use the upper and lower keys to change the type of G code. Currently, the G code parameter is at most 8 (which can be developed according to customer requirements). Some of the G code parameters can be selected. According to the programming needs, you can select the axis you want to move in the parameter selection, and the key is changed from blue to yellow. The parameter is selected.

After the code is filled out, click the save button, and the new program will disappear before the G code is inserted into the current line.

Localize

Select the axis and coordinates you want to move in the parameter selection, and click location to move to the location you want.

Load

In this interface, you can manually move the axis and coordinates you need, and click save to save the data.

Delete rows

By clicking the delete row button, you will be prompted to delete the delete and the new program. After clicking the confirmation, you will be deleted after clicking the save button, and the new program will disappear.

Jump a career change

Click on the jump to jump to the specified row with the number of rows to jump from the current row option. The row number of the specified row is entered on the right side of the jump switch button, and if the input is greater than the last line number, it will jump to the last row.



Return

Click the return button to return to the main interface.

As shown in figure 7-5, the operation of the interface is as follows:



Figure 7-4 program browsing interface

Display the data

Program number, total number of rows, current row. (note: the display data only shows that it cannot be modified)

Previous page

Click on the previous page to show the instructions on the previous page. When you turn to page 1, there will be no response.

Next page

Click on the next page to show the instructions on the next page. When you turn to the last page, there will be no response after clicking.

Click on the top row, and the next line can scroll up and down the command line.

Edit

Click the edit button to edit the edit interface of the current display line. If you want to modify the program to change the line to the first line, or double click the line to be modified, you can shorten the programming time

Return

Click the return button to return to the main interface.

As shown in figure 7-6, the point selection programming mode, 7-7 shows the input programming mode, and the device defaults to the point selection mode

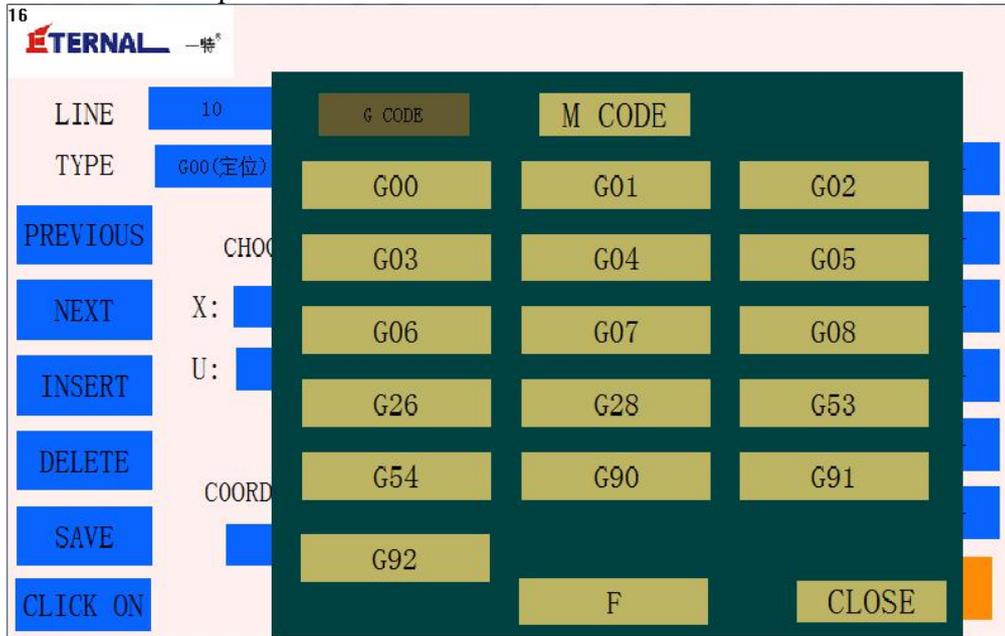


Figure 7-6 programming interface

When the blue button after the type is clicked, it will enter the command interface, where you can view the function of all G instructions and select the required instructions by switching the G instruction and the M instruction. After clicking the command, return to the program editing interface

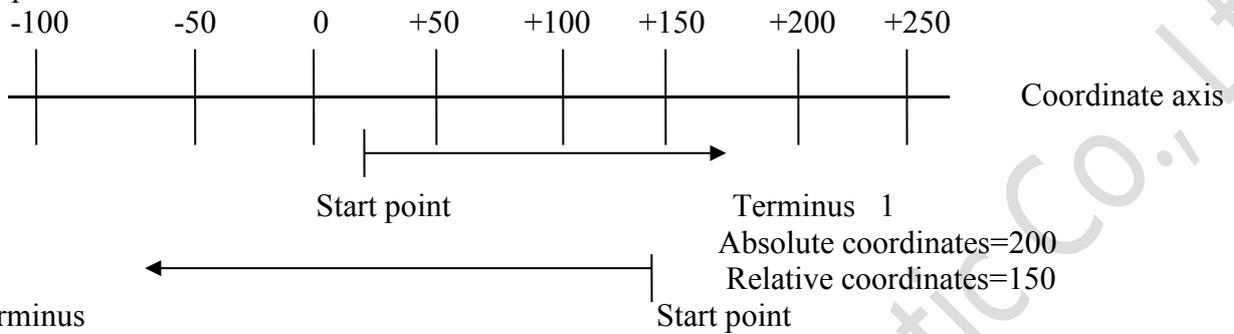


Figure 7-7 input programming interface

After clicking the input command, enter the instruction you want to edit after the blue button on the back of the type, click OK, and return to the program editing interface

