JIANAN REMAX MACHINERY TECHNOLOGY CO.,LTD
www.remaxcnc.com

CNC Plasma Cutting Machine Manual

Operation instruction:

1325/1530/2050





＊ Please read the manual carefully before using the machine

Catalog

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（一）General Introduction of plasma Cutting Machine

Remax-P1525







（二）Usage Precautions:

1. After the container is unpacked, please check the system for any damage and verify if the contents in the container are physically in conformance with the packing list.
2、This user's manual is applicable to the plasma cutting machine manufactured by Jinan Remax machinery technology Co,. Ltd.
3、Please verify the conformance of local mains voltage. Be sure to use stable and normal voltage between the power supply network and the system to guarantee personal safety and operating reliability.
4、The required ambient temperature for the CNC is ranged from 0℃ to +40℃ and relative humidity is from 0 to 85%.Special protection is required in case of operating in a high temperature, high humidity or corrosive gas environment.
5 、Never try to hot plug/unplug any cable on the rear panel of the CNC, for the damage incurred thereby is beyond our quality warranty.
6、Working in a very dusty environment, the whole system should be provided with dust protection in addition to regular dust cleaning.
7、Trained operator should be specially assigned for the CNC.
8、Please contact the manufacturer in case of any problem. Never disassemble, assemble or modify the system the system without prior authorization and qualification.
9、Be sure to maintain the system and the cutting machine properly--routine maintenance and check per shift, secondary maintenance per month and primary maintenance half a year.
10、The LCD screen is fragile and proper care is necessary in the process of operation.

Attention：

The provided USB port is very small in power output, only good for USB disk and not recommended for any other USB device to prevent damage.

Special Statement：

The quality warranty of this product is twelve months since its manufacturing date covering the faults specified by this user's manual.
Paid service is available for faults caught beyond the warranty period and outside the quality warranty Coverage.

The following cases are not covered by the manufacturer's quality warranty:

A：Damage caused by misuse due to violating the operating instructions
B：Damage due to force majeure including the following situation:
a、Natural causes such as thunder stroke, flood, drought, snowstorm, earthquake, etc.
b、Society causes such as war, strike, government prohibition, etc.
c、Damage caused by unauthorized actions such as disassembly, modification, repair etc.
The final power of interpretation to this user's manual is subject to Jinan Remax machinery technology Co., Ltd.

一、Brief Introduction

1.1 Product declaration

Thanks for selecting remax CNC Cutting Machine
Before using the machine, Please read the manual carefully to ensure proper usage because incorrect usage will cause the behave incorrectly, break down or reduce the service life.
Prohibit! The machine cannot be installed in the place with high temperature, high humidity, high dust, high salt, Metal powder high corrosive gas, It cannot be used in the environment where there are water, oil and Medicine dripping, or it can be easy to be damaged.

1.2 Product advantages

◆ Small in size, resist interference: this equipment adopt professional industrial personal computer control system made by Sino-American joint venture. With compact and reasonable structure design, the machine has the features of light in weight, small in size and easy to move which makes the machine suit for both indoor and outdoor especially for small and medium-sized enterprises to improve work efficiency and the material use ratio and cut down production cost. High reliability in performance makes the machine has the ability of resist plasma interference, lightning stroke and surge etc.
◆ Simple in material programming software: The machine not only realizes the manual programming of simple graph but also process automatic material program for arbitrary complex graph through Random complimentary program software. The software adopts interactive conversational mode.
There is no need to write the code through manual work as the graph can change automatically through which the pictures of accessories designed by Auto-CAD can save and take DXF file directly then emission, then select adaptable program parameter to generate the G code file for cutting directly.
Abundant software function, applicable flame and plasma cutting technique especially small segment program management can be widely used in making blanking, advertisement and steel art etc.
◆ The transfer and storage of file is convenient and flexible: the software supports USB, the user can output to USB flash disk then insert miniature cutting machine to realize the transfer of file(it can also connect laptop to transfer program file) It has 32M-64M huge user

program storage capacity which can process program without limitation and realize the convenient compile, transfer and send of program
◆Include 24 graphs(can be expended). Common used graphs are included.
◆Easy and convenient to operation: It can not only be used just like semi-automatic trolley to realize manual cutting, but also automatic cutting just like huge CNC machine (it can go up and down by inching) Dynamic & Static graph process indicate:5.7 high resolution lattice liquid crystal display, All Chinese menu, Characters suggest, Dynamic & Static graph display make it directly perceived through the senses and easy to learn. It is also easy to realize Chinese and English transfer, conduct, display and save Chinese file.

1.3 Product Introduction

Remax-1530 is the CNC portable cutting machine structure, it is a kind of cutting equipment with high efficiency, high precision and high reliability combined with CNC system control and precise mechanical transmission. It can cut Arbitrary steel part of planar shape constructed by programmable cutting straight line and circular arc. Good human-computer interface makes the machine easy to be operated and cutting the panel with various and complicated shape which is suitable for automatic cutting and blanking of the medium and thin Non-ferrous metal sheet, stainless steel and Carbon steel plate.

1.4 Product Parameter

Model	Remax-1530
Effective Cutting Width (X axis)	1500mm
Effective Cutting Length (Y axis)	3000mm
Cutting Mode	Plasma
Drive Mode	Bilateral-side
CNC system	Beijing STARFIRE CNC
Plasma cutting speed	50-6500 mm/min
Cutting torch lifting distance	150mm
Speed setting error	≤±5%
Max Idle running speed	12000mm/min
Torch height controller accuracy	≤±1.0mm
Longitudinal line accuracy	±0.2mm/10m
Motor and driver	Leadshine motor and driver
Gearbox	Hubei planet
Drive Method	Hiwin square rails and rack gear for X Y Z axis
Moving Precision	0.01mm per step
Power Source	380V 50/60Hz
Height controller(plasma)	SF-HC 25G-Arc voltage height controller for plasma cutting
Plasma cutting thickness	1-22mm

length of a side	±0.5mm	
Diagonal error |AD-BC|	±0.5mm	
Base point return error	±0.2mm	
Intersection point error	±0.5mm	

二.System Introduction



2.1 Brief Introduction of System Function

2.1.1 System Function

Some model CNC System for Cutting is designed to work with torch/plasma,high-pressure water jet and laser cutting machines and extensively used in metal working, advertisement fabrication and stone machining businesses.

1、High reliability as well as good resistance to plasma disturbance, lightning and surge.
2、Applied torch/plasma cutting technology, able to perform corner speed control and height control automatically;。
3、Kerf compensation, reasonability check and report for user's option;
4、Breakpoint restoration, automatic power-back recovery and automatic breakpoint memory,
5、Random section and piercing point selection
6、Extended piercing for thick plate and bridging feature for thin plate,
7　Optional piercing position feature in mode of RETURN, SECTION(section selection) and RESBREK(breakpoint restoration), very convenient for user control,
8、Ready for transitional cutting operation at any moment,
9 .Special short line machining feature based on smooth travel, extensively applicable to metal blanking as well as advertisement and ironwork fabrication, etc.

10 、Parts library of 24-type patterns, extensible and customizable, including the common machining parts
11、Compatible with many blanking software such as IBE(Germany), FASTCAM, etc.
12、Operation menu both in Chinese and English, dynamic graphic display, 8-times zoom, free point automatic tracking, USB disk program and timely software upgrade.

2.1.2 Technical specifications

1) Processor: Industrial ARM7 CPU
2) Display: 7 " Color LCD
3) Input/output: 13 channels of optical isolation input and 8 channels of optical isolation output
4) Interlocked axles: 2 axles, extensible to 4 interlocked axles
5、Maximum speed: <24m/min
6、Pulse equivalency: variable, electronic gear numerator and optional denominator in the range from
7 、Memory space: 32M-64M oversized memory capacity for user program and no restriction to machining program
8、Machine case size: 298×202×95.2(mm)
9、Operation temperature: 0 to +40℃; storage temperature: -40 to +60℃

2.1.3 Micro step also supplies the following auxiliary products for compact CNC cutting



2.2Main Menu

2.2.1 Menu

The design of hierarchy-based functional windows is adopted for system operating display. If a function is invoked in the main menu window, the corresponding subwindow menu will pop up. Press [F1] to [F7] to select the corresponding function according to window prompt. Press ESC to abandon the selection and return to the upper level of menu.



P2.1 Control system Main interface

2.2. 2 Description of Main Menu

VER: The version information of software and hardware is indicated at the bottom left corner for your information.

[F1] AUTO: Programmed control of automatic machining

[F2] MAN: To manually control the position of cutting nozzle

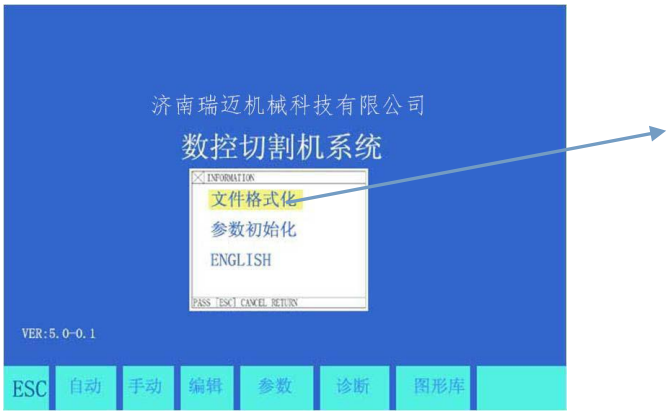
[F3] Edit: To edit/modify/input/output the machining program

[F4] SETUP: To set system parameters

[F5] SETUP: To set system parameters

[F6] LIBMINIT: To set normal pattern and plan material

[G] [G] [3] Initial Setting: A dialog box as follows will appear:



Among:

File format -- -- formatting user space program;

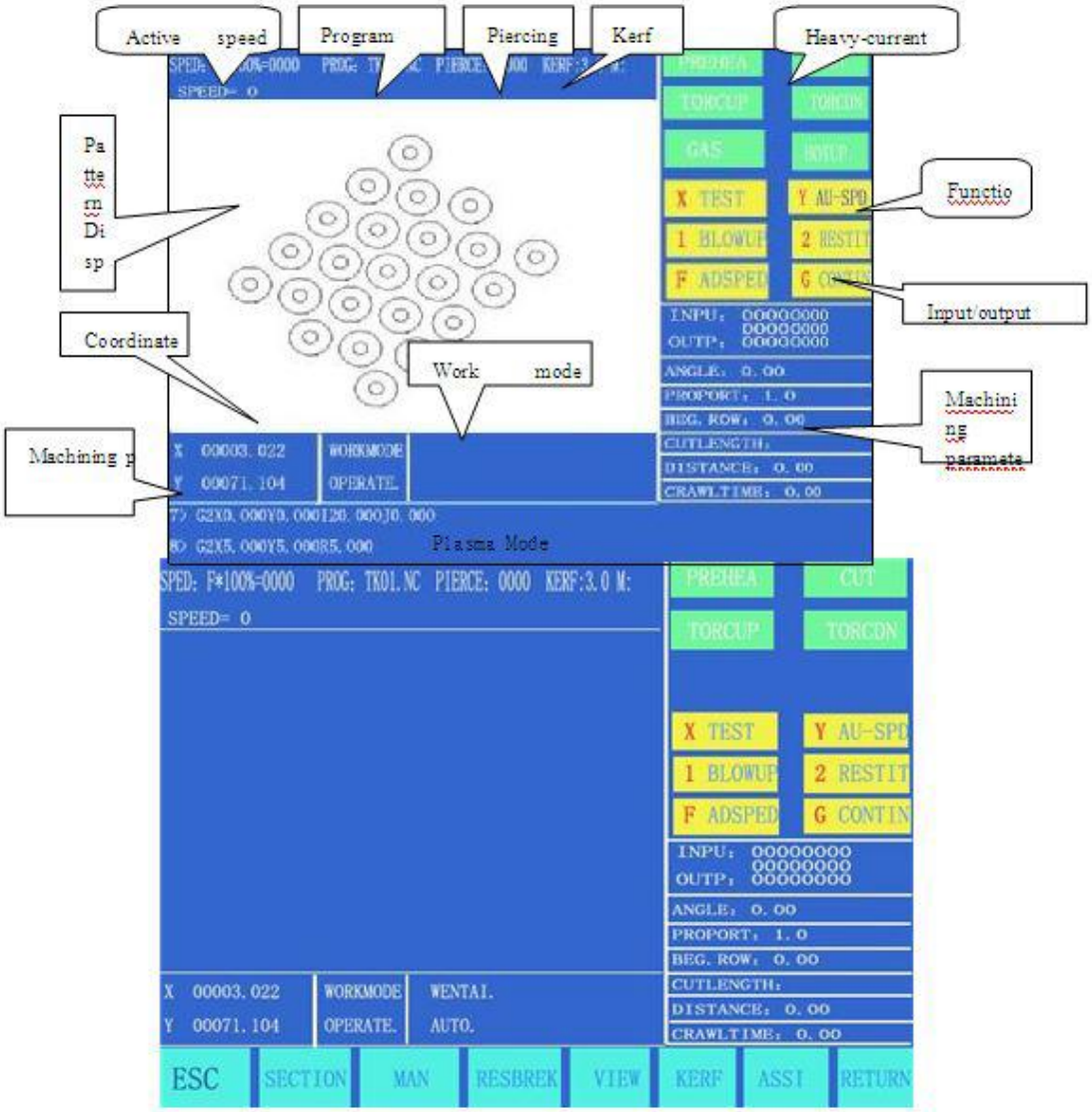
Initialization parameters -- -- to restore the factory parameter

