Please read this manual carefully before using the system

Use notice:

1. On the packing, please check the system have damaged during the transit, whether the content listed on the packing list and the items in the cabinet.
2. This manual applies to Beijing STARFIRE control technology co., LTD., peak production of SF-2300-s-QG NC cutting machine system.
3. Please check whether the power grid voltage is correct. Between the grid and the system to use AC220V isolation transformer, to ensure the safety of the system reliable work and personnel.
4. Numerical control system requires working environment temperature 0 ℃ ~ + 40 ℃, relative humidity of 0 ~ 85%. Such as it works high temperature, high humidity and corrosive gases under the environment, need to take special protection.
5. CNC system wiring to correct parts, good ground contact.
6. CNC system does not allow charged plug all cable at the back of the case, the resulting consequences. Or company refused to guarantee.
7. CNC system output port at the back of the line, does not allow with other power cord short circuit, otherwise will be burned CNC.
8. Under the environment of high dust, dust the machine needs to be done protection, and require regular cleaning dust, as far as possible to ensure that the numerical control system clean.
9. NC system should be managed by personnel, should carry on the training to operators.
10. CNC system is not allowed to use inner the AC/DC power supply to connection to other electrical appliances.
11. In case of problem, please contact with the company. Don't in unfamiliar situations to tear open outfit, the transformation system.
12. The maintenance system and machine tools, daily maintenance and check once per class. Every month performs maintenance level 2.
Every six months perform maintenance level 1.
13. CNC system Settings of various parameters, we will strictly in accordance with this manual or order of added set. Such as setting parameters within the prescribed scope, or can make the operation of the CNC system and even damaged.
14. The LCD panel of the system is fragile goods, pay attention to during the process of using LCD for protection.
15. This system technical indicators in the event of a change, without prior notice.
16. Note:
System's USB port output power is very small, only for the use of USB flash drive, can't pick up any other USB devices, in case of damage.
17. In the internal and external keyboard switch power must be followed.
18. Special announcement:
Warranty, the warranty of this product range is from the date of delivery, 12 months, according to the instructions allow what happened under the condition of fault.
Warranty and warranty beyond the treatment of the failure is a subscription service.

The following case is beyond the scope of warranty:
A: Use breach of artificial damage
B: The damage caused by force majeure
Force majeure usually includes two cases:
A: The natural causes, such as lightning, flood, drought, storm, earthquake, etc..
Another: The social causes, such as war, strikes, government ban, etc.
C: Without permission, without authorization, remove the damage caused, modification, repair, etc.
20. The interpretation of this manual belongs to Beijing STARFIRE control technology co., LTD.

Orders to record

Chapter 1 : overview system function

1.1 system function

SF-2300-s-QG NC cutting machine system, can control do flame or plasma cutting machine. Can be set through the selection of process (parameter Settings See chapter 7). The operation of the system and display, there are prompt window function step by step. Example: under the main window menu, after a function call, system will launch this feature of the child window menu. According to the prompt of screen window, press "F1" to "F8" choose corresponding function, press the "ESC" key to return at the next higher level menu.

1.2 system characteristic

SF-2300-S-QG is applicable for kinds of flame/plasma cutting machine CNC system, high pressure water jet and laser cutting machine, widely used in metal processing, advertisement, stone material industry, etc.

The system is designed with high reliability, with plasma interference, lightning protection and surge capacity.

Practical flame/plasma cutting process, plasma processing, automatic corner speed control, and control the block. Can use wireless remote control or wired control box to realize remote operation.

Slotting compensation function and test procedure of compensation is reasonable, the report accordingly, for the user to choose from.

Breakpoints recovery, can automatic power to restore function, also can be breakpoint memory automatically.

Function of any passage and punch point processing, can be arbitrary line escapement in machining.

Suitable for thick plate extension perforation function, and is suitable for the bypass function sheet.

Back, passage and breakpoints in recovery, to choose the function such as perforation position, greatly convenient user manipulation.

Can transfer cutting at any time, choose the starting point of processing. This can be automatically generated broken bridge.

Small segment of the special processing functions, walking is fluent, can be widely used in metal and advertisements, wrought iron, etc.

Including 24 kinds of graphics component library (customizable), contains the common basic processing parts.

With STARCAM nesting software is fully compatible with, and at the same time compatible IBE (Germany), FASTCAM in major nesting software.

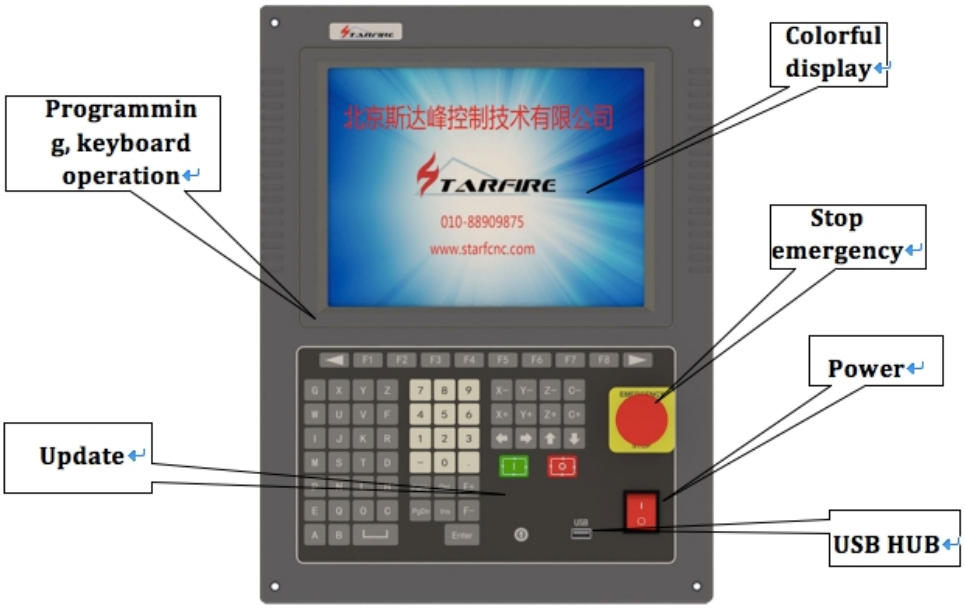
In both Chinese and English operation interface, dynamic graphical display, 1 ~ 8 times of graphics zoom, fixed point automatic tracking, the U disk read program and software upgrades in a timely manner.

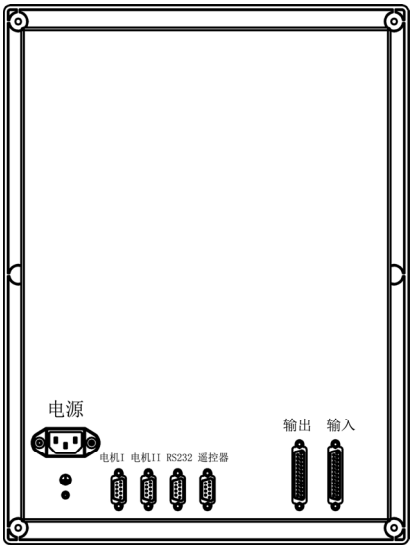
1.3 Hardware technical indicators

Using industrial-grade ARM processing chip hardware technology index.

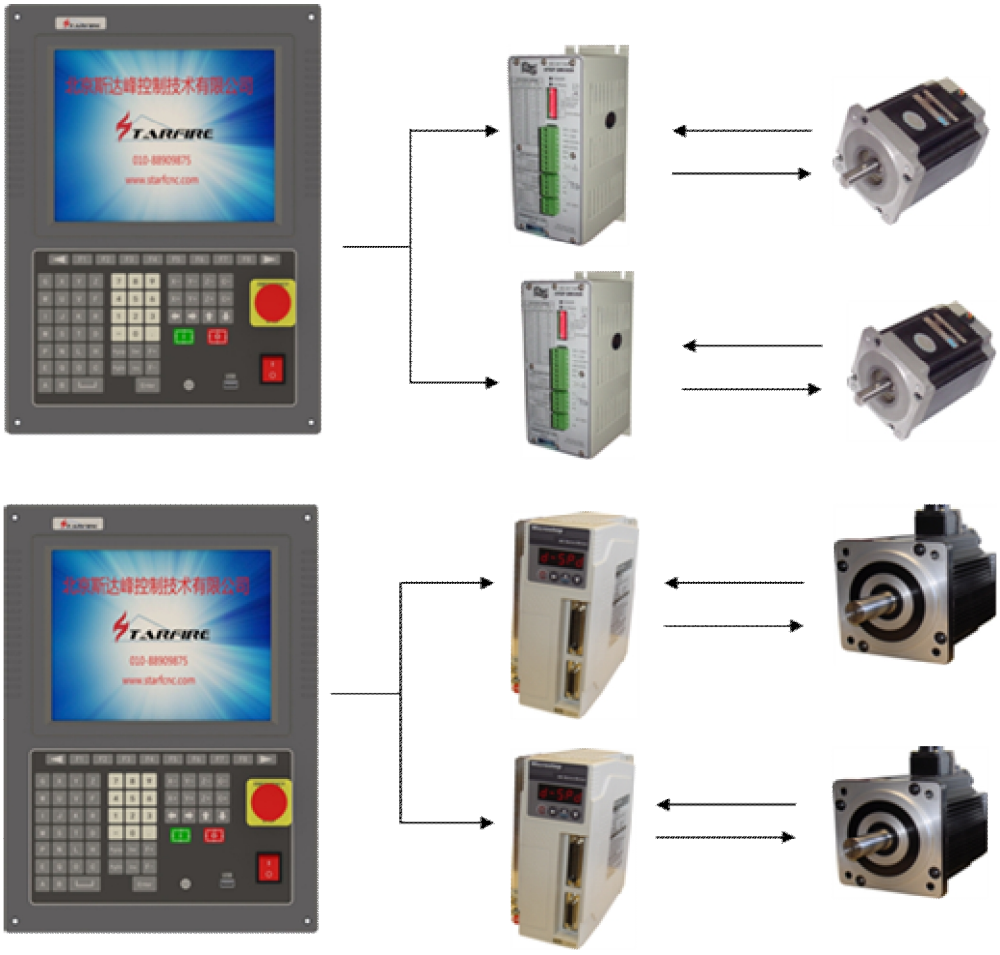
The system to provide the photoelectric isolation 16 roads input, 14 photoelectric isolation output.
Linkage axle count: two axles, can be extended for four axles.
Pulse equivalent: electronic gear, the denominator set scope (1-65535).
User program storage space: 4 g, the maximum can be extended to 32 GB.
Case size: 410 * 310 * 310 (mm).
Working temperature 0 ℃ ~ + 40 ℃.
Storage temperature 40 ℃ ~ + 60 ℃.

1.4 System panel structure





1.5 System and the connection diagram of the machine



Chapter 2: System main menu

2.1Menu character

According to operating characteristics of the system function window prompt way step by step. Under the main window menu, after a function call, system will launch this feature of the child window menu. According to the prompt of screen window, press "F1" to "F8" choose corresponding function, press the "ESC" key to return at the next higher level menu.

2.2 The main menu shows

The version number: the lower left corner tip is currently about software, hardware version information. Photos are for reference only.

[F1] automatically: automatic processing program.

[F2] manual: manual adjusting cutting gun position.

[F3] edit: edit/modify/input/output process program.