Absolute coordinates and relative coordinates

The motion pattern is divided into absolute motion and relative motion. To define a curve with a series of points, the relative motion is to change the coordinates of one of these points to the coordinates of the subsequent points. The absolute motion is to change the coordinates of the point where the coordinates of the point are not affected.



Absolute coordinates and relative coordinate patterns

6. G code instructions

SC400 The controller's command list is as follows

G code	Function	G code	Function
G00	Rapid positioning	M80	I/O output
G01	Linear interpolation		
G02	Along the circular interpolation	M82	Waiting for export to be valid
G03	Inverse circular interpolation	M83	Waiting for an exit is invalid
G04	Delay	M90	Local loop termination
G05	Arc midpoint	M91	Local cycle start
G06	Arc end	M84	Continuous movement
G26	Back to zero	M85	Shut down continuous motion
G28	Back work piece zero	M98	Subroutine call
G53	Mechanical coordinates	M99	Subroutine return
G54	Restore as work piece coordinates	M02	End of the program
G90	Absolute coordinates	M11	Output 3 on
G91	Relative coordinates	M12	Output 3 off
G92	Redefine coordinates	M86	The variable plus a number
G07	Linear interpolation winding instructions	M87	Given variable value
M00	The pause	M89	Wait for a point
M07	Exit 1 on	M92	Force modification of artifact coordinates
M08	Exit 1 off	M94	Conditional jump
M09	Output 2 on	M95	Forced to jump
M10	Output 1 off	M96	Invoke the subroutine based on the conditions

M30	The program ends and loops	M97	Multitask call
M50	Linear interpolation speed setting	M79	Input port detection and alarm
F	F instruction, speed setting	G07	Straight line differential

G code

G00 Rapid positioning

Parameter selection: X_m Y_n Z_i U_j(Four parameters are optional)

Function: quick positioning

Parameter: X_m is optional. Specify the X-axis to move from the current position to the coordinates m, unit: mm

Y_n is optional. Specifies the Y-axis to move from the current position to the coordinates n, unit: mm

Z_i is optional. Specify the Z axis to move from the current position to the coordinates I, unit: mm

U_j is optional. Specify the U axis to move from the current position to coordinates j, unit: mm

Example: N00 G00 X100 Y100 Z100 U100

G01 Linear interpolation

Parameter selection: X_m Y_n Z_i U_j R_x F_y

Function : Linear interpolation

Parameter:

X_m is optional. M is the endpoint coordinate on the line X axis, unit: mm

Y_n is optional. N is the endpoint coordinate on the Y-axis of the line, unit: millimeter

Z_i is optional. I is the endpoint coordinates on the z-axis of the line, unit: mm

U_j is optional. J is the endpoint coordinate on the line U axis, unit: mm

F_y is optional. Y is the speed instruction, unit: percentage

Column: N00 G01 X100 Y100

G02 Along the circular interpolation

Parameter selection: X_m Y_n Z_i U_j R_x F_y

Function: smooth round interpolation

Parameter: X_m is optional. M is the terminal coordinate of the arc on the X-axis, unit: mm

Y_n is optional. N is the endpoint coordinates on the Y-axis of the arc, in millimeters

Z_i is optional. I is the endpoint coordinates on the z-axis of the arc, in millimeters

U_j is optional. J is the endpoint coordinates on the axis of the arc U, unit: mm

R_x is optional. X is the radius of the arc, unit: mm

F_y is optional. Y is the velocity parameter, unit: percentage

Shown: N00 G02 X100 Y0 R50 F50: a clockwise arc with a radius of 50 at high speed

Note 1: the four-axis parameter must and can only select two of them to do the arc interpolation. If you need to do a spiral, then choose three axes, and the first two axes will do the arc, and the third axis will follow the line

Note 2: when R is negative, the expression is greater than 180 degrees, and when it is positive, it represents a circle less than 180 degrees

G03 Inverse circular interpolation

Parameter selection: X_m Y_n Z_i U_j R_x F_y

Function: reverse circular interpolation

Parameter:

X_m is optional. M is the terminal coordinate of the arc on the X-axis, unit: mm

Y_n is optional. N is the endpoint coordinates on the Y-axis of the arc, in millimeters

Z_i is optional. I is the endpoint coordinates on the z-axis of the arc, in millimeters

U_j is optional. J is the endpoint coordinates on the axis of the arc U, unit: mm

R_x is optional. X is the radius of the arc, unit: mm

F_y is optional. Y is the velocity parameter, unit: percentage

Shown: N00 G02 X0 y-100 R50 F50: a counterclockwise circle with a radius of 50 at a high speed of 50.

