

HW -FM SERIES FOAM CUTTING MACHINE

INSTRUCTION MANUAL

(SOFTWARE&CONTROL SECTION)



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CIXI HAI EN NC EQUIPMENT MANUFACTURING CO.,LTD

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3 Important safety tips

Please carefully read the safety tips, and properly keep these instructions for future reference:

1. It can not be inserted or pulled out the cable connected to a computer with electric.
2. It can not be inserted or pulled out the cable between control card and the machine tool with electric.
3. Do not use liquid or spray cleaner, please use brush or other tools to remove dust on the surface of the control board.
4. Please do not insert or pull out control card charged, only after the computer system power shut down, carries on the related operations.



Notice

Movement of the machine is in danger! Even if we can design the effective error handling and safety protection mechanism, set up protective device and insurance operation, but still need to operator safety practices in accordance with the specification, Haien CNC has no obligation or responsibility on the resulting incidental or corresponding losses.

4 The important parameters

The parameter list is very important, it's written by manufacturer when the equipment will leave factory. When you change the computer or reinstall the system, the parameters should be put into the system parameters. Otherwise, the correct parameters will lead to equipment can't work normally. Therefore, the parameters list must be attached with the equipment for future reference:

Input define

1	<input type="radio"/> Exi0-Knife broken	No used
2	<input type="radio"/> Exi1	No used
3	<input type="radio"/> Exi2	No used
4	<input type="radio"/> Exi3	No used
5	<input type="radio"/> Exi4-Cylinder power checker	No used
6	<input type="radio"/> Exi5-Knife power checker	No used
7	<input type="radio"/> Exi6-Motor power checker	No used
8	<input type="radio"/> Exi7-Emergent power checker	No used
9	<input type="radio"/> Exi8-Air pressure checker	No used
10	<input type="radio"/> Exi9	No used
11	<input type="radio"/> Exi10	No used
12	<input type="radio"/> Exi11-Hand operator X+	No used
13	<input type="radio"/> Exi12-Hand operator X-	No used
14	<input type="radio"/> Exi13-Hand operator +	No used
15	<input type="radio"/> Exi14-Hand operator Y-	No used
16	<input type="radio"/> Exi15-24V power checker	Used

Output define

1	<input checked="" type="checkbox"/> Exo0-Knife On/Off	No used
2	<input checked="" type="checkbox"/> Exo1	No used
3	<input checked="" type="checkbox"/> Exo2	No used
4	<input checked="" type="checkbox"/> Exo3-Green lamp	No used
5	<input checked="" type="checkbox"/> Exo4-Yellow lamp	No used
6	<input checked="" type="checkbox"/> Exo5-Red lamp	No used
7	<input checked="" type="checkbox"/> Exo6-Beeper	No used
8	<input checked="" type="checkbox"/> Exo7	No used
9	<input checked="" type="checkbox"/> Exo8	No used
10	<input checked="" type="checkbox"/> Exo9	No used
11	<input checked="" type="checkbox"/> Exo10	No used
12	<input checked="" type="checkbox"/> Exo11	No used
13	<input checked="" type="checkbox"/> Exo12	No used
14	<input checked="" type="checkbox"/> Exo13	No used
15	<input checked="" type="checkbox"/> Exo14	No used
16	<input checked="" type="checkbox"/> Exo15	No used

Foam 2 system parameters

Status	X Axis(CM5)	Y Axis(CM6)	Left/Down rotate(CM7)	Right/Up rotate(CM8)
Driver alarm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Pos. limit	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Neg. limit	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Home signal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Base parameter

1	Knife type	Direct
2	Maximum angle of Loop knife's positive direction	90 [Degree]
3	Maximum angle of Loop knife's negative direction	90 [Degree]
4	Oscillating motor control mode	FIL/Frequency converter
5	Maximum velocity of cutting	5 [m/min]
6	Use function that change velocity while cutting the small cavity by auto?	Yes
7	stop the knife run after cutting finished	Yes
8	Knife base type	By Manual
9	Velocity of knife find home	10 [Round/Min]
10	Delay after knife been started	0 [s]

Step 1: Choose axis

12	Current axis	X axis (CM5)
----	--------------	--------------

Step 2: Select used signal and check it

14	Driver alarm	Is used
15	Limit	Is used
16	Home signal correct?	Correct

Step 3: Set pulse parameter

18	Pulse mode	Pulse+Direction
19	Pulse for 1 round	5000 [Pulse/Round] on 1 round
20	Motor run 1 round to positive direction	Yes
21	Run 1 round to negative	Run 1 round
22	Motor run 1 round to negative direction	Yes

Step 4: Set rotate parameter

24	Round of test	1 round
27	Calculate the distance of motor run 1 round	30.319 [mm]
28	Distance of motor run 1 round correct	Correct

Step 5: Set backlash

30	Value of backlash	0 [mm] Test
----	-------------------	-------------

Step 6: Set manual parameter

32	Slow velocity	1 [m/min]
33	Quick velocity	5 [m/min]
34	Manual Direction	Forward
35	Acc. time	0.2 [s]

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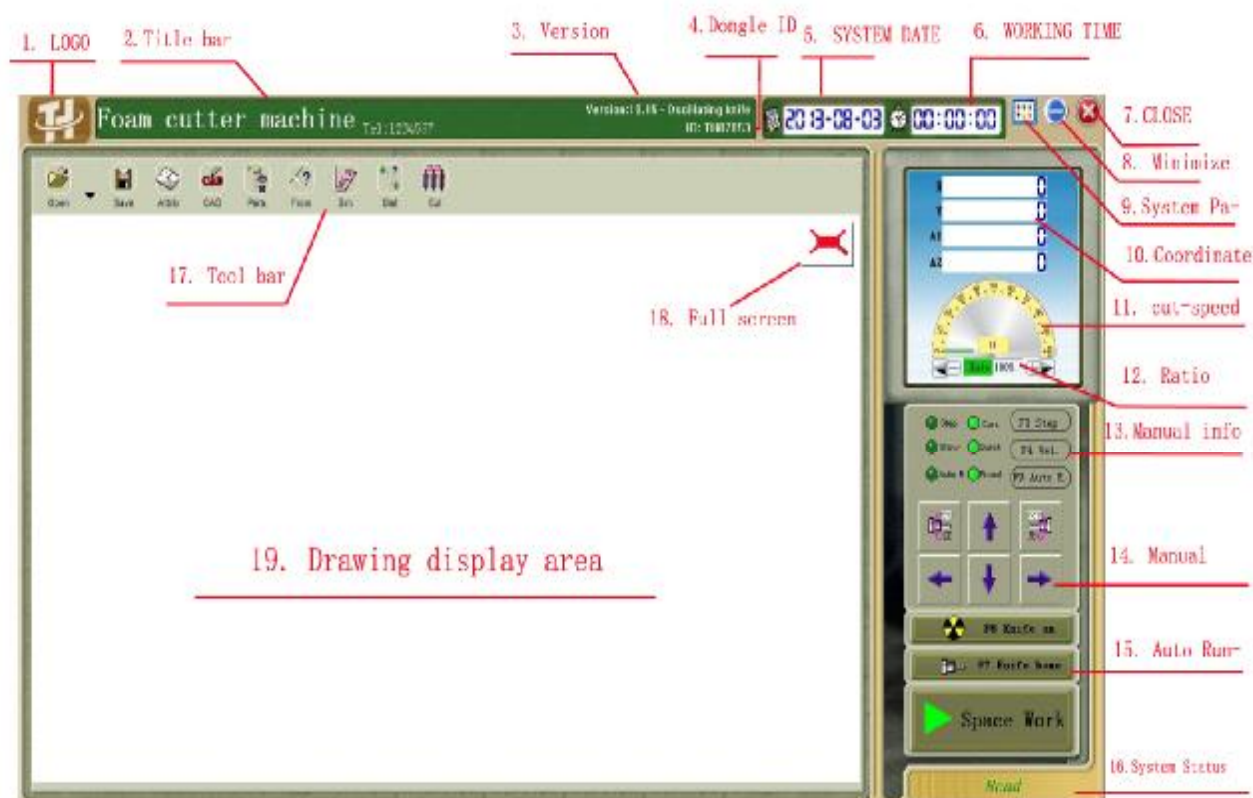
Chapter 1 System profile

1.1 Summary

Welcome to use Ycut-Foamcutter XP control system, the controlling system of foam contour cutter is a kind of system that is based on high capability of DSP processor/ large-scale, programmable and logical FPGA controller, under Windows98/2000/XP. It is characterized by stability, high speed, high precision and easy operation. The software profile as following :



From the desktop double-click THCNC 10.0 icon, start THCNCsponge cutting control system, enter the main interface.



1. Logo:	Display equipment manufacturer's mark.
2. Title bar:	Display the type of the current control system. The system can control the total of three type of equipment, line knife, oscillating knife, and circular knife.
3. Version:	Display system version.
4. Dongle ID:	Display Dongle ID. When the system is locked, please provide the ID number to the manufacturer for release.
5. System date:	Display the date of the computer. When the system is locked, please provide the date to the manufacture for release.
6. Working cutting time:	Display the current time spent of cutting.
7. Close:	According to this button, the system will be closed.
8. Minimize:	According to this button, the system window will be minimized.

9.	System Pa-:	According to this button, the sytem parameter selection menu will be appearing. It will be explained detailly by chapter 6.
10.	Coordinate display:	Display the values of machine coordinate.
11.	Cut- speed:	Display the actual time of cutting speed.
12.	Ratio:	When cutting, in non-stop condition, change the speed. Ratio is less than 100%, cutting speed slower, less than the cutting speed of the parameters set; Ratis is greater than 100%, cutting speed is greater than the parameters set. Change range: 0 ~ 200%.
13.	Manual info:	Display the manual control of each set. Special note: the three Settings only affect manual control, the automatic cutting does not work. Detailed in chapter 3.
14.	Manual:	Manual control step motor, according to the set speed, the interval, super to develop in the direction of movement. Detailed in chapter 3.
15.	Auto-Run:	Control on/off knife, knife reset, cutting/stop. <ol style="list-style-type: none"> 1. 【F6 knife on】 Clicking this button will start the tool with the function of operation. Knife belt after operation, the button will automatically switch to 【F6 knife off】, at this time click can stop knife belt operation. Press the keyboard ESC in the upper left corner, also can stop the knife belt operation. 2. 【F7 knife home】 Click this button, the blade will be running to zero level. 3. 【space work】Click this button, the system began cutting processing, the button will automatically switch to a【ESC stopped】.Than press the the button, or press the ESC button on the left upper corner of the keyboard, can stop the processing.
16.	System status:	Display system status. Under normal circumstances is shown as "ready", appear abnormal situation, it will show specific alarm message.
17.	Toolbar:	<ol style="list-style-type: none"> 1. 【open】 Open a cutting file, the system supports standard G code files and Foam CAD file. The button in the lower right corner has ▼ a triangle button, click this button, a menu will appear, showing you recently opened four files, select the file name to open, it is convenient for you to quickly find and open the last used file. 2. 【save】 Open the current graphics, save for DXF format file. In CAD, you can open the DXF file to modify the drawing. When you need to modify the processing drawing, but can't find the original graphics files, this feature is very useful. 3. 【attrib】 Display the current drawing need man-hour and material utilization. These are the estimate, not a formal credential. 4. 【CAD】 Start the CAD programming system. You can draw in CAD graphics need to cutting, then generate a standard G code files, used for cutting processing. 5. 【para.】 It's main to set cutting speed, it also can adjust size proportion and blade Angle adjustment, it shows detailed in chapter 2 and chapter 5. 6. 【from】 In general, the cutting is from the drawings of the starting point,

but after cutting knife broken, or the power outage, or for other reasons to stop halfway, it need to cut from a certain position. At this point, "From function" is used for cutting the starting position, it shows detailed in chapter 4 " specify cutting starting point".

7. **【sim.】** Before really start cutting processing, you can observe whether cutting walking routes through the simulation function, according to our design for the knife cutting, you can also observe the edge direction is correct by simulation of rotating knife. Note: this function can only authenticate system for graphics processing is correct or not. When you simulate, the blade Angle is very normal, but the actual processing, the edge is not in the right direction, you will need to check the system within the parameters of rotating knife machine parameter Settings is correct, if motor lose step, and if there is a poor contact in the situation of the external line.
8. **【dist】** Measure drawings within the specified distance between two points, facilitate you the sponge bubble size is enough.
9. **【cut】** After cutting out the drawings, the worktable rotate 90 degrees, execute the function, automatically sponge foam cutting length for a given number and small. See chapter 6 [cut].

18.	Full-screen:	When drawing be amplified or contractible, the button will return to maximize drawings.
19.	drawing display area:	Display the needs of cutting drawing. Yellow for need cutting part, green for don't need cutting part.

The subsequent sections according to the machine process and each function module to do a detailed explanation.

1.2 Install software

1.2.1 Scope of delivery

Our delivery comprises the following:

CD-ROM /Flash memory disk

Ycut-FoamcutterXP

USB /LPT Dongle

license agreement in duplicate

You are requested to return one copy of the licence agreement to us for registration. Once you have become registered, we can in future inform you about updates and other innovations.

1.2.2 System requirments

Prior to the installation of this system, please ensure that the following minimum requirements are fulfilled.

Required is the following:

A PC/Special Application with a Pentium-Processor

Microsoft Windows ® 98/2000/XP

1GB memory storage
VGA graphic board (1024 x 768, 32bit depth of shade)
250 GB free hard-disk drive capacity
a mouse or compatible indicator
a serial USB interfaces
CD-drive for installation
LPT interface for dongle.

1.2.3 Installation

1). Before installing the Ycut-Foamcutter XP ,Please shut off the computer and printer power, then take out a dongle, Setting it as the following picture:



Figure 1-2-3

Important:

Connect the dongle to the computer prior to installation

Dongle and computer must be to reliable connection

2). It is necessary to have the programmer installed on your computer.

For this purpose, please run the Setup programmer on the flash memory disk. If installation is carried out under Windows 2000/XP you must be registered as Administrator, double-click the setup.exe file on the memory disk and run it, it will appear the following picture:

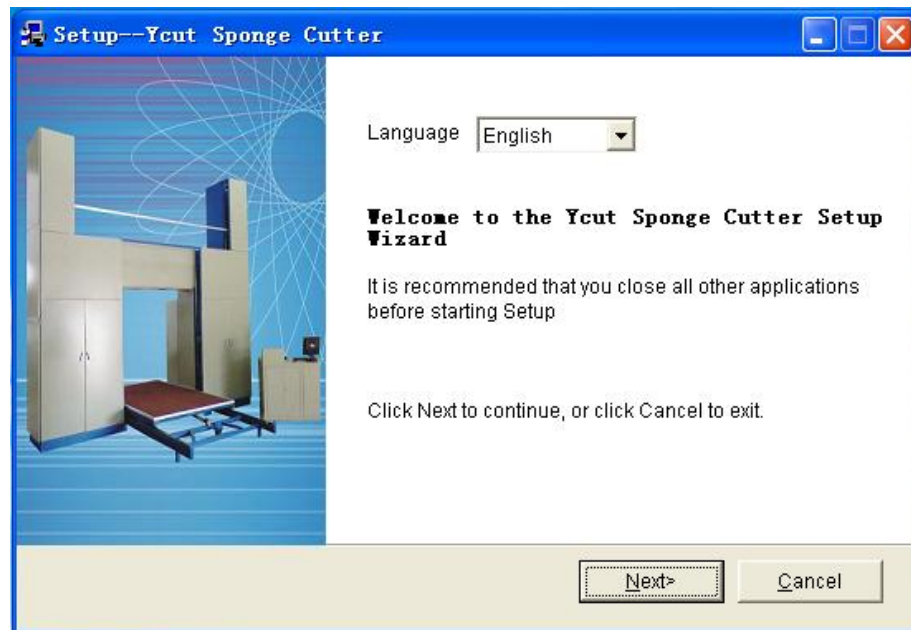


Figure 1-2-3-2-1

You may select the install language “English” or “Chinese”

3). When you have selected the install language, To continue with install the license , click the “next”,It will appearing the following picture:

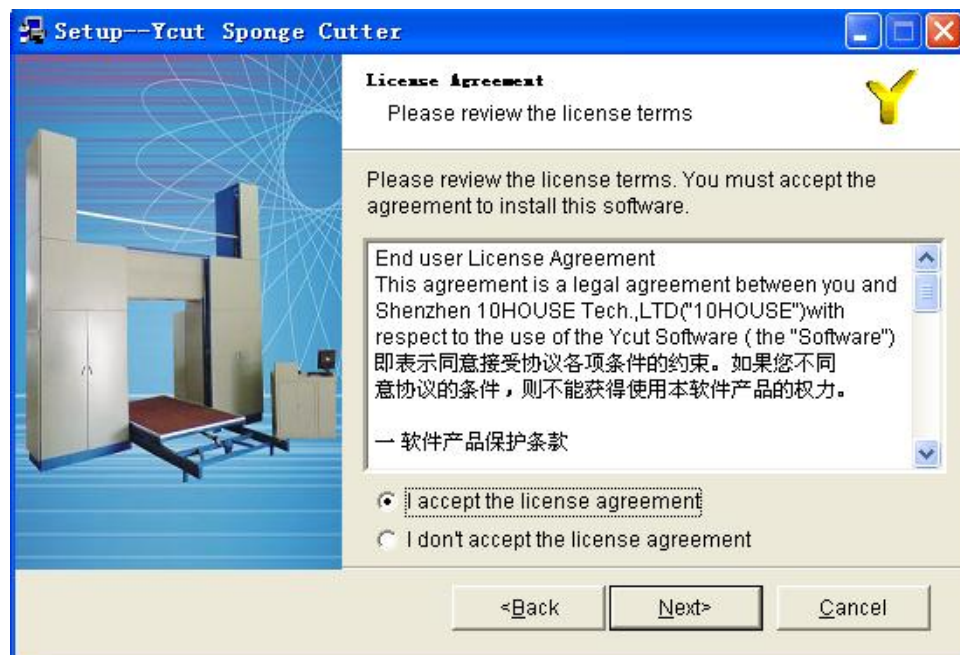


Figure 1-2-3-3-1

If the user accept this license, click “I accept the license

Agreement”. It will continue to installation. If the user can not accept the license terms, click “I don't accept the license agreement” to stop the installation.