ENGLISH -- -- -- --- change to Chinese or ENGLISH.

Fig.2.2 Initial setting dialog box

2.3Automatic Function(AUTO)

In the main menu, press [F1] to enter the automatic function window, as shown in the figure



Plasma Cutting Machine Mode

Fig. 2.3 Automatic Function Interface

2.3.1 Description ofAutomatic Mode Window

2.3.1.1 SPEED

1) In automatic mode, at the top left corner of the screen, it shows F×(multiplying factor of automatic machining speed)= set machining speed.

2) In manual mode, at the top left corner of the screen, it shows F×(multiplying factor of manual speed)=manual speed.

3)SPEED indicates the actual speed while the active speed multiplying factor is adjustable with [F↑] and [F↓].

4) It is allowed to adjust the speed quickly by pressing [F] key in this window. A pull-down menu will appear with 8 speed multiplying factors available for selection with [↑] and/or [↓]

key: 5%, 20%, 30%, 40%, 50%, 60%, 80% and 100%. And then, press ENTER key to acknowledge the selection.
5) Attention: The speed may be indicated in **Metric** or **English** system depending on the Metric/English Selection in **SETUP** (Refer to **Parameter Control**).

2.3.1.2 ROG, PIERCE and KERF
They are used to indicate the name of machining program, serial number of pierced hole(automatic clear in automatic machining mode) and the active compensating width of kerf Respectively.

2.3.1.3WORKMODE, OPERATE
WORKMODE field indicates the active operating mode such as rotation selection, breakpoint recovery, mirroring and section selection.
OPERATE field indicates such information as machining/pause, limit alarms and time delay.

2.3.1.4 Input and output
Below the heavy-current switches, there are 3 rows×8 indicators ○.
The top indicators show the status of 13 input ports, ○ indicating no signal input and ● indicating signal input.
The bottom indicators show the status of 8 output ports, ○ indicating no signal output and ● indicating signal output.
See the description of **DIAGNOSE** function for the definitions of input/output ports.

2.3.1.5 Machining Parameters Indication
This zone indicates various parameter values in the current machining mode.
2.3.1.6 Selection of coordinate unit
The coordinates may be indicated in **Metric** (millimeter) or **English** system(inch) depending on the Metric/English Selection in SETUP(Refer to Parameter Control).

2.3.1.7 The six heavy-current control keys on the front panel are designed to exert heavy-current control of external source.
[IGN]: Refer to M20 for ignition feature.
[PREHEA]: To open the solenoid valve of preheating oxygen. Refer to M24 for details.
[GAS]: To open the solenoid valve of acetylene （gas). Refer to M10 for details.
[CUT]: To open the solenoid valve of cutting oxygen; refer to M12 for details. To turn on the arcing switch if it is plasma.

[PIERCE] heavy-current control key
To carry out a piercing process, the specific operation procedure is as follows:
Flame machining case: rise the cutting torch (M72), open the cutting oxygen(M12) and lower the cutting torch(M73).
Plasma machining case: execute M07 command.

Note: This is a very important feature. It will be used repeatedly in pause, return and extend piercing operations. When preheat is done, pressing [PIERCE] key will start up piercing operation directly.
[SWOFF]: To shut off all the heavy-current output.
[S↑]: Push it down to rise the cutting torch and release to stop the torch.
[S↓]: Push it down to lower the cutting torch and release to stop the torch. ;

2.3.1.8【1】BLOWUP
The pattern will be magnified one times by one keystroke and it can be magnified to eight times maximum by three keystrokes.

2.3.1.9 【2】RESTIT
To restore to normal pattern size .

2.3.1.10 【X】TEST
If [X] key is pressed, the system will run the program at top speed without executing M command. This feature is often used to position quickly or check the working size of steel plate. This operation can be paused at any moment or cancelled by pressing [X] key one more times.

2.3.1.11 【Y】AU-SPD
Since the manual speed and automatic speed is separate in the system, this key is used to switched between automatic mode and manual mode to adjust the speed multiplying factor.

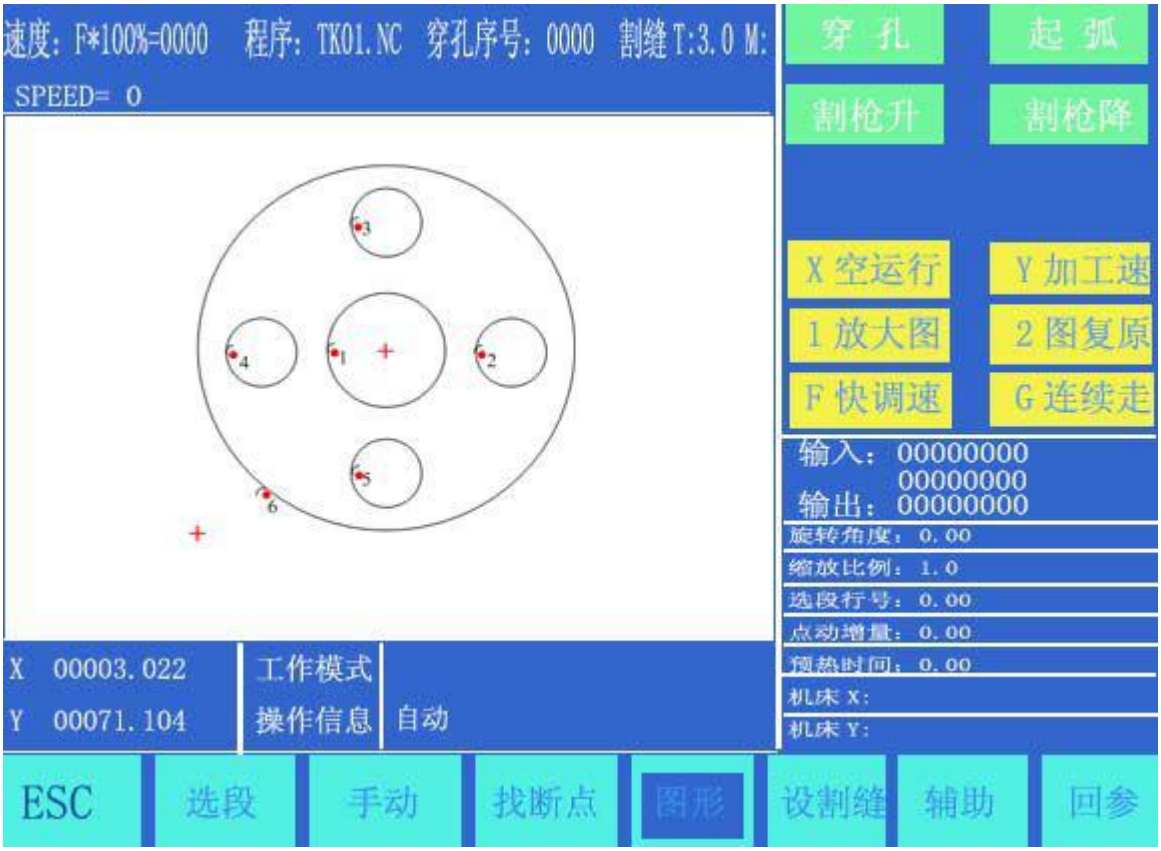
2.3.2 Function selection inAUTO mode
It is allowed to invoke a machining program by means of EDIT feature. If a program has been invoked(as long as it is the same program name), it can be run directly. If the program is invoked from an USB disk, especially a large program, it can be run directly with USB disk connected instead of saving it into the system.

2.**3.2.1【F1】SECTION**
To assign system to start up machining operation from any section or piercing point . It is often used when machining needs to start from a certain section or only a part needs being processed. Refer to SECTION feature for details.

2.3.2.2【F2】MAN
To switch the system to manual mode.

2.3.2.3【F3】RESBREK
After this function is selected, pressing [**START**] key to fulfill breakpoint restoration. Refer to **RESBREK** feature for details.

2.3.2.4【F4】Graph



2.4 Functional interface

If you choose this function, the system will show the processed graphs, and marked the processing serial numbering, there will be cross cursor in the middle of the graph.
[S] key is used to magnify the pattern, one times by one keystroke and eight times maximum by three Keystrokes [Q] key is used to return the pattern to original size. The display position of pattern is moveable by pressing[↑], [↓], [←] and/or [→] key.

2.**3.2.5[F5] KERF**
This key is used to reminder input of kerf compensating width; if no necessary to compensate(usually in blanking), simply enter 0.

2.3.2.6【F6】ASSI
This key is used to enter the next lower level of menu, as shown in Fig. 2.5 below.

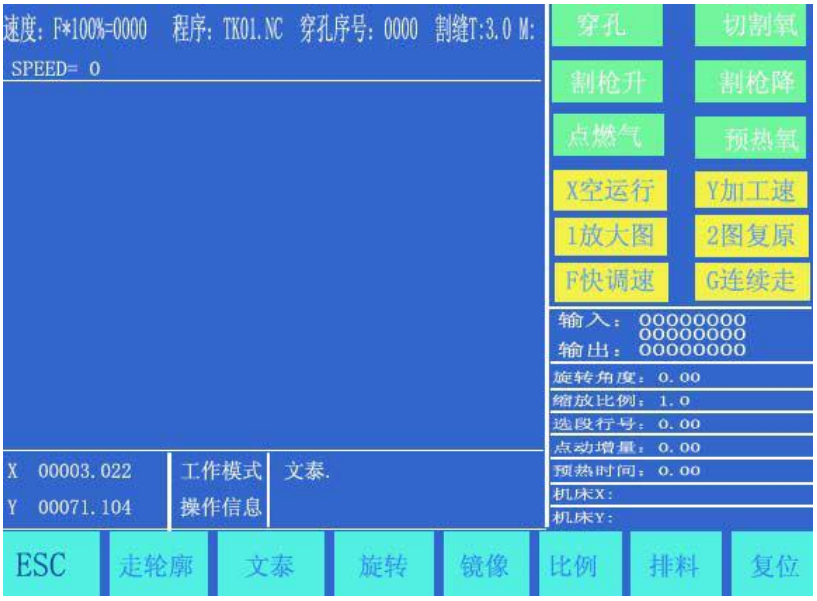


Fig.2.5.