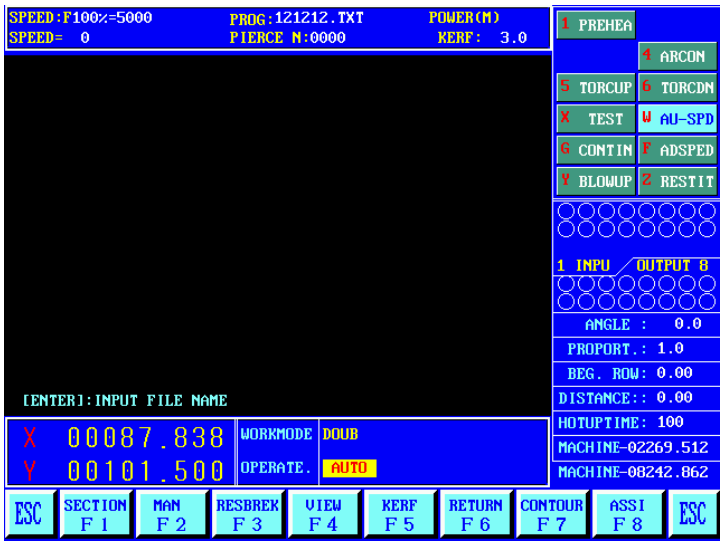
[F4] parameters: the system parameter Settings.

[F5] diagnosis: check the machine input and output information.

[F6] graphics library: standard graphics Settings and discharge.

[G] [G] [3] in the early set: in the following dialog.

Chapter 3: automatic function



3.1 automatic way interface specification

3.1.1 setting speed

1) At the upper left screen display F * (speed ratio value) = set value of processing speed.

2) SPEED is the SPEED of the actual value, use the 【F+】【F-】 to adjust the current SPEED ratio value.

3) In this picture press [F], can be directly input processing speed.

4) Note: the speed of the display value may be metric can also be an inch, depends on the parameter Settings in metric/inch option (see parameters - control).

3.1.2 program

Directly above the screen, display processing program file.

3.1.3 key [1] - [6] a key external high-voltage electrical control, including: flame cutting mode:

【1】 Acetylene, press once to open the gas and ignition (see M50), press again to close the gas valve.

【2】 Solenoid valve open/close preheating oxygen, according to an open, then closed for electromagnetic valve.

【3】Open/close high pressure solenoid valve, cutting oxygen at once opened, then closed for electromagnetic valve.

Plasma mode:

【4】 Arc starting switch, pressing the button once to open the arc starting, then closed for arc starting switch. Flame/plasma function is under the same.

【5】 The cutting nozzle continuously rise, raise my hand stopped rising.

【6】 Make cutting nozzle continuous drops, raise my hand to stop falling.

3.1.4 [X] empty run

Selected empty running function, system to processing speed, limited to run the program, but does not perform M instructions. This function is used for rapid

positioning or checking the steel plate processing. It may at any time in the operation of the suspension. And then press "X" key to cancel an empty running.

3.1.5 [W] processing speed
The system in the manual speed and automatic speed is separated, push down this button, can change the speed of the current ratio, speed ratio in the process of processing speed position for automatic processing, vice to manually adjust the speed ratio.

3.1.6 [G] continuous go
See 4.4.1 of manual function.

3.1.7 [F] set speed
Push down this button can be directly to carry on the processing speed setting, and to press "enter" to confirm.

3.1.8 [Y] enlarge figure
According to graph 1 x magnification, can press 3 times in a row, graphic maximum amplification eight times;

3.1.9 [Z] figure back
Back to the standard map displays.

3.1.10 input and output
Under high voltage switch side, there are four rows x 8 ". The above two rows of said 16 input port status, "says no signal input, low said signal input. Two rows behind said 14 outputs port state, "says no signal output," said a signal output. Input/output port definition can see system diagnostic function.

3.1.11 coordinate unit of the choice
The coordinate display may be a metric (mm) can also be imperial (inches), depending on the parameter settings in metric/inch option (see parameters - control).

3.2, the function choose of automatic processing
3.2.1 【F1】choose part
Set from a program specified system (point) or perforation arbitrary start processing. Commonly used in the need to start from the application of a certain period of processing, or only used when processing a part of. See 3.7 for specific parts of functions.

3.2.2 【F2】manual
From system to manual mode

3.2.3 【F3】find breakpoint

Select this feature, press the "start" key, began to perform the function of breakpoint recovery, specific see 3.6 breakpoints recovery feature.

3.2.4 【F2】 graphics

Used to test whether the program is wrong. Select this function, the system display graphics processing procedure, and marking punch points are numbered sequentially, graphics center points have cross cursor. Press [Y] magnify double graphics (up to three times, enlarge 8 times), press [Z] map display, press [up] [down] [left] [right] key to mobile graphics display position.

3.2.6 "F5" set slot

Press this key prompts for slot width compensation, if you don't compensate (usually in the nesting compensation) can input 0.

3.2.7 [F6] back return reference point,

Click this button machine tool quickly return reference point (G92 specified location, usually is 0, 0).

3.2.8 "F7" walk contour line

Before users begin machining contour line, can determine through walk to the contour line, is beyond the scope of the steel plate processing path. Press【F7】went contour line, if the current cutting torch not on the reference point (coordinate not zero), the system will prompt: the current point positioning - cutting the current position as a reference point. Reference point positioning - cutting back to the first reference point, then start contour line. In contour line, if more than the scope of the steel plate cutting, can press "pause" button, move the cutting torch to steel plate edge, then press "start" button, the system prompt: "modify the reference point EN/ESC?" Press the return key point of reference for the confirmation modified, system will continue to run the current position as a contour line. Press [ESC] to give up. The way can run repeatedly, until the position suitable.

3.2.9 "F8" auxiliary

Press this button to enter the next level menu. As is shown in figure 3.2.

3.2.10 "F1" auxiliary to mirror

Continuous to press [F1], respectively select X, Y, mirror, no mirror.

Choosing X mirror, along the X direction of axisymmetric process execution, looks like a turnover on the up and down.

Choosing Y mirror, along the Y direction of the axisymmetric execution process, looks like a turnover.

No mirror, normal execution, default is not mirror mode.

3.2.11 【F2】auxiliary to proportion

Click this button system prompts for scaling, system execution procedures when enlarged or reduced according to the proportion. This feature is very useful on arts and crafts letter by in the process of cutting.

3.2.12 [F3] auxiliary - rotation (steel plate correction function)

Processing steel plate lifting is impossible once, or for other reasons need to rotate an Angle processing, can choose the function. Can cooperate under the auxiliary function of manual test starting point and end point, using the rotation function. Also can be directly input Angle. After confirmation, the system will reduce the machining procedures according to the specified Angle rotation.

Note: a positive perspective to counterclockwise.

For example:

Measured by any one of the steel plate edge (a line) as the starting point and end point to let the system automatically identify and calculate the rotation Angle, the method is as follows:

1) into the manual - auxiliary function, first determine the baseline, take a plate from the sidelines do baseline, move the cutting torch to the baseline to start, press【F2】set the starting point.
2) Control of cutting along the baseline to the end (starting point and end point more far more accurate), cutting gun aimed at baseline, press "F3" set the end point.
3) The relative rotation Angle of baseline will be automatically calculated. Completed the rotation function, rotation Angle that is displayed in the operation information display bar.

3.2.13 "F4" Auxiliary-WENTAI. It increases the WENTAI software processing.

If it is < wen tai > system software to generate machining program (usually for carving various text and pattern), under the automatic interface after wen tai of the auxiliary function, can be directly run, two Suggestions:

1) Run < wen tai > application, because the program is bigger, use U disk read, not storage, direct work with U disk.

2) Run the < wen tai > programs, this feature should be cancelled, methods as well as setting.

3.2.14 "F5" auxiliary - choose a start function

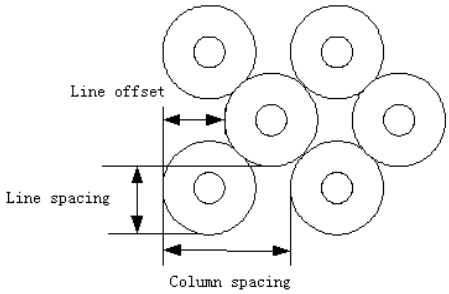
By pressing the four arrow keys, select four angles respectively (up and down or so) to the beginning of the current application processing.

3.2.15 【F6】auxiliary - discharge function

For a single machining program arrangement that has been programmed. System prompt:

Arrangement of rows - Y direction is to arrange the number of rows.

Arrange the number of columns - the column number of the X direction is arranged.
Line spacing, spacing between the X directions of the work piece.
The gap between the column spacing is Y direction of the work piece.
Line offset - the even lines, migration distance to the right.



3.2.16 【F7】selected gun
During plasma processing of initial alignment, system supports the use of two cutting torch (A, B) work at the same time. The specific input/output control is as follows:
A gun: M14 (cutting torch rises, the output 2 feet), M16 (cutting, output 15 feet), the initial position (8 feet) input.
B: gun M36 cutting torch rise, the output (6 feet), M40 (cutting, output 7 feet), the initial location (enter 21 feet). Continuous choose gun, respectively choice: double gun, gun A, gun B work.

3.2.17 "F8" broken bridge
Chosen this feature, during processing, every cutting length (set broken bridge point. Mm. See [parameter] the [control]), will set up a bridge cut-off point, partition bridge length (mm) (see [parameter] the [control]) controlled by the operator to continue after cutting.
Note: this function has remained to press this button again, cancel the function.

3.3 speed mode (ratio) and automatic processing of startup
3.3.1 Manual speed
Manual mode, the mobile cutting torch, will execute the highest speed limit * manual rate, the adjustment is manual ratio

3.3.2 machining speed
When processing, it perform the machining speed limit * ratio, ratio adjustment automatically at run time by + F/F -. The processing, press "W" processing speed through the F + / F -, adjust processing ratio.

3.3.3 back/forward speed
Processing in the event of back (or forward), enforce a back/forward speed (see parameter Settings, speed parameters), the fallback ratio adjustment is done in the process of back, through the F + / F - implementation.

3.3.4 automatic machining start

1) Automatically start

To choose the correct processing program, select the appropriate processing rate (ratio), the cutting torch on the cutting position (program starts automatically cutting lift (execution M70)) and other preparations in place, can be started automatically processing program execution.

2) Automatic processing start there is two ways:

a) According to the green "start" button on the panel.

b) According to the external "start" button (see the "input/output port definitions").

3.4 automatic control and adjustment of cutting position

3.4.1 track in the process of machining the suspend operation

Caused the suspension of conditions and the following points:

1) The external pause button press.

2) Plasma processing, and choose the "detect arc voltage (1)" (see parameters - plasma), if the broken arc will be suspended.

3) If you choose the "" bump shot detection (1)" (see parameter, control), bump shot will pause.

Suspended after display:

Suspended after can be the following:

A) Select new piercing point, press the "F6" key, enter the new perforation after a period, the system automatically go to the new perforation, waiting for the punch operation;

B) The original track back or forward.

C) Adjust the position of operation, we can see 3.4.2 cut position adjustment.

D) Press "ESC" key, out of processing.

E) Press "F5" button, select the line escapement operation, the system prompt: fallback, forward, choose program line, according to mark new selected row cursor position operation, press the "start" key, the machine go to the new line escapement position, waiting for the punch instruction to continue processing.

F) [START] system continues to run.

G) Press "ESC" key, exit the machining program, return to the image automatically.

H) [F up], [F down] speed adjusting button: increase or decrease feed speed ratio.

I) Use [S up], [S down] to control cutting torch up and down. Press the corresponding key, cutting up or down. Raise my hand to stop cutting movement.

J)【stop key】 scram button for external key (see the "external input interface"), the signal from the input port access. Stop is valid, and stop all movement, output shut down. For emergencies occurs.

3.4.2 adjust the position of the cutting:

3.4.2.1 the following several ways of cutting position need to adjust the position of the cutting

1) Cutting blocked, or need to change, often move the cutting torch to a safe location, after processing to return to the starting point.

2) Need edge notch, don't want to put the punch points on the outer limits of the work piece. In the work piece outside to look for a suitable location, perforation and then cut along a straight line to the starting point (pause) continue to normal processing.