When you accept the license terms, click the “next” button

The system will display the programmer installing as the following picture:

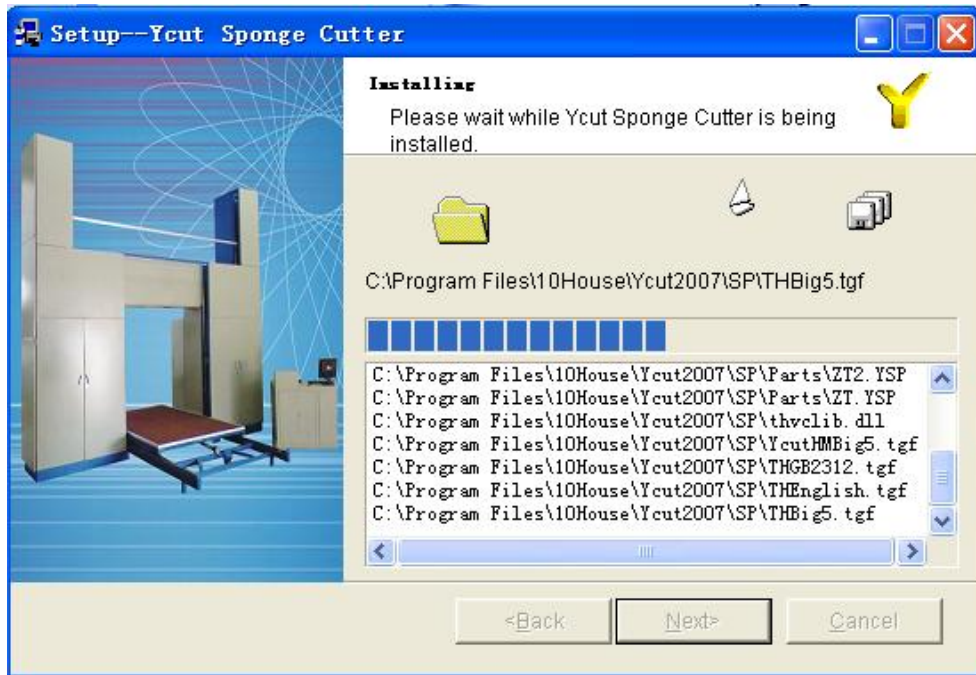
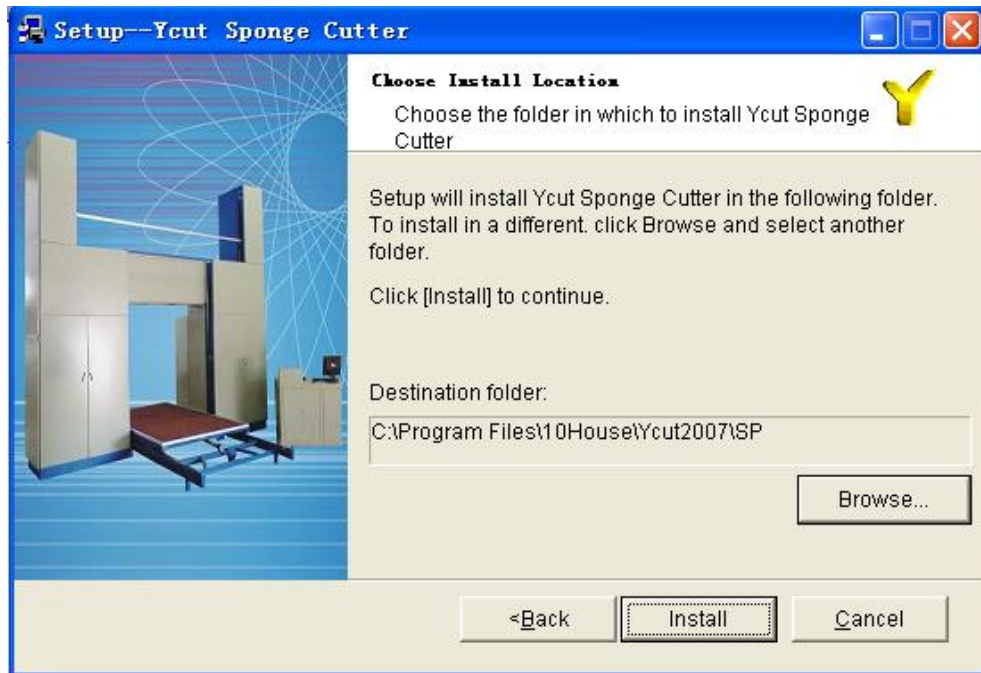


Figure 1-2-3-3-2

The system installing path is c:\Program Files \10house\Ycutsp , you may select an other one.

4).It will automatically appear an icon on the desktop after you finished installation.



Figure 1-2-3-4-2



Figure 1-2-3-4-1


1.2.4 uninstall software

Ycut-foamcutter8.8 is a green software, If you want uninstall it you can delete its installation folder .And any Ycut-foamcutter files will be delete.

1.3 Display the zoom in and zoom out drawing

Method 1, scrolling mouse button of the roller, it can enlarge/reduce the drawings. Note: enlarge/reduce shows not as the center of the screen to zoom in center, but to zoom as the center with the cursor location and movement of the position of the cursor to the center of screen.
 Method 2, use the mouse to zoom in specified area. Amplification area needs in the lower left corner of the press the left key of mouse, don't let go, move the mouse, drag a rectangle on the screen, until the rectangle drag to zoom in the top right-hand corner of the area, and release the left mouse button, the system amplification show just tagged rectangular range. This method can only be zoom in, can't reduce.

After decrease/increase the display, click on the graphics display area in the top right corner of the "full

screen" button , graphics can be restored to maximized.

Chapter 2 Cutting

Machining process divide into four steps:

- 1: the first step: open the cutting file.**
- 2: The second step: set the cutting parameters of user.**
- 3: open the valve and start line knife and vacuum cleaner.**
- 4: start to cutting.**

The second step needs to be performed after start the system but before the first cut. When change the different materials, its need to be performed the second step of setting the cutting parameters.

2.1 Open the cutting files

Click on the toolbar **【open】** button, appear file dialog box, select the cutting files in dialog:

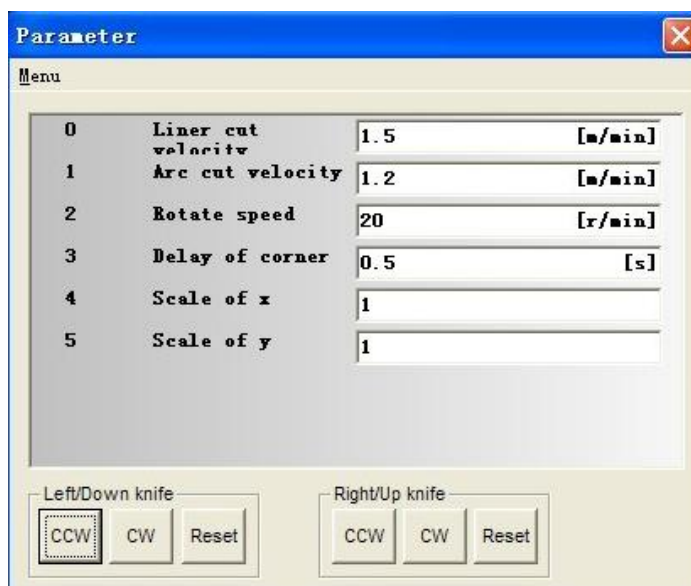
System comes with some processing Sample Files, they are usually located in C:\Program Files\10House\THCNC\Foam\10.15\Sample folder.

Fish.ISO	Fish pattern. To be a sample.
Pillow0-1.ISO	Around both ends as the straight edge of the pillow, a single cutting method.
Pillow0-2.ISO	Around both ends as the straight edge of the pillow, both as a group, share bottom edge, in two cutting method. It can be used for testing the blade Angle, if it cuts two pillows' size is not consistent from top to bottom, it need to adjust the blade Angle.
Pillow0-40.ISO	Around both ends as the straight edge of the pillow, sharing of bottom edge, no clearance volume cut.
Pillow1-1.ISO	Around both ends for the circular arc of the pillow, a single cutting method.
Pillow1-2.ISO	Around both ends for the circular arc of the pillow, both as a group, share the bottom edge, in two cutting method. it can be used for testing the blade Angle, if it cuts two pillows' size is not consistent from top to bottom, it need to adjust the blade Angle.
Pillow1-40.ISO	Around both ends for the circular arc of the pillow, sharing of bottom edge, no clearance volume cut.
Rabbit.ISO	Little rabbit pattern. To be a sample.
Start.ISO	Star pattern. To be s sample, it also can be used to test the circular cutting of consistency.
Tiger.ISO	Tiger pattern. To be s sample,it also can be used to test the line cutting continuity.

Open the drawing, it shows the file name, maximum Angle, the length and the maximum size of the height, the number of automatic rotation, and the current setting of the cutting speed in the graphical display area.

2.2 Set the cutting parameters (not necessary steps)

Click on the toolbar **【parameter】** button, it shows cutting parameters setting dialog box to set the parameters.



According to different settings, the table display content and images shown above will differ.

Note: this step is not the required step. When change the different density and different hardness of sponge, or you think the last cutting speed is too fast/slow, you need to open the dialog box to do adjustment.

Parameters introduction as below form:

Linear cutting speed: Automatic cutting, the speed of the XY motor' walking inside the cutting drawings linear part, , the unit is m/minute. According to the different density/hardness of the foam, set the right speed. When the parameters bigger than the system setting maximum cutting speed, automatically capture for the system maximum allowable cutting speed.

Arc cutting speed: Automatic cutting, the speed of the x, y motors' walking inside the cutting drawings arc part, unit speed is m/minute. According to the different density/hardness of the foam, set the right speed. When the parameters bigger than the system setting up the maximum cutting speed, automatically capture for the system maximum allowable cutting speed.

knife rotate speed: Automatic cutting, when cut to the drawing sharp corners, XY electrical chance to stop, separate operation knife motor, rotating the blade Angle to the direction of the next drawing, unit is revolutions per minute, according to the different density/hardness of foam, set the right speed. When this parameters bigger than the system manually the knife twisting quick speed, automatically intercept for manual the knife twisting quick speed. This parameter is only for oscillating and loop knife, the wirecut is invalid.

Corner delay: Automatic cutting, when cut to the drawing sharp corners, XY electrical chance to stop, running rotary blade motor separately. before and after run rotating knife motor, the system will pause here setting by time, so that the knife with middle part fully in place. The parameter range of 0 ~ 3 seconds.

X dimension scale factor: When cutting out do not match the product size and the design size, can be amended by adjusting the parameters. See chapter 5 "product size adjustment", "the XY size adjustment.

Y dimension scale factor: When cutting out do not match the product size and the design size, can be amended by adjusting the parameters. See chapter 5 "product size adjustment", "the XY size adjustment.

Numerical value in the form, can according to each of the hardness and density sponge, planning a set of reasonable data, then save it on disk; When cutting different foam sponge, only need to load the sponge from the hard disk in the corresponding plan. Through the dialog box "menu" - "open file" and "save program files" implementation plan load and save the file.

2.3 Knife reset (not necessary steps)

This is a function of oscillating knife and loop knife, wire cut users, please skip this step.

This step is not necessary step. Only when you start the software, you need to perform a knife reset action before the first time cutting. Reset once, than cutting again, no matter what Angle blade is, you don't need to perform this function, the system will automatically rotate the blade to the correct Angle. Of course, if you don't be careful to the button, also has nothing to do, let the system to reset again!

Click this button, the blade will be running to zero level.

According to the system parameter setting, this action is divided into two cases:

First. Automatic reset. System for zero sensor, zero position is decided by the location of the sensors incision.
Second. Manual reset. Blade zero position, the default location for the system startup incision. So before you start the system, disconnect power supply system, rotating cutter head with the hand, the blade twist to what you think of the ideal position. Or after you start the system, using the "parameters" dialog about fine-tuning of the cutting tools within the function, respectively, after running into the appropriate position of the cutting tools, click on the "reset" button to set the current position to the blade 0 degrees.

Speed of resetting knife reset is specified by the system parameters within the "speed change knife belt".

More detailed instructions, refer to chapter 5, the "product size adjustment".

2.4 Start cutting

Put the foam sponge on the worktable/conveyor belt, start knife belt runs ([F6 Knife on] button), start [knife with] function, control the X/Y machine by manual, take knife moved to bubble up inside the sponge cutting position, click on the button [Space Work] to start cutting, system according to the graph line, automatically cut out of the product.

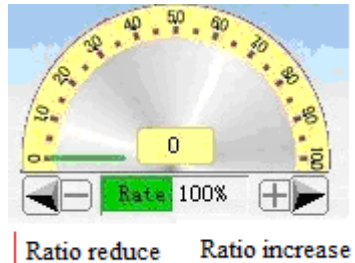
On machining cutting, it will appears the moving cursor on the screen, real-time display and processing location and direction of blade. The user can observe the position and blade is consistent with the graphics.

Start cutting, the system will default to knife belt position that is the graphics on the cut point location, so before your cutting, you need to determine a good starting position on the graph, as shown in the chapter 6 "specifies the cut point".

When cutting, "Space Work" button start will automatically switch to "ESC Stop" button. When you need to stop cutting, click on the button "ESC Stop" or press left upper corner of the keyboard ESC key.

In the cutting of the processing, adjust the cutting speed by changing the speed ratio. Ratio decreased slower,

ratio increasing speed is faster. As shown, click on the left to the triangle or press the keyboard's arrow keys minus sign (-), can reduce the speed ratio; Click the right arrow or press the plus button on the keyboard to the triangle (+), can increase the speed ratio. Every time of reduction was 10%, minimum can be adjusted to zero, most can be adjusted to 200%. Adjusted to zero, x, y and rotary blade have been in a suspended state, at this time be sure to note: the xy motor stop cutting, but don't ran to see, actually the knife with faster, careful knife wounds.



Machining cutting, if appear the unusual situation of system Settings, such as motor limit alarm, trigger, low air pressure, or knife cut, power failure, etc., the system will automatically stop cutting. Abnormal situation Setting have set up by the equipment manufacturer before they go out, the operator can't change at will, otherwise will appear the alarm is not alarm, should not be alarm when the alarm condition.

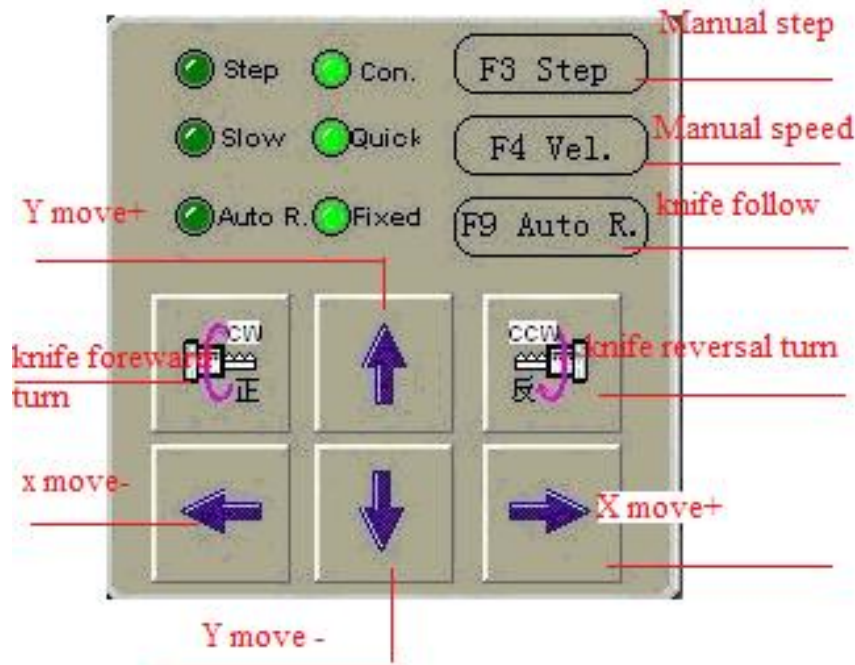
Stop cutting knife may stop, or could not stop, this decision by the system parameters of the "cutting knife belt stop after the completion of the cutting. If choose to stop, then stop after cutting, a knife belt will stop automatically; Otherwise, knife belt will continue to run until you click "F6 Stop Knife" button or press the ESC key, it will stop.

In normal, the product cut size should be meet the requirements. When see abnormal size, ensure the mechanical parts of the system parameters are all correct and no abnormal (such as belt slack sliding, transmission connection part fall off, cable connectors are poor contact), to fine-tune size by two methods, the first kind of method is to modify drawings, within the CAD drawing to enlarge or shrink, to regenerate the cutting file and open the cutting file again in this system; The second method is to adjust the XY proportion coefficient, see chapter 5 "product size adjustment".

Chapter 3 By manual

When sponge foam be put completed, you need to move the knife to the cutting starting point, it must be achieved by manual function.