2.3.2.7【F1】Contour function

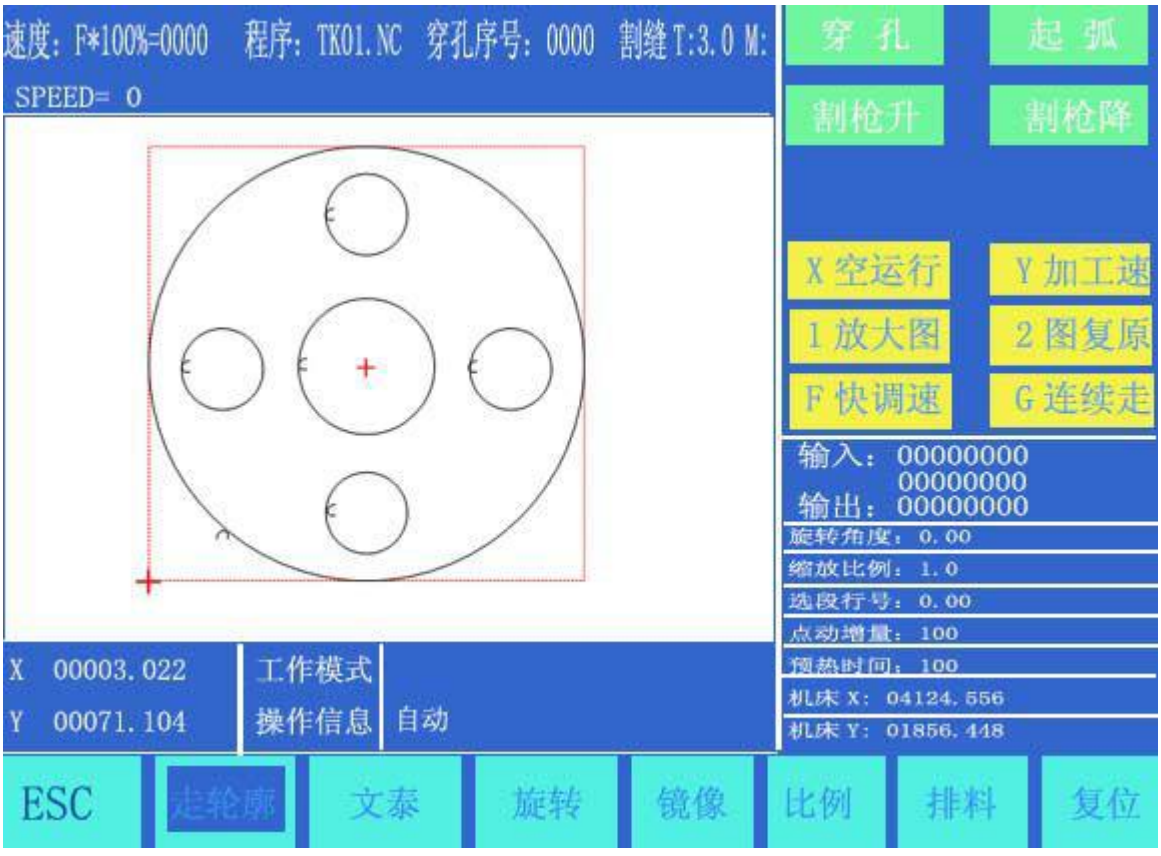


FIG 2.5 Contour function Interface

Aim：Before process the metal plate, the user can use Contour function to confirm whether the processing routine excess the metal plate range.
Method：**Press**【F1】begin to move，If the torch is not at the reference point(the coordinate is not zero) the system will point out that:
The current point positioning --- the current position of torch as the reference point.；
Position of reference point --- the torch should be back the reference point first then begin the Contour route.
When in the process of Contour route, if the torch exceeds the metal plate range, we can press the【pause】button. When the torch moves to the edge of the plate, then Press【start】button, then the system will point out the: “change the reference point EN/ESC?” Then press the confirm button to change the reference point. Then the system will treat the current position as the contour routine to move. Press [ESC] to quite change, the operation can repeat several times until the position is suitable for you.

2.3.2.8【F2】WENTAI
The system will prompt to run WENTAI-based machining program if this key is pressed. WENTAI is a word machining software for CAD/CAM, widely used in cutting graphic characters in advertisement business. This feature is required to run a WENTAI-based program.

2.3.2.9 【F3】ROTATE(steel plate correcting feature)
2.3.2.9.1 Machining at rotation angle

This feature is used when the steel plate is not positioned perfectly or the steel plate needs to rotate an angle before machining. It is allowed to use Rotate function along with BEG. PT. and END PT. in Manual mode or input the expected angle directly. After acknowledged, the system will start the machining program at the appointed rotation angle.
Note: Counterclockwise direction is taken as positive angle.

2.3.2.9.2 Example：
The system is able to identify and calculate the rotation angle by measuring the origin point and the end point of an edge of steel plate(a straight line). The procedure is as follows:
1) Determine the datum line. Take one borderline of steel plate as baseline and move the cutting torch to the origin point of this baseline. Press [F2] to set the beginning point of measurement.
2) Control the cutting torch and let it move along the baseline to the end point. The larger distance between the beginning point and the end point, the more accurate of the measurement. Aim the cutting torch at the baseline and press [F3] to set the end point of measurement.
3) At this moment, the rotation angle of the datum line is calculated. After the rotate

function is fulfiled, the rotation angle will appear in the OPERATE field, as shown in Fig. 3.2 below.

2.3.2.10【F4】MIRR

It is possible to select X Mirror, Y Mirror and No Mirror if press [F5] key continually. When X Mirror is selected, the machining program will run along the symmetry direction of X-axis, as appears inverted horizontally.

When Y Mirror is selected, the machining program will run along the symmetry direction of Y-axis, as appears inverted vertically. When default No Mirror is selected, the machining program will run normally.

2.3.2.11【F5】SCALE

The system will reminder user to input scale if this key is pressed. When the machining program is executed, the work size will magnify or minify as per this scale. This feature is very useful in cutting graphic character.

2.3.2.12 【F6】Discharge function

As for the edited single process program, the user can choose this function to discharge.

The system prompts you to enter：

Arrangement of rows — rows in Y direction

Arrange the number of columns — columns in X direction

LineSpacing— space between workpieces of X direction

space between columns— space between workpieces of Y direction

Line offset — Even-numbered row to the right offset distance

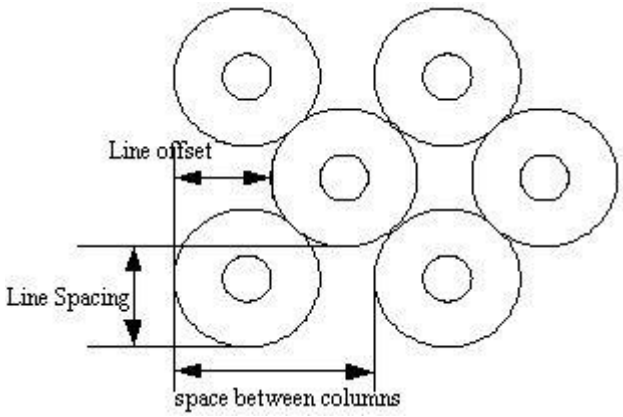


Fig 2.7 discharge

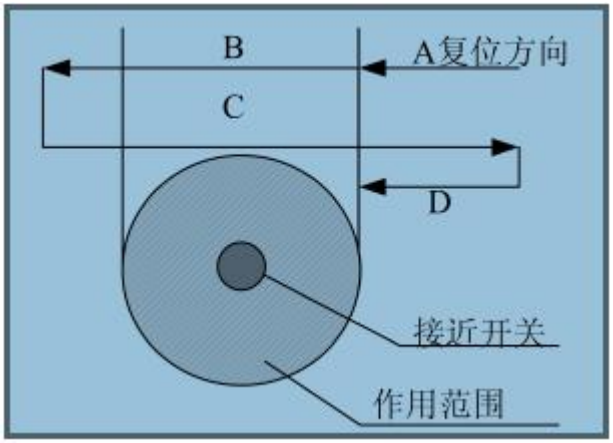
2.3.2.13 Reset function（Homing operation）

Origin machinery back to the origin can be divided into "test" and "reset" two parts.

Origin machinery back to the origin is the process of return machine tool mechanical zero point, back to the zero biaxial running at the same time, independent completed back to zero.

the preparation before reset(back to zero) :

(a)Mechanical origin should choose NPN hall proximity switch (normally open, the signal is low), and install in a suitable position.
(b)Set the parameters (see parameter setting F3)
●Reset rate - 【parameters】-【speed】, reset when the feed rate, the unit is mm/min
●Reset direction - 【parameters】- 【system】, 0 -is not reset; 1 - reverse; 1 - positive;
(c)Machine back to zero point process is as follows:



A: to reset speed fast forward.
B: slow down to stop
C: reverse crawling to the effective area.
D: crawling forward, to stop the valid area (the end).

figure 2.8 Machine back to zero point

(d)measure the origin-to confirm the mechanical origin of the workpiece coordinate system.
Methods:
●Cutting torch will be moved to the reference point in the workpiece coordinate system(Any point)
●Set the current coordinates of workpieces
●【manual】-【supplementary】-【Measuring the origin】System to complete the mechanical origin, and the current coordinates into the origin of the machine tool value, 【Parameters 】【system 】option in the origin of the machine tool change accordingly
(e)Reset - cutting back to mechanical zero point and set up the workpiece coordinate system
Methods:【manual】(or [automatic]] - 【supplementary】- 【reset】, the origin of the system to complete the mechanical action, and set to the current coordinate origin of the machine tool, the machine coordinates are set to 0.
【note 】:If reset direction of the two axes in the parameters are 0, namely no reset action, performed after reset operation, will remain the current value is equal to the origin of the machine tool. Machine coordinates equal to zero, it is very important, because the application limit is the machine tool coordinate as a benchmark. First cutting torch will be moved to the mechanical origin (this may not true), select reset function, can determine the current machine tool coordinate (reset);Second according to distance the effective distance on both sides of the mechanical origin again, fill in the positive/negative limit value of the software.

2.3.3 Automatic processing of startup

2.3.3.1 Cutting speed

Processing, will use the automatically adjust speed ratio.

The speed of implementation=Machining speed limit * ratio,【F 】,【F↑】,【F↓】mean adjusting the automatic rate.Two speed ratio, once set, this will save, not affected by the shutdown.

2.3.3.2 Automatic processing of startup

1） Before starting the automatic processing

2） To choose the right process and the appropriate processing rate (ratio),put the cutting torch on cutting height(after the start process, automatically cutting torch lift (execution M70)).After some other preparations were made, can start the process automatically.

3） Automatically start there are two ways of processing:

Press the green "start" button on the panel

Press the external "start" button (see the "input/output port definitions")

2.3.4 Automatic processing of the control and adjustment of cutting position

2.3.4.1At the start of the automatic processing, only the following keystrokes effective:

【Pause 】: Press this button, the system movement slowing down to stop, closed cutting oxygen（ plasma processing, shut off the ignition switch), closed higher controller (M39),Keep the currently displayed image. If you choose in the parameter is set to "suspended after an old fashioned gun (1)"(see control parameters), suspended after cutting torch will lift (M70).