3) Transfer of cut, work piece is more, wide is bigger, need to change the local cutting.

3.4.2.2 several operating can adjust the cutting position of the following:

(1) Suspension (2) the fallback (3) punch (4) parts processing (5) machining (6) breakpoint recovery.

In the state, if you want to change the cutting position, can be directly according to the [right] [left] [up] [down] key to adjust the position of the cutting torch (the system ratio for manual rate can be adjusted). After adjustment in place, press the "start" key, the following dialog:

1) Return to the original road

To return to adjust with the speed of G00 starting point, in this waiting for further operations. At this point according to the corresponding high voltage function keys (such as ignition, preheated perforation, open cutting operations such as oxygen). Suggestion: after preheating, and then press "punch" key, then the system starting from the breakpoint position to continue processing.

2) Cutting back

First perforation, again with cutting speed along a straight line from the current position to adjust the starting point, don't stop according to the original path to continue processing, a bit like edge perforation, perforation point more smooth.

3) Current perforation

First perforation, the current coordinates is set to "start" coordinates, according to the original path to continue processing, in order to realize the transfer function of cutting.

4) Note: (2) and (3) before operation, should be fully preheat (fire), because once chose operation, punch right away. Normal practice should be, preheating first, then press the "start" key.

3.5 the original track back processing

For failing to cut through, in the processing to the original track back, is as follows:

3.5.1 Track of the original track back, press【pause】, slow down the running system,

the system displays "pause" tag, and presented the following figure.

Press "F7" key system to perform the original track back, back speed set in the parameter - speed - back.

Press the "F8" key at the back, on the basis of the original trajectory. In the process of back, if do not meet the need of position, can press the【pause】again, repeat the above process, until a bit.

3.5.2 encounter G00 (reach a piercing point) back in the process.

When back, meets G00 (reach a piercing point) suspended system, the operator can choose is to continue to back, or forward.

3.5.3 back to operations

Back to the designated place, can choose cutting torch position adjustment, (see 3.4), may also directly bring a perforation, according to the corresponding high voltage function keys (such as preheating perforation, open cutting operations such as oxygen). Typically:

Good for preheat, then press "punch", in the case of fire, burning torch, oxygen cutting, cutting down, the system to continue running, under the condition of plasma arc open, wait for after the arc, the system to continue running.

3.5.4 exit processing state

Press "ESC", during a break in system processing status.

3.5.5 fallback procedure of the total number of rows and the starting line Fallback procedures section, most within the 300 lines, if it is a breakpoint recovery, or parts of the processing, the back of the starting line is the current breakpoint or passage, not on the basis of rolling back processing.

3.6 breakpoint recovery and double breakpoints recovery processing

3.6.1. Breakpoints recovery

1) In the system for suspension or for processing power failure, the system will automatically save the current cutting torch position for a breakpoint. The breakpoint will be permanent, whether to turn it off or not.

2) When in automatic mode, as long as the current program did not change, can press "F3" find the breakpoint function, then press "start" button, system breakpoint began to recover.

3) If the cutting position has not changed, then find the breakpoint, prompted to "break", waiting for the next step. User can choose directly【perforated】 cutting position adjustment, see 3.10.

4) If the cutting position have changed (not on the breakpoint), after the system find the breakpoint, can appear the following three options (The fact is the cutting position adjustment).

The original road return -- to return to the breakpoint with the speed G00, commonly used in general (exchange) cutting set breakpoints.
Cutting back -- a breakpoint recovery can be slightly left point breakpoints, a bit like the outer perforated, make breakpoints more smooth;
Current punch -- like the previous operation, transfer can also be used to cut with. At this point according to the corresponding high voltage function keys (such as ignition, preheated perforation, open cutting operations such as oxygen).
Tips: After preheating, then press "punch", then the system starting from the breakpoint position to continue processing. When it finds a breakpoint, press "ESC" key, system exits the processing status.

3.6.2 double breakpoints recovery feature
System can save two procedures that face the breakpoint. Operators do a larger program A, the intermediate temporary stop (generated the first breakpoint), to do another program of B. After the call the program A again, can be directly do restore (【find the breakpoint 】) breakpoint, the system will automatically find the location of the interrupt for the first time, to continue processing.

3.6.3 note:
Both breakpoints recovery and restore power, are not allowed to change the Angle of rotation, scaling, the condition of the system will automatically save, not affected by the switch machine. Otherwise the system may find the breakpoint.

3.7 parts of choose

3.7.1 start the parts choose
Parts of functions specify system, from the program (point) or a perforation arbitrary start processing. Press [F1] select parts of function, the system show the diagram below:

At this point: [up] [down] move the cursor to select one of the two parts of the processing mode.
According to the selection, the system prompt for selection of serial number (line number or punch point number). Concrete perforated, can find when picking graphical capabilities.

3.7.2 select parts processing there are generally two kinds of situations: 3.7.2.1 transfer processing, starting from a certain position in the program, in a place to start processing.

3.7.2.2 will start a paragraph from the program after program to processing it again.
1) For the former, usually find a piece of waste, on the punch point directly processing (optional, the current point positioning).
2) In the latter case, the orientation from the reference point (optional, reference point positioning).
3) For the two options, the system that after the boot prompt (below):

A) If you select "current point positioning", after the system is running, the first map, and on to the position of the punch, draw a big cross cursor, the operator can press [S] graphics to enlarge, to see whether to need to punch positions, if not satisfied, can press "ESC" to exit the processing state, select again.
B) If the requirements of the perforation point, can be controlled by high voltage switch, ignition, preheating, press "punch" up and running;
C) If you select the "reference point" to start, the operator should aim the cutting torch reference point. After start-up, the system control cutting punch point and the rest of the operating methods.

3.8 the edge of the thick plate perforation
1) Automatic processing of the thick plate processing method should be used when perforation.
2) Edge of the perforation of the method is: Before punch cutting torch to move to the edge of the plate recently.
3) Start preheating, when after the preheating, press the "start" key, cutting along a line distance and the selected cutting speed cutting to punch, cutting processing again.
4) Uses the edge notch, the first change parameter control menu of edge notch choice to 1 (said to choose effective). So every hole, the first prompted the diagram below:

3.8.1 select perforation the current position
Perforation system the original position, commonly used hole.

3.8.2 perforation the selected edge

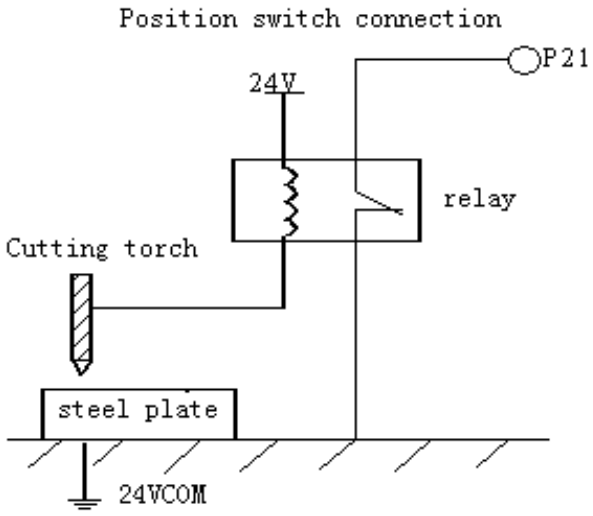
(1) The operator may according to the selected [up] [sown] [left] [right] key, adjust the position of the cutting torch to the outer limits of the steel plate (the speed ratio automatic adjustment for 5%), start preheating.
2) When the preheating ended, press the "start" key, cutting along a line distance and the selected cutting speed to punch, cutting processing again.

3.8.3 choose don't punch
Don not punch, the system runs directly from the current perforation position. Blank line to the next hole, a new perforation tips.

3.9 the flame processing, preheating time delay adjustment
System was flame processing, as long as the replacement process, preheat time delay is set to 100 seconds, automatically to avoid the punch for the first time.

3.10 slotting compensation error checking, may choose whether to interrupt to run the program
To increase in the parameter Settings - control parameters for the following Settings:
G41 / G42 detection efficiency (0/1): 0.
When elect 0, system in slotting compensation error, an error (position), but the program can run.
The elected 1, interrupt program is running.

3.11 strengthen the function of plasma processing of perforation orientation
If you choose the perforation orientation (see parameter Settings), effective in perforation (M07) when cutting down, until the collision position switch (normally closed), drop stop, cutting up after perforation positioning delay, cutting gun stopped.



3.12 powder painting line function

This system has the function of powder painting line, when use:

M62 - offset processing line drawing gun, gun at programming will draw line position.

M63 -- -- return offset line drawing a gun

M07 -- -- began to draw lines (line drawing oxygen)

M08 -- -- end of the line drawing (off line drawing oxygen)

Port Settings (see chapter 11 output connection table):

M32, painting line, the line drawing gun ignition

M34 oxygen gun/preheating gas oxygen

M42 - painting line cutting oxygen.

The system compatibles with HAIBAO powder spraying line drawing function. Using the following specific.

HAIBAO: M09 -- -- line drawing gun firing command (M07)

HAIBAO: M10 -- -- line drawing gun off fire command (M08)

HAIBAO: M11 -- -- line drawing gun offset command (M62)

HAIBAO: M12 -- -- line drawing gun offset return instructions (M63)

3.13 triple punch function

When system the cutting plate, in order to avoid the splash of steel blocking gun mouth, adopts three-level crawling perforation method.

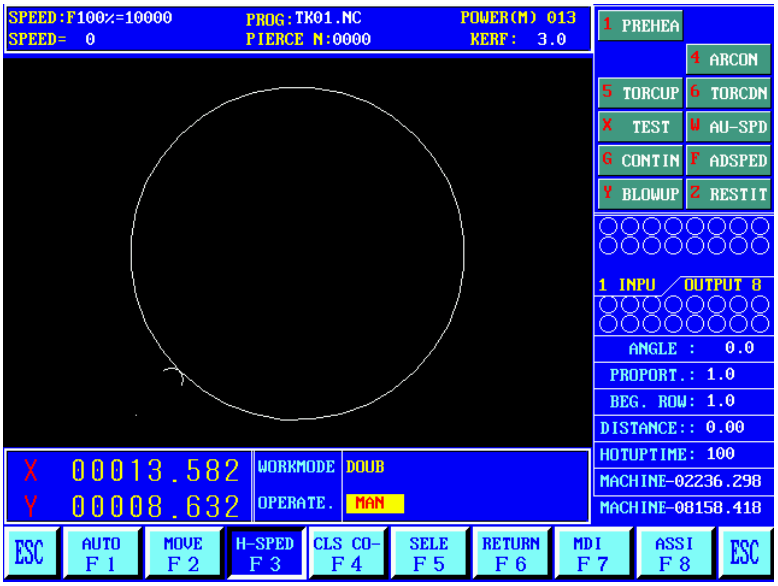
A. Level 1 cut open, oxygen cutting torch to move slowly, after a time delay, closed primary cutting oxygen.

B. Secondary cutting open, oxygen cutting torch to move slowly, after a time delay, the secondary cutting oxygen to shut down.

C. Level 3 cut open, oxygen cutting torch to move slowly, after a time delay, speed up to normal cutting speed, start cutting.

Chapter 4 Manual function

System work under the main menu, press "F2" button to enter manual function, as shown in the figure below:



4.1 manually interface manually interface display with automatic mode. Difference in the value of the ratio of the manual, it affects the manual operation, back to the speed, movement speed, etc. Directly on the screen press [F] speed can be set. There are some special operation manual modes.