Manual function button below:



3.1 Step

Shortcut: F3

Manually, you can switch between the fixed length and continuous mode through the button. Green pilot light indicates the current mode.

Continuous mode: press the motor and reversing button by the mouse, the motor move to a specified direction, release the mouse, the motor stop immediately, called the continuous mode.

Fixed-length mode: press the motor and reversing button with the mouse, the motor move to specified direction, release the mouse, the motor does not stop immediately, but stop after the specified length distance, called a fixed-length patterns. Of course, when run in Fixed-length patterns, found abnormal situation occurs, you can also press the ESC key or stop button, the system will stop immediately.

Continuous mode is often used to quick sponge soaking up and down; Fixed-length patterns are often used for cutting the length of the specified products, or used to test the system parameters is correct, also used for testing the size ratio.

After switch to the fixed-length mode, the system will automatically display pop up step length setting dialog:



Within this dialog you can configure the commonly used five step distance, when need to use one of them, use the mouse to click on the corresponding interval, then switch to this interval, the green tick to show the current use of step distance. This functionality is new in version 10.0 of a function, make you in manual cutting, just pick out gently, can change the interval, avoid frequent input lowe, abnormal convenient.

3.2 Velocity

Shortcut: F4

Manually, you can through the button to switch between fast and slow. Green pilot light indicates the current mode.

When put up and down Sponge, you can use the fast speed; To knife (take knife cutting starting point of the action of called knife setting), then you need to use slow, first to accurate positioning, second, to prevent the knife cut the sponge with the sponge rinds hard, too fast to be pulled or movement.

Fast and slow specific values within the system parameter setting. By the equipment manufacturer's machine based on the actual situation, user can not modify the value, in order to avoid improper setting and damage to equipment.

Note: this only for manual control movement speed, cutting speed has nothing to do with it, cutting speed use mentioned in chapter 2, the speed within the "parameters".

3.3 Knife with

Shortcut: F9

Manually, you can through the button choice the knife follow and no follow. Green pilot light indicates the current mode.

Knife follow before manually move the x, y motors, system will automatically run to the corresponding Angle cutting direction, make the manual mobile xy motor, blade is always toward the direction.

Knife not follow, it mains manually move x,y motor, blade always stay in the current point of view, will not change as the xy motor direction.

When the knife outside the sponge foam, can close knife follow function, to save time turned the edge of the sword; And when the knife move in the sponge, must open the knife follow function, make blade consistent with the direction of motion, and to open the knife with running, otherwise the DaoHui due to resistance of sponge is pulled, or movement.

Knife with rotational speed, also has fast and slow, controlled by section 3.2 speed selection, concrete numerical value within the system parameter setting. By the equipment manufacturer's machine based on the actual situation, user can not modify the value, in order to avoid improper setting and damage to equipment.

Note: the following is only for manual control movement, cutting edge according to the drawing to follow automatically, and is not subject to the setting mode.

3.4 Knife on

Shortcut: F6

When blade setting, bring blade inside the sponge, before moving, need to start the knife belt running.

After blade belt running, the button will automatically switch to "F6 Knife off", click it can stop knife belt running at this time. Press the keyboard ESC in the upper left corner, also can stop the knife belt operation.

After blade running has a great deal of risk, so before open the knife, make sure people are in a safe location, not been stranded near the knife; Before the blade complete stop, not allowed to use any part of the body with touch the edge of the sword; also not allowed to pull products before a complete stop, otherwise easy to dao with huge tension pull people to take, cause harm to personnel, or because of the unstable, fall on his sword belt, cause harm.

3.5 Knife home

Shortcut: F7

This function operation to level 0 degree. According to the system parameter setting, this action is divided into two cases:

First, automatic reset. System for zero sensor, zero position is decided by the location of the sensors incision.

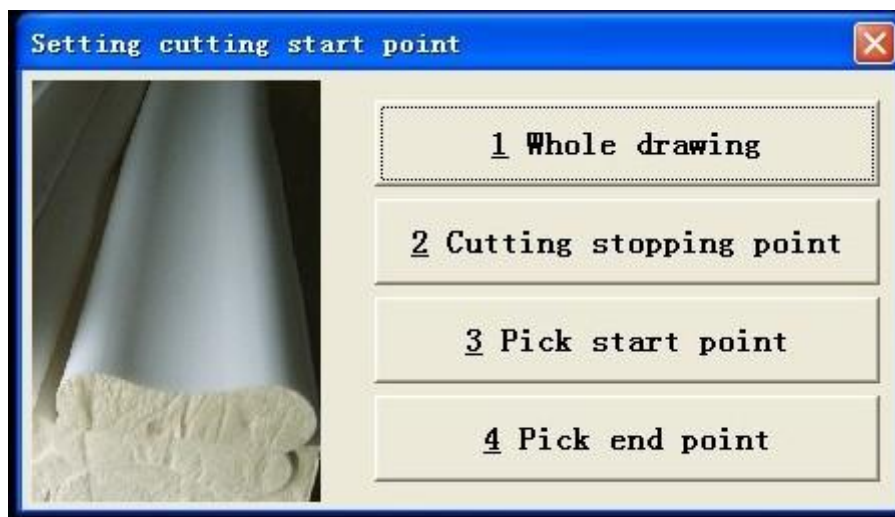
Second, manual reset. Blade 0 degrees the location of the default location for the system startup incision. So before start the system, blade twist to what you think of the ideal position. after start the system, using the "parameters" dialog about fine-tuning of the cutting tools within the function, respectively, running into the appropriate position of the cutting tools, click on the "reset" button to set the current position to the blade 0 degrees.

Speed rotating knife reset by the system parameters within the "Velocity of knife find home".

Chapter 4 Confirm the start point of drawing

In general, the cutting from the point of the drawing. But after knife broken, or the power outage, or for other reasons to stop halfway, it should start cutting from a location in the drawing. At this point, it need to use the "from" to specify the cutting position.

Click on the [from] icon in the toolbar, show the following dialog:



4.1 Whole drawing

Usually, we are all need to cut out all the drawing products. So, when we open a file processing, the system will default to cut all the drawing, drawings all display yellow.

But when appear abnormal situation described section 4.4/4.2/4.3, we often set cutting point by specifying to the exception, the drawing will be divided into two parts: the green don't need to cut, yellow parts need cutting. Cutting out the Sponge foam, start cutting a next complete sponge foam, need to tell the system, this cutting is needed to cut all drawing; Otherwise, the system will cut yellow starting point from the drawing, only cutting yellow part of the drawing.

Click all the drawings, the dialog disappears, drawings all recovery for yellow, said cutting all drawings.

4.2 Cutting stopping point

In both cases, need to use this function:

1. In the cutting process, because of the external circuit fault alarm than shutdown system. When you eliminate the external fault, then prepare started cutting the remaining parts, you can use this function.
2. During cutting, you found the product size have a error, stop manually, adjust the [parameters] of proportion coefficient and the edge zero position, need to restart cutting, cutting the remaining parts, you can use this function.

Click "cutting stopping point" botton, dialog box disappear, according to the system current actual coordinate

position and automatically find the cutting point on the drawings. Before the cut point of drawing is green, said don't need to cut, the cut point after the drawings still keep for yellow, said the need to cut the part. You can use color to judge whether the system is correct or not, if it is found that is not correct, please use the method of section 4.3 manually specify the cutting position.

If before the cutting, do not specify a starting point, system will cut yellow starting point from the drawing, if the yellow starting point is the starting point of the drawing, the system will cut all the drawing from scratch, rather than from the rest of the last cutting.

Note: when it is't processed and restart after shutdown, or restored electricity blackouts, it cannot use this function to find the cutting point, even if the knife stay inside the sponge foam. Because of power failure can lead to the system shutdown, after the shutdown system coordinates will be lost, start the system than the current coordinates to 0, the location is not within the drawing cutting stops the location of the last time.

Tip: before using this feature, you can box with the mouse choose amplification method, enlarge the area of the position of the cursor on the screen, and then perform this function. So that we can improve the accuracy of the automatic identification system.

4.3 Pick start point

When knife broken, control by manual, took the knife out of the sponge foam to convenient location to install the new knife belt, then cutting, it need to use this function.

1. Control by manual, move the knife into a location of the sponge inside the bubble. Select the location of the principle has two: one is easy to reach; The second is accurate on the drawing and specify the location, such as a corner of the product. This position does not need to be the location of the broken knife, because may be on the circular arc cutting knife position, it's hard to hand down the cut tool movement into the arc, on the drawing, it is difficult to point out that you take knife moved to what aspect of arc.
2. Amplification show knife with roughly on the drawing area, click on the "cutting stopping drawing " button, the dialog disappears, the screen top left corner prompted "please specify cutting starting point", move the mouse, move the cursor to the drawing on the knife at present the accurate position, press the left key of mouse after loosen the button, the system analysis of drawing, specify cursor location is bounded, lasr drawing to green, said don't need to cut, the after drawing be yellow, said need cutting.

If before cutting, do not specify a starting point, system will cut yellow starting point from the drawing, if the yellow starting point is the starting point of the drawing, the system will cut all the drawing from scratch, rather than cut the last cutting rest.

4.4 Pick end point

The following two cases, you may use this feature:

1. Make full use of the bubble head bubble tail, not enough size, and you don't want to again for processing program, then you can on the existing drawing, designated cutting terminal. After cutting to the destination location, system will automatically stop, stop cutting, avoid empty run where no sponge, waste electricity and time.
2. When products complement. On both the drawing, according to the replenishment quantity, set aside to cut drawing, specified after the drawing cutting end. When system cutting to the final position, will automatically stop, stop cutting, avoid continuing to cut unnecessary drawing, waste of sponge.

Click [pick end point] button, dialog box disappear, left upper corner of the screen prompted [setting cutting start point], move the mouse to the drawing you want to stop, press the left key of mouse than loosen the button,

the system analysis of drawing, to specify cursor location is bounded, the drawing after the cursor is green, said don't need to cut, foregoing drawing keep to be yellow, said need cutting. If you set cutting starting point at the same time, you can see only one segment is shown as yellow, fore and aft display for the green don't need cut.

Note: specify a starting point or pick end point of the drawing, when need to cutting all the drawing, don't forget to specify the cutting drawing for "whole drawing".

Chapter 5 Product size adjustment

The product that cut out, through measurement, if the actual size and design size has a little error, you can use the method in this chapter to fine-tune system; When the size deviation is too large, you may need to contact equipment manufacturers to correction.

Size adjustment is divided into two aspects:

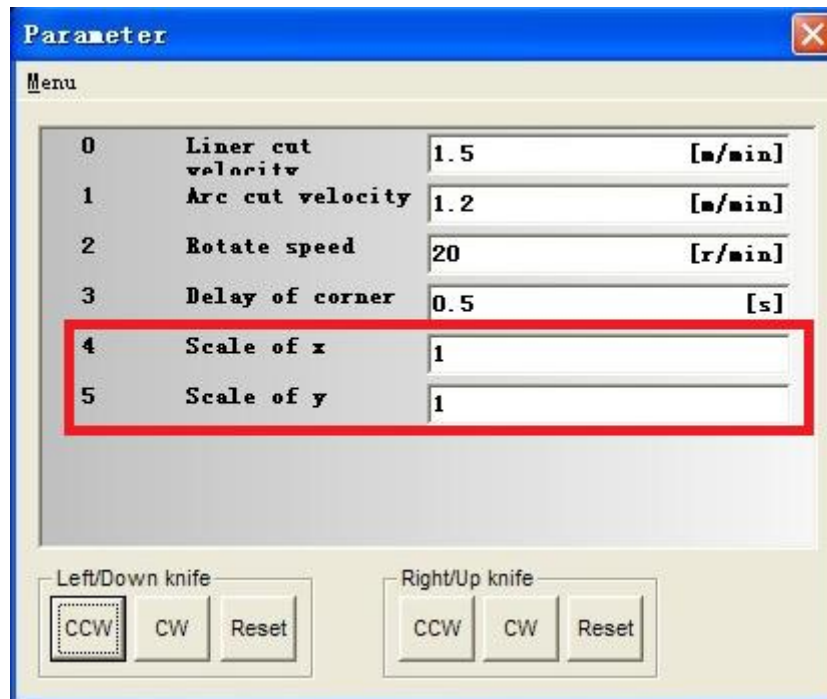
First adjust the proportion of the XY, to ensure that the size of the x, y direction is achieved;

Then you can adjust the blade Angle.

These two order can't change, only after ensure accurate XY size can adjust the blade Angle. Otherwise, even if adjust the blade Angle size to meet the requirements with difficulty, when change a direction after cutting, the size will not correct again.

5.1 X/Y axis size adjustment

By measuring, calculate the proportion coefficient of x, y, it is set in the "parameters".



Formula:

$$\text{Scale of X} = \text{X design size} / \text{X actual size}$$

$$\text{Scale of Y} = \text{Y design size} / \text{Y actual size}$$

Thus, when a shaft's actual size is less than the design size, it need to increase the scale of the shaft; When actual size is greater than the design size, it need to reduce the scale of the shaft.

System allows the range of 0.8 ~ 1.2, when beyond this range, it need to calibrate by equipment manufacturer.

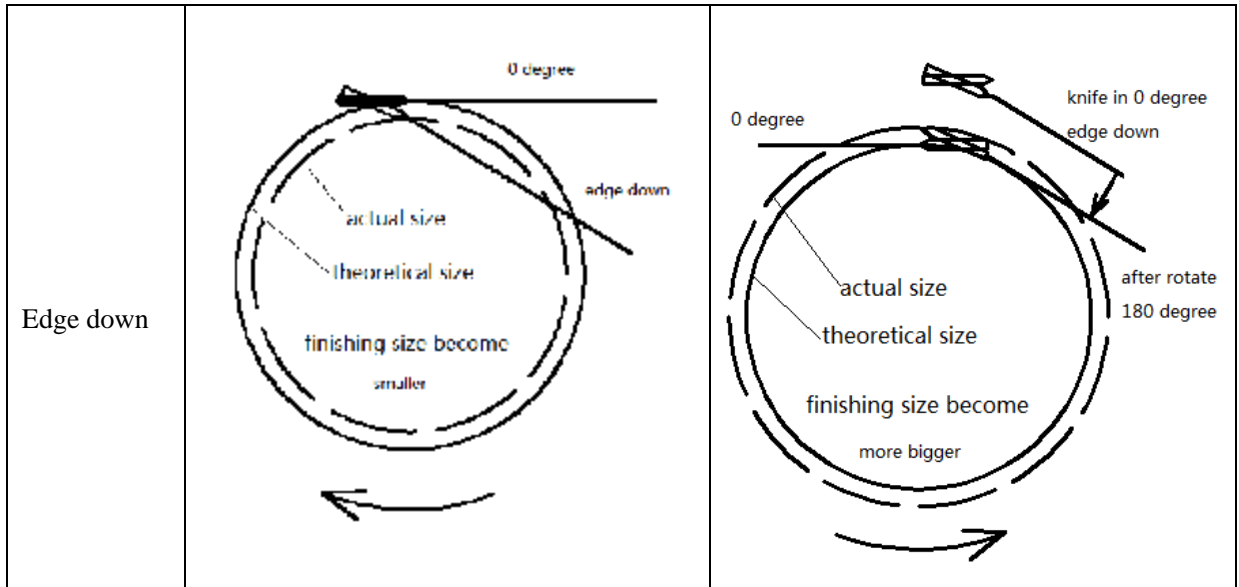
5.2 Knife angle adjustment

For knife cutting equipment, blade Angle is very important, it affect the product's actual size.

When you find counterclockwise cutting and clockwise cutting products has different size, there is no doubt that it have a problem need to adjust the blade Angle.

Than, make the cutting of the circle as an example, interpretae the blade Angle is how to affect the machining dimension.

	CW	CCW
ANGLE CORRECT		
Edge up		

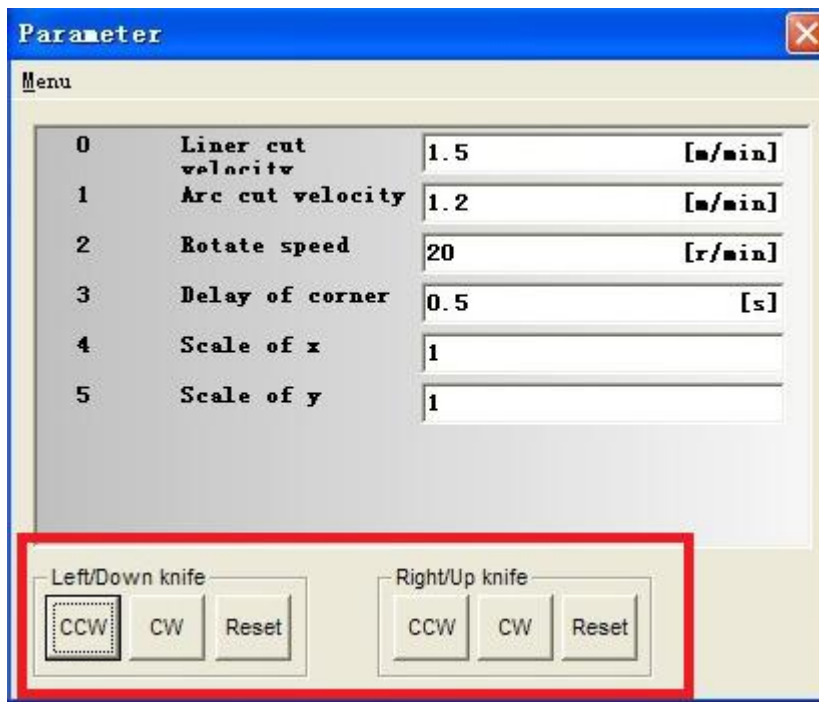


By figure can be seen, because of the upper blade offset, clockwise cutting the size will be larger, but counterclockwise cut out size will be smaller. Blade down offset, the size of the clockwise and counterclockwise cutting is not the same. As long as we understand the principle, can quickly judge the blade is need upwards offset or downwards offset.