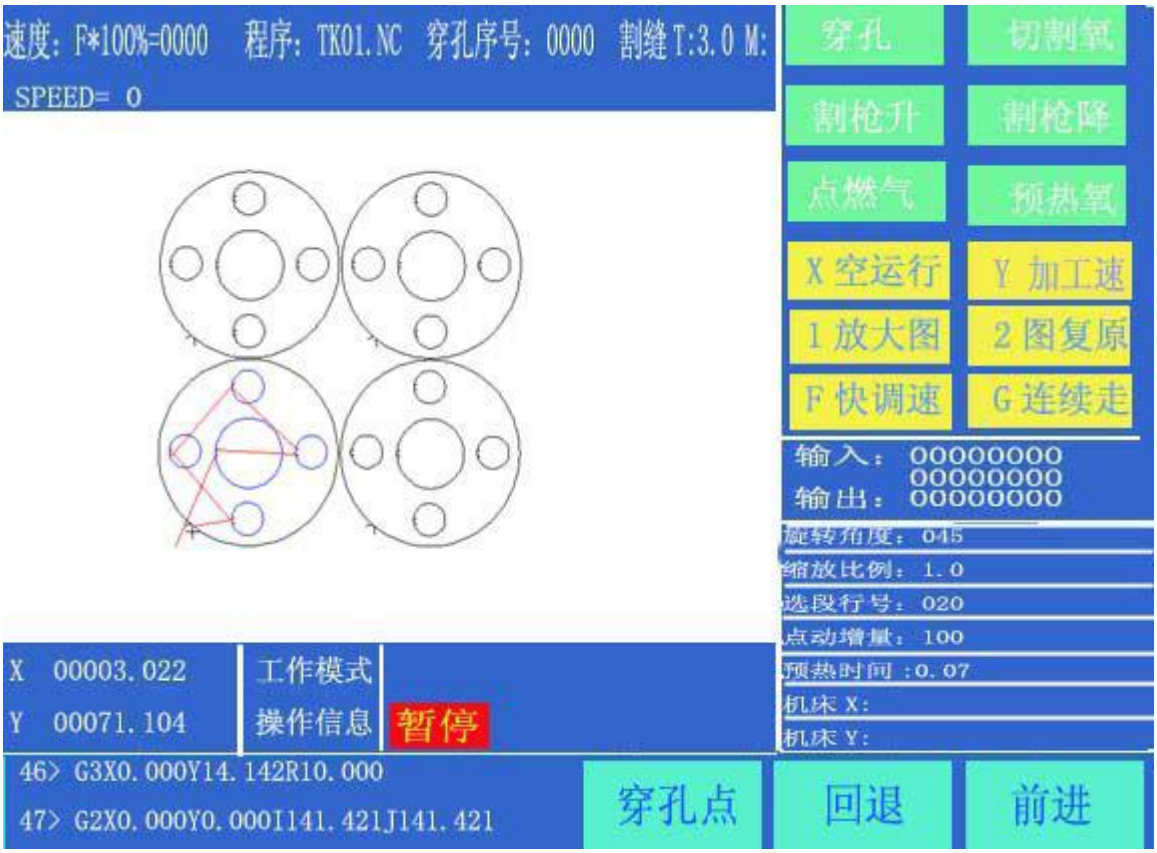


图 2.9 暂停界面

After suspension can be the following:

1) Choose a new perforated dot, press【**F5**】**,**After input the new perforated dot, the system automatically go to the new punch points, waiting for the perforation operation;

2) The original track back

3) Adjust the position and so on

4) Exit the processing

5) 【Start】**:**The system continue to running

6) Press 【**ESC**】**,**Exit the processing, return to the screen automatically

7) 【F↑】,【F↓】speed adjustment button: Increase or decrease feed speed ratio

8) 【S↑】, 【S↓】control cutting torch rises and falls button: Press the corresponding key, cutting up or down ;The beam and cutting torch motion stops.

9) 【Scram】button: is the external key (see the "external input interface"), Signals from the input port access. When stop is valid and stop all movement, output shut down. This button is used for sudden emergency. Another conditions for the system to pause the following:

1) Press external pause button;

2) In the condition of Plasma processing and choosing the "arc pressure test (1)", broken arc will be suspended.

3) If you choose the "bump" gun test (1) ", hit gun will be suspended.

2.3.4.2 Cutting position adjustment after suspension

2.3.4.2.1 Several of the following cases need to adjust the position of the cutting:
1) If Cutting torch is blocked, or need to change, it always moves the cutting torch to a safe location, after processing to return to the starting point;
2) Outer edge of the perforation is required, don't put the perforation point on the outer edge of the workpiece. Look for a suitable position (usually steel plate edge) in the outside of workpiece, Perforation and then cut along a straight line to the starting point (non-stop) to continue normal processing
3) Transfer cutting, the workpiece is more, large format, you need to cut another place

2.3.4.2.2 Several of the following operations can be adjust cutting position:
(1) pause process, (2) return process,(3) piercing process, (4) section selection, (5) hole selection and (6) breakpoint restoration If operator intends to change the position of cutting torch in the above-mentioned states, it is allowed to press [↑], [↓], [←] and/or [→] key to do so(in this case, it is manual multiplying factor, adjustable). When the expected position is reached, press [Start] key, as shown in the following dialog box



Figure 2.10Position adjustment selection dialog
1) ORI PATH RET(original path return)
Return the cutting torch to the adjustment beginning point at speed G00 and wait for other operation; at this step, it is allowed to press an heavy-current function key such as IGN(ignition), PREHEA(piercing preheat), CUT(cutting oxygen), etc. Tip: The system will continue to process from the breakpoint location if [PIERCE] key is pressed after preheating.
2) CUT RET (cut return)
After piercing, the cutting torch returns from the current position to the adjustment beginning point along a straight line at cutting speed and continue machining along the original path without stop, which is somewhat like extended pierced, making the piercing point more smooth. ； HOLE HERE (piercing here)
After piercing, set the coordinates at current point as coordinates of "adjustment beginning point", and continue machining along the original path to fulfill transitional piercing function.
4)Be sure to have the system preheated sufficiently(for flame cutting) before taking steps 2) and 3) ,for piercing operation will start right away once the operation is selected.
It is recommended to preheat the system(for flame cutting) and then press [START] key to select appropriate operation.

2.3.5 The original track back processing
In processing for not cutting through to the original track back, treated as follows

2.3.5.1 The original track back

Press 【Pause】to slow down the running system, and then the system shows 【Pause】 tag, and presented below:

Back	Forwar d

Figure 2.11 Processing and Suspended picture

Press 【F6】,system will execute the original track back, back speed can be setted in the 【parameter 】→【speed】→【back】. Press 【**F7**】**,**the original track will forward .In the process of back, if did not meet the need to position, press 【pause 】button again. Repeat the above process until it is right.

2.3.5.2 The fallback in case of G00(Reach a perforated dot)

In the process of fallback, Meet G00 (reach a piercing point) suspension system, the operator's choice is to continue to back, or move on.

2.3.5.3 The operation after fallback

After back to the designated location, it can be chose cutting torch position adjustment(See 2.11).Press the corresponding function button of high voltage(such as preheated perforation, open cutting oxygen and other operations),may also directly bring a perforation.

Common practice is: To be preheated, and then press 【punch】key.

In the case of flame, torch liter, open cutting oxygen torch down, the system continues to run.

In the plasma case, the arc opening, the system continues to run until the end of the arc.

2.3.5.4 The above operation can be repeated until the desired effec

2.3.5.5 Exit processing status

Pause, press the [ESC] key, the system exits the processing state.

2.3.5.6 The fallback procedures the total number of rows and the starting line

Fallback block up to 300 lines or less. If the breakpoint recovery, or excerpts processing, the start line fallback is the current breakpoint or excerpts line, on this basis cannot rollback processing.

2.3.6 Breakpoint recovery and double break to resume processing

2.3.6.1. Breakpoint recovery

1)In the system artificially suspend or power outage due to the processing of, the system will automatically save the current position of the torch for a breakpoint. This breakpoint will be permanently preserved, whether shutdown or not.

2)In automatic mode, as long as the current program has not changed, press [F3] to find breakpoint function, then press the [Start] button, the system begins recovery breakpoint.

3)If the torch position has not changed, the breakpoint is found, the system prompts "breakpoint", waiting for the next step. Users can directly press [punch] or select the position adjustment of the torch, see 2.11
4)If the position of the torch has changed (not on the breakpoint), the system finds the program breakpoint, the following three options(In fact, is the torch position adjustment).



Figure 2.12 Dialog box of restart options after system pause
ORI PATH RET: to return to the breakpoint G00, commonly used in the sense (in) cutting set 25 breakpoints;
CUT RET: little bit off from the breakpoint after breakpoint restoration, which is somewhat like piercing along the exterior margin, making the breakpoint more smooth ;
HOLE HERE: the same operation as previous, which can also be used for transitional cutting. Now, it is allowed to press a heavy-current function key such as IGN(ignition), PREHEA(piercing preheat), CUT(cutting oxygen), etc.
Tip: The system will continue to process from the breakpoint location if [Punch] key is pressed after preheating.
If press [ESC] key when a breakpoint is found, the system will exit machining mode.

2.3.6.2 Double breakpoints recovery function
The system can save two adjacent program breakpoints.
When operating in a larger program A, operator temporary stop in the middle (to generate the first breakpoint),to do another program B. After the end of the re-called in the program A can be done directly breakpoint recovery ([find breakpoints]), the system will automatically find the location of the first interrupt and continue processing. Of course also available in the new location (to select this position perforation) to continue processing .

3.6.3 Attention:
Never try to change the machining program, rotation angle and scaling proportion whether it is breakpoint restoration or power-off restoration, which will be automatically saved by the system and free from affect by power-off operation; otherwise, the system cannot find the breakpoint.

2.3.7 Start SECTION function
SECTION: to assign system to start up machining operation from any section or piercing point.

Press [F1] to select SECTION function and the system will show a menu as shown in the figure below:



Fig. 2.13 Selection function menu

Move the cursor with [↑] or [↓] key and make one choice from two machining options. According to your option, the system will prompt to input the serial number of the option(program line number or the serial number of piercing point).

2.3.7.2 Two cases for SECTION machining option:

3.7.2.1 Transitional machining: to start machining somewhere different from the start position of the program;

3.7.2.2 Repeat the machining operation starting from a certain section of the program .

1) For the former case, a scrap work piece is often used for aiming at the piercing point and machining directly(HERE POSITION option);

2) 2) For the latter case, the reference point is used for positioning(REF POSITION option).

3) For these two options, the system will prompt an option menu as shown below after startup:



Figure 2.14 Dialog box of restart options after system pause

a) If "HERE POSITION" option is selected, the system will draw the full pattern first and then draw a large cross cursor at the piercing point. Operator may press [S] key to zoom in the pattern and observe if it is the expected piercing position. If not satisfied, operator may press [ESC] to exit the machining mode and take the option again.

b) If it is the expected piercing point, use heavy-current control switch for ignition and preheat before press [PIERCE] key to start operation.

c) If "REF POSITION" option (Reference Point Positioning) is selected, operator should aim the cutting torch at the reference point. After started up, the system will control the cutting torch to reach the piercing point and then perform the operations as above.

2.3.8 MOVE HOLE forThick Plate

1) In automatic mode, MOVE HOLE option is taken for thick plate.