4.4.1 [up] [sown] [left] [right] the direction control keys and [G] continuous walk normally, press the four direction key, the corresponding axial movement, raised my hand against the stop. But according to [G] choose walking straight (highlighted), press the direction key cutting start (Raise hand stop), press the stop again. If need two axis at the same time, can walk on a shaft, another axis of the direction key, press the two axis movement at the same time. Press any key direction at this time will stop cutting torch corresponding axis, and the rest of the shaft to continue walking, walking until then press the axis direction, movement stops. [Pause] button will also stop movement.

4.1.2 "F1" automatically

System into automatic working mode

4.1.3 【F2】inching

Press "F2" button, click on, appear some dynamic incremental selection dialog, as shown in the figure below.

Point move incremental there are four choices:

The first three are commonly used incremental. Finally a press 3 - input increment is manual input increment. In inching mode, press a key direction, cutting at the

speed of the current highest speed limit by ratio, run a point incremental value.

4.1.5 [F3] high speed
Quick select manual ratio, press F5 high-speed (highlighted) ratio is 80%, then 10% at low speed.

4.1.6 "F4" clean coordinates
Quickly reset X/Y values.

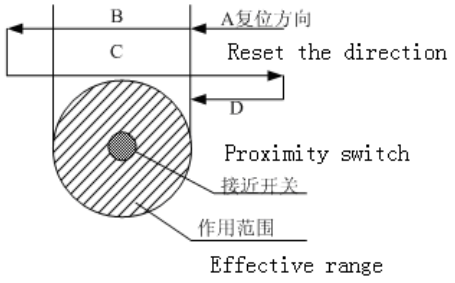
4.1.7 [F6] back and return reference
Back point processing (start).

4.1.8 "F8" auxiliary
Login into the auxiliary functions, the system shows the following interface.

4.1.9 "F1" test starting point, see 3.2.11 [F3] auxiliary - rotation (steel plate correction function).

4.1.10 "F2" measure the finish, see 3.2.11 [F3] auxiliary - rotation (steel plate correction function).

4.1.11 "F5" origin and "F6" reset (back mechanical original) function
Machine back to the origin can be divided into "measuring the origin" and "reset" two parts.
Machine back to the origin, is the process of return machine mechanical zero point, back to zero biaxial running at the same time, independently back to zero. Reset (before 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 parameters (see parameter F3) reset speed - see "parameters" - "speed", reset when the feed rate, the unit is mm/min. reset direction - see [parameter] - [system], 0 - the shaft no longer, 1 – reverse, 1 – positive.
(c) Machine back to zero point process is as follows:



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

(d) To measure the origin, to determine the mechanical origin of the work piece coordinate system. Methods:

Cutting torch will be moved to the reference point in the work piece coordinate system (a bit). set the current work piece coordinates.

[manual] - [supplementary] – [origin] measurement system to complete the mechanical origin, and the current coordinate values into the origin of the machine tool value, parameter Settings【system】option in the origin of the machine tool change accordingly.

(e) Reset - cutting back mechanical zero, and set up the work piece coordinate system.

Method: [manual] (or [automatic]) – auxiliary – reset, origin system to complete the mechanical action, and the origin of the machine tool is set to the current coordinates of the machine tool coordinate set to 0.

【note】: If two axes in the parameter reset direction from 0, namely no reset action, execute reset after operation, the current value is equal to the origin of the machine tool. Machine tool coordinate is equal to zero, this is important, because the program limit is machine tool coordinate as a benchmark. Cutting torch will be moved to the first mechanical origin (the origin is not necessarily true), select reset function, can determine the current machine tool coordinate (zero), then according to the distance from the effective on both sides of the mechanical origin, fill out the positive/negative limit value of the software.

4.1.12 【F7】select gun

see 3.2.14 【F7】gun selected.

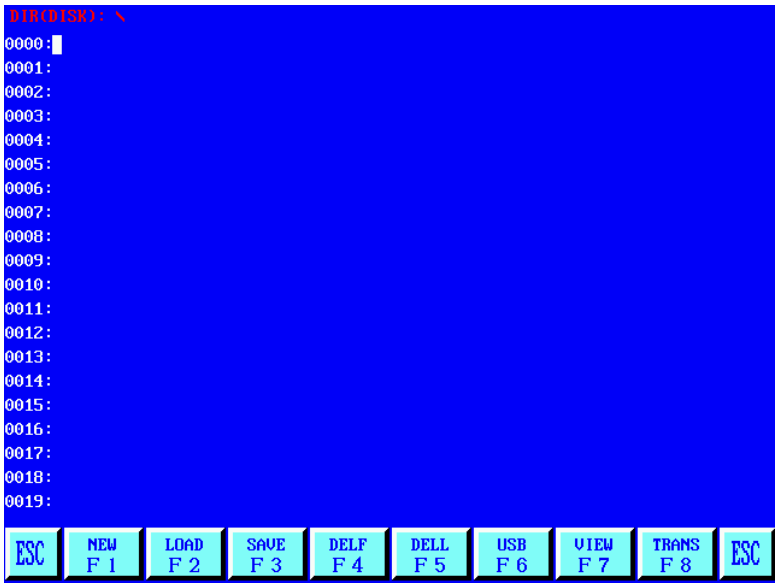
4.1.13 "F8" set coordinates

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

To click this button reset all coordinates To set the current coordinates To set the reference point coordinates

Chapter 5 editing function

In the system under the main menu, press "F2" to enter editing menu, as shown in the figure below:

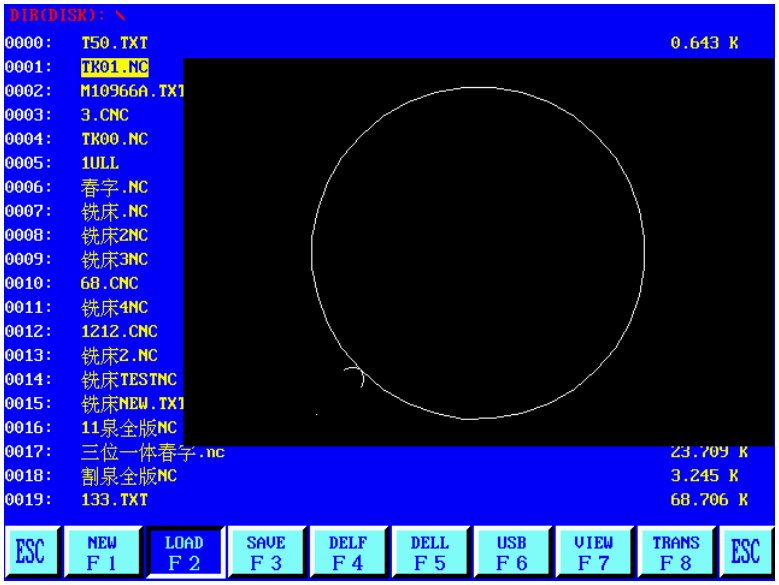


5.1, editing menu description

5.1.1 "F1" build

To build a new program, the clearance process editor area, and start editing a new processing procedure.

5.1.2 [F2] call in



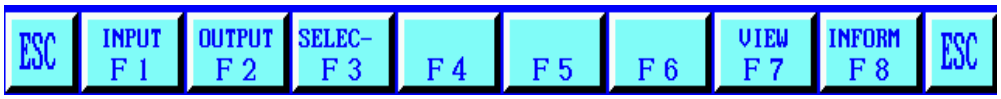
Transfer into the program, select the call in the user program in the program, the system will be an existing program, displayed in a tabular form, and the cursor stays on the program name. Move the cursor keys to select different programs. After press enter, the selected program loading process editor area. If you press "F7", graphic displays of the program. Press "ESC" to give up to function.

5.1.3 [F3] storage
Stored program, editing procedures for storage, the system hint: enter the program name: 1234.TXT
System shows the current program name, can be modified. If press the return key, to edit the program, to select the name of the deposited in the program area, if press the "ESC" key is stored program.
Note: the program name and extension shall not exceed 12 characters.

5.1.4 "F4" delete files
Choice of to delete user program in the program.

5.1.5, "F5" delete line
When program to edit out the entire line, increase the speed of editing.

5.1.6, [F6] USB
Transmission procedure, the system supports USB transfer procedures. After press "F6" key to enter the next level menu below:



[F1] input To send U disk program to the system process area.
[F2] output After the system processes program, output to the U disk in the program area.

5.1.7, "F7" graphics
Display the current pattern of the editing program.

Chapter 6 instruction system

6.1 programming symbol shows

That action of every step of numerical control processing, is carried out according to the prescribed procedures, each process is composed of several instruction period, each instruction, and consists of several functional characters, function of each word has to be made by letter, followed by the parameter values.

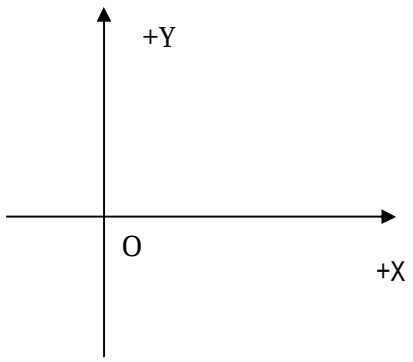
Function word definition:

N instruction period of serial number
G preparation
M auxiliary
T tool functions (in this system refers to the flame width)
L cycles, delay time
X X axle (diameter) absolute coordinates
Y Y axle absolute coordinates
I arc processing, center coordinate values minus the X axle starting point value
J arc processing, center coordinate values minus Y starting point value
R arc radius specified
H high arc string specified
A secondary variable
F processing speed, used for G01, G02, G03.

Note 1: in the introduction to the following, have agreed as follows:
X [U] n, signs X or U, n is a number, but one can only appear. By the same token, the Y [V] n - can be Y or V, n is a numeric value, also can appear one. PPn - said combination can be any axis, containing at least one axis, also can contain two axes.
Note 2: instruction execution order, and the execution of a program in the program before the next. Within the same program instructions is before G M, S, T.

6.2 coordinate system

The numerical control system adopts standard rectangular coordinate system, the following figure:



6.3 G (Basic preparation instructions)
(1) G92 reference point setting
Set program is running, processing starting point (reference point) coordinates, must start in the program, and set the absolute coordinates.
Format: G92 Xn Yn
If not after G92 with X, Y, with the current X, Y coordinates of reference points. In commonly when used machine tool positioning, G92 not with X, Z content.

2) G90 / G91
G90 absolute coordinate system (default)/G91 Relative coordinate system
When using G90, X, Y coordinates, U, V relative amounts of the current point. When using G91, X, Y, and U, V are relative to the current point relative amounts.
Format: G90
Format: G91

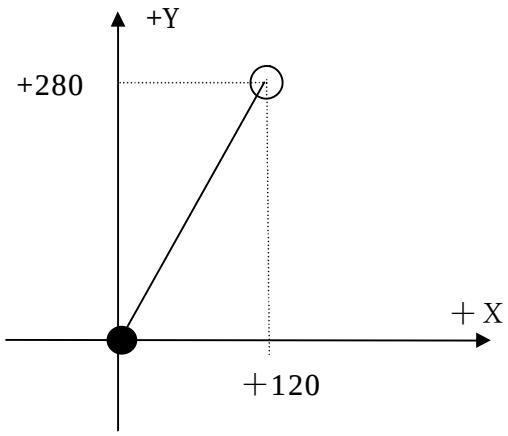
Example 1:
G92 X0 Y0
G91 / / relative coordinates
G00 X100 Y100 / / quick positioning to (100,100), quite G00 U100 V100
G01 X500 Y100 / / linear processing to the position (600,200), quite G01 U500 V100

Example 2: G92 X0 Y0
G90 / / absolute coordinate system, but the default
G00 X100 Y100 / / quick positioning to (100,100)
G01 X600 Y200 / / linear processing to (600,200)

3) G20 / G21 imperial/metric shows
G20 imperial explains, the G20 after the X, Y, I, J, R, U, V, H, F, all are English unit.
G21 metric specification (the default), G21 after X, Y, I, J, R, U, V, H, F, are all metric units.
Format: the G20
Format: G21
4) G00 point exercise
This directive can be realized fast feed to the specified location. When two axles have a displacement system use the highest speed ratio, linear motion from start to finish. When G00 movements, was influenced by speed ratio.
Format: G00 X [U] n Y [V] n

Or: Y G00 PPn.

```
Ex: G92  X0  Y0
    G00  X120 Y280
(Or  G00 U120 V280)
M02
```



● The current position

○ The target position

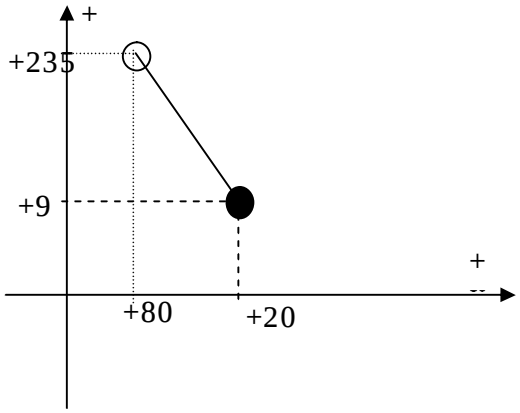
5) G01 linear cutting

This directive can realize tool linear feed to the specified location, as cutting movement instruction, can be single axis or two axles linear interpolation motion. Feeding speed can be specified by F command.