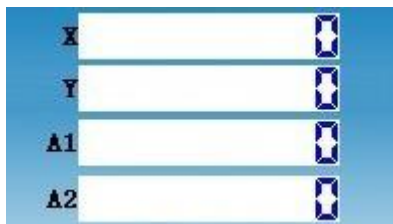
Judge the deviation direction of the edge, than adjust the Angle of blade. Blade offset Angle adjustment through the "parameters" dialog.

Open the "parameters" dialog box, according to the system parameter "knife home type" parameter setting, the adjustment of the blade offset the difference.

Manual to find zero offset Angle adjustment (left and right turn rotary cutter can have different offset value)

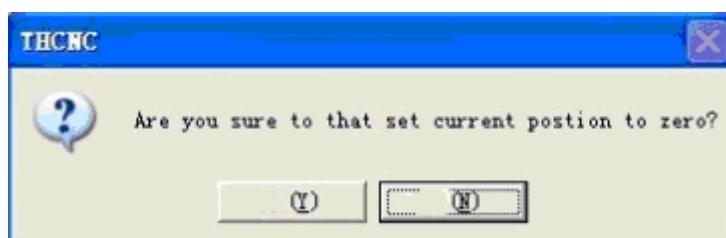


Step 1, perform【F7 knives home】, system will make the knife edge to 0 degrees, and A1 / A2 are shown is zero.



Step 2, click the mouse that need partial transfer head "forward" and "reverse" button, knife head can rotate at a very slow speed, you can see the corresponding A1 or A2 numerical changes.

After adjusting to what do you think of the right Angle, click the "reset" button, the system will make you sure the current position of knife is set to 0 degrees.



Choose "yes", the corresponding A1 or A2 numerical also cleared, shown zero, here is the rotary blade zero point.

Step 3, proofing, try to cut a product.

Measure the actual size is standard. If do not conform to the requirements, also shows that deviation Angle is not enough, repeat the above three steps, until the size meet the requirements.

The same machine, different people operate, processing out of the effect is different, one of the key lies is whether you mastered blade Angle adjustment. If you can according to the actual size and cutting direction, quickly analysis the knife edge is the slant upwards or downwards slant, partial much, then use the function of this section, rapid adjustment, so congratulations you, you have entered the master. Go anywhere, can be the chef; Meet what kind of equipment, can make a good product.

Of course, the size of the product precision, also effected by such as the precision of the machine itself, clip blade, blade clearance center position is correct or not, not the offset of the blade Angle can be completely solved. But you can master the blade Angle adjustment, will help you better use this machine well. So I hope you can read this section a lot and have a good understanding of its principles, and began to experiment a few times, gradually grasp skilled. Practice makes perfect, frequently compensated, says it is for this reason.

Chapter 6 Cut

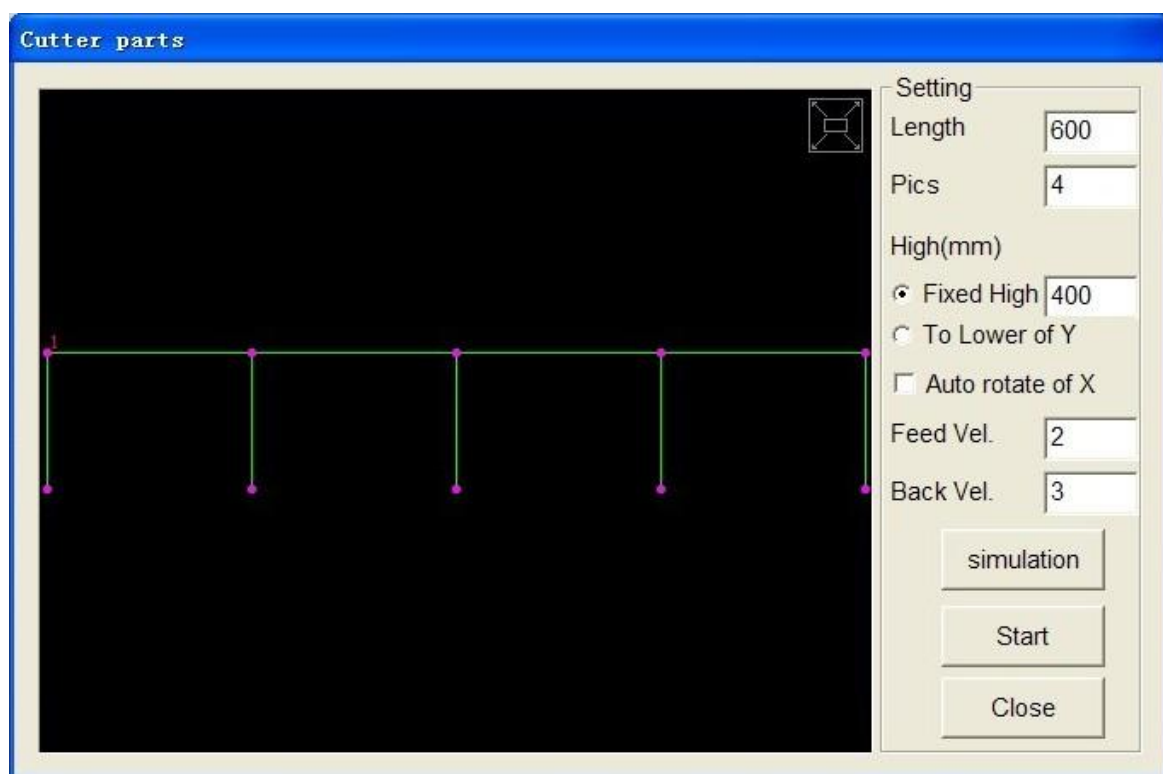
After cutting out the drawings, rotates 90 degrees to the workbench, execution the function, automatically cut the sponge foam to a given length and number.

The cutting there are two methods of cutting:

One is to use the manual function from chapter 3, using different fixed-length step, cutting it. This method by manual, need your manual operation, switching interval and control the motor movement.

Second is to use the function telling by this chapter, this function for automatic cutting. You only need to enter the cutting length and height, and then move the knife to the initial cutting position, and can be automatically cut.

Click on the "cut" icon, appear "cutter parts" dialog.



Interpretation parameters in detail

Cutting length:	The length of each cutting.
Cutting segments:	Need to cut into several pieces.
Cutting height:	There are two kinds of specified cutting height: <ol style="list-style-type: none"> Specify the height. Don't need to completely cutting, take knife moves to above the initial cut point of tangency, and then measure the knife band and you want to cut to the position of the distance, put the number to the [specified height] column. Using this way, each cutting a bubble, it need to measure the knife away from the cutting at the bottom of the distance, because every time you move the knife with height and the height of the last time cut may not have the same position. To their lowest level Y axis. Cutting in full, you can use this way. This way would

be no need for each cutting a bubble when measuring the distance from at the bottom of the cutting knife belt, because the system automatically stop when cutting to Y nadir, then back up. You also don't have to worry about every one knife cutting system travel switch, because version 10.0 adds protection function: so long as touched one travel switch, the system will memory the location, a bit later before touching the travel switch, the system will automatically stop, ensure that won't touch the switch.

Auto rotate of X: Decides the blade knife with horizontal motion, whether follow automatically rotate to walking with X in the same direction or not.

Mainly from the following two applications to decide whether to select "Auto rotate of X" :

1. when the sponge foam at the top of the thick leather has been cutting pick up in advance, knife with the height of the original cutting location can be on the outside of the sponge foam, Y axis can be raised to the surface after each cut external. Such a case, no need to select "Auto rotate of X", when knife moves horizontally, it does not need to rotate to 0 degrees, continue to stay - 90 degrees, can dispense rotating knife which will take time.
2. When the sponge foam at the top of the thick skin is not cutting pick up in advance, the knife with the height of the initial cutting position is not on the outside of the sponge foam, necessary to start the knife belt first , control by manual, move the knife belt inside to sponge foam; Y also can not lift up after each cut to external sponge, can only stay inside the sponge foam. Such a case, it is necessary to select "Auto rotate of X", as it moves horizontally, blade automatically rotate to 0 degrees, make it can cut the sponge.

Feed Velocity: The speed when cutting sponge, according to the sponge hardness and density to set the appropriate speed. Unit: m/minute.

Back Velocity: Cutting along the cut after the speed of the original road to return to the starting point. Because of the sponge has been cut off, the back speed can be set larger than the cutting speed. Unit: m/minute.

Simulation: After set up the parameters, can perform the function of "simulation", examined the feeding line and rotating knife is correct or not.


Start: Simulation test is correct, you can start the cutting function. Specific cutting process is:

1. The system will run edge to down;
2. From the height of the knife take place, the Y axis automatically cut down to the height of the specified position, the speed of "cutting speed";
3. Keep the blade down, the Y axis is raised to the original cutting height, rate is "back velocity";
4. If chose to follow "Auto rotate of X, the knife edge automatic rotation to 0 degrees, or it still keep 90 degrees;
5. X direction specified by the cutting length, if "Auto rotate of X ", the rate is "cutting velocity", otherwise is "back velocity".
6. Repeat from step 2, until cut out of the set.

Cutting process, can press [ESC stop] button to stop the cutting.

Close: End of this function.

Chapter 7 System function

Click on the upper right corner of the interface "system" button , Popup menu system, choose the need of perform function:

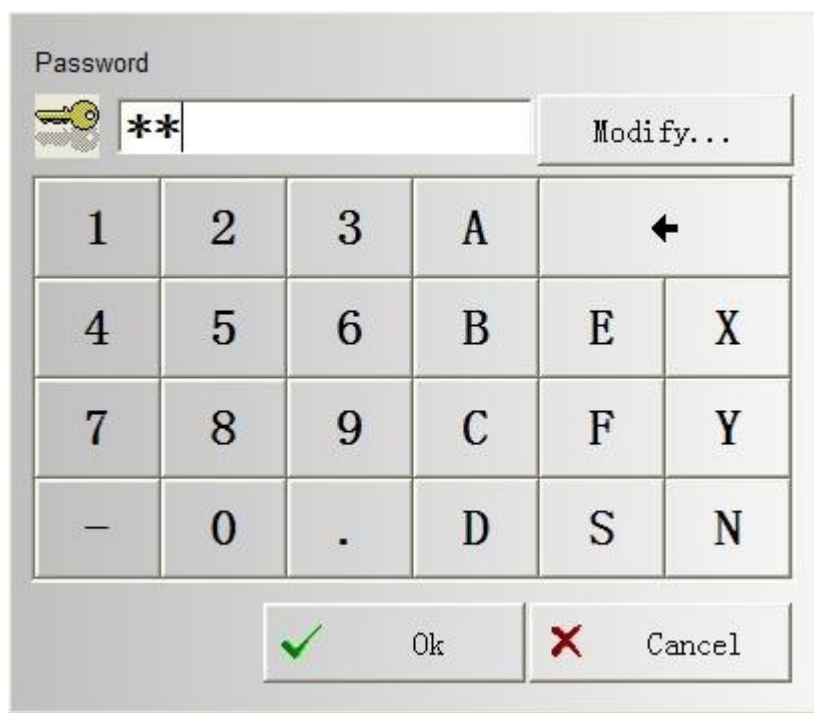


7.1 System parameter

System parameters is restricted function, set by manufacturer when equipment leave the factory. User can not modify these parameters, otherwise the parameter setting is not correct, because equipment doesn't work properly.

Click on the "system parameter" icon, appear following dialog:

a. password dialog



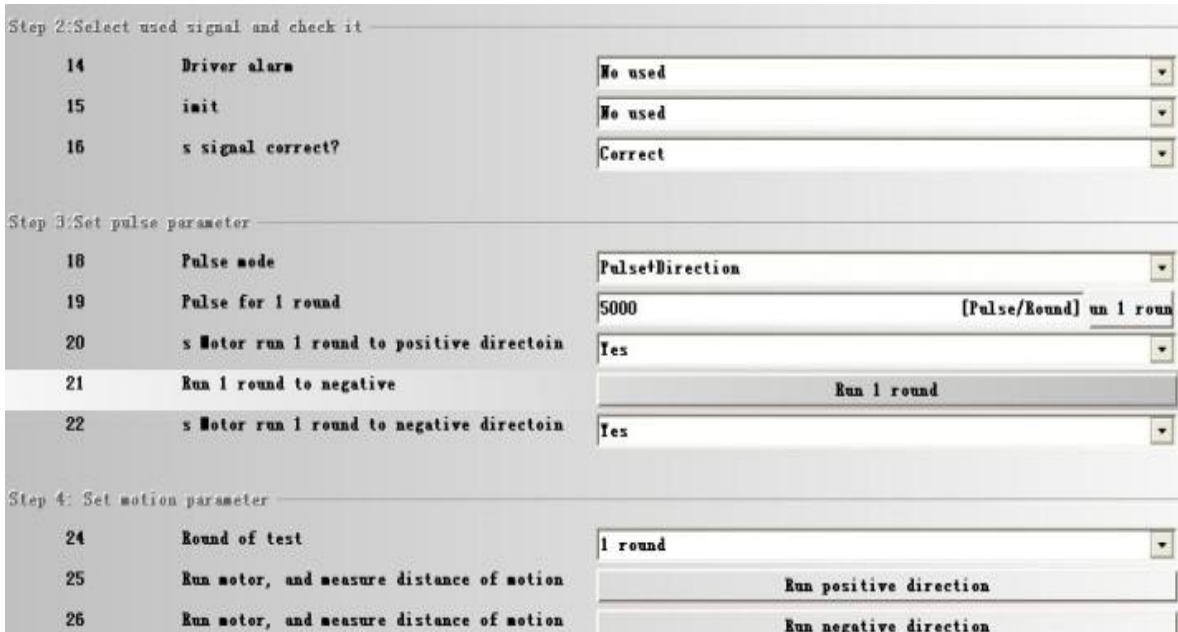
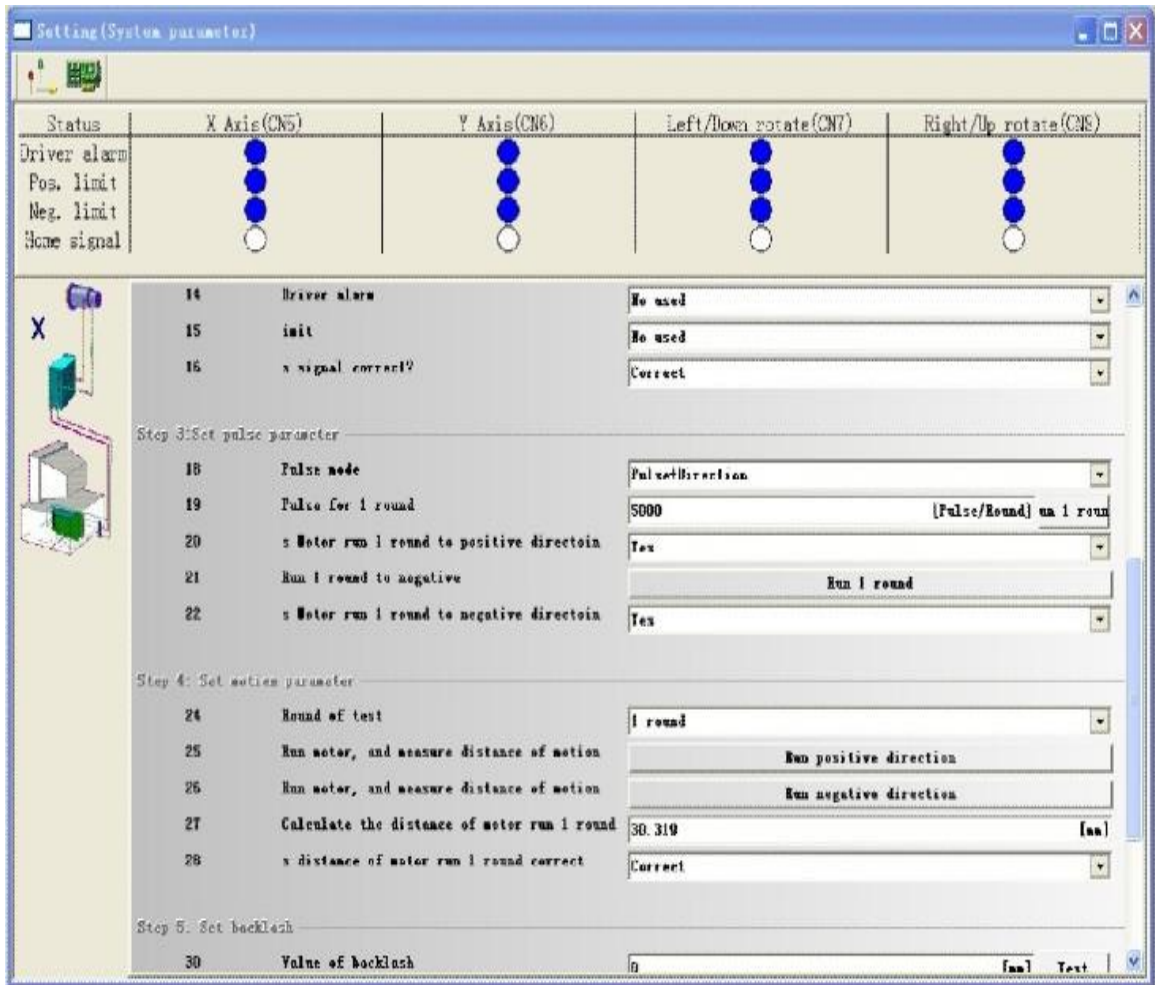
The image shows a 'Password' dialog box. At the top, there is a key icon and a text field containing 'BB'. To the right of the text field is a 'Modify...' button. Below the text field is a keypad with the following layout:

1	2	3	A	←	
4	5	6	B	E	X
7	8	9	C	F	Y
-	0	.	D	S	N

At the bottom of the dialog box are two buttons: 'Ok' (with a green checkmark icon) and 'Cancel' (with a red X icon).