Note 1: the four-axis parameter must and can only select two of them to do the arc interpolation. If you need to do a spiral, then choose three axes, and the first two axes will do the arc, and the third axis will follow the line.

Note 2: when R is negative, the expression is greater than 180 degrees, and when it is positive, it represents a circle less than 180 degrees

G04 Delay

Parameter selection: P_m (must fill)

Function: delay

Parameter: P_m must be selected. M is the pause time, unit: mm.

Listing: N00 G04 P500: pause 500 milliseconds

G05 is midpoint

Parameter selection: X_m Y_n Z_i U_j

Function: center of arc

Parameter:

X_m is optional. M is the midpoint coordinate of the arc on the X-axis, unit: mm

Y_n is optional. N is the midpoint coordinate on the Y-axis of the arc, in millimeters

Note: the four-axis parameter must and can only select two of them to do the arc interpolation. If you need to do a spiral, choose three axes. The first two axes will be the arc, and the third axis will follow the straight line.

G06 end of the arc

Parameter selection: X_m Y_n Z_i U_j

Note: the four-axis parameter must and can only select two of them to do the arc interpolation. If you need to do a spiral, choose three axes. The first two axes will be the arc, and the third axis will follow the straight line.

Function: arc end point

Parameter:

X_m is optional. M is the terminal coordinate of the arc on the X-axis, unit: mm

Y_n is optional. N is the endpoint coordinates on the Y-axis of the arc, in millimeters

G26 back to zero

Parameter selection: X Y Z U (four parameters optional)

Function: return to machine zero

Parameter: X, Y and Z

Shown: N00 G26 X Y Z U: XYZU axis back to zero

G28 returns the zero of the artifact

Parameter selection: X Y Z U (four parameters optional)

Function: return the zero of the artifact

Parameter: X, Y and Z

Shown: N00 G28 X Y Z U: XYZU axis back to work zero

G53 mechanical coordinates

Parameter selection: no parameters

Function: switch to mechanical coordinates

Parameters: no

Column: N00 G53: switching to mechanical coordinates

G54 is reduced to work piece coordinates

Parameter selection: no parameters

Function: switch to work piece coordinates

Parameters: no

Column: N00 G54: switch to artifact coordinates

G90 absolute coordinates

Parameter selection: no parameters

Function: absolute coordinates, setting the back coordinates are absolute coordinates

Parameters: no

Column: N00 G54: set the back coordinates to be absolute coordinates

G91 relative coordinates

Parameter selection: no parameters

Function: relative coordinates, the coordinates in the back are all relative coordinates

Parameters: no

Column: N00 G54: set the back coordinates to be relative coordinates

G92 redefines coordinates

Parameter selection: Xm Yn Zi Uj (four parameters optional)

Function: used to redefine coordinates

Parameter: Xm is optional. M is the terminal coordinate of the arc on the X-axis, unit: mm

Yn is optional. N is the endpoint coordinates on the Y-axis of the arc, in millimeters

Zi is optional. I is the endpoint coordinates on the z-axis of the arc, in millimeters

Uj is optional. J is the endpoint coordinates on the axis of the arc U, unit: mm

Column: N00 G92 x 100 Y500 Z1000: define the current coordinate as X100 Y500 Z 1000

F speed setting

Parameter selection: Fm (optional)

Function: F sets the speed

Parameter: Fm must select. M is the percent of the velocity

Shown: F F52: set at a speed of 52%

M instructions

M00 program paused

Parameter selection: no

Function: program pauses

Parameters: no

Listing: N00 M00: program pauses

M07 outlet 1

Parameter selection: no

Function: outlet 1

Parameters: no

Listing: N00 M07

M08 exports 1

Parameter selection: no

Function: export 1

Parameters: no

Listing: N00 M08

M09 exported 2

Parameter selection: no

Function: outlet 2

Parameters: no

Listing: N00 M09

M10 loses export 2

Parameter selection: no

Function: export 2

Parameters: no

Listing: N00 M10

M11 lost export 3

Parameter selection: no

Function: outlet 3

Parameters: no

Listing: N00 M10

M12 exports 3

Parameter selection: no

Function: export 3

Parameters: no

Column: N00 M12

The M30 program ends and loops

Parameter selection: no

Function: the program ends and loops

Parameters: no

Listing: N00 M30: the program ends and loops

Description: after executing this command, the program will enter an infinite loop, which can be forced to stop by the emergency stop button