2) For edge piercing method, it is important to move the cutting torch to the nearest edge of steel plate before piercing operation.
3) Preheat the system and press [START] key at the end of preheat. The cutting torch will cut the steel plate along a straight line to the piercing point at selected cutting speed and then go on machining.
4) When MOVE HOLE option is taken, it needs to change the MOVE HOLE option to 1 in the parameter control menu, thus to enables the option. In this way, whenever it is time for piercing operation, the system will prompt an option menu as shown below:

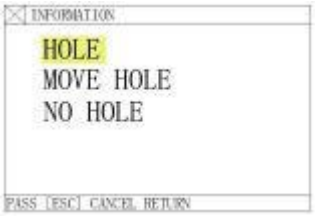


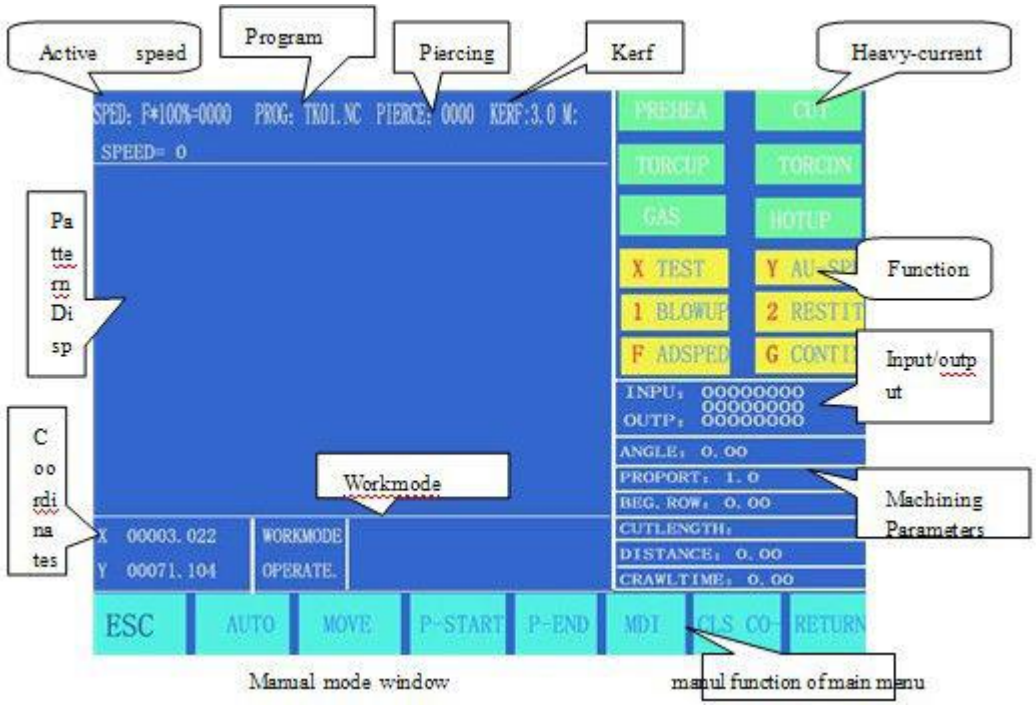
Fig. 2.14 Option dialog box prompted by the system after reach

2.3.8.1 HOLE
To pierce at the original position, which is often used for boring .

2.3.8.2 MOVE HOLE
1） Operator may press [↑], [↓], [←] and/or [→] key to move the cutting torch to the edge of steel plate; in the mean time, the speed multiplying factor is adjusted to 5% automatically. The system is preheated.
2） Press [START] key at the end of preheat. The cutting torch will reach the piercing point along a straight line at selected cutting speed and then go on machining.

2.3.8.3NO HOLE
Instead of piercing, the system moves through the current piercing position to next, and new piercing prompt appears.

2.4Manual Mode
In main menu, press [F2] to enter MAN (manual) window, as shown in figure below:



手动功能界面（火焰模式）

图 2.16 手动功能界面

2. 4.1Description of Manual Mode Window

The window display in manual mode is the same as it in automatic mode except that the multiplying factor is manually adjustable, which affects manual operation, return speed to reference point, move speed, etc.. There are some special operations in manual mode as follows:

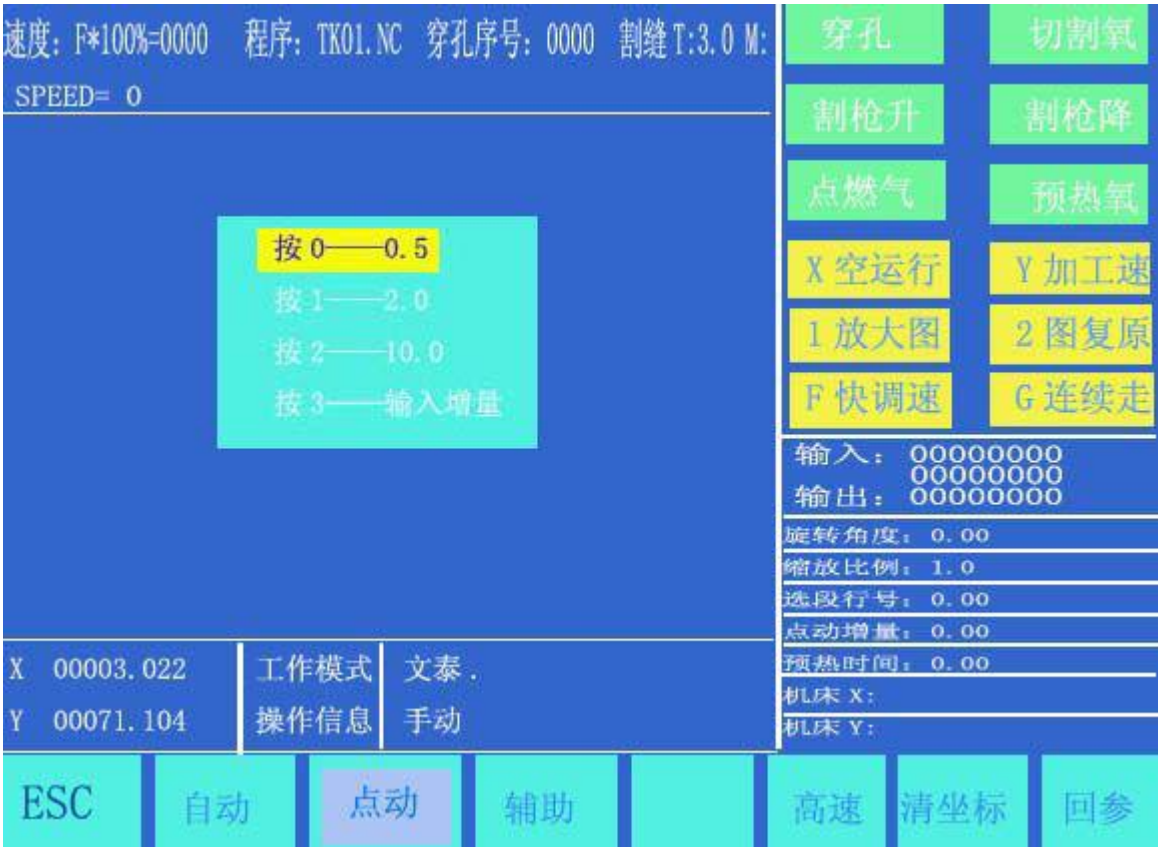
2.4.1.1 [↑], [↓], [←], [→] directional control keys and [G] Continue Key

Generally, if any of the four direction keys is pressed and held, appropriate axial movement will carry on until the key is released. However, if [G] Continue key is pressed and highlighted before any direction key is pressed, the cutting torch will keep moving even if the key is released. The movement will not stop until the direction key is pressed again. If two axial movements are required, let one axial movement start first and then press the direction key for the other axial movement. Two axial movement will go on simultaneously. In this case, the axial movement of cutting torch will stop if the corresponding direction key is pressed while the other axial movement will go on until the corresponding direction key is pressed too. [PAUSE] key will stop the movement as well.

2.4.1.2【F1】AUTO

The system is switched to automatic mode.

2.4.1.3【F2】Point move



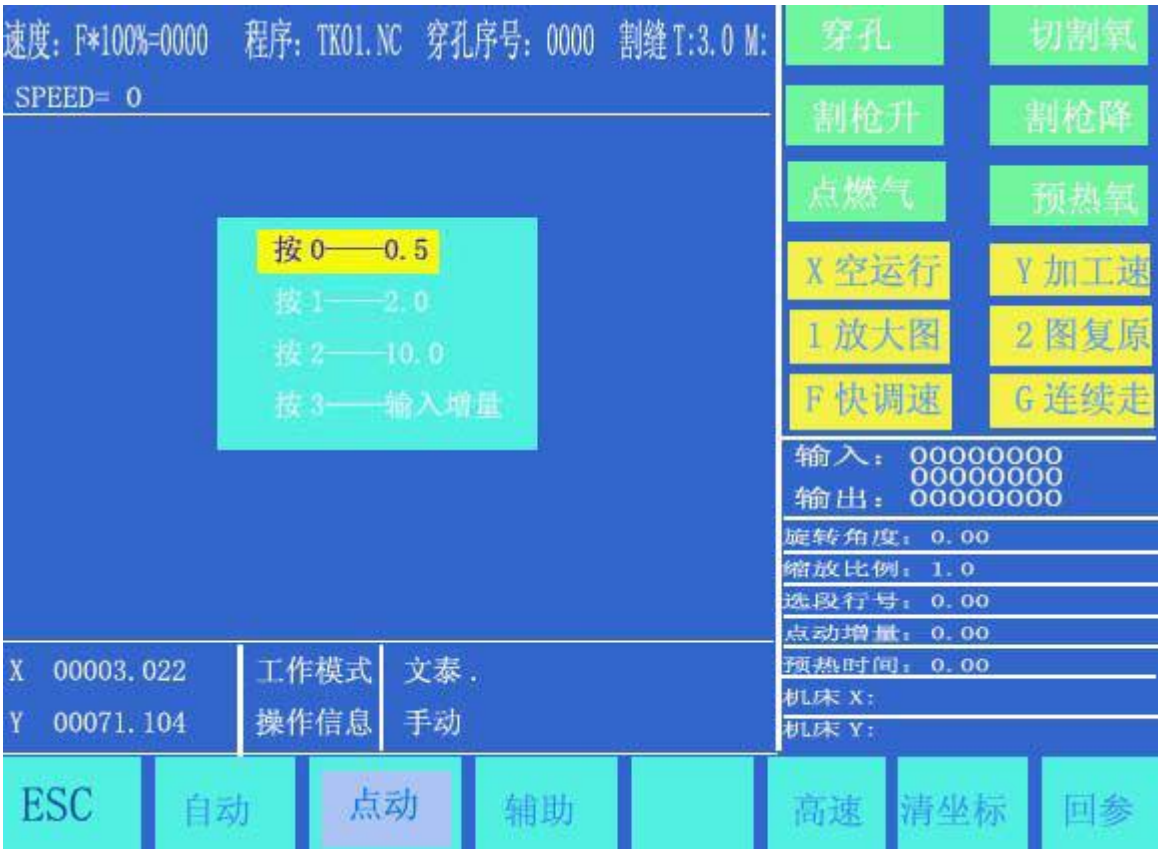


图 2.17 点动界面

Figure 2.16 Point move interface

Press the [F2] key, the election jog, jog incremental selection dialog, as shown above:
Point move incremental has four options:
The first three are commonly used incremental. Last one, Enter 3- is manually input increment. In point move mode, press the direction key at a time, cutting torch to the current maximum speed limit multiplied by the ratio of the speed of running a jog increment value.

2.4.1.5【F5】High speed

In manual function, through ratio adjustment speed is not very convenient, and thus increase the F5, 【high-speed】, high-speed (80%), low (10%), quick select.

2.4.1.6【F6】Clear coordinates

Quickly cleared the X / Y coordinate values

2.4.1.7 Speed

Left upper corner of the screen shows F * (manual speed ratio value) = speed manually
Directly on the screen press [F] key to set speed, and then press [enter]to confirm.