The current password is BB . if you want modify password , enter any data within six digit and letter .

b. system parameter setting dialog



27	Calculate the distance of motor run 1 round	30.319	[mm]
28	s distance of motor run 1 round correct	Correct	▼
Step 5: Set backlash			
30	Value of backlash	0	[mm] Test
Step 6: Set manual parameter			
32	Slow velocity	1	[m/min]
33	Quick velocity	6	[m/min]
34	Manual Direction	Normal	▼
35	Acc. time	0.2	[s]

Detailed parameters in the form below:

Pulse mode: The parameters obtained from the drive. Options for "pulse and direction" and "double pulse".
If for stepper motor, is commonly "pulse and direction";
If for the servo motor, generally for "double pulse".
Need to obtain accurate information from the driver, or Settings don't match will directly lead to machine can't normal operation.

Pulse for 1 round: This parameter is also obtained from the drive. Said motor each roll, how much pulse signal need the control system sends to it. See chapter 8 "FAQ" related content.

Calculate the distance of motor run 1 round: The parameters by calculating income, said motor each roll round, counter or knife with corresponding shaft moving distance.
These parameters only X and Y motor has, rotary blade motor don't need to set this parameter. See chapter 8 "APQ" related content.

Value of backlash: Set the transmission value of backlash, general is 0. See chapter 8 "FAQ" related content.

Slow velocity: Set manual control when walking, slow walking speed of each motor. Y/Y motor units are m/min, turn to motor knife unite is circle/minutes.

Quick velocity: Set manually walking control, fast moving speed of each motor. Y/Y motor units are m/min, turn to motor knife unite is circle/minutes.

Manual Direction: Set manually control the direction of the button, the corresponding is which direction movement. In normal, the left arrow is X motor overload (worktable) direction, right arrow is X motor (worktable) super positive direction, the up arrow is the knife go up, the down arrow is the knife go down. After the panel mounted at the other side of the device, the direction of arrow and corresponds to the actual direction may not match, this case, set this parameter to "reverse".

Knife type: According to the equipment actual situation, select the "loop knife" or "oscillating knife".

"Loop knife" because they cannot afford to unlimited rotation, so need to input the forward and reverse maximum allowable Angle.

"Oscillating knife" set to vibration control mode. "PLC/inverter" and "850 control" two ways to choose.

Wire cut only has two shaft, wire cut started either manually or automatically in two ways, the most simple.

Parameters must be set from top to bottom, after set the last parameter (answer yes), the system will automatically open a parameter Settings dialog.

7.2 I/O detection

I/O detection function is used to check the system input and output wiring is correct or not.

Click on the icon [I/O config], I/O test dialog box appears:



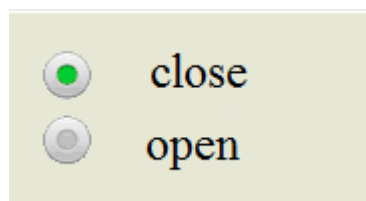
Input signal indicating external state of check point, if a signal is input, so in normal condition, the signal in the signal display column in blue.

Signal is normally closed connection.

Note: click the output button by manual, it is important to ensure that safety!

For example, if you click the "knife on/off" button, system will start cutting operation, so make sure no one near the knife belt.

If you want to change the use of a signal state, double click the left mouse button in the corresponding column, appear the pop-up dialog box shown , choose to close or open the signal.



Driver alarm: at ordinary times is low-level output, after the trigger is a high level of output;

Limit signals: travel switch connect normally closed; Proximity switch to ensure that the output is low level, at ordinary times the trigger is a high level of output;

Zero signal: ensure at ordinary times is high level output, after the trigger is low level output.

According to the actual situation of equipment, block certain unwanted signals. Such as stepper motor to shield "servo alarm", the conveyor belt can shield "limit" signal of the corresponding motor.

7.3 Language selection

Click [language] icon, appear system language selection dialog:

Two type language you can select . click “ 中文简体” icon , all the software language will be change to Chinese. Click “ English” icon , all the software language will be change to English language.



Chapter 8 Program

8.1 Starting up the function

Double click menu “cad”

System starts up AutoCAD as the following 8-1-1 picture;

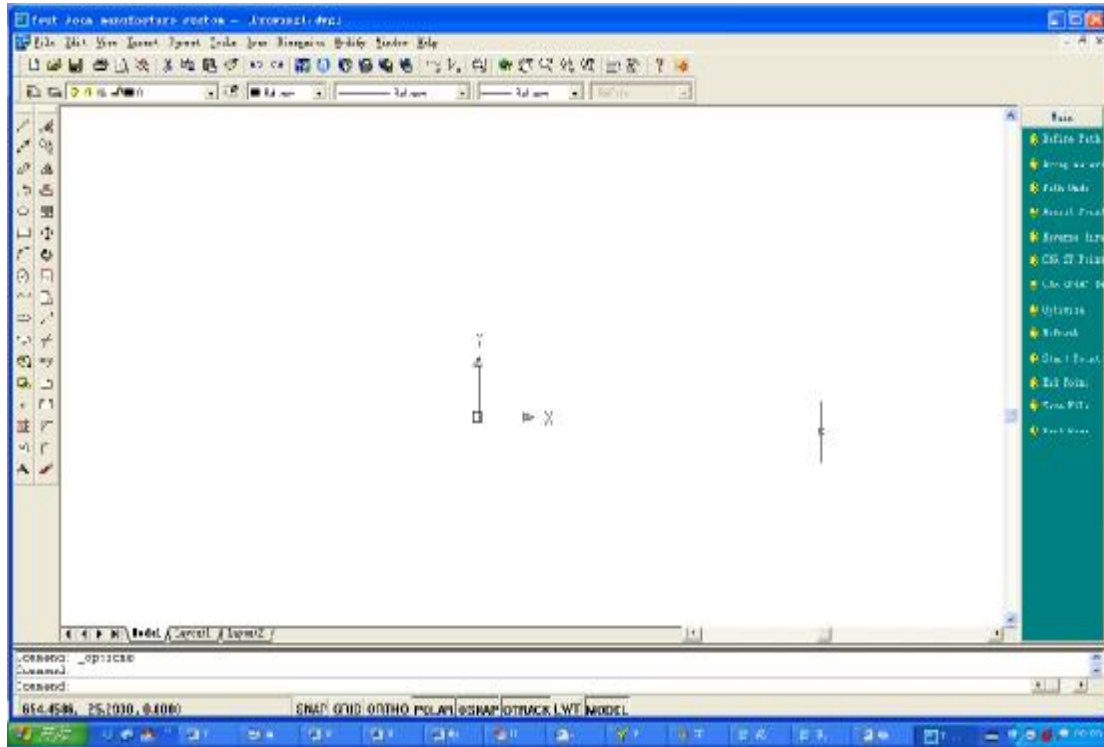


Figure 8-1-1

This system adopts AutoCAD as the picture treatment software of users, so it needs users to install the software of AutoCAD2002/2004 beforehand.

As a universal drawing stage, AutoCAD can't program. After installing this system, it will expand the function of AutoCAD, like programmed. On the right side; it is an increased function after starting up AutoCAD.

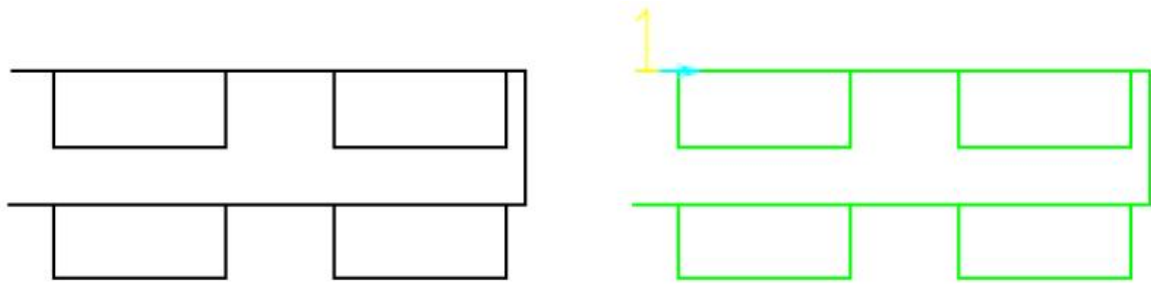
8.2 Drawing pictures

Users can finish drawing freely in AutoCAD. Here, it is a general description; please refer to some relevant AutoCAD books.

The original way to draw pictures by the group of exploring YcutSP is: make the products that are to be produced into different single picture, and make the right order, then define the path of pictures nearby by the system automatically. It is as the following 5-2-1 picture:



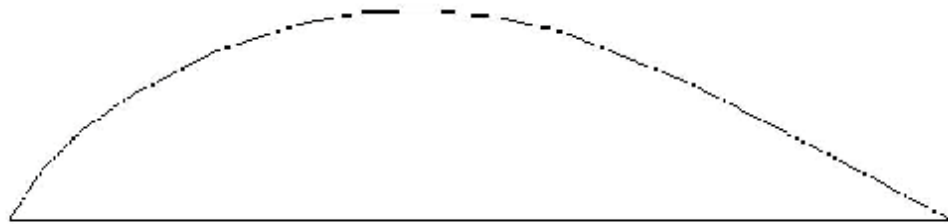
While in practice, customers have a better method: they have drawn path with beeline when they are drawing pictures. The following 5-2-2 picture shows:



Original picture (General use) define path Figure 8-2-2

There are two obvious differences, please pay attention to the picture of 5-2-1 and 5-2-2:in drawing 5-2-2,that is, in “the original picture”, the path has been drawn and it is integral and special; while the path of 5-2-1 has 4 relative ones, among which the path is done automatically by system.

The latter path sometimes is not satisfying, like breaking the products, so it needs workers to use the way of Break to avoid. It is relatively difficult for operators, so drawing this path step by step would be a good choice. Take the picture in 5-2-3 for example, in order to make the Sharp angle, users have dealt with this problem in drawing pictures, as in the following 5-2-4picture.



Product picture Figure 8-2-3

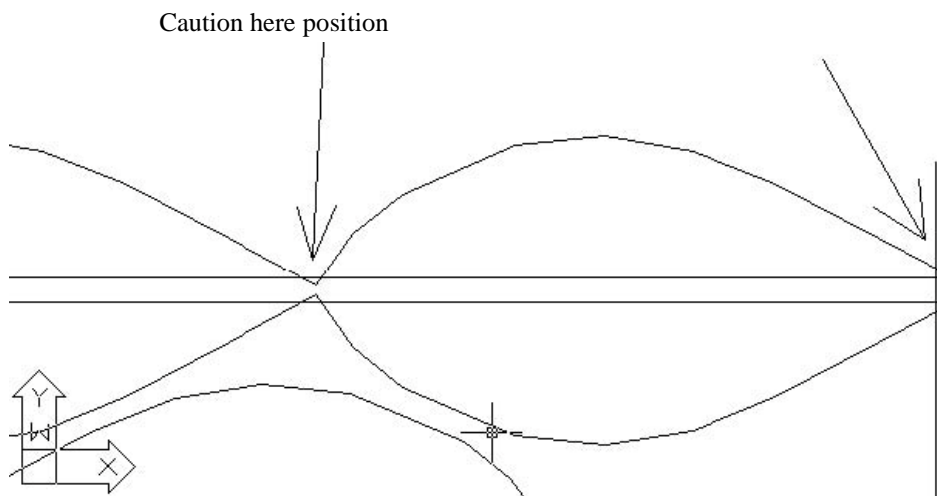


Figure 8-2-4 (fine)

The demo.dwg file under system file is a good example,so users can take it for reference.

As Demo-2.YSP and Demo2.dwg is a cutting file by ACAD under the system folder,users can refer to its drawing skills and methods.

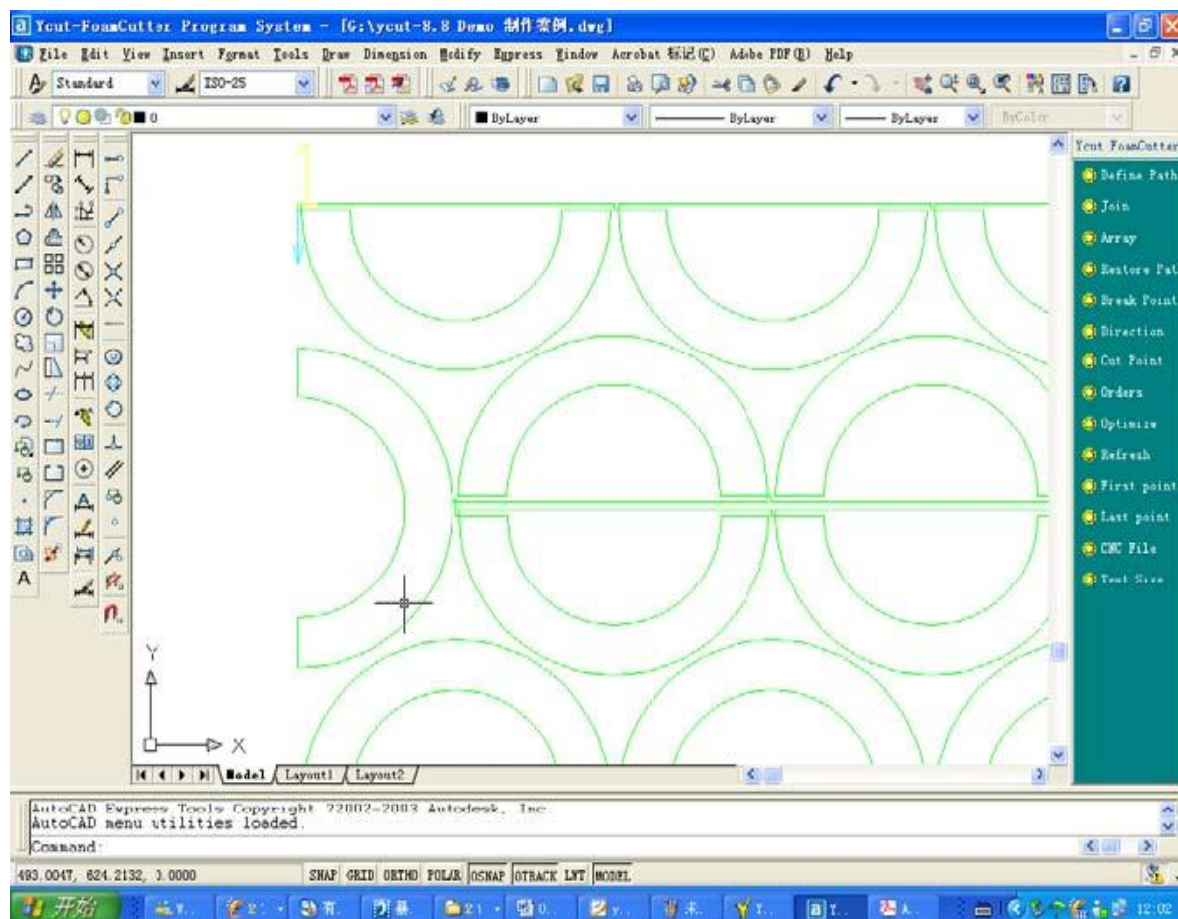
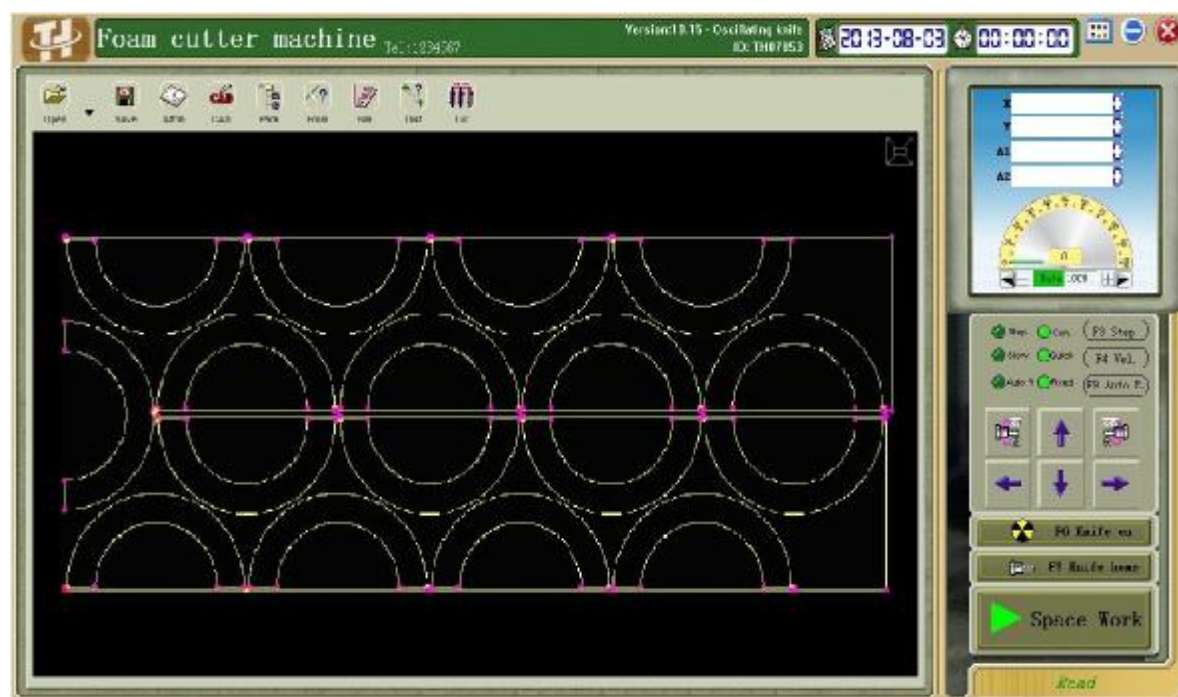