Format: G01 X [U] n Z [W] n [Fn]

Or: G01 PPn (Fn)

```
EG: G92 X0 Y0
    G00 X200 Y95
    G01 X80 Y235
(OR  G01 U-120 V145)
    M02
```



● Thecurren t position

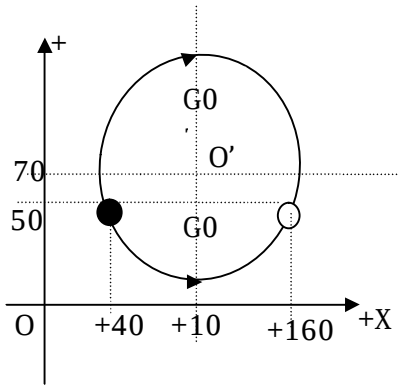
○ The target position

6) G02 / G03 arc cutting

This instruction is applied to circular arc interpolation. Instructions are divided into smooth arc G02 (clockwise), inverse arc G03 (counterclockwise). Good or poor in the direction of the Settings below:

Format: G02 [03] X [U] n Y [V] n In JN [Fn]. Or : G02 [03] X [U] n Y [V] n Rn (Fn)

G02 [3] PPn In Kn (Fn). Or: G02 [03] PPn Rn [Fn]



● The current position

○ The target

```
EG(G02):
G92  X0  Y0
G00  X40 Y50
  G02  X160 V0 I60 J20
  G28
  M02EG（G03）:
  G92 X0 Y0
  G00 X40 Y50
  G03 X160 V0 I60 J20
（Or G03 X160 V0 R63.25）
  G28
  M02
```

Description:
I and J are for the X, Y axles relative to the starting point of the incremental value of circle center (starting point).
R is for round radius (R positive, when arc 180 ° or less can be used to describe the radius R). if specified I, J, R. If R, don't use I, J.

7) G04 pause/delay orders
This directive is used to set the time delay, when the program execution to this directive, the program according to the L time delay, in seconds.
Format: G04 Ln
Example: G04 L2.4 (2.4 seconds delay)
During the period of execution of G04, press the "start" key is terminated latency, continue to implement G04 after application, press "exit" key to terminate the current execution.

8) G26, G27, G28 return reference point
This directive tool can be realized automatically return reference point.
Format:
G26 X returns to the reference point
G27Y returns to the reference point
G28 X, Y axles at the same time to return to the reference point
Example: G28 (X, Y axis at the same time to return to the reference point, equivalent to go G00)

9) G22 / G80 loop statement
This directive can be used to execute a program cycle, G22 as the beginning of the

loop body, and specify the cycle number L. G80 as end of the loop body mark, this directive can be nested loop, but not more than 5 layers. G22 with several recent G80 downward constitute a loop body.
Format:
G22 Ln (L designated cycle)
The loop body G80 (end of the loop body signs)
For example:
N000 G92 X100 Y100
N001 G00 X60 Y80
N002 G22 L5 - the first layer of circulation.
N003 G00 V50 U - 25
N004 G22 L5 - the second loop begins
N005 G01 U5 V - 10
N006 G80 - the second end of the cycle.
N007 G80 - the first layer loop ends.
N008 G28
N009 M02

10) Tool radius compensation statement (G40, G41, G42)
Format: G41 (or G42) Rn.
Need to compensation procedures section. G40
Note:
G41 is for the processing of path, the compensation to the left half of the flame diameter.
G42 is for the processing of path, the compensation to the right half of the flame diameter.
G40 is for end of migration.
Because of the cutting tool compensation is done automatically, so before G41, G42 instructions must be G00 rapid positioning statement, in order to make sure the cutting nozzle can adjust the position. After cancel the knife repairing G40, still need to have a G00 statement position to adjust back.

6.4 M auxiliary function
M00 pause command, suspend execution program, press the "start" key to continue.
M02 instruction program ends, after the execution process in the wait state M30 same as M02
M10 / M11 gas (acetylene) valve switch, M10 (open), M11 (close)
M12 / M13 cutting oxygen valve switch, M12 (open), M13 (off)
M14 / M15 cutting torch switch, M14 (open), M15 (off)
M16 / M17 cutting torch switch, M16 (open), M17 (closed)
M24 / M25 standby switch, m2-m24 (open), the M25 (closed)
M20 / M21 ignition switch, M20 (open), M21 (closed)
M07 fixed cycle perforation (after entering M07, not back, can move gun)

M08 concerns cut fixed cycle

Flame cutting operating sequence is as follows:
M07
1. If gas (acetylene) valve is not open, open (acetylene) gas ignition.
2. Cutting down (cutting down latency, see M71).
3. Preheat the oxygen valve, began to preheat time delay, if the preheating time is not enough, can press【pause】, preheating time delay automatically extend to 150 seconds, if preheating is good, can press the "start" button, the end of the preheating time delay, and will be automatically saved in the preheat time delay parameters.
4. The cutting torch rise (perforation cutting up delay, M72).
5. Open cutting oxygen valve (M12), delay time, delay perforation after cutting down (perforation cutting delay M73).
6. Open the block (M38). Then began to run after the program.

Plasma cutting operation sequence is as follows:
M07
1. Cutting down (cutting down latency, see M71).
2. If you choose to perforation orientation (see parameter Settings) effectively, the cutting down, until the lower limit position switch, stop falling. After cutting, delay in holes positioning, stop cutting torch.
3. Open the arc switch
4. Detect "success" arcing voltage signal, if the parameter settings in the arc pressure detection from 0 (no) is any arc pressure, after the success of the arc, delayed perforation delay (in seconds).
5. Open the block (M38), began to run after the program

M08 concerns cut
Flame cutting fixed cycle operating sequence is as follows:
1. The concerns cut oxygen (M13).
2. Shut down the block (M39).
3. The cutting torch rise (M70).
Plasma cutting operation sequence is as follows:
1. The arc pressure switch.
2. Shut down the block (M39).
3. The cutting torch rises (M70).

M50 perforation action:
1. The cutting torch rise (M72), plasma operation without the action.
2. Open cutting oxygen (M12). Or open plasma arc, the detection of "success" arcing voltage signal.
3. Cutting down (M73), plasma operation without the action.
4. Open the block (M38).

M52 ignition fixed cycle:
Operating sequence: open gas (acetylene) valve (M10), high voltage ignition (M20), delays the ignition delay time, high voltage ignition (M21).

M70 cutting up fixed cycle:
Use the program starts, and a cutting end of the program, to raise cutting torch, so that the cutting torch fast move to the next cutting position. Sequence of operation: open cutting up switch (M14), delay cutting up delay (see 7.3) flame parameters, cutting up switch (M15).

M71 cutting down fixed cycle:
Used in punch, role, in contrast to the M70, but slightly smaller, because of the effect of gravity, than to hurry up.
Sequence of operation: open cutting down switch (M16), delay cutting down delay (see 7.3) flame parameters, cutting down switch (M17).

M72 perforation cutting up cycle:
Use after preheating, to raise cutting co., LTD., to avoid pulling cutting oxygen, splash of steel slag to block the mouth of the burning torch.
Sequence of operation: open cutting up switch (M14), delayed perforation cutting up delay (see 7.3) flame parameters, cutting up switch (M15).

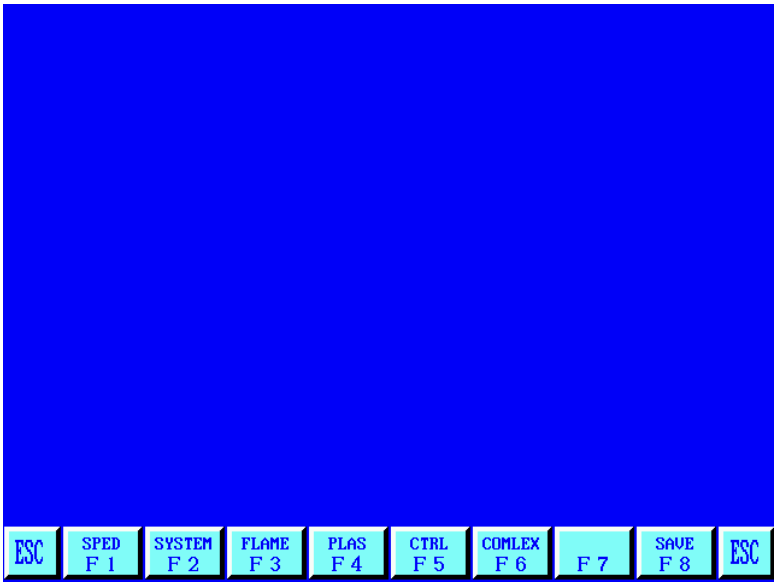
M73 perforation cutting down cycle:
Use after preheating, performed M72, open after cutting oxygen, the cutting torch on the cutting position, is M72's action, but slightly smaller, because of the effect of gravity, than to hurry up.
Sequence of operation: open cutting down switch (M16), delayed perforation cutting down delay (see 7.3) flame parameters, cutting down switch (M17).

M75 cutting torch orientation delay:
Plasma rob positioning, cutting down (M16) first, when met the lower bit (see input port 8 XXW), stop cutting down (M17). And the burning torch up then (M14), after cutting positioning delay (see 7.4) plasma parameters, later, stop cutting up (M15).

M80 terminal shut:
After executing M80 all outlet will be closed.

Chapter 7 Parameter Settings

In the system work under the main menu, press "F3", enter the parameter Settings interface, as shown in the figure below:



7.1 Parametric Description:

Speed parameters

The axis starting speed, adjusting time, highest speed limit;

System parameters

The shaft electronic gear ratio, the origin, reference point, the reverse clearance, line drawing bias, soft limit of positive/negative.

Flame parameters

Flame ignition delay, preheating time delay, cutting torch rise/fall time delay, punch cutting torch ascending/descending, perforated delay, etc.

Parameters of plasma

Cutting torch orientation delay, arc starting with M instructions, arc breaking with M, the choice of arc pressure detection, position detection, perforated delay.

Control parameters

Include flame/plasma mode selection, processing speed, edge notch choice, metric/inch selection, etc.

Storage capabilities

Modified parameters will be stored in the area. Continuous press the S key, choose outside took over control key, you can choose to manually valid or invalid.