2.4.1.8 【F3】ASSI

Enter the auxiliary function, the system display interface is as follow

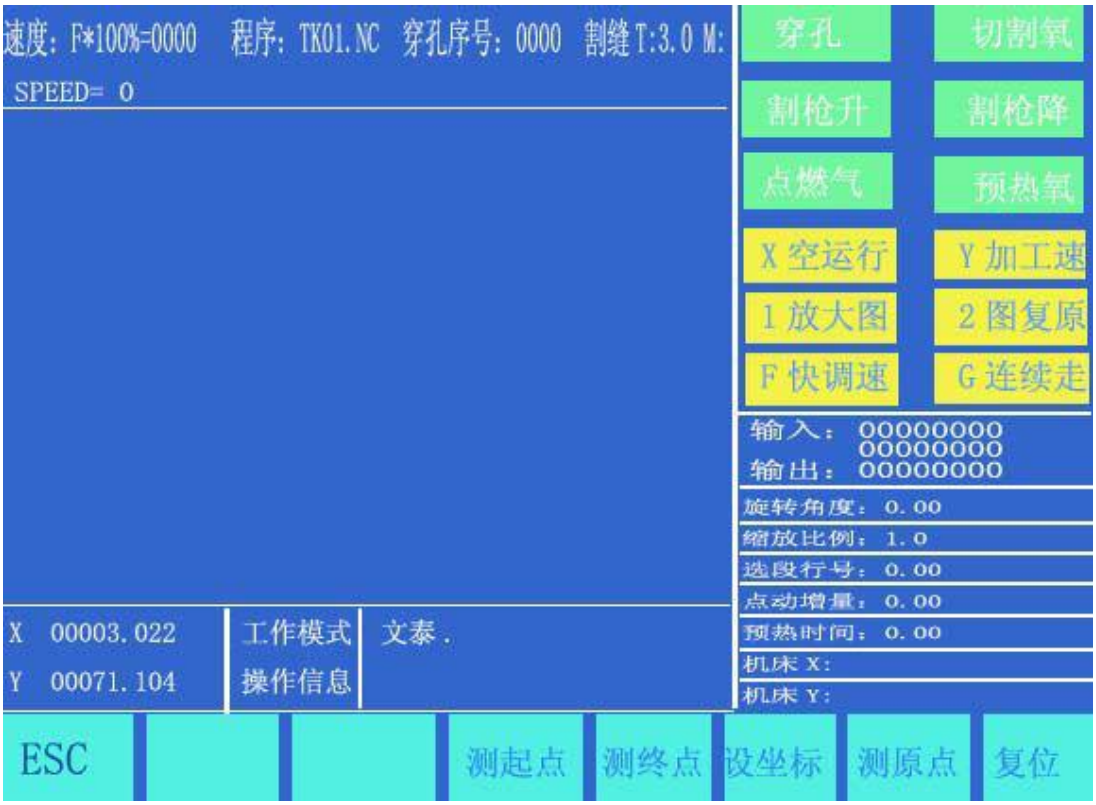


Fig 2.178Auxiliary interface

2.4.1.9【F3】Measurement starting point 【F4】Measuring the end ,Steel calibration function

Processing steel plate is impossible once assembly, or for other reasons need to rotate an angle processing, this feature can be selected. Of the torch along a straight edge of the steel, for as long as possible, pick two points ([F3] to measure the starting point and [F4] the end of the measurement).System will automatically calculate the rotation angle. Then choose the rotation function of automatic processing. After confirmation, the system will put the machining procedures according to the specified angle rotation.

Note: angle counterclockwise is positive.

2.4.1.10 【F5】Set coordinates

There are three options: click this button reset all coordinates, set the current coordinates, is set to the reference point coordinates.

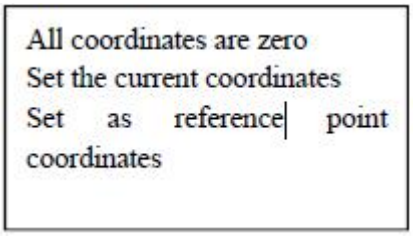


Fig 2.19 A coordinate system dialog box

2.4.1.11 【F6】Measuring the origin/【F7】reset

Specific see 2.3.2.13 reset function of mechanical origin (back).

2.5 Edit functions

Work in the system under the main menu, press [F3] to enter editing menu, as shown in the figure below:

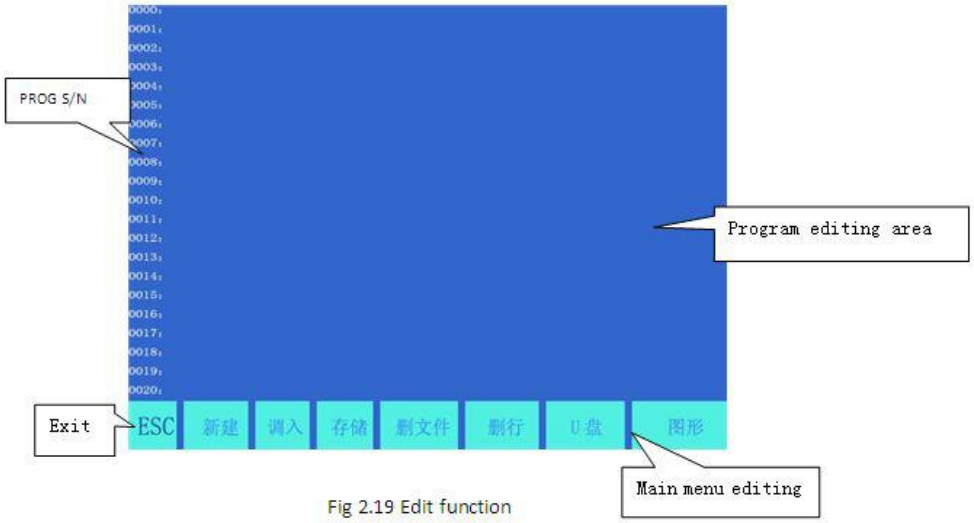


Fig 2.19 Edit function

2.5.1 Editing functions Menu Description

2.5.1.1【F1】new construction

Build a new program, clear the editing area of processing procedures, and start editing a new processing procedures.

2.5.1.2【F2】Call-in

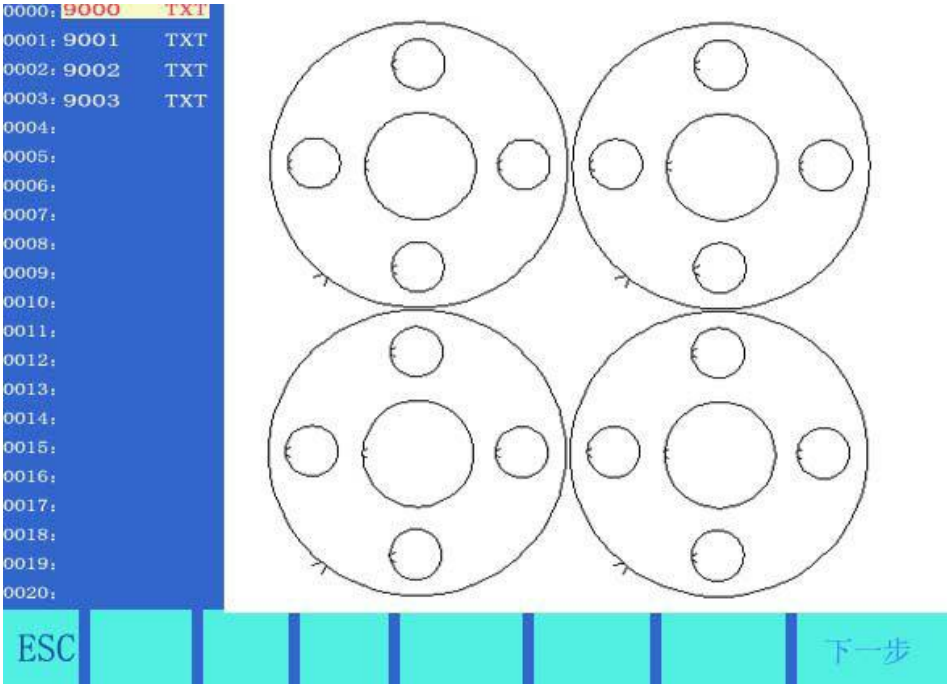


图 2.21 调入界面

Call-in a program and select the program from the transferred program, the system will display the existing program in a tabular form, the cursor will stop on the program. Move cursor can select different program. After press the enter, the highlighted program will be loaded into program editing area; If you press**【F7】,** it will display the graphic of the program; press **【ESC】,** abandon the loading function.

2.5.1.3 【F3】SAVE

Saving program, after edited the program, the system will prompt
Enter program name: 1234.TXT
The system displays the current program name, which can be modifiable. If ENTER key is pressed, the program in the editing area will be saved into the program area under the selected name; if [ESC] key is pressed, the save function will be abandoned.

Notes:
1）The program name and extension name should never exceed 12 characters.
2）For large-sized program above 200K, it is allowed to work along with USB disk instead of saving it.

2.5.1.4 【F4】DELE

It is used to delete the program in the user program area.

2.5..1.5 【F5】DELL

It is used to delete the full line the editing area and improve editing speed.

2.5.1.6 【F6】U disk

Transfer program, the system supports U disk transfer program. Press [F6] key to enter the next level menu as shown below:



Figure 2.22 Transmission menu of USB disk

输入：INPUT 输出：OUTPUT
[F1] Input: to transmit program from USB disk to the machining program space.
[F2] output: to output the machining program to USB disk from the machining program Space.

2.5.1.7 【F7】Graph

When the current program would like to become a standard cell library, press the [F7] key.

2.6 Functions of LIBMINIT(Library of Patterns)

2.6.1 LIBMINIT Settings

Input the desired size, getting your expected workpiece and can also customize the graphics module. When entering parameter, the control system will conduct general check to the physical dimensions and prompt warning message if any error is detected.

Notes:
1) It is impossible for the control system to find all the error parameters; therefore, please enter correct dimensions for parameters as much as possible.
2) When the parameters are entered, the control system will drawn the pattern based on the enteredparameters, which is very helpful to graphic check.
In the system main menu, press [F6] to enter the LIBMINIT(Library of Patterns)

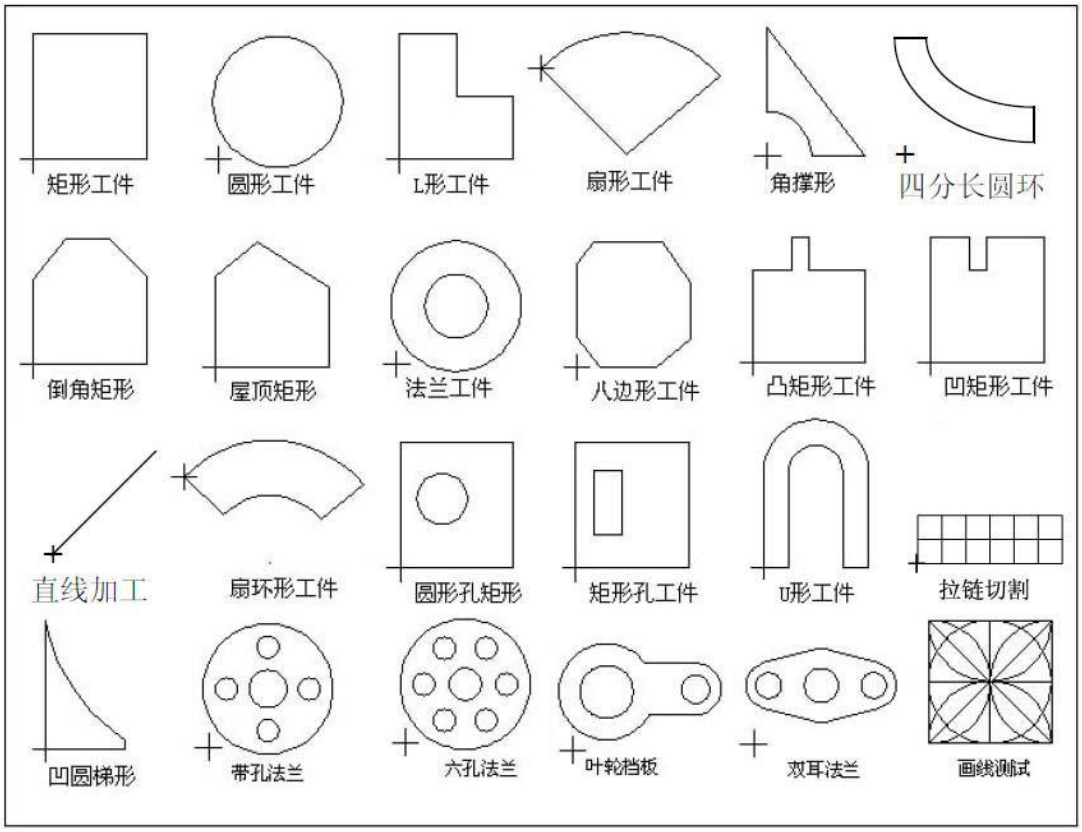


图 2.23 图库功能

凹圆梯形 **Concave-edged trapezium**
带孔法兰 **Holed flange**
六孔法兰 **Six holed flange** 双耳法兰 **Double-ear flange**
叶轮挡板 **Impeller baffle**
画线测试 **Scribe test**
凹半圆矩形 **Concave semicircular rectangle** 扇环形工件 **Fanned ring workpiece**
圆形孔矩形 **Round holed rectangle**
矩形孔工件 **Rectangle holed workpiece**
U 形工件 **U-shaped workpiece**
凹圆三角形 **Concave-edge triangle**
倒角矩形 **Chamfered rectangle Roof rectangle** 屋顶矩形
法兰工件 **Flange workpiece**
八边形工件 **Octagonal workpiece**
凸矩形工件 **Convex rectangular workpiece** 凹矩形工件 **Concave rectangular workpiece**
矩形工件 **Rectangular workpiece**
圆形工件 **Round workpiece**
L 形工件 **L workpiece**
扇形工件 **Fan-shaped workpiece** 角撑形 **Corner brace**
斜角矩形 **Bevel-angle rectangle**