Figure 8-2-5 Demo2.dwg



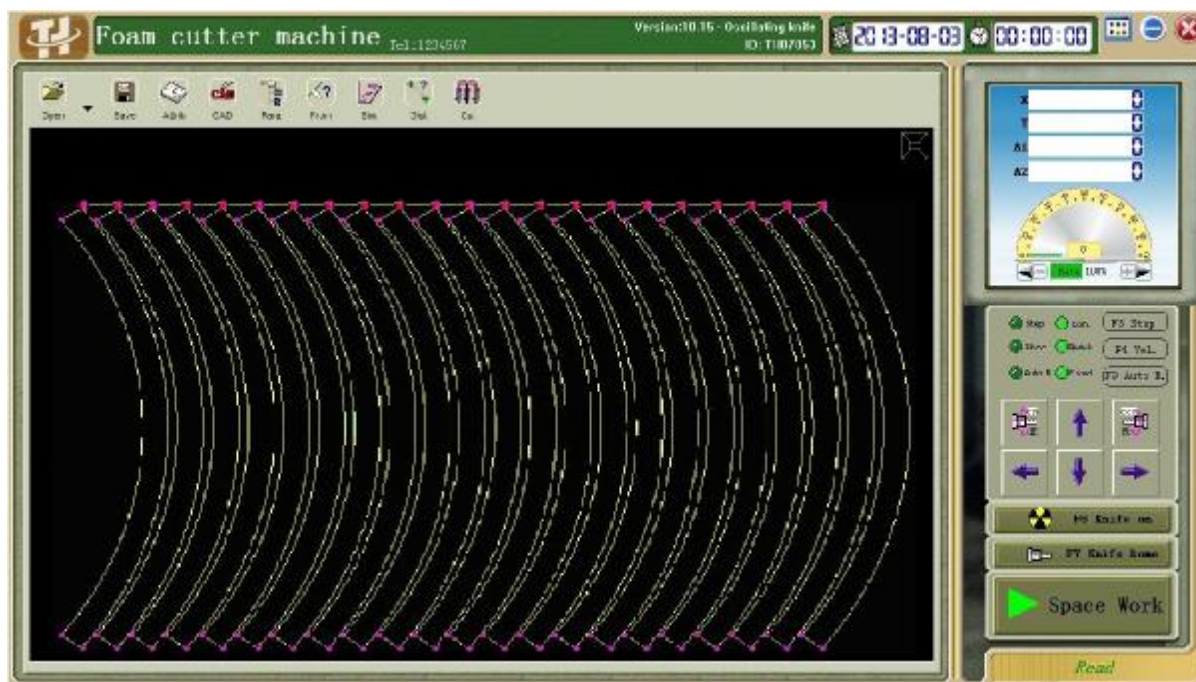


Figure 8-2-7 Demo3.ISO

Demo3.ISO is a G code file by Foamcad/xp under the system file.

Notice: As Ycut-Foamcutter controlling system can't deal with the problem of equalizing semidiameter of the knife, it needs users to consider it in drawing pictures and draw pictures with the size equalized. For example, if the diameter of knife line is 1mm, then the equalized semidiameter is 0.5mm; if producing a round with the semidiameter of 20mm, with the compensation, the semidiameter of the round is 20.5mm. So this is the right picture with semidiameter of 20mm, otherwise, the size will be smaller, like 19.5mm. The rectangle with 20*10mm should be 21*11.

8.3 Defining the processing path

The picture of products drawn by AutoCAD is only an ordinary one, which doesn't include necessary technological condition, like processing order, cutting direction (clock wise/counter-clock wise), cut-in point..., so users should confirm these elements.

Select "defining path" on the right menu of AutoCAD, system prompts:

Processing NO.1---<chooses multiple tracks or round>: choose the finished picture no matter whether it is closed or open.

If the selected picture is not closed, system will notice:

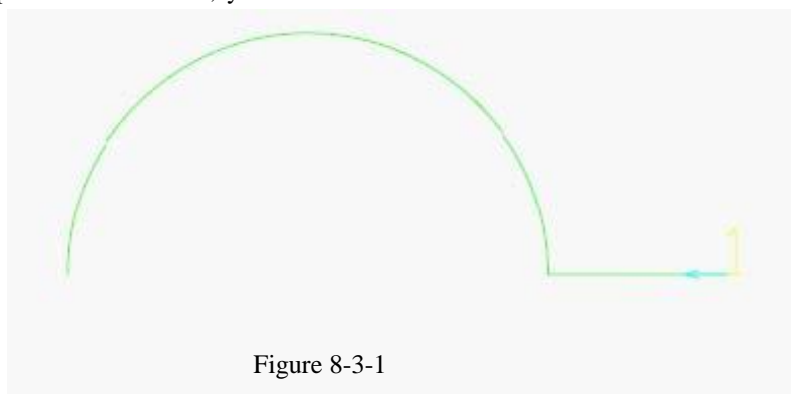


Figure 8-3-1

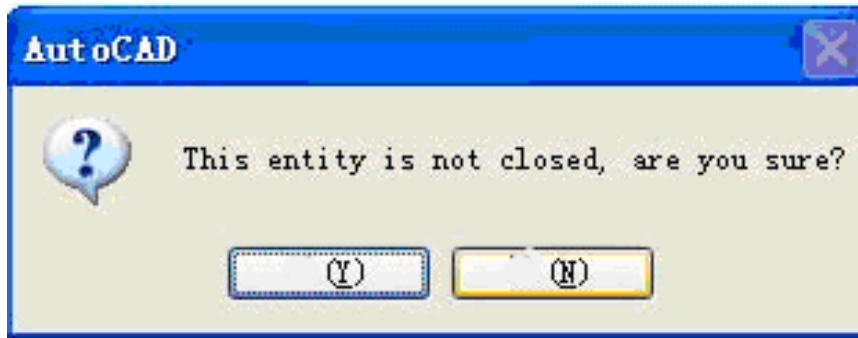


Figure 8-3-2

Choose “yes”.The start point of the open picture is near the end of point which be defined.

The rules of cut-in point is:if using point to select single picture,we can begin to cut this picture from define point;if using box to select several pictures, we can cut in from the top of every picture;if it is an open picture, the cut-in point is the extreme point near define.

8.4 Save the cutting file

Select “Save the cutting file”on the right menu of AutoCAD, and there appears a dialogue box of keeping files.Input the keeping place and file name in dialogue box,then system will automatically keep the data of processing path and the parameter of technology as YSP/ISO format for processing transferring

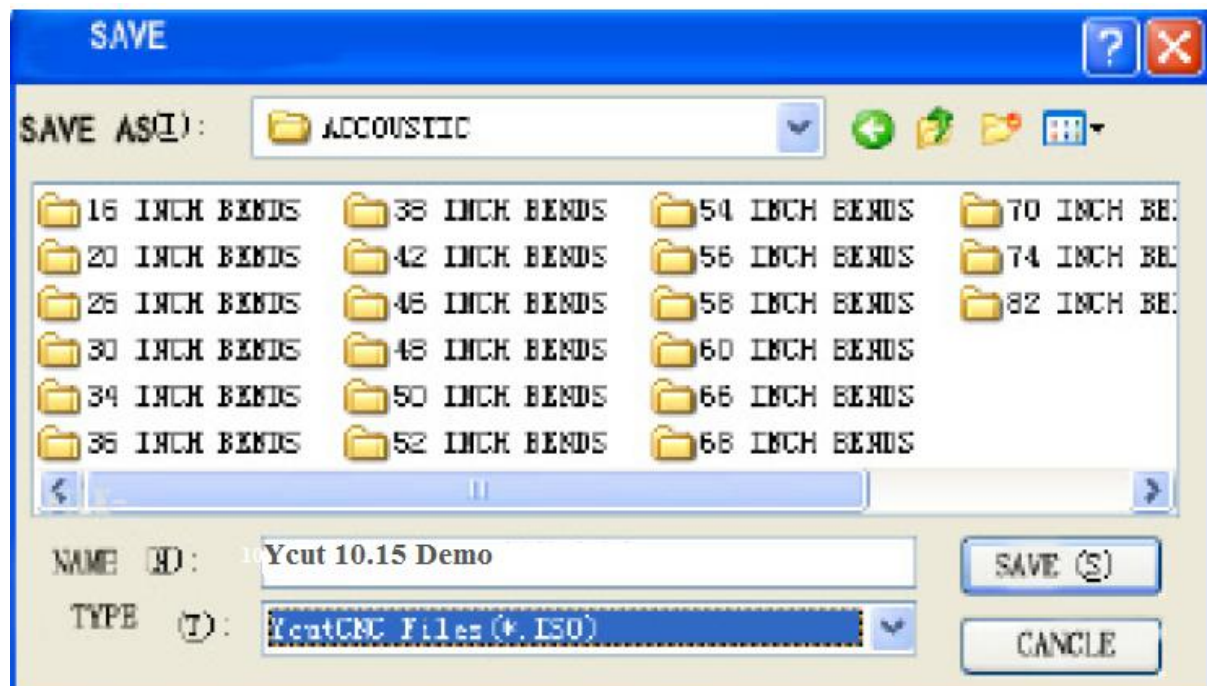


Figure 8-4-1

Chapter 9 Attached function of program

9.1 Array

Calculate automatically the acceptable product numbers in size-appointed range according to specified parameter. The parameter set is as the following picture of 6-1-1:

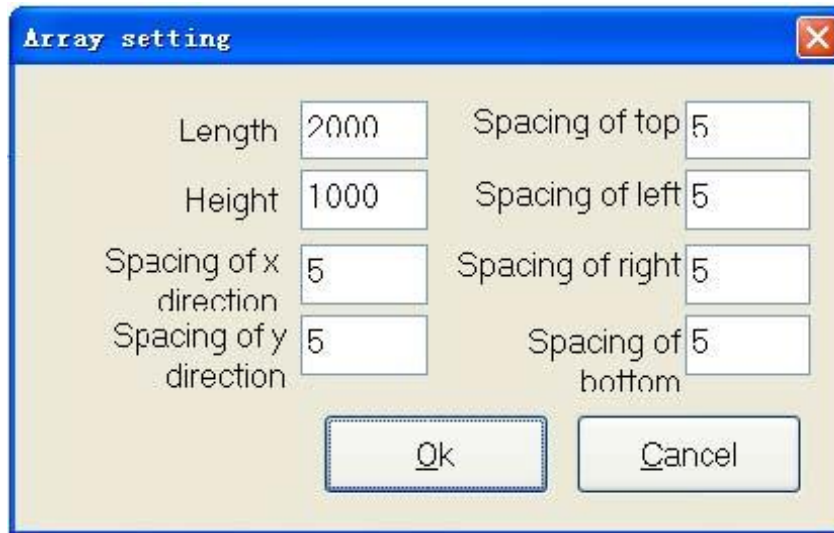


Figure 9-1-1

9.2 Restore Path

Define the path to restore the original graphics, it is such as the auto cad undo function, but it is also different. Therefore, we suggest that you use this function when the path restore. Please does not use auto cad undo function.

Choose "restore path" button, then click the drawing block, at this moment the drawing line type will change from solid type to void type. Show as the following picture:



Figure 9-2-1

9.3 Break point

When system automatically array the define path, Its easy to damage the product which appearing between two pictures of the space path . Now we can choose to add the appropriate number of breakpoint in the space path. Then we can use the auto cad Stretching with drag functions.

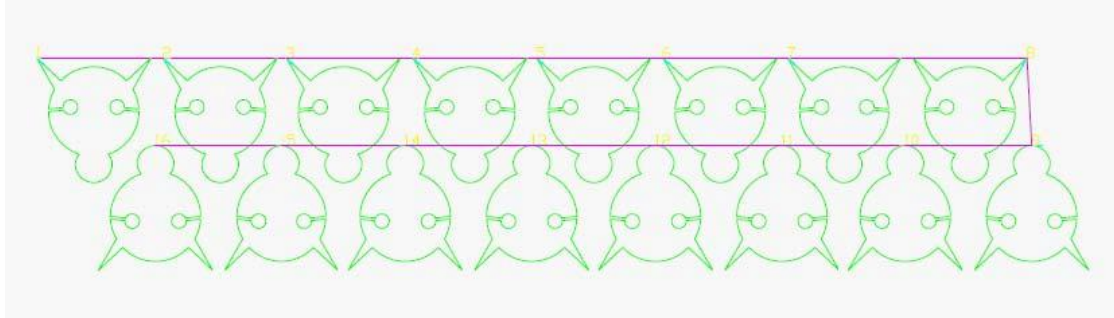


Figure 9-3-1 error path

We cut the above products ,and define path for them. They will Automatically generate path . But often errors, so we should change the path , like this we should add some break point.

We shown the following picture 9-3-2

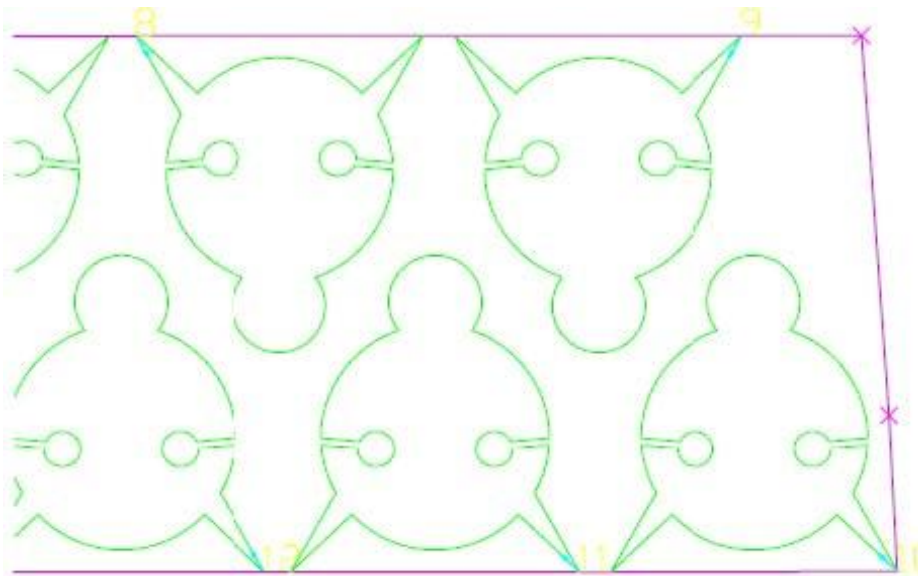


Figure 9-3-2 add two break point

Finally, we edit and generate full path.