Note:

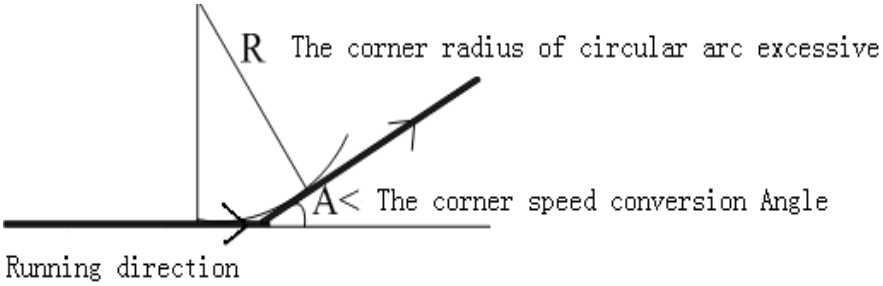
1) Selecting the above parameters, if the changes effective, needs to be stored separately, namely according to the "F8" storage.
2) Under the parameters of the main interface input password after "1928", "F8" save menu to factory Settings. At this point, the parameter changes will be stored in the factory Settings parameters, and the current user parameter. Upon initial parameters, the parameters are for the current factory. Otherwise, applies only to modify the current user parameters.

7.2 parameter setting
7.2.1 the velocity parameter
In the parameter setup submenu, press [F1] key, enter the speed parameter setting function, as shown in figure 7.2:

Speed parameters include:
Starting speed - system X, Y axles at the time of starting and stopping the speed (unit: mm or inches per minute, see control parameters, the same below).
Time adjustment - system by starting speed adjustment to the highest speed (the speed) during the process of the time it takes. Unit: seconds.
Uniform acceleration time - In the process of add/deceleration, linear acceleration time is, usually slightly smaller than adjusting time (about nine over ten). Big machine this value accounted for the proportion of smaller. Example:
Adjust time - 0.5 s
Uniform acceleration time - 0.4 s
Highest speed limit - the top speed for manual and execute commands G00 runtime (unit: mm or inch/min).

Processing speed limit - the highest in the manufacturing process of flame/plasma processing speed (unit: mm or inch/min).
Reset (back to mechanical zero) speed - reset (back to mechanical zero) (unit: mm or inch/min).

Back/forward speed - suspended back and forward operation specified speed (unit: mm or inch/min).
Empty running speed - the speed of the system air lines (unit: mm or inch/min).
Corner speed between conversions Angle - when the program is running direction change over this point, the system is the corner speed down to starting speed.
General system are heavier, this value is selected. Timing can be according to the tone, the processing speed and machine tool vibration condition. Vibration is big, this value is chosen small.
The corner radius of circular arc transition - in high-speed processing line processing, if there is a vibration of machine tool, can be appropriately increase the radius, generally between 4 to 8 mm.



7.2. 2 system parameters
In the parameter Settings menu, press "F2" button to enter the system parameter setting function, as shown in figure 7.3:

Electronic gear molecular /denominator - electronic gear molecules and the ratio of the denominator is the pulse equivalent, unit microns, converted to X 1000 mm. Molecular < 65535, denominator < 65535.
Example: system is 0.008 mm, its electronic gear molecular/denominator = 8/1.
Electronic gear ratio calculation formula = screw DISTANCE x 1000 / (360 x score/interval Angle x ratio).
The calculation method of electronic gear, adjustment method is as follows:

(1) The first rough set an electronic gear ratio, example: 8:1.
(2) Points on the machine tool dynamic walking a standard distance (the longer the more exact), measure the actual walking distance, to the following formula:
<Molecular>*practical run distance /<Denominator> should run distance.
Make type reduction into the simplest fraction.
Example: at the beginning of electronic gear ratio, example: 8:1, at 2000 mm, the actual 2651 mm.

$$\frac{8 X \ 2651}{1 \quad X} = \frac{2651}{250}$$

Machine origin - use connect into switch a special point on the set of machine tools, machine tools without the use of mechanical origin, the origin of the machine tool can be set to zero. (Unit: mm or inch)

Reference point -- the starting point is defined as the process of machining, the system is to run the program (G92) will be automatically generated. (Unit: mm or inch)
Reverse - due to mechanical connection with reverse clearance, clearance system when reverses, it will compensate for clearance. Clearance value is obtained by actual measurement, unit: mm or inches. In general, not advocating a backlash.

Painting line, the line drawing offset guns and cutting of the X, Y axis offset value, unit: mm or inches.

Reset direction - the system back to the direction of the mechanical zero, 1 negative, 0, nothing, 1 is reset.

Positive/negative soft limit - when the machine tool coordinate exceeds the soft plus or minus limit values set, alarm system, if when not in use, should be used to set the parameter is greater than the actual value. Or, in the case of a control parameter, to "choose the soft limit are: 1 / invalid: 0", selected is invalid. Units: mm (or inches).

7.3. Flame cutting parameters
In the parameter setup submenu, press "F3" button to enter the flame parameter Settings, as shown in figure 7.4:

Ignition delay---flame cutting, when performing M20, open the high voltage ignition switch delay time;
Preheat delay---preheat-perforation time (unit: second), the preheating, perforated began after preheating, if the preheating time is not enough, can press【 pause 】, preheating time delay automatically extend to 150 seconds, if preheating is good, can press the "start" button, the end of the preheating time delay, and will be automatically saved in the preheat time delay parameter.
Level3 punches creep speed –level3 perforation in the process of crawling speed (unit: mm/min).
Level 1 perforation delay – level 1 cutting oxygen open time (unit: second)
Delay - secondary perforation -- Secondary cutting oxygen open time (unit: second) and closed level 1 cutting oxygen open time after the delay secondary cutting oxygen.
Level 3 perforations delay (the default) – Level3 cutting oxygen open time (unit: second) and start cutting after the delay.
Cutting up delay M70-- instructions that are executed (M70) - when the delay time of auxiliary instructions (see 6.4 M), unit: seconds.
Cutting down latency M71-- instructions that are executed (M71) - when the delay time of auxiliary instructions (see 6.4 M), unit: seconds.
Punch cutting up M72-- instructions that are executed (M72) - when the delay time (see 6.4 M assisted instruction), unit: seconds.
Punch cutting down M73-- instructions that are executed (M73) - when the delay time of auxiliary instructions (see 6.4 M), unit: seconds.

Perforated delay -- When flame cutting punch performing M07, - after open the cutting oxygen delay, the cutting decreases.
Expired delay - shut down cutting oxygen, because of rest pressure in the pipe, through delay to next step, in order to improve the cutting surface finish.
Period of time delay --between processes in place after the line movement, via the time delay and then run the next line.
First open another cutting oxygen gun (0/1) - 0 - first rises the gun to open cut again

choose 1 - start with cutting oxygen gun.
Use high pre m2-m24 choosing (0/1) - plate punch, need to use high preheating auxiliary, select this feature, open m2-m24 preheating, shut down after preheating.
Pay attention to, don't choose this, the whole process m2-m24 don't open (hot).
Gas use M instructions, open the outlet gas solenoid valve use address (see diagnostic function), if do not use (especially when answering system into the flame and plasma amphibious) to establish the M46.
Not complete processing output option (0/1) - when two processing interval is very short, can choose the, processing after none output (oxygen gas and preheating).

7.4. Plasma parameters set
Set menu, press [F4] into the plasma parameter settings, as shown in figure 7.5:

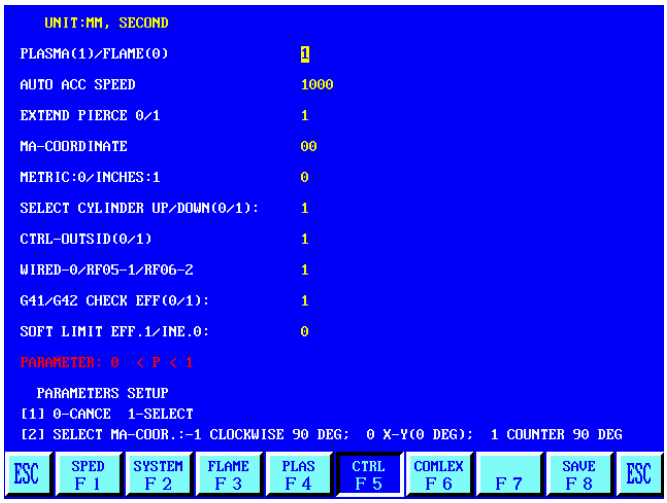
Cutting positioning delay
When plasma gun position, cutting down first. when met the lower bit, stop cutting down. And the burning torch up then, after cutting positioning delay stop cutting up (see M75 instruction), unit: seconds.

Cutting up delay M70-- instructions that are executed (M70) - when the delay time of auxiliary instructions (see 6.4 M), unit: seconds.
Cutting down latency M71 instructions that are executed (M71) - when the delay time of auxiliary instructions (see 6.4 M), unit: seconds
Arc pressure test options -- In plasma operation, whether to detect arc pressure, to make sure form this. (Choose 1) when detecting arc voltage, arc starting to detect when the arc voltage feedback, the runtime to monitor arc voltage feedback. When breaking arc voltage feedback, the system according to suspend processing, and the tip. The general plate processing arc pressure detection. Chose not to detect arc voltage (0). When the ignition switch opens, delay perforation began after processing delay, cutting process, don not detection of arc voltage feedback. The general sheet processing is not to choose arc pressure detection.
Positioning detection of choice - when performing M07 instruction, select whether

to cutting positioning operation. 0-not position. 1-positioning operation.

Positioning detection logic (0 1 high/low) -- -- position switches normally open 0 (highly effective), normally closed (low effective) choose 1.
Punch time delay - when striking success after perforation delay system normal operation.
The corner -- -- shut up distance (corner) transformation in the procedures section, may cause changes in the velocity of the (arc pressure would change, cause drop Gun), so the system automatically shut down when section at the end of the distance away by high control, unit mm.
Distance from the finish off arc pressure -- processing is usually a closed curve, at the end of the process, start and end point come to together, tend to form the phenomenon of burnt, affect the finish. After selecting this distance, have the distance before the finish, and the automatic power off the arc pressure and higher.
Higher automatic signal delay (in seconds) -- --because when you start cutting, arc voltage is not very stable, start cutting after the delay then open up automatically.
Arc starting with M instructions -- -- set up arc outlet, the default is M12.
Arc breaking with M instructions -- -- to break the arc set outlet, default is M 13.
Note: when the arc breaking M instructions than arc M is big 1, indicating that they are one outlet (even to open, and closed), the system controls arc starting switch use level control. When two M instructions are an even number, and are not equal, that is, two output control on and off operation respectively. The system control switches use pulse ignition control, pulse width 0.5 seconds.

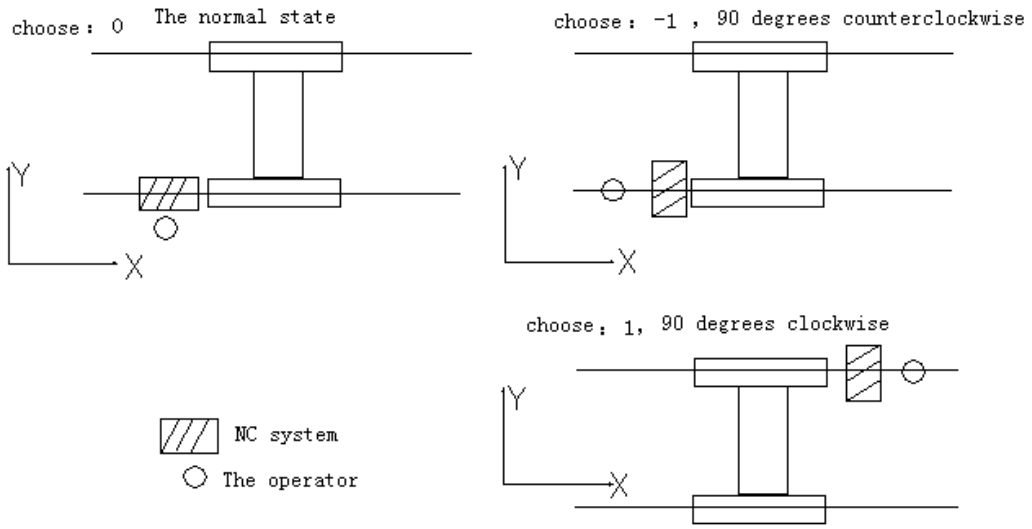
7.5 control parameter set
In the parameter setup submenu, press "F5" button to enter the control parameter Settings menu, as shown in figure 7.6:



Flame (0)/plasma (1) choice - select 0 when choose a flame processing, plasma process selection 1.
Automatic speed change rate - automatically adjust the speed when the rate of

change.
Edge notch choice (0/1) - 0 means don't choose edge of perforation, 1 means choose edge notch.
Steel plate to X width X direction, steel plate width actually, this parameter is only running in heavy work.
Steel sheet to width Y--- The Y direction of the actual height, this parameter is only runs in large work
Machine tool coordinate system selection---Machine tool is the standard installation, big car is X axle, small car is the Y axle. But due to the installation of a CNC system toward is different (face, 1 screen).