M80 IO output

Parameter selection: Sm

Function: IO open, execute the instruction to specify the outlet opening

Parameter: Sm must be selected. M refers to the export number

Column: N00 M80 S5: status: open 5 to exit

Status: close and close the 5 exit

M82 waits for the input port to be valid

Parameter selection: Sm

Function: IO is waiting to open

Parameter: Sm must be selected. M refers to the input port number

Column: n00m82 S5: wait for the input port number 5 to be valid

M83 waits for the input port to be invalid

Parameter selection: Sm

Function: IO waiting for customs clearance

Parameter: Sm must be selected. M refers to the input port number

Column: n00m82 S5: wait for the input port number 5 invalid

The local cycle of M91 begins

Parameter selection: no

Function: local cycle begins

Parameter: Cm, m refers to the number of cycles

Column: N00 M91 C3: local cycle 3 times

M90 local loop ends

Parameter selection: no

Function: local loop ends

Parameters: no

Listing: N00 M90: local loop ends

M84 continuous motion

Parameter selection: Xm Yn Zi Uj (four parameters optional)

Function: vmove, continuous motion instruction

Parameter: Xm is optional. M denotes the rotation direction of X axis, m is positive, and negative is rotated by negative

Yn is optional. N is the rotation direction of the X axis, n is positive, positive and negative

Zi is optional. I represents the rotation direction of the X axis, the positive rotation of I and the negative rotation of the negative

Uj is optional. J represents the rotation direction of the X axis, j is positive and the positive rotation, negative is the negative rotation

Column: N00 M84 X1, y-1: the X-axis is negative to the continuous motion of the Y-axis

M85 closes continuous motion

Parameter selection: Xm Yn Zi Uj (four parameters optional)

Function: stop vmove

Parameter: X, Y and Z

Column: N00 M85 X Y: stop the continuous movement of X Y axis

M98 subroutine call

Parameter selection: Nm (optional)

Function: subroutine call

Parameter: Nm, m is the N line number of the first line of the subroutine

Listing: N00 M98 N20: call the first line number N20 subroutine

Note: after using this command, use the M99 instruction at the end of the subroutine

M99 subroutine returns

Parameter selection: no

Function: subroutine returns

Parameters: no

Listing: N100 M99: subroutine returns

End of M02 program

Parameter selection: no

Function: end of program

Parameters: no

Listing: N100 M02: the program is all over

The M86 variable plus one number

Parameter selection: Sm Vn

Function: the corresponding variable plus a number

Parameter: Sm, m: 1-28 output IO: 100 machining output number: 101-103 internal variables

Vn, n: IO, 0 constant, 1 flip: variable value

It is assumed that the outlet 5 is initially high level

N10 M86 S5 V1: export 5 variables plus 1 becomes low level

N20 M02

Note: when the above program is executed again, the export 5 will become high level. If the M86 S5 V0, the output of the export 5 initial level is unchanged

M87 variable value

Parameter selection: Sm Vn

Function: the corresponding variable plus a number

Parameter: Sm, m: 1-28 output IO: 100 machining output number: 101-103 internal variables

Vn, n: IO, 0 constant, 1 flip: variable value

Column: N10 M86 S5 V1: export 5 effective

N20 M02

Note: export 5 will be effective when the above procedure is executed again. If M86 S5 V0, exit 5 is invalid when executing this program. This program can observe the change of exit 5 through fault diagnosis

M89 is waiting to pass some point

Parameter selection: Xm Yn Zi Uj (four parameters optional)

Function: wait for a certain axis to pass through a certain point

Parameter: Xm is optional. M is the point coordinate of X axis, unit: millimeter

Yn is optional. N is the point coordinate of the Y-axis, unit: millimeter

Zi is optional. I is the point coordinate of Z axis, unit: millimeter

Uj is optional. J is the point coordinate of the U axis, unit: millimeter

Listing 1: N10 M98 Y500: wait for the Y-axis to pass 500, and then execute the subroutine following this instruction

Note: you can only select one axis, select multiple, the first is valid, and M89 must be used in multi-task programs

M92 forced modification of coordinates

Parameter selection: Xm Yn Zi Uj

Function: mandatory modification of coordinates

Parameter: Xm is optional. Specify the X-axis to move from the current position to the coordinates m, unit: mm

Yn is optional. Specifies the Y-axis to move from the current position to the coordinates n, unit: mm

Zi is optional. Specify the Z axis to move from the current position to the coordinates I, unit: mm

Uj is optional. Specify the U axis to move from the current position to coordinates j, unit: mm

Column: N10 M92 X0: force modification 0 is the current X workpiece coordinate, and the unit is determined according to the pulse equivalent

M94 jumps according to the conditions

Parameter selection: Sm Vn Ni

Function: jump to the specified subroutine depending on the conditions

Parameters: Sm, m: 1-28 input IO: 100 machining output number: 101-103 internal variables

Vn, n: IO, 0 constant, 1 flip: variable value

Ni, I jump the switch

Columns: N10 M94 S3 V1 N50: jump to the line number 50 when the input 3 is valid

M95 forced jump

Parameter selection: Nm

Function: mandatory jump to the specified subroutine

Parameter: Nm, m: jump switch number

Listing: N10 M95 N100: a mandatory jump to a program with a line number of 100

M96 invokes the subroutine based on the conditions

Parameter selection: Sm Vn Ni

Function: call the subroutine according to the condition

Parameters: Sm, m: 1-28 input IO: 100 machining output number: 101-103 internal variables