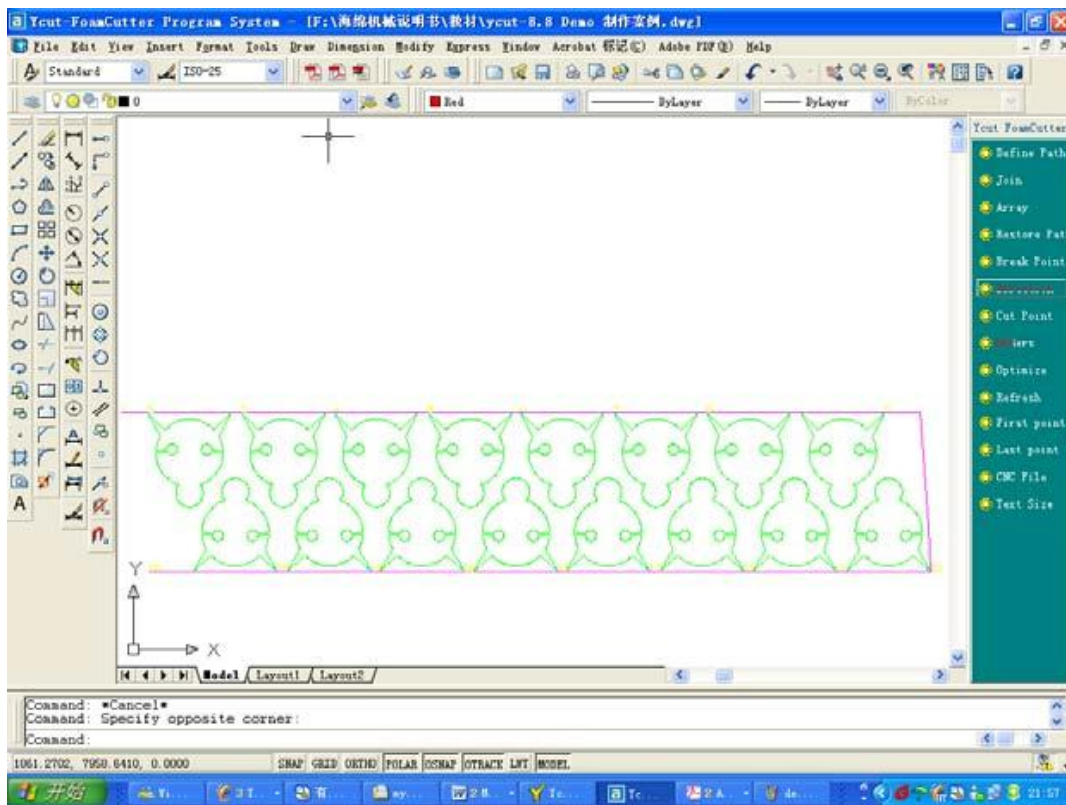


Figure 9-3-3 full fine path

Save the cnc programme and translate it to the controller.

look at the following picture:

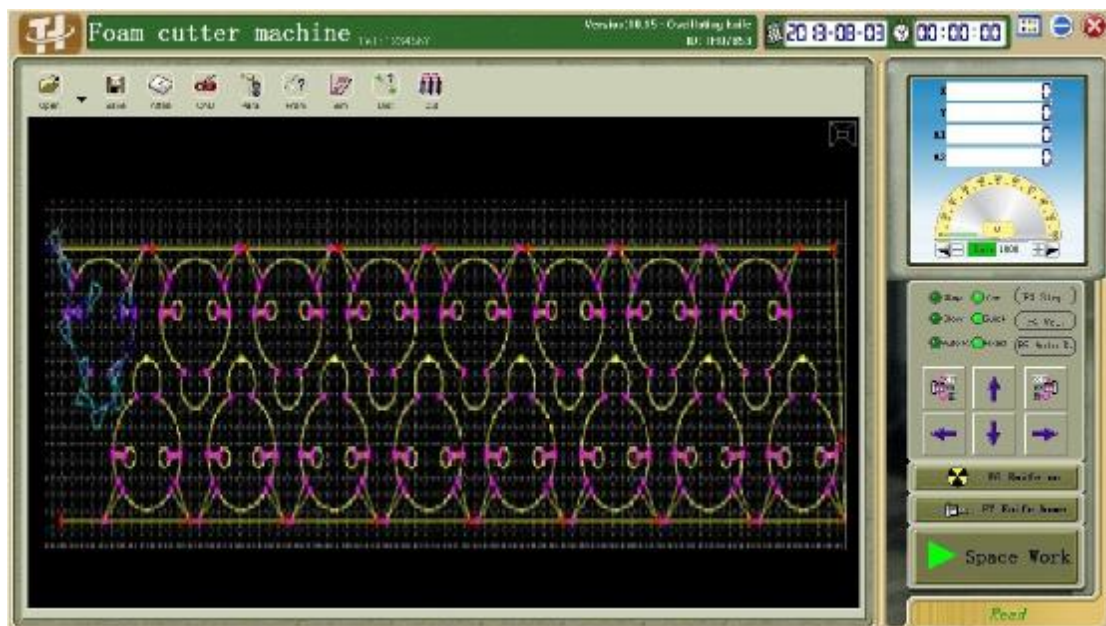


Figure 9-3-4 Run cnc program

9.4 Change Direction

Choose “direction” and click picture to change the direction of cutting products, from clockwise turns to anti-clockwise or from clockwise turns to counter clockwise.



Figure 9-4-1
Before change



Figure 9-4-2
After change

9.5 Change the cutting point

Change the cutting point of product and move it to the specified point of the picture.



Figure 9-5-1
Before change



Figure 9-5-2
After change

9.6 Change the order

Change the processing order. The processing order can be rearranged according to the appointed order.

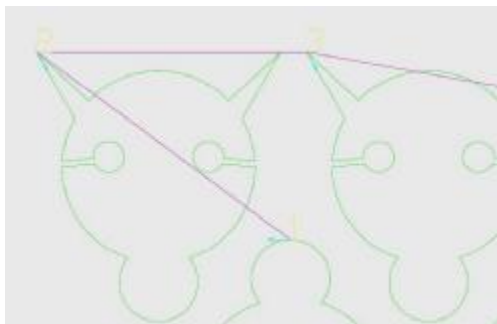


Figure 9-6-1 Before change

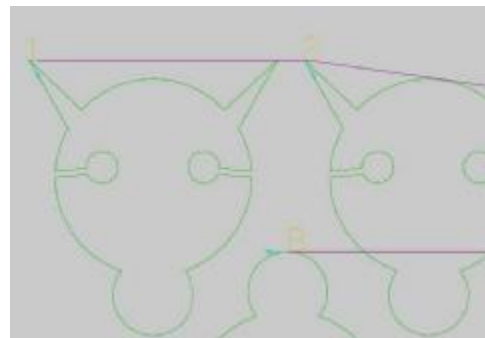


Figure 9-6-2 After change

9.7 Optimizing

This function can also change processing order, but the difference between this function and 9.6 is that 9.6 is appointed by hands while this function can make processing order automatically according to the principle of shortest distance. Besides, it can rearrange the order from any part of picture but not the first one.

Chapter 10 FAQ

In this chapter we give some typical problems in the process of customer service. If during the use process met what not understand place, suggest you look for in this section first to see if there are similar or the same problem. If yes, according to the answer of the problem to solve the problem, don't rule out, please contact the supplier.

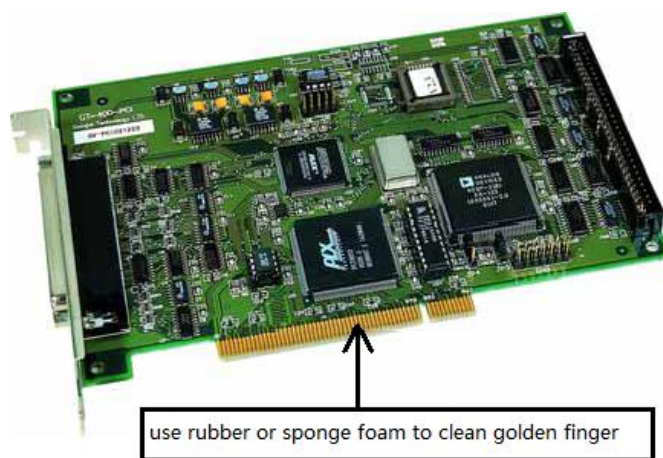
I start the system, the system status bar is shown as "Failed to open the card", what is the reason, how to eliminate this failure?

A: there are three possible:

1. If you are using industrial controlling computer, please make sure that the motherboard power supply for 5 V, because industrial controlling computer base plate is 3.3 V and 5 V power supply two kinds of specifications, and our control boards need to use to support 5 V power supply to work properly.
2. Please make sure the driver control card is installed inside the computer, use the method in the "question 1", see if control card's driver has been installed on the computer.

If there is no view to the control card project, you need to reinstall the driver control card.

3. Please make sure the card with the computer motherboard connections are secure. Turn off the computer power supply, pull out the card, with rubber or sponge to wipe the gold finger part of control card, replace other PCI slot inserted into the computer.



General is the third most likely to happen.

If the above methods still can't solve, please contact the equipment supplier.

I how to properly set “pulse for 1 round” and “calculate the distance of motor run 1 round”?

A: Once I see the user set "calculate the distance of motor run 1 round" to a fixed value of 20 mm, then through constantly modify "pulse for 1 round" to make the correct size, so that " calculate the distance of motor run 1 round " a decimal. This is not the right way.

" calculate the distance of motor run 1 round " is a constant value, determined by the setting of drives. If it is stepper motor, it drive the fine fraction. ON the drive's manual or the shell, usually have a segment table, column according to the segment size ON/OFF state, find out the corresponding numerical within the segment table, fill into this column.

If it is servo motor, please found within the numerical value by the driver to fill in this column.

Special note: This parameter is an exact fixed value, the stepper motor is an integer, not possible decimal; A handful of the servo motor, a decimal point.

After setting up the numerical, can use "run motor" steps:

1. Choose a shaft, running laps for 1 ring.
2. Click "run positive direction", motor run positive direction, click the "run negative direction", motor run negative directions.
3. The system issues the setting number of pulses numerical, observe whether motor is turned 1 round or not. If it do not run 1 or more than 1 round, then the setting parameter is not correct, please find information again, find the correct data. Really can't find the information, you can try to increase or decrease the data, multiple tests turn 1 round, until indeed turn 1 round.

If the motor only run in one direction, a) check the wiring is correct or not; B) matches the "pulse" parameter.

If the motor rotation direction and the actual need of rotation direction is inconsistent, please change the motor when the power is any group in the U, V, W wiring sequence.

Calculated the "calculate the distance of motor run 1 round ", there will be a decimal number.

The parameters of the calculation:

First of all, according to transmission ratio, to calculate the motor rotate one circle, the corresponding screw (or roller), how many turns hypothesis for A circle.

Calculation of screw (or roller) each roll distance moved in a circle. Screw each round moving distance is its pitch, this is available in the data; Roll each round movement distance of its circumference, diameter 3.14 x.

Assumptions to calculate the distance to B.

"calculate the distance of motor run 1 round " = Ax B.

To calculate the numerical value, the input to the corresponding motor "calculate the distance of motor run 1 round ". Input can also pass the test, after calculate the error, to do fine adjustment, the specific methods:

1. Choose a shaft, running laps choose five laps.
2. Click "run positive direction", motor run positive direction, click the "run negative direction", motor run negative directions.
3. Test actual distance measuring motor stops after exercise, and then divided the motor rotating circle number, then calculate the motor "calculate the distance of motor run 1 round ".

In the case of security, can choose ten laps, 20 laps to do the same test.

Note: This test, must be determined "pulse for 1 round" setting is correct. Only under the condition of the parameters are correct, the motor can rotate the specified laps, otherwise, the test results meaningless.

I By manual, the arrow button direction inconsistent with the actual movement direction, how to set?

A: the reasons for the phenomenon, is generally when a device console mounted at the other side of the device, the arrow direction and corresponds to the actual direction may not match.

Modify the "system parameter" in "manual" value of the corresponding motor, it is set to reverse.

This parameter is only for manual direction, it will not affect the automatic cutting, so when in automatic cutting, running direction and drawing and edge direction is inconsistent, you need to change the motor wiring.

I cut out circle into ellipse, what is the reason, how to solve?

A: two possible:

1. the wrong size of the motor, the system parameter " pulse for 1 round " and " calculate the distance of motor run 1 round " is not correct, set the correct parameters.
2. Wrong size of the motor, exist the reverse gap.

Analysis: if the starting point of the closed curve is a kind of "initial state" (both actuator to motion in the direction of the current and previous movement in the opposite direction), there must be a closed curve from forward to reverse and from backward to forward the direction of the number are equal, accumulative errors caused by the reverse clearance has been offset, closed closed curve can be better. Closed, of course, this does not mean that eliminate the reverse gap problem, but the reverse clearance have been converted to a closed curve form error.

Reverse clearance Settings, see the follow quaestion.

I Cutting out the closed graph, outlet joint, what is the reason, how to solve?

A: If it is a wirecut, may be reverse clearance caused;

If it is a wirecut, in addition to reverse gap can lead to this phenomenon, knife is whether can be twisted in right place is also a contributing factor.

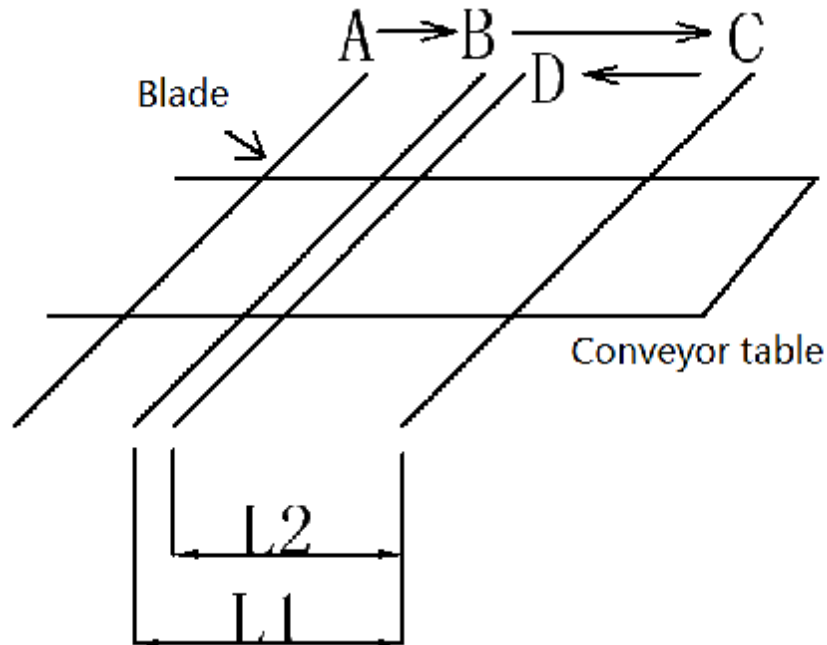
Analysis: if the starting point of the closed curve is not in the "initial state" (both actuator current to the direction of motion is the same as the previous direction), and this will inevitably lead to from forward to reverse and from backward to forward the direction of frequency difference, reflected on the final result, closed curve is not closed well.

I What is the "reverse clearance", how to correctly set the reverse clearance?

A: In general mechanical system will exist reverse clearance, because of the existence of the reverse clearance shaft reverse movement began, cumulative error increasing, increased to completely reverse clearance compensation, cumulative error and gradually tends to smooth fluctuations. From positive to reply, because

from forward to reverse or reversing process from backward to forward, reverse clearance is considerable.

In the following simple method if there is a reverse clearance test system, the X axis, for example:



1. Manual control mobile X from point A to point B (arbitrary), make A mark on the bedplate/conveyor belt, record the knife with initial position;
2. Switch to "fixed-length" mode, select a step distance, step assumes that the distance is 200;
3. Along the walking direction of step 1, X motor control continue to go forward, stop at point C, measure the distance of the point C to point B L1, should be equal to we set interval.
4. Keep "fixed-length" model, interval constant, X axis control back, stop at point D, measuring C to D is the distance of the L2, if there is no reversal clearance, L1 and L2 should be the same, namely D points a and B should be a coincidence. If there is a reverse clearance, smaller than L1, L2, calculate the difference, in the "system parameter" input.
5. Repeat from step 1, measure the L1 and L2 should be the same at this time, reverse clearance eliminated.

Note, test process, don't be step 1 A to B, otherwise, the test results may not.

Used the same method to test the reversal of the Y motor gap.

In general, machine tools have before they go out on the determination of various performance indicators, such as using a laser interferometer is determine the relevant parameters. Of course can also through the dial indicator, dial gauge, or torsion spring field test table, simple equipment, determine the reference value of the reverse clearance.

Appendix

I System attachment

1. Common input signal wiring

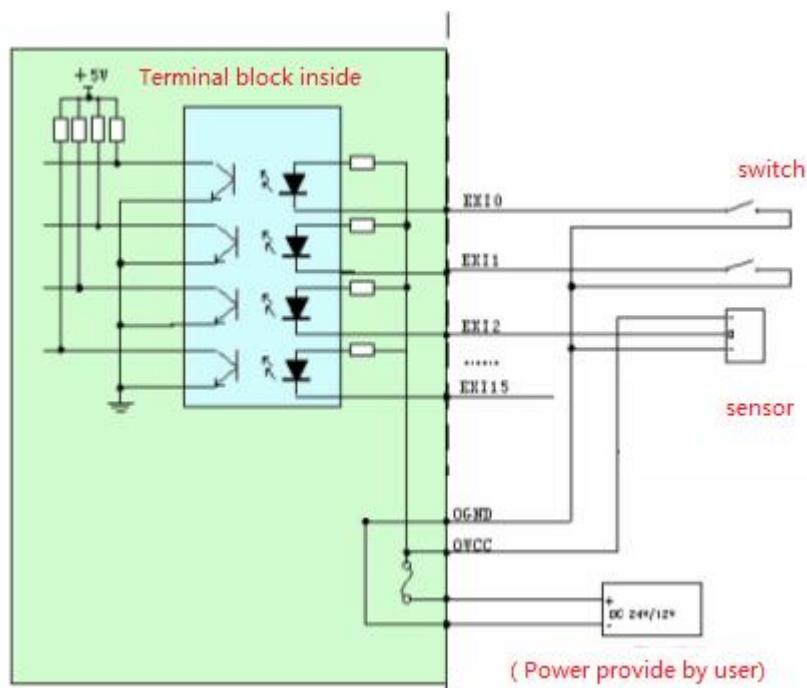
Common input signal is mainly used for testing, for the normally closed signal.

System definition of detection signal is more, factory according to their own needs to choose to use which measure, the closing of unwanted signals in the system (see chapter 7[IO detection]).