Machine tool coordinate system diagram



Metric system: 0/ inch metric: 1 choice = metric: 0: length parameters, speed, and the value, the coordinates are metric unit (mm). Can finish English program (G20), but the display is a metric unit (mm).

Option 1 inch: parameters, display, coordinates are imperial units (inches), Can progress metric program (G21), but the display is imperial units (inches).

Take over control box to choose (0/1) - 0 does not use, 1, I use the company to provide hand control box.

Take over control box to choose (0/1) - if you use the outside to take over control box, choose 1, otherwise to choose 0.

Wired 0/wireless 1 remote control to choose (0/1) - take over control box is wired remote control to choose 0, wireless remote control to choose 1.

G41 / G42 detection effective (0/1), operation, system real-time detection slotted

set, a but found that is not reasonable (not necessarily fatal), there will be a prompt, if you choose to test (1) stop running effectively, or continue to run.

Choose soft limit effectively: 1 / invalid: 0: - soft limit is limit in the machine tool coordinate, 0: limit is invalid. 1: limit effectively.

External limit effective (0/1) - 0: not detect external limit (don't answer, or existing fault), 1: the real-time detection of external limit.

Processed automatically back to choose (0/1) - option 1, processing after the automatic back to the reference point.

Bump shot detection (0/1), effective collision detection machine installed switch input port (19 feet), 0 - don't test, 1 - real-time detection of anti-collision switch.

Hit gun after the suspension of operation (0)/gun (1) - 0, bump shot suspended after processing, choose 1, gun automatic after, processing to continue.

Suspended after a uplift gun choice (0/1), to determine whether suspended after a uplift gun, 0: don't lift, 1: lift gun.

Cutting length (broken bridge point. Mm) - processing when choosing broken bridge function, each cut the length, will automatically set up a broken bridge point;

Broken bridge length (mm) - after setting has broken bridge, an empty line after the distance to start cutting.

Display company name (0/1), set to 1, then can press GG8 modify the name of the company, to 0 indicates the original background image.

Option to show slotting compensation line (0/1) - 0: graphic display without slotting compensation curve, 1: according to the curve of the slotting compensation.

Note: when did not understand the parameters of concrete application, please change carefully!!!

Chapter 8 the gallery features

8.1 Graphics library setup:

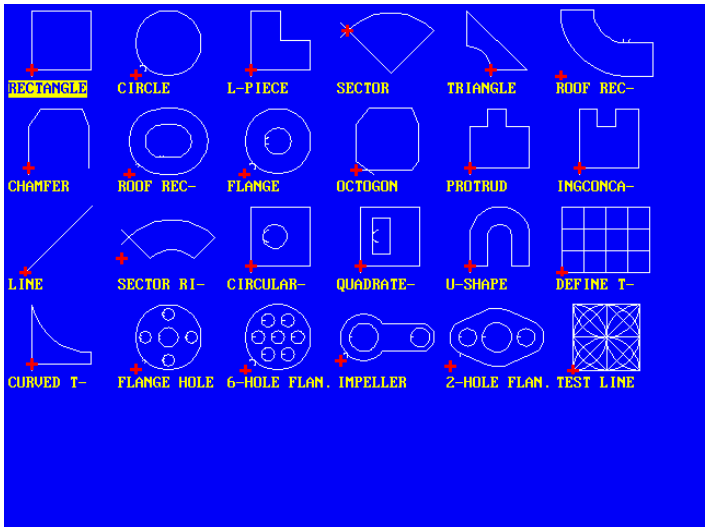
Input to the size you want, to get what you need to artifacts.

When the input parameters, control system general inspections of geometry size, there is an error to display warning information.

Note:

1) The control system can't check all of the error parameters, as much as possible to input the correct size parameters.

2) When you input parameters, the parameters of the control system will be based on the input automatically draw the graphics. This examination is helpful for graphics. Working in the system under the main menu, select the "F6" into the gallery.



8.2 the selection of graphical parts

At present this system provides 24 graphic unit (can be readily expanded according to customer requirements), press the direction key [up] [down] [left] [right] mobile highlight cursor, choose the required graphics, press "ENTER" key to confirm.

8.3 set of graphical parts and discharge

After the parts according to the last steps selected, upper prompts for various parameters of graphics. As shown in figure 8.2:

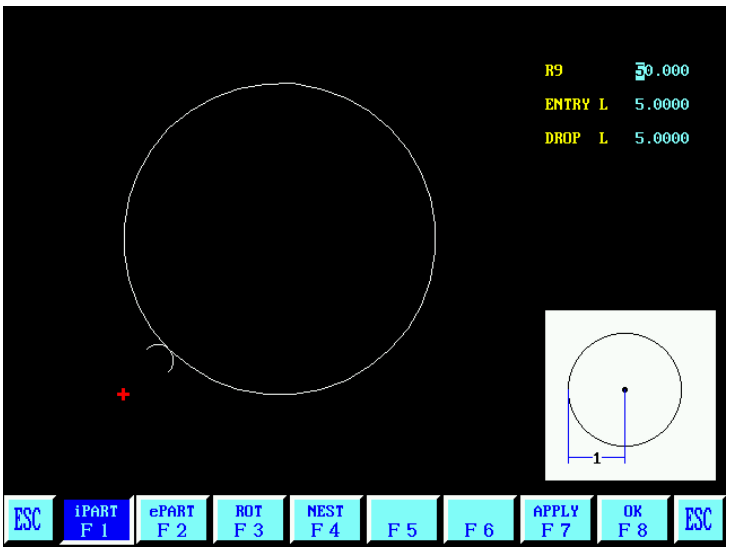
【F1】Artifacts: according to the work piece machining (for effective parts). 【F2】Hole shape: according to the hole shape processing is made valid by means of the (outside).

【F3】Rotation: system prompts for rotation Angle and press [ENTER] or F6 submit, display graphics after the rotation. Angle counterclockwise is positive. 【F4】Arrange material : system prompts input.

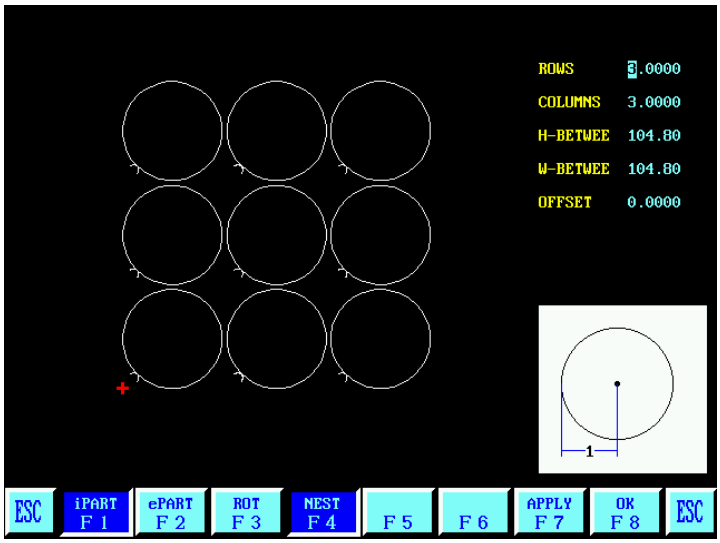
Number of lines - array processing line Numbers.

The number of columns - arrange the job number of columns.

Line spacing - the distance between line and line.
Column spacing – The landscape distance of processing pieces
Line offset - interlaced dislocation of the offset. As shown in figure 8.3 schematic diagram:



Graph 8.2 Graph set menu

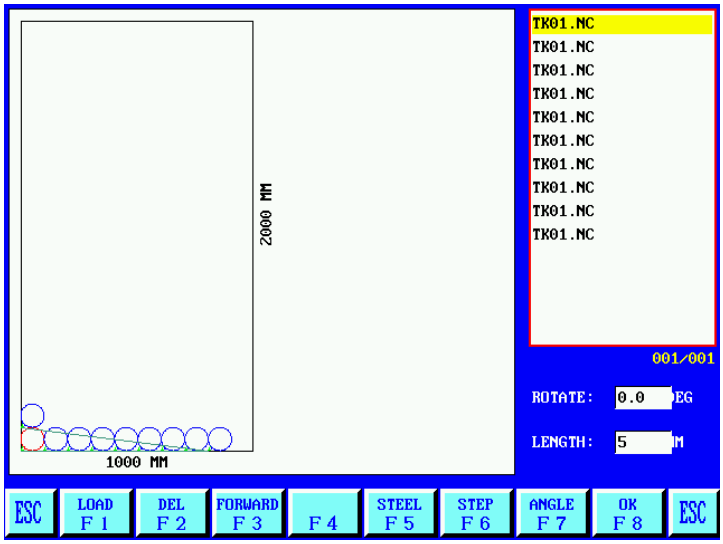


Graph 8.3 Layout diagram

[F8] Submit: the parameter selection, choose the key generation process.

Chapter 9 nesting functions

In the system work under the main menu, press【F7】key to enter nesting function. This function supports plate nesting, the user can add different parts on any board, optimization arrangement after processing. As shown in the figure below:



9.1 nesting functions set menu

Press the return key to switch to the steel plate after drawing frame and file list boxes (selected in red) box, press the direction key move files or parts, press G setting angle of selected parts.

Can increase parts: from the gallery and transferred to the file system storage.

Delete parts: delete inappropriate parts.

Cutting in advance: press the up and down key to select some parts, press this key cutting the parts in advance.

After cutting, press the up and down key to select some parts, click this button after cutting the parts.

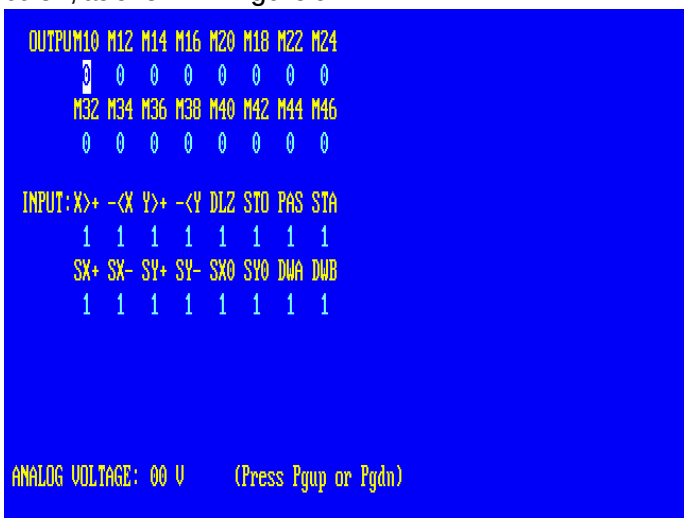
The size of the steel plate size: Settings for cutting steel plate, in order to automatically optimize the arrangement of parts.