Vn, n: IO, 0 constant, 1 flip: variable value

Ni, I jump the switch

Columns: N10 M96 S3 V1 N50: call the line number 50 when the input 3 is valid

Note: the end of the subroutine USES code M99

M97 multi-task call

Parameter selection: Nm

Function: multi-task call, simultaneous

Parameter: Nm, m is the jump switch

Column: N10 M97 N20: call the first line number N20 for the subroutine at the same time

Note: in the subroutine of the jump in the M97, you can use G00 G01 G02 G02 G03 to run the program code, but you can use both M84 and M85.

* * M79 IO test alarm

Parameter selection: Sm Vn Ps Ni

Function: specify IO to detect alarm time and number

Parameter: Sm, m is the input port

Vn, n is the variable value

Ps, s is alarm delay time, unit: millisecond

Ni, I is the alarm number

Column: N10 M79 S5 V1 P1500 N5: detection 5 input port is high level, delay 1.5 seconds, prompt number is 5 alarm bar

Note: the time delay in M79 is determined by the cylinder stroke, which corresponds to the number of the alarm bar number and the input port.

** M50 interpolation speed

Parameter selection: Vm Vn Ts

Function: linear interpolation speed definition

Parameter: Vm, m is the initial speed

5 is less than or equal to 30 digital input range

Vn, n is the highest velocity

10 is less than or equal to the numerical input range

Ts, s plus deceleration time

Column: N10 M50 v20v320 T1.5

The initial velocity here is defined as 20, with a high speed of 320 and a deceleration time of 1.5 seconds

* * G07 line interpolation winding instruction

Parameter selection: mode width diameter

Function: winding instruction

Patterns are optional. The total length of the axis when the Y is selected as the line axis, unit: mm

Winding number is optional. Refers to the wire diameter, Diameters, unit: mm

The total width of the line is optional. Specify the total number of winding number of U axis (wound) winding, unit: circle

Width is optional. Specifies the width of the coil skeleton, unit: mm

Width definition: this refers to the running width of the line axis when the winding instruction is executed. Here's how:

The width of the actual coil skeleton minus the remainder of the single line diameter (including the paint layer) is the width of the line axis. For example, the actual width of the skeleton is 5, and the outer diameter of the enameled wire is 0.08, and the line width is $5 - 0.08 = 4.92$

In this case, the total winding number of the winding is 1000 laps, the line width is 4.92 mm, the diameter of the wire is 0.08 mm, the even ring and the odd circle are the position of the stop position of the designated line axis at the beginning of the winding point. The direction of the line axis of the above display line is from the machine to the operator direction. The line diameter is 0.08.

Shown in listing 2: N00 G07 d-0.8 U1000 L4.92

The total width of the line is: the total winding number is multiplied by the diameter of the line. The last line should stop at the beginning of the winding point and choose an even number circle. The last line will stop at the opposite end and select the odd number circle

Tip: the direction of the line axis is controlled by the line diameter plus plus and minus. Please modify the line diameter and line width when the line effect is not good.

Note: the G91 must be added before using this winding instruction, and the coordinates are switched to relative coordinates.

7 Instance program

N0 M86 S101.00 V1.00; The internal variables add a number

N0 M79 S6.00 V1.00 P1500 N6.00; Check the closing of the feeding cylinder for 1.5 seconds and then prompt the alarm

N0 M79 S12.00 V1.00 P1500 N10.00; Check the closing of the air cylinder for 1.5 seconds

N0 M79 S14.00 V1.00 P1500 N14.00; Check the cylinder closing condition for 1.5 seconds before and after the clamp line

N0 M79 S16.00 V1.00 P1500 N16.00; Check the closing state of the rotary cylinder of the rotary cylinder for 1.5 seconds

N0 M94 S22.00 V1.00 N80.00; Determines whether the fiber is blocked and if the line number is blocked

Program for line 80

N0 M94 S22.00 V0.00 N100.00; Determines whether the fiber is blocked, if not blocked the line number

Program for 100 lines

N80 M00; The program to stop

N90 M95 N60.00; The program that returns the line number is 60, and the fiber state is determined again

N100 M80 S1 1; Open the feeding cylinder

N120 M79 S5.00 V1.00 P2500 N5.00; Check the opening of the feeding cylinder for 2.5 seconds

N130 G04 P150.00; Time delay of 150 milliseconds

N0 M80 S12 1; Open the feeding cylinder

N0 M79 S27.00 V0.00 P1500 N27.00; Check the air cylinder on the feed to open 1.5 seconds after the alarm

N140 M80 S1 0; Close the feeding cylinder

N150 M79 S6.00 V1.00 P2500 N6.00; Check the closing of the feeding cylinder for 1.5 seconds and then prompt the alarm