Common input signal connection port in CN12 and CN13.

signal	application	port
Knife broken	Detection of knife belt is normal. Will automatically stop cutting after cutting knife.	CN12 Exi0 port
Cylinder power checker	The test valve solenoid valve is on. If you enable the detection signal, the system detects that the valve didn't opened, refuse processing.	CN12 Exi4 port
Knife power checker	Testing whether the knife with power. If you enable the detection signal, the system detects that the knife with power didn't open, refuse processing.	CN12 Exi5 port
Motor power checker	Whether open detection system power. If you enable the detection signal, the system detects that the system power supply didn't open, refuse processing.	CN12 Exi6 port
Emergent power checker	Detecting abrupt stop button is reset. If you enable the detection signal, the system detects that the abrupt stop button is not reset, refuse processing.	CN12 Exi7 port
A pressureir	The test pressure is normal. If you enable the detection signal, the system detects a low air pressure and the set point, refuse processing.	CN12 Exi8 port
24V power checker	Detection of 24 v power supply is normal. If you enable the detection signal, the system detects that the 24 v power supply failure, refuse processing.	CN12 Exi15 port

Wiring method is as below:



2 .Common output signal wiring

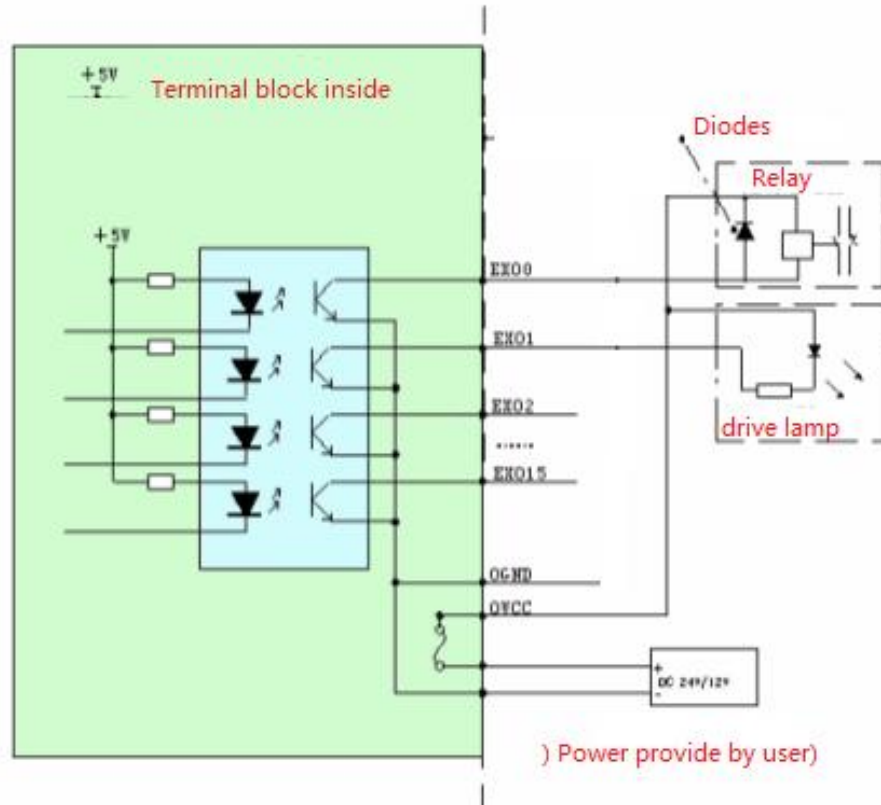
Common output signal is mainly used to control external solenoid valves, relays, etc., and low level output.

System definition of output signal, manufacturer according to your need to choose to use which, the closing of unwanted signals in the system (see chapter 7[IO detection]).

The connection port on the CN14 of ordinary output signal.

signal	application	port
Knife On/Off	Control the start and stop of frequency converter	CN14 Exo0 port
Green lamp	System is in standby mode, when everything is ok, start the green indicator light.	CN14 Exo3 port
Yellow lamp	System in the process of work, start light yellow light, the warning role, remind to pay attention to safety.	CN14 Exo4 port
Red lamp	When system is abnormal, start the red indicator light.	CN14 Exo5 port
Beeper	Normal cutting completed, roar for 3 seconds, remind operators: processing is completed, to discharge.	CN14 Exo6 port
Shake head 1 can	Servo motor 1 vibration knife can signal, see section 5 of this chapter.	CN14 Exo14 port
Shake head 2 can	Servo motor 2 vibration knife can signal, see section 5 of this chapter.	CN14 Exo15 port

Wiring method is as below:



3 .Limit signal wiring

Limit signal connection port located in CN12.

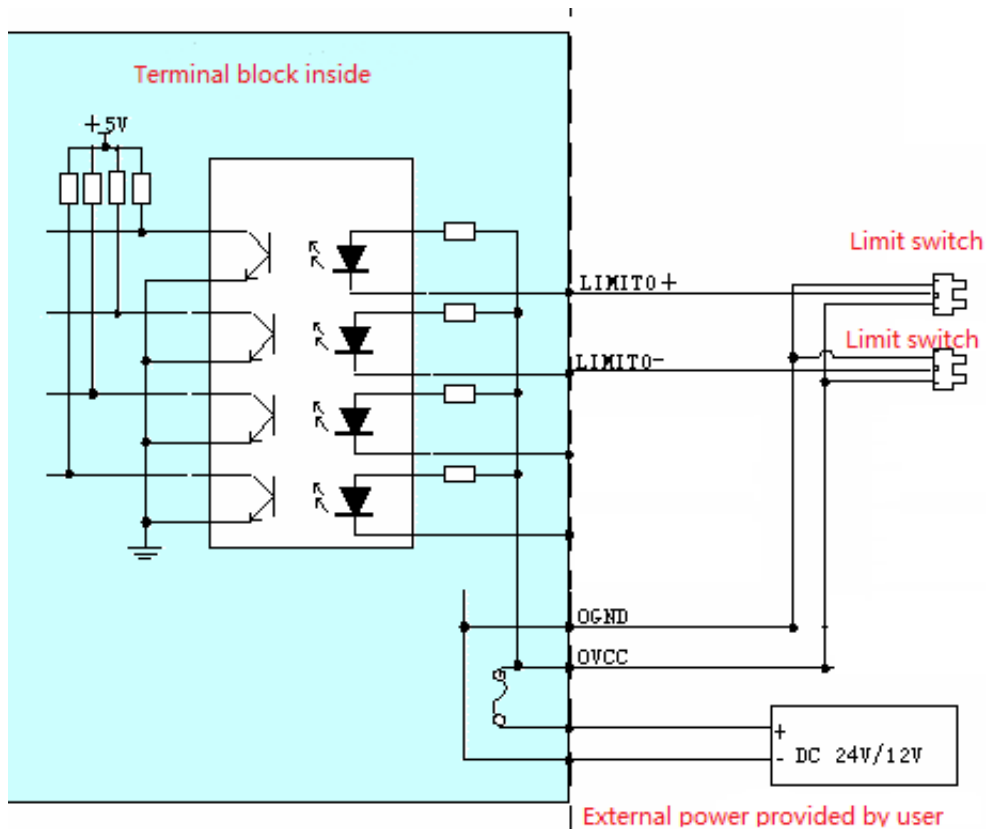
Terminal board CN12 pin definition

pin	signal	instructions
5	LIMIT0+	Axis pos. limit
6	LIMIT0-	Axis neg. limit
7	LIMIT1+	Axis pos. limit
8	LIMIT1-	Axis neg. limit
9	LIMIT2+	Left rotate pos. limit
10	LIMIT2-	Left rotate neg. limit
11	LIMIT3+	Right rotate pos. limit
12	LIMIT3-	Right rotate neg. limit

Standard: according to the safety limit switch system should connect into a normally closed state.

Factory according to their own needs, close don't need to limit the signal.

Limit switches for photoelectric switch connection method as below:



Mechanical travel limit switches for the development [Common output signal wiring] connection method.

4 .The origin signal wiring

Rotating knife back to zero as the automatic way, need to contact any knife zero signal.

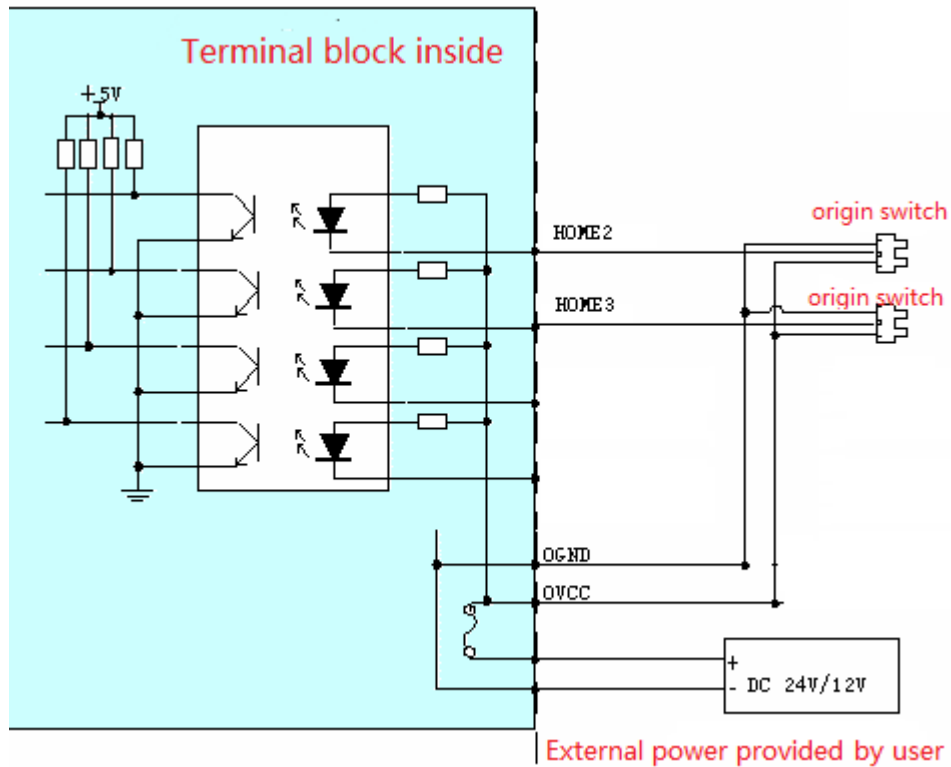
Zero signal terminals located in CN12.

Terminal board CN12 pin definition

pin	signal	instructions
3	HOME2	left motor zero signal
4	HOME3	right motor zero signal

According to safety standard: the origin switch is normally open state.

Connection method as below:



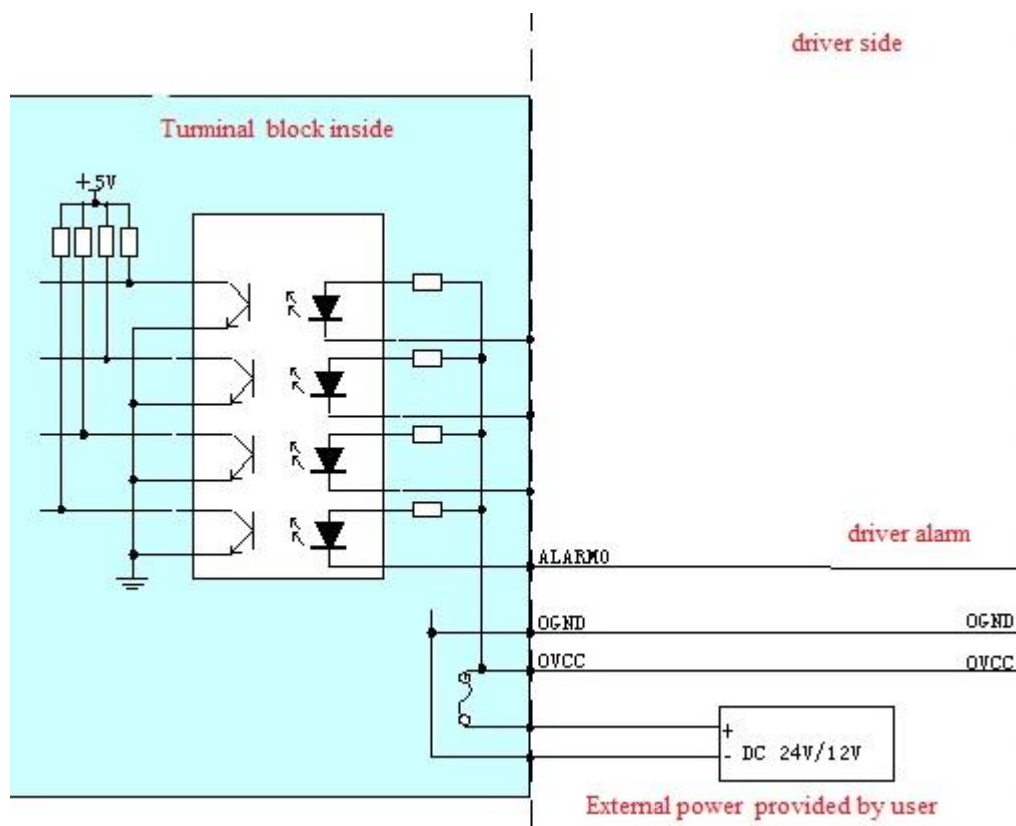
5 .Servo alarm signal wiring

If you use servo motor, servo motor of the alarm signal can be connected to system, when the motor fault occurs, the system can through the servo alarm signal perception, immediately stop processing.

Drive alarm signal, through the terminal board CN5, CN6, CN7, 2 feet of CN8 connected to the drive, see section 6 of this chapter about CN5 pin definition.

According to safety standard: drive alarm input signal is often close state, (when the user need, please send the input to OGND short answer).

Connection method as below:



6. Drive connection

Terminal board CN5, CN6, CN7, CN8 external drives, corresponding to the system of X, Y, turn left, turn right, knife motor.

CN5, CN6, CN7, CN8 pin definition

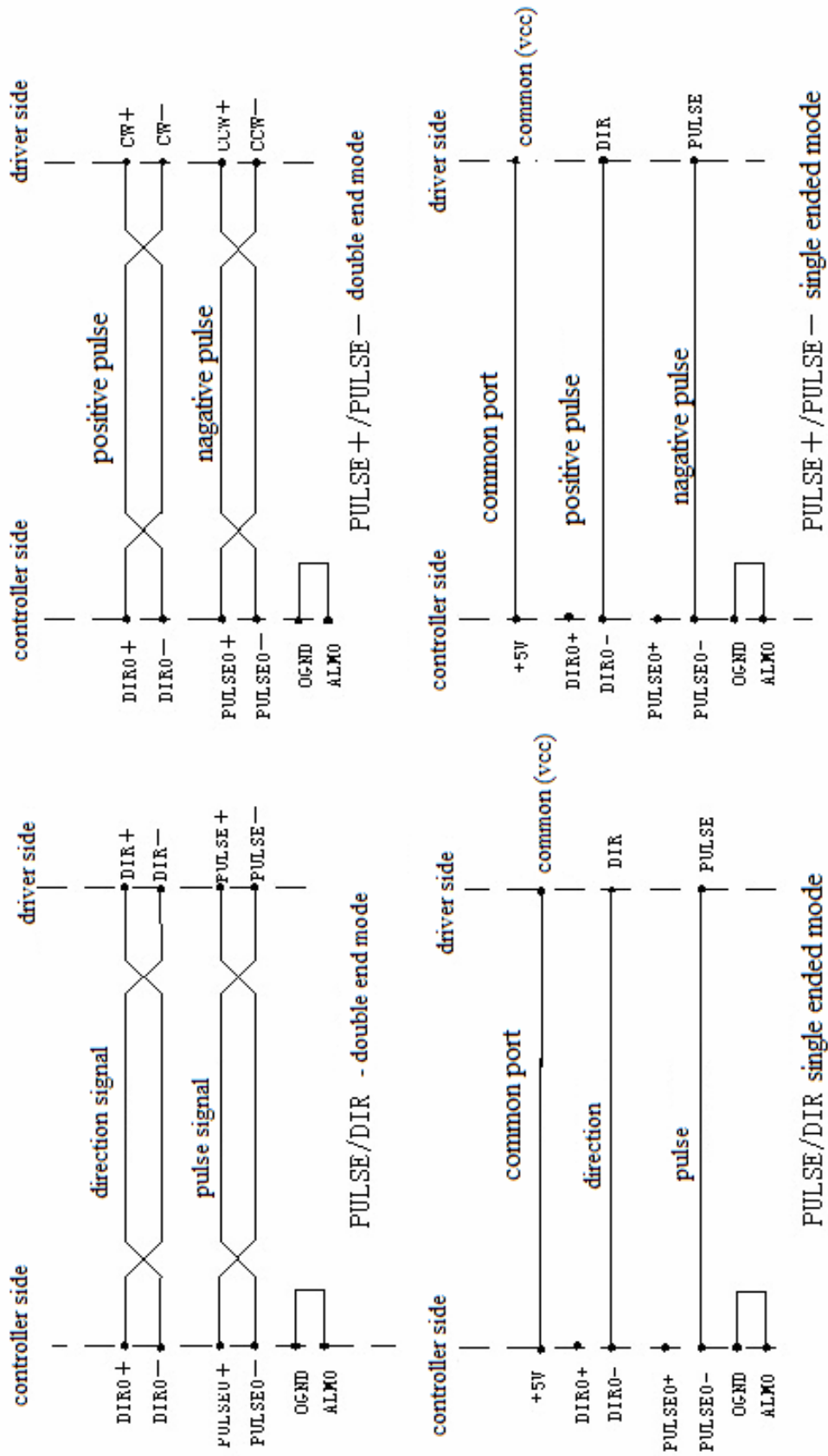
pin	signal	instructions	pin	signal	instructions
1	O G N D	External power supply	14	O V C C	+ 2 4 V output
2	A L M	Drive alarm	15		
3			16		
4			17		
5			18		
6			19		
7	+ 5 V	Power output	20		
8			21		
9	D I R +	Output of the step direction	22	D I R -	Output of the step direction
10			23	P U L S E +	Output of the step pulse
11	P U L S E -	Output of the step pulse	24	G N D	D G N D
12			25		
13					

Under the mode of pulse and direction signals, 23, 11 pins output differential pulse control signal, the movement direction of the output pin 9 and 22 differential control signals.

In the double pulse (positive/negative pulse) mode, the pin 9 and 22 output differential forward pulse control signal, 23, 11 pins output inversion of differential pulse control signal.

If the signal is not a differential signal, drive need to connect signal corresponding to the output of negative

differential signal terminal (pin 11, 22), the positive and negative signal end dangling.



1 Pipe section program example