2.6.2 Selection of Pattern Elements

So far, this system provides 24 pattern elements, which is expandable at any time as per client requirement. It is allowed to select the interested pattern by pressing [↑], [↓], [←] and/or [→] key to move the cursor to right position and press [ENTER] to acknowledge the selection.

2.6.3 Arrangement and Layout of Pattern Element

Follow the above steps to select a part, the upper right prompted to input various parameters of the graph. Show in Figure 2.23

【F1】Workpiece: To machine into workpiece that is solid internally.

【F2】Hole: To machine into hole that is solid externally.

【F3 】Rotate: The system will prompt to input rotation angle and press [ENTER] or [F6] to acknowledge. The pattern rotated such an angle will appear. Counterclockwise direction is taken as positive angle.

【F4】Layout: The system will prompt user to provide:

Row number----Row number of machined parts array

Column number----Column number of machined parts array

Row pitch---- Distance between rows.

Column pitch----Horizontal distance between machined parts

Row offset----The deviation of raw misplacement, as shown in Fig. 8.3

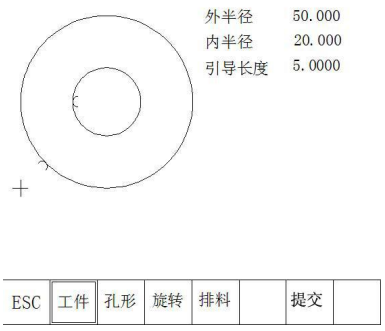


图 2.24 图形设置菜单

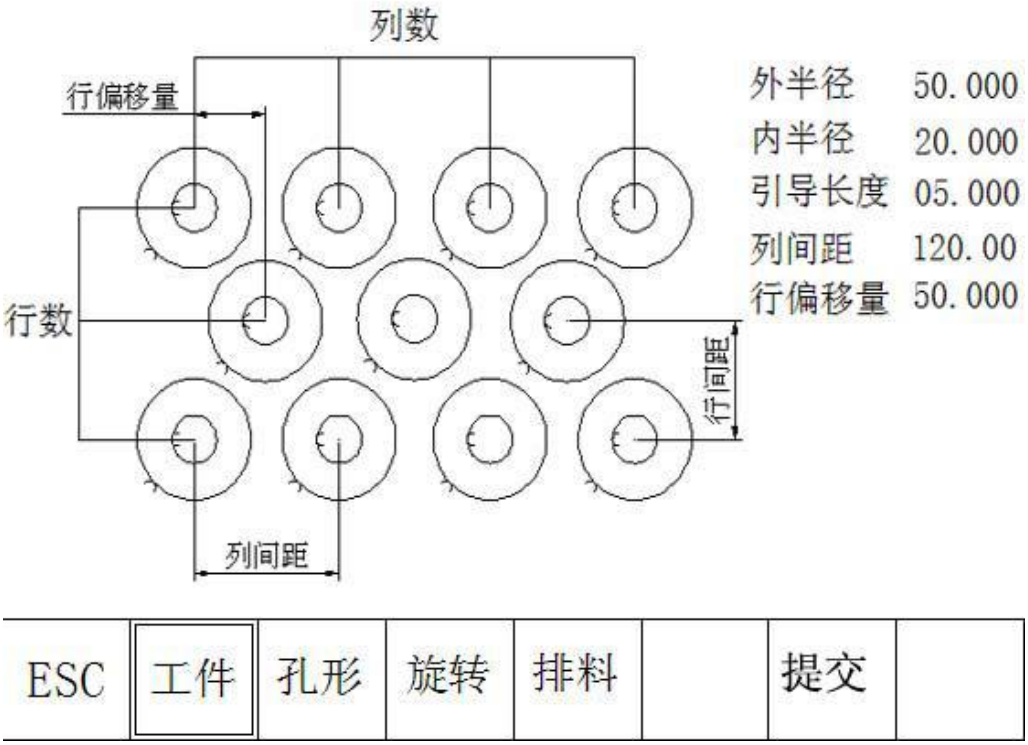


图 2.25 排料示意图

三、**Automatic height controller**

No matter in Flame or plasma methods, the distance between plasma nozzle and cutting plate is critical to the stability (level), it will directly affect cutting speed and cut surface quality. Keeping the distance about 3-5mm.

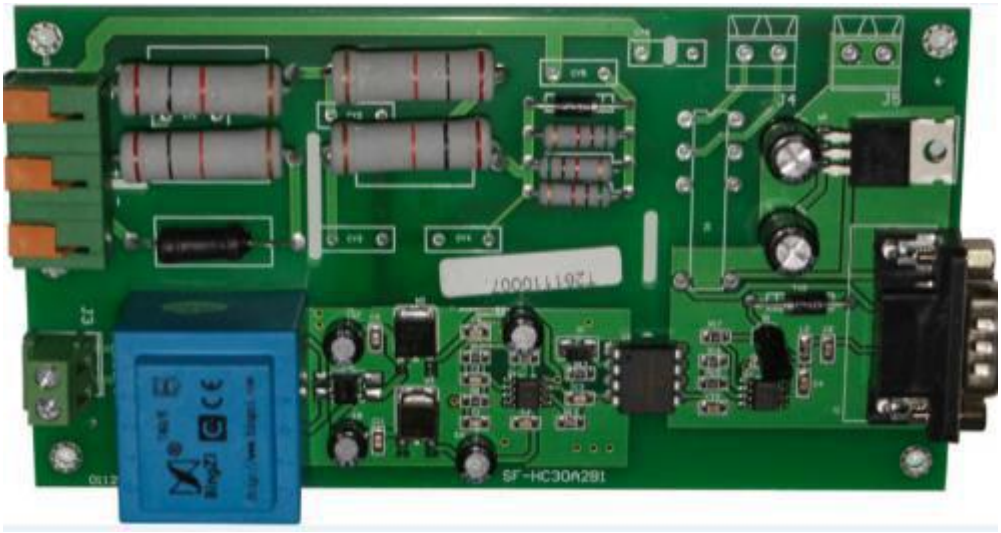
Mainframe



Display and setting panel



Divide voltage plate



Cables



SF-HC25G Plasma height controller is special for plasma cutting machine .It is very easy to operate, convenient to adjustment, and economy. It adopts digital control with stable performance. It is a perfect product for CNC welding equipment manufacture

四、Operation

Flame mode

First of all, please connect AC220V to control system, then connect with oxygen and gas well. Next, open the emergency switch, the system main interface screen display, the machine is under the normal condition; System default is fire mode, if not, please press [F4] under the main menu, then press [F5], under this interface, please the parameter behind of the flame to “0”, then press [F7] to flame mode. In additional, please put the button to flame mode on the left of the control box, then adjusting the mode of height controller.

4.1 Manual mode

4.1.1 In the main menu interface, press[F2] manual，then the interface change into manual mode, in this mode we can move X axis and Y axis by press[X+][X-][Y+][Y-]，and the moving speed can be set directly by press 【F】button ，then press 【enter 】to confirm., the actual speed equals to set value*Manual speed resolution value, and we can also press F 5【high speed 】to select high speed and low speed.

4.1.2 In the Manual mode, by press【Ｓ↑】to make the torch up, and stop up；press【Ｓ↓】to make the torch down, and stop down, so we can adjust the position of the torch by press these two keys.

4.1.3 Adjust the height of the torch well, press the 【ethyne open】to open the gas and preheat oxygen, manual ignition, adjust the flame to best state, press [X+], [X-], [Y+], or [Y-] change the position of axis，find the preheat point, then start to preheat the perforation, press the shortcut key 【cutting oxygen】to up the arc, and press [X+] or [X-] or [Y+] or [Y-] to move the position of axis to complete cutting. According to the cutting effect to adjust the speed, when in the best effect, write down the arc value and enter the value into the Height controller A value.

4.2Automatic Mode

Automatic process is the most principle process mode, upload the graph has various methods, we usually use the following two methods:

4.2.1 First method：in the main interface，press**【F6】picture library**，open the picture.. The system provides 24 kinds of primitive graphic，by press shortcut key【↑】【↓】【←】【→】to select the necessary graphs，press【ENTER】to select the graphs，the user can also input the number directly to change the size of the original graphs, then press **【F1】workpiece**：process as the workpiece（with effective parts inside）；or press**【F2】shape**：process as the shape(with the effective parts outside), the user can make a change by pressing**【**F3**】**、**【F4】**, at last, press【F6】**to submit.**

4.2.2 Second method ： use the equipped software to change the graphs into the G-code that can recognized by system, the most common used is CAD and Caxa which is used to draw then save as DXF format file.
Then use the Nesting software, the completed software can copied by USB then put into the system. Press**[F3] to edit**→**[F6] USB**→**[F1] enter**→ choose the upload graphs→**[Enter].**
4.2.3 In the main interface, Press**[F1]** automatic→**[F4]** graph, then the system indicates the graphs uploaded by Method one or two, press[F4] graphs to make other button effective, press**[F2]** manual and through[X+][X-][Y+][Y-] change the position of axis, choose the suitable process point. Press automatic，in this mode, press**[F]**，enter into number to change the speed directly, press **[X]** Dry run,press green**[I]** button to start the program and automation simulation a process program, press**[X]**Dry run again ， press green**[I]** button to start the program, then the program complete the process automatically.
The above is the simple process procedure, the detailed functional application, please take the system introduction as a reference.

Plasma mode

First of all, access AC220V to control system, the plasma source access to three phase 380V, then connect the gas pipe well. After everything is ready, open the emergency stop switch, the system main interface screen display, the machine is under the normal condition; Under the main interface, please press [F4], then press [F5], under this interface, please the change parameter behind of the flame / plasma to “1”, then press [F7] to plasma mode. Then put on the air button behind of the plasma source, it will show power value on the plasma source, and the power light and pressure light are green, the plasma source is on normal condition. In additional, please put the button to plasma mode on the left of the control box, then adjusting the mode of height controller.