N0 M80 S120; Close off the feeding cylinder

N160 G00 Y9.35 Z37.00; Fiber optic detection y.z axis coordinates

N190 M96 S22.00 V1.00 N6000.00; If the fiber is blocked, the line number is 6000 lines

N0 G00 X - 13.60 Y14.00; coordinates

N0 G00 Z50.00; coordinates

N0 G00 Y11.25; coordinates

N0 G04 P30.00; 30 milliseconds delay

N0 G00 Y14.00; coordinates

N0 G00 X - 17.60 Y14.00; coordinates

N0 G00 Y11.25; coordinates

N0 G00 Y13.00 Z40.00; coordinates

N0 G00 X5.00 Y17.00 ; coordinates

N0 M79 S10.00 V1.00 P1500 N10.00 ; Check the closing state of the receiving cylinder for
1.5 seconds

N0 M80 S5 1 ; Open the wire clamping cylinder front and back

N0 M79 S13.00 V1.00 P1500 N13.00 ; Check the wire clamping cylinder front and back
opens for 1.5 seconds

N0 G00 X5.00 Y17.00 ; coordinates

N0 G00 X19.00 Z43.00 ; coordinates

N0 G00 Y29.00 ; coordinates

N0 G00 X-7.15 Z44.70 ; coordinates

N0 G00 Y24.00 ; coordinates

N0 G91; Switch the following coordinates to the relative coordinates

N0 M50 V30.00 V50.00 T0.3 Linear interpolation speed, initial velocity 30mm, maximum speed
50mm,
Acceleration time 0.3 seconds;
Maximum speed 50mm,
Acceleration time 0.3 seconds

N0 M91 C3.00; Local cycle starts, and C3 represents 3 cycles

N0 G03 X5.00 Y0.00 Z -0.20 R2.50; Counterclockwise circle (2.5mm in radius, 5mm in the X axis
and 5mm in the direction of arc interpolation, the z axis
is upward 0.2mm).

N0 G03 X - 5.00 Y0.00 R2.50; Counterclockwise circle (2.5mm in radius, 5mm in the X axis and
5mm in the direction of arc interpolation)

The local cycle of N0 M90 begins

N0 M91 C1.00; Local cycle starts, C1 represents one cycle N0G03 X5.00 Y0.00 R2.50;
Counterclockwise half circle arc (with a radius of 2.5
mm, X axis to the positive direction

Forward 5mm for arc interpolation

N0 G03 X - 5.00 Y0.00 R2.50; Counterclockwise circle (2.5mm in radius, 5mm in the X axis and 5mm in the direction of arc interpolation)

N0 M90; Local loop termination

N0 G03 x 5.00 Y - 1.00 Z1.80 R2.50; Counterclockwise circle (2.5mm in radius, 5mm in the X axis and 1.8mm on the z-axis)

N0 G00 Y6.00; coordinates

N0 M97 N1500.00; A program that runs line Numbers of 1500

N0 G00 X - 5.00; coordinates

N0 G00 Y - 5.00; coordinates

N0 M91 C3.00; Local cycle starts, and C3 represents 3 cycles

N0 G03 X5.00 Y0.00 R2.50; Counterclockwise circle (2.5mm in radius and 5mm in the X axis)

N0 G03 X - 5.00 Y0.00 R2.50; Counterclockwise circle (2.5mm in radius, 5mm in the X axis and 5mm in the direction of arc interpolation)

N0 M90; Local loop termination

N0 G03 X5.00 Y0.00 Z0.90 R2.50; Counterclockwise circle (2.5mm in radius, 5mm in the X axis and 5mm in the positive direction), and the z-axis is 0.9mm downward.

N0 G90; Switch the following coordinates to absolute coordinates

N0 G00 Y26.00; coordinates

N0 G00 U0.45; coordinates

N0 G00 X - 8.00; coordinates

N0 G00 Y21.80; coordinates

N0 G00 U0.90; coordinates

N0 G00 Y24.20 Z48.00; coordinates

N0 G00 U1.80; coordinates

N0 G00 Y24.32 Z40.00 U2.70; coordinates

N0 G00 X - 4.00 U3.60; coordinates

N0 G91; Switch the following coordinates to the relative coordinates

N0 M97 N3000.00; The program running the line number is 3000

N0 M50 V20.00 V480.00 T1.00; Speed definition, initial speed 30mm, maximum speed 480mm, acceleration time 1 second

N0 GO7 width 6 line diameter 0.08 circle number 4600; Winding instruction, line diameter of 0.08, line width of 6mm,

The total circle is 4,600 turns

N0 M80 S6 0; Close the clamp and turn the cylinder

N0 G90; Switch the following coordinates to absolute coordinates

N0 G00 x 0.00 Z42.00; coordinates

N0 G00 Y24.00 Z45.40; coordinates

N0 G91; Switch the following coordinates to the relative coordinates

N0 M50 V30.00 V50.00 T0.3; Linear interpolation speed, initial velocity 30mm, maximum speed
50mm,

Acceleration time 0.3 seconds

N0 M91 C3.00; Local cycle starts, and C3 represents 3 cycles

N0 G03 X5.00 Y0.00 Z0.10 R2.50; Counterclockwise circle arc (2.5mm in radius, 5mm in the X
axis to make the arc interpolation, the Z axis downward
0.1 mm to do the screw)

N0 G03 X - 5.00 Y0.00 R2.50; Counterclockwise circle (2.5mm in radius, 5mm in the X axis and
5mm in the direction of arc interpolation)

N0 M90; Local loop termination

N0 M97 N2500.00; Run the program with a line number of 2500

N0 M91 C2.00; Local cycle starts, C2 represents 2 cycles

N0 G03 X5.00 Y0.00 Z -0.65 R2.50; Counterclockwise circle arc (2.5mm in radius, 5mm in the X
axis and 0.65mm in the z-axis)

N0 G03 X - 5.00 Y0.00 R2.50; Counterclockwise circle (2.5mm in radius, 5mm in the X axis and
5mm in the direction of arc interpolation)

N0 M90; Local loop termination

N0 M91 C2.00; Local cycle starts, C2 represents 2 cycles

N0 G03 X5.00 Y0.00 R2.50; Counterclockwise circle (2.5mm in radius and 5mm in the X axis)

N0 G03 X - 5.00 Y0.00 R2.50; Counterclockwise circle (2.5mm in radius, 5mm in the X axis and
5mm in the direction of arc interpolation)

N0 M90; Local loop termination

N0 G03 X5.00 Y0.00 R2.50; Counterclockwise circle (2.5mm in radius and 5mm in the X axis)

N0 M92 U0.00; I'm going to put the current U axis at 0

N0 M79 S16.00 V1.00 P1500 N16.00; Check the closing state of the rotary cylinder of the rotary
cylinder for 1.5 seconds

N0 M79 S13.00 V1.00 P1500 N13.00; Check the cylinder closing condition for 1.5 seconds before
and after the clamp line

N0 G90; Switch the following coordinates to absolute coordinates

N0 G00 Y31.00; coordinates

N0 G00 x 22.80 Z48.00; coordinates

N0 G00 Y24.50; coordinates
N0 M80 S7 0; Close the clamp cylinder
N0 G04 P100.00; Time delay of 100 milliseconds
N0 G00 Z38.00; coordinates
N0 G00 x 4.00 Y25.50; coordinates
N0 G00 Z43.00; coordinates
N0 G00 Y22.00; coordinates
N0 G00 Z47.57; coordinates
N0 G00 Y27.00; coordinates
N0 M80 S5 0; Close the clamp line before and after the cylinder
N0 M97 N1000.00; The program running the line number is 1000
N0 G00 Z40.00; coordinates
N0 M79 S14.00 V1.00 P1500 N14.00; Check the cylinder closing condition for 1.5 seconds before
and after the clamp line
N0 G00 X - 16.35 Y6.00 U - 0.90; coordinates
N0 M79 S9.00 V1.00 P1500 N9.00; Check the open state of the receiving cylinder for 1.5 seconds
N0 G00 Z54.50; coordinates
N0 G00 Y32.00; coordinates
N0 G00 Z20.00; coordinates
N0 G00 x 0.00 Y0.00; coordinates
N0 M81 S3.00; Close the receiving cylinder
N0 G00 U0.00; coordinates
N0 M02; End of the program
N1000 M80 S3 1; The line number is 1000 subroutine, open the feed cylinder
N0 M99. Subroutine return
N1500 M80 S8 1; The line number is 1000 subroutine, open the feed cylinder
N0 G04 P50.00; Latency of 50 milliseconds
N0 M80 S6 1; Open the clamp and turn the cylinder
N0 M99. Subroutine return
N2500 M80 S5 1; Open the clamp and turn the cylinder
N0 M99. Subroutine return
N3000 M79 S15.00 V1.00 P1500 N15.00 ;
The line number is 3000 subroutine, detecting the open state of the rotary cylinder of the clip line,
and the alarm prompt after 1.5 seconds

N0 G04 P200.00; Delay 200 ms
 N3005 M91 C4.00; Local cycle starts, C4 represents 4 cycles
 N3010 M80 S7 1; Open the clamp cylinder
 N3020 G04 P150.00; Time delay of 150 milliseconds
 N3030 M80 S7 0; Close the clamp cylinder
 N3040 G04 P150.00; Time delay of 150 milliseconds
 N3045 M90; Local loop termination
 N3050 M80 S7 1; Open the clamp cylinder
 N3060 G04 P150.00; Time delay of 150 milliseconds
 N3090 M91 C2.00; Local cycle starts, C2 represents 2 cycles
 N3100 M80 S6 0; Close the clamp and turn the cylinder
 N3110 G04 P200.00; Delay 200 ms
 N3120 M80 S6 1; Open the clamp and turn the cylinder
 N3130 G04 P800.00; Time delay 800ms
 N3140 M90; Local loop termination
 N0 M80 S5 1; Close the clamp line before and after the cylinder
 N3150 M80 S8 0; Close the broken cylinder
 N3160 M99. Subroutine return
 N6000 M79 S22.00 V0.00 P1500 N22.00; The line number is 6000 subroutine to check whether the skeleton has an abnormal condition, and after 1.5 seconds, alarm prompt
 N6020 M95 N190.00; Programs that jump to a line number 190
 N6030 M99. Subroutine return
 N0 M02; The end