4.3 Manual mode
4.3.1 In the main menu interface, press[F2] manual，then the interface change into manual mode, in this mode we can move X axis and Y axis by press[X+][X-][Y+][Y-]，and the moving speed can be set directly by press 【F】button ，then press 【enter 】to confirm., the actual speed equals to set value*Manual speed resolution value, and we can also press F 5【high speed 】to select high speed and low speed.
4.3.2 In the Manual mode, by press【 S↑】to make the torch up, and stop up； press【 S↓】to make the torch down, and stop down, so we can adjust the position of the torch by press these two keys.
4.3.3 Adjust well the height of the torch, according to the shortcut key【cutting oxygen】to up the arc, and press [X+] or [X-] or [Y+] or [Y-] to move the position of axis to complete cutting. According to the cutting effect to adjust the speed, electric current and air pressure, when in the best effect, write down the arc value and enter the value into the Height controller A value.
4.4**Automatic Mode**

Automatic process is the most principle process mode, upload the graph has various methods, we usually use the following two methods:
4.4.1**First method**：in the main interface，press【**F6**】**picture library**，open the picture.. The system provides 24 kinds of primitive graphic， by press shortcut key【↑】【↓】【←】【→】to select the necessary graphs，press【ENTER】to select the graphs，the user can also input the number directly to change the size of the original graphs, then press【**F1**】**workpiece**：process as the workpiece（with effective parts inside）；or press【**F2**】**shape**：process as the shape(with the effective parts outside), the user can make a change by pressing【F3】、【**F4**】, at last, press【F6】**to submit.**
4.4.2 Second method ： use the equipped software to change the graphs into the G-code that can recognized by system, the most common used is CAD and Caxa which is used to draw then save as DXF format file. Then use the FASTCAM, the completed software can copied by USB then put into the system. Press**[F3] to edit→[F6] USB→[F1] enter→** choose the upload graphs→**[Enter].**
4.4.3 In the main interface, Press**[F1]** automatic→**[F4]** graph, then the system indicates the graphs uploaded by Method one or two, press[F4] graphs to make other button effective, press**[F2]** manual and through[X+][X-][Y+][Y-] change the position of axis, choose the suitable process point. Press automatic，in this mode, press**[F]**，enter into number to change the speed directly, press **[X]** Dry run, press green**[I]** button to start the program and automation simulation a process program, press**[X]**Dry run again ， press green**[I]** button to start the program , then the program complete the process automatically.
The above is the simple process procedure , the detailed functional application, please take the system introduction as a reference.

五、**Daily maintenance**

一）Flame Model

5.1、Daily check of the CNC plasma cutting machine

（1）Check whether the circuit ground is in good contact
（2）Check the plasma power source of the gas pressure is in compliance with specified requirements

5.2、The matters of attention in the work

（1）This equipment must have the specialist operations, otherwise the consequence is proud
（2）Before processing, adjustment by cutting steel plate, as far as possible keep parallel with orbit
（ 3 ）According to the thickness and material, select the appropriate cutting nozzle makes cutting nozzle and plate vertically
（4）When operate the flame cutting machine, the user should pay attention to the equipment running status, if find any abnormal situation, the user should press the tight stop switch and exit the work in time, it is forbidden to leave the scene when the machine is starting up.

（5）Operator should pay attention that the cutting torch should be moved to the safe position when finish cutting a workpiece, the cutting should begin after the new workpiece is ready.
（6）Operator should set the cutting speed according to the given cutting speed. It is forbidden to increase equipment load simply in order to improve the work efficiency. The operator should deal with the relationship between the good processing equipment life and the working efficiency and environmental protection.
(7) If there is tempering during cutting , should cut off power supply in time, stop cutting and turn off the gas valve. If the temper valve is broke down, you should stop to use it, please ask the supplier or professional person to solve it.

5.3、Matters need attention after complete the operation of CNC flame cutting machine
（1）When the operator is going off work, they should turn off all the power supply and guarantee the pump pressure is zero. If implement succession system, the operator should keep good record of the equipment running status and record the succession.
（ 3 ） After completion of work every day, the operator should be carefully cleaning up, keeping working area clean and orderly.
5.4、Daily maintenance of CNC flame cutting machine
（1）Track does not allow personnel stand trod by heavy pressure, what is more, does not allow the impact; Guide way removes the dust by using air compressed after each class with gauze dipped in 20 # engine oil wipe the rail surface to keep guide way lubrication clean at any time
（2）Transmission rack should be on the application of 20 # engine oil every day to clean so that guarantee the normal work of the rack
（ 3 ） System operation and electrical cabinets should keep clean on which are not allowed to put sundry, in case of damage to interface and get an electric shock.
（4）Operators are only allowed to remove the cutting nozzle, the rest of the parts cannot be taken apart, electrical junction box allows only relevant personnel overhaul will open.
（5）If the machine is broken, the user should be timely require the maintenance personnel, if the breakdown is too large, the user should organize relevant personnel came to equipment first to determine the maintenance plan, it is strictly prohibited to tear open machine to check

二）Plasma Model
5.5、**Daily check of the CNC plasma cutting machine**
（1）Check whether the circuit ground is in good contact
（2）Check the plasma power source of the gas pressure is in compliance with specified requirements
5.6、The matters of attention in the work
（1）This equipment must have the specialist operations, otherwise the consequence is proud

（2）Before processing, adjustment by cutting steel plate, as far as possible keep parallel with orbit
（ 3 ）According to the thickness and material, select the appropriate cutting nozzle makes cutting nozzle and plate vertically
（4）When operate the plasma cutting machine, the user should pay attention to the equipment running status, if find any abnormal situation, the user should press the tight stop switch and exit the work in time, it is forbidden to leave the scene when the machine is starting up.
（5）Operator should pay attention that the cutting torch should be moved to the safe position when finish cutting a workpiece, the cutting should begin after the new workpiece is ready.
（6）Operator should set the cutting speed according to the given cutting speed. It is forbidden to increase equipment load simply in order to improve the work efficiency. The operator should deal with the relationship between the good processing equipment life and the working efficiency and environmental protection.

5.7、Matters need attention after complete the operation of CNC plasma cutting machine

（1）When the operator is going off work, they should turn off all the power supply and guarantee the pump pressure is zero.
（2）If implement succession system, the operator should keep good record of the equipment running status and record the succession.
（ 3 ） After completion of work every day, the operator should be carefully cleaning up, keeping working area clean and orderly.

5.8、Daily maintenance of CNC plasma cutting machine

（1）Track does not allow personnel stand trod by heavy pressure, what is more, does not allow the impact; Guide way removes the dust by using air compressed after each class with gauze dipped in 20 # engine oil wipe the rail surface to keep guide way lubrication clean at any time.
（2）Transmission rack should be on the application of 20 # engine oil every day to clean so that guarantee the normal work of the rack
（ 3 ） System operation and electrical cabinets should keep clean on which are not allowed to put sundry, in case of damage to interface and get an electric shock.
（4）Operators are only allowed to remove the cutting nozzle, the rest of the parts cannot be taken apart, electrical junction box allows only relevant personnel overhaul will open.
（5）If the machine is broken, the user should be timely require the maintenance personnel, if the breakdown is too large, the user should organize relevant personnel came to equipment first to determine the maintenance plan, it is strictly prohibited to tear open machine to check

六、Troubleshooting

一）Flam Model：

No.	Fault Symptoms	Reason	Solutions
1	The equipment without power	1）no input voltage	Check the voltage whether it is AC220V；
		2)the switch is broken	Change
		3） Insurance is broken	Change
		4）enmegency stop is pressed	Check the emergency stop
2	Cannot ignite	1）air valve is not turn on	Check the gas and oxygen, whether the pressure is normal
		2） magnetic valve is broken	Change
		3）the cable road is broken	Check the connect cable, then connect it again
		4）nozzle is broken	Clearing it or change it
3	Motor is fail to run	1） System wiring loose or fall off	Connect again
		2）the driver light is red	Restart, if the light is still red, change the driver
		3） Startup is zero or is too big, speed regulation time is too short, whether the electric gear or pulse is “0”	Before modification we suggest to record the original parameter
		4）checking other parts	Change the break parts
4	The lifter is broken	1） Lifter internal contact bad	Change
		2）the shortcuts is broken	change
		3）the mode is abnormality	The lifting key cannot work under the main interface
5	Electric	1）no 24V input power	Checking wiring

	valve cannot work	2）something wrong with control system	Change control system
6	Cannot cutting well	1）the press is too lower or too high	Adjust the pressure
		2）flame is not well	The flame must be in best state
		3) speed is too fast	underspeed
		4）the distance between nozzle and workpiece is not suitable	Adjust the distance
		5）nozzle is broken	Change the nozzle
7	Cut slope is too large	1）the nozzle is not vertical with table	Reinstall the cutting torch
		2）the table surface is not level	Adjust the work table
		3）nozzle is broken	Change the nozzle
		4）the height of the lifter is not good	Adjust the height according to the material and thickness
8	Perforation is not good	1）Preheat time is too short	Extending the time
		2）flame is not good	Adjust the flame according to the material and thickness
		3）the height of nozzle is not suitable	Adjust nozzle height according to the thickness

二）Plasma Model

No.	Fault Symptoms	fault cause	Recommended Solutions
1	Turn on the switch, the equipment without electricity	1）No input voltage	Use the multimeter to check whether there is AC220V voltage
		2)switch is broken	replacement
		3） Insurance is broken	replacement
		4)Emergency Stop is pressed	Make the emergency stop is through

2	Gas test, there is no flow of gas or air flow is very small	1) The low air pressure	Adjust the air pressure valve, so that the air pressure is increasing to meet the cutting requirements ,Then press regulating valve
		2) The pump is not open	Open the pump
		3) low temperature, freezing	Heat preservation, and drainage in time
		4) Gas test switch is bad	replacement
3	Motor fails to run	1) system wiring loose or fall off	Reconnect
		2) The driver warning lights lit	Restart the red light is still brighter then replace the driver

		3)Check if the start speed is zero or too high, the speed regulation time is too s hort and the electronic gear or pulse equivalency is appropriate to be zero.	Suggest to record the original parameters before making any modification
		4）Replace the exclusion of the various components, identify the problem.	Replace the damaged parts
4	Can not arcing or easily broken arc	1）Poorly grounded	The ground wire of plasma power must be in contact with the body well.
		2）The distance between the nozzle and steel plate is not appreciate.	Manually drop the torch, make it automatically rises from the steel plate
		3）Pressure is not normal	Adjust the air pressure value according to the thickness

5	Cannot broken arc automatic ally	1）Plasma power in a self-locking state	Make the switch to a non-self-locking state
		2）The system making bad arc	Replace the system
6	It cannot cut through when cutting materials	1) The pressure is too low or too high	Adjust the air pressure
		2) The current is too low	Adjust the current
		3) The speed is too fast	Low the speed
		4) The nozzle away from the steel plate is too high or too low	Adjust the distance between the muzzle and steel
		5) The nozzle has broken down	Replace the nozzle
7	Notch Angle is too large	Muzzle and work surface is not perpendicular	Reinstall the torch
		The work surface is rough	Adjust the table surface
		1）The nozzle is broken down	Replace the nozzle
		1）The arc pressure of the height controller is not appreciate	Fills the correct value of arc pressure.
8	When work automatic ally the height of the arc is unstable	1）Check whether the ground wire is well contact.	Check the ground wire
		2）Whether the value of the arc pressure is appreciate	Fills the correct value of arc pressure.
		3）Whether the time of the torch lift is suitable	short rise time, fall time long

9	The height controller does not display the arc pressure values	1) Points on the platen press line whether is right.	Check points and line pressing plus or minus is correct
		2) The pressure plate 9-pin head no the fixed platen	Fixed points linking piece of nine core plugs
		3) The insurance of the plasma power broken down	Replace the insurance of the plasma power
10	Fail to adjust the height when work automatic ally	1) The automatic line loose	Welding again
		2) The value is not suitable,Response is slow	Fills the correct value of arc pressure
		3） The height controller is broken down	Replace the height controller

The above question is normally , if there is any other question, please contact to the supplier.