8. Fault diagnosis

I/O

Click **I/O** on the main interface will jump out of the IO interface, here you can check all the IO port connection, the servo axis testing done by the system automatically, once any one axis defective controller will jump out of the alarm prompt.



9. Maintenance and maintenance

In order to ensure the normal operation and stability of the equipment, please use the same accessories for replacement. Please follow manufacturer's instructions for lubricating oil and replacement parts

Maintenance guidance

The machine is grounded to ensure the safety of personnel and machine stability.

Clean the equipment regularly every day and make sure there is no dust

Air compressor should be kept dry, preferably with a filtration system, which can drain automatically

Equipment maintenance reference table

Items	Time	Every day	1 M	2 M	3 M	6 M	1 Year	Note
The gas source processor drains		Check/ drainage						
Clip		Clean			Check			
Guide rail, Liner bearing		The waste wire/Dust			Lubricating oil			NSK: NS7
Reset sensor [inductive capacity]				Clean with air pressure gun or alcohol		Clean	Clean	
XYZ Guide rail,Ball screw						Lubricating oil	Lubricating oil	NSK: NS7
Nozzle					Check			consumables
Wool felt [wear condition]				Clean/ Change				consumables
Tension-er over wire guide [wear condition]					Check	Check		consumables
Manipulator over wire guide bearing [wear condition]			Check		Check		Check	Check
Bearing							Check	
Belt/ Belt wheel							Check	

Note: the above is the reference value. The specific maintenance is based on the actual use of the user

Safety instructions

Please do not ignore the strict compliance with the equipment safety rules due to the familiarity and proficiency of the equipment (the experience gained from previous reuse). Unsafe or incorrect operating equipment can cause serious personal injury.

Please do not open the box, do not touch the electrical parts, in case of electric shock and death

Always wear safety glasses and goggles. Glasses or sunglasses are not safety glasses

Do not place your hands on the moving and rotating parts to avoid causing injury or serious personal injury.

Dress appropriately. Do not wear loose clothing or accessories. Keep your hair, clothes, and sleeves away from moving parts. Loose clothing, accessories or long hair may be involved in moving parts.

Keep children and bystanders away from running devices.



Warning:

Misuse or negligence of the safety rules stated in the safety instructions may result in serious personal injury.

10.Appendix

Fuji servo alarm list

Alarm code	Alarm content
OC1 OC2	Over-current protection
OS	Over speed protection
OV	Over-voltage protection
ET1 ET2	Encoder exception protection
CC	Control circuit abnormal protection
ME	Memory exception protection
F6	Protection of fuses
CE	Abnormal protection of motor combination
EH	Regenerative transistor overheating protection

Ec	Encoder communication exception protection
OL1 OL2	Overload protection
LU.P	The main circuit voltage is not protected
rH1	Internal regenerative resistance overheating protection
rH2	External regenerative resistance overheating protection
rH3	Abnormal protection of regenerative transistor
rH4	Surge current suppression circuit abnormal protection
oF	Amplifier overheat protection
EH	Encoder overheating protection
RF	Multi - rotation overflow protection
38	Initialization error protection

Fuji servo alarm list

Alarm code	Alarm content
11	Control of insufficient voltage protection
12	Over voltage protection
13	The main power supply is not under voltage protection
14	Over current protection
15	Overheating protection
16	Overload protection
18	Regenerative discharge overload protection
21	Encoder communication exception protection
23	Encoder communication data exception protection
24	Excessive position deviation protection
25	The mixed control position deviation is too large to protect
26	Rapid protection
27	Command pulse multiple frequency anomaly protection

28	External feedback device communication data exception protection
29	Deviation counter overflow protection
34	Software constraint protection
35	External feedback device communication exception protection
36	Abnormal protection of EEPROM parameters
37	Abnormal protection of EEPROM check code
38	The stroke limit prohibits the abnormal protection of the input signal
39	Analog quantity instruction over voltage protection
40	Blackout protection for absolute encoder system
41	Absolute encoder counter overflow protection
42	Absolute encoder over speed protection
44	Absolute encoder single coil data protection
45	Absolute encoder multicoil data protection
47	Absolute encoder status protection
48	Encoder Z believes protection
49	Encoder communication signal protection
50	External feedback device 0 alarm
51	External feedback device 1 alarm
52	External feedback device 2 alarm
53	External feedback device 3 alarm
54	External feedback device 4 alarm
55	External feedback device 5 alarm