Every time interval: set the parts moving distance.

Confirmed: according to the confirmation, input filename to save the nesting file, for cutting.

Chapter 10 diagnosis function

In the system work under the main menu, press "F5" button to enter system diagnostic function, as shown in figure 9.1:



10.1 Input/output interface system diagnosis

System diagnosis according to the current system of open hardware resources, under the system diagnostic images, can check the input/output interface.

10.2 output check

The cursor moves to the 16 points photoelectric isolation output at any position. With "0" and "1" to change the output state of 0 s and 1 s level. 1 means setting, 0 means canceled. See the output each port definitions (input/output port definition).

10.3 input inspection

Shows the current 16 points photoelectric isolation state of input. 1 means setting, 0 indicates the port without setting. Its input the symbol definition can see ports (input/output port definitions), including:

X > +, - < X --- X axle plus or minus limit.

Y >+, -<Y--- Y axle plus or minus limit.

DLZ --- plasma arc pressure detection.

STO - manually stop button

PAS - pause button manually

The STA - manual start button

SX + SX- --- take over control box of the X axle is, negative direction control key.

SY +, SY- --- take over control box of the Y axle is, negative direction control key.

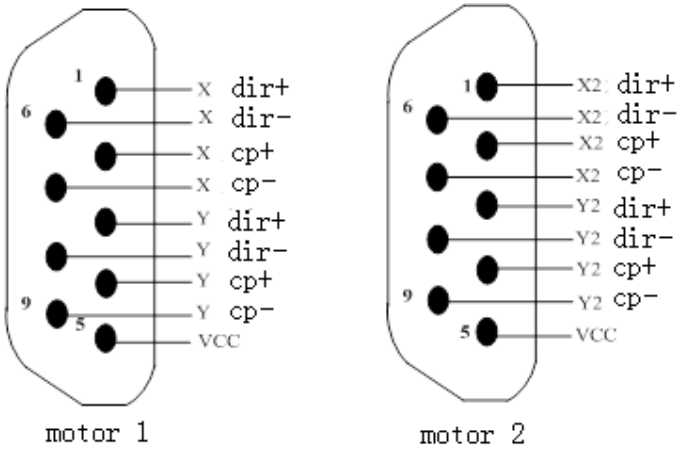
SX0 SY0 --- X, Y axle mechanical zero point.

DWB, DWA --- Cutting A, B of initial alignment interface.

Chapter 11 system input/output interface connection

System interface: including input (DB25 core), output (DB25 core), motor 1 (9 core), motor 2 (9 core), RS232 serial port (9core), including RS232 serial port to take over control box, see appendix 3.

11.1 the external motor drive interface

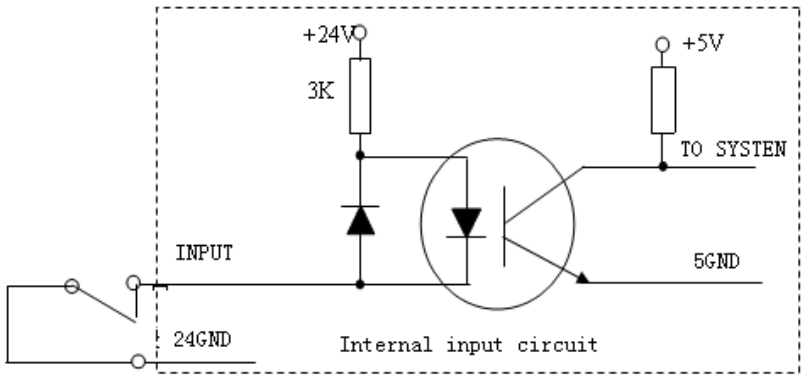


Note:

1. If this system is used for plasma cutting/welding equipment, from system to drive cables must use the shielded wire, system safety grounding and shielding wire shielding copper network also want safety grounding, pictured above.
2. If the device needs bilateral drive, motor 2 signal port.
3. If use Yang connection with VCC to total Yang side, direction and negative pulse signal by corresponding end of the drive.

11.2 input connection

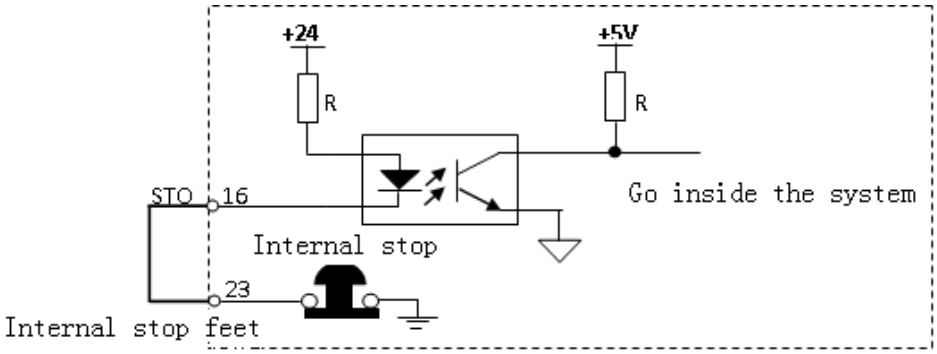
11.2.1 input principle



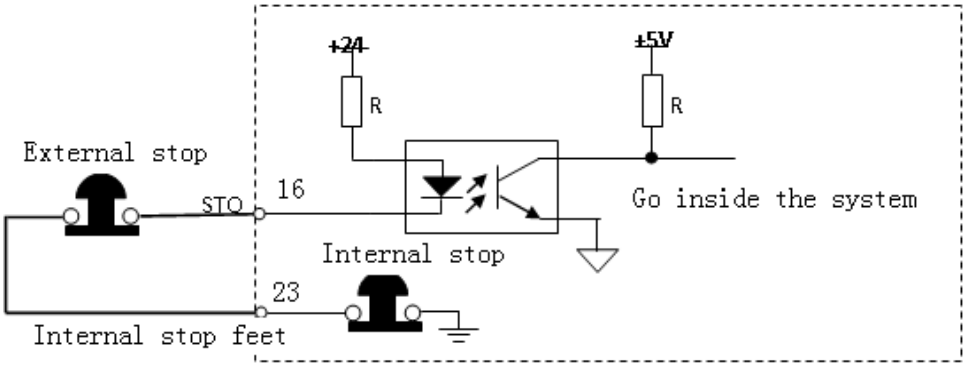
11.2.2 "Scram" and the use of the input signal

"Scram" input signal and the input signal when use other differences. Generally there are two ways:

a. Only use the system internal scram (that is, the system panel).
Connect the system input port of the 23 feet (internal stop terminal) and 16 feet (STO) short sub.



b. External and internal scram (that is, external scram) are effective. The system input port of the 23 feet (internal STOP lead) and 16 feet (STOP) between them into an urgent STOP switch.



11.3 input defined

Input cable (25 core needle socket)

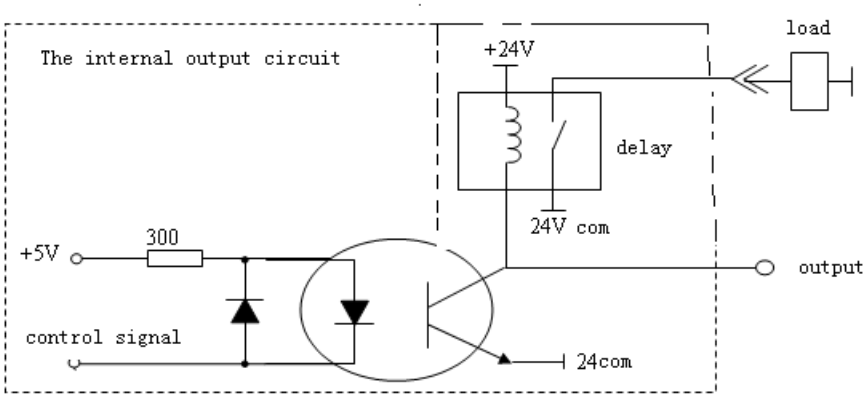
Signal identification	25 core feet No.	Illustration
X>+	1	X axle is limit, normally closed. If not, please send short signal received 13 feet (24 v)
-<X	14	X axle negative limit, normally closed. If not, please send short signal received 13 feet (24 v)
Y>+	2	Y is limit, normally closed. If not, please send short signal received 13 feet (24 v)

-<Y	15	Y negative limited, normally closed. If you don't use, please send short signal received 13 feet (24 v)
DLZ	3	Plasma arc, low effective (normally open)
STOP	16	External scram button, normally closed connection. If not, please send short signal received 13 feet (24 v)
PASE	4	External pause/driver alarm, normally closed, if not, please send short signal received 13 feet (24 v)
START	17	External start buttons, normally closed. If not, please send short signal received 13 feet (24 v) - +
H08/SX+	5	Input stand-by/wireless remote control input port p. 9 / external wired hand control box X + (take over control box, normally open/closed connection, but should agree)
H09/SX-	18	Enter standby/wireless remote control input port p. 10 / external wired hand control box of X-
H10/SY+	6	Enter standby/wireless remote control input port p. 11 / external wired hand control box of Y+
H11/SY-	19	Enter standby/wireless remote control input port p.12 / external wired hand control box of Y-
H12/SF+	7	Enter standby/wireless remote control input port p. 13 / external wired hand control box speed + F/X axle origin
H13/SF-	20	Enter standby/external wired hand control box to slow down - / F Y origin
H14/UP	8	Enter standby/external wired hand control box of cutting torch lift of/A gun initial positioning input port (normally closed)/bump shot detection (A gun)/upper limit of drill bit
H15/DOWN	21	Enter standby/external wired hand control box of cutting down/B gun initial positioning input port (normally closed)/bump shot detection (B)/ gun drill
24V	12,24	24 v power supply
24V ground	13,25	24 v power supply ground

Note:
1) Sign or (tied) function.
2) If this system is used for plasma cutting/welding equipment, from system to drive cables must use the shielded wire, the system must be safety grounding. 3) The external input signal connection into a normally closed, invalid on (low level) is valid off (high level).
4) The wireless remote control is in parallel connection with 11.6 nine cores port.

11.4 output connection

11.4.1. Output principle



11.4.2. Output definition

Output cable (25 core hole socket)

Output signal definition	25 core socket (hole)	Illustration
M10/M11	1	Oxygen gas and preheating and port on
M12/M13	14	Level 3 / arc cutting oxygen (default)
M14/M15	2	Cutting A liter, M14 open/ M15 close
M16/M17	15	Cutting A drop, M16 open / M17 close
M20/M21	3	Flame ignition switch, M20 open/ M21 close
M18/M19	16	Level 1 perforation cutting oxygen/standby switch, M18 open/M19 close
M22/M23	4	Secondary punch cutting oxygen/standby switch, M22 open/ M23 close
M24/M25	17	High-pressure preheating oxygen/standby switch, M24 open / M25 close
M32/M33	5	Line drawing/standby switch, ignition gun M32 on/M33 off
M34/M35	18	Line drawing gas gun/standby switch, M34 open/ M35

		close
M36/M37	6	Cutting torch B up/standby switch, M36 open/ M30 c
M38/M39	19	Up automatically (M38)/manual (M39) switch
M40/M31	7	Cutting B down /standby switch, M40 / M41 close on 24 v power supply 24 v power supply
M42/M43	20	Drill start/paint line gun line/standby switch, op M43 close
M44/M45	8	Drill up/standby switch, M44 open/ M45 close
M46/M47	21	Drill down/standby switch, M46 open/M47 close
24V	12,24	24V power supply
24V ground	13, 25	24V power supply ground

11.4.3. Note

1) System with DC24V power supply.

2) The use of external input, output, must provide DC24V power supply to the system.

11.5 RS232 connection definition (9 core pin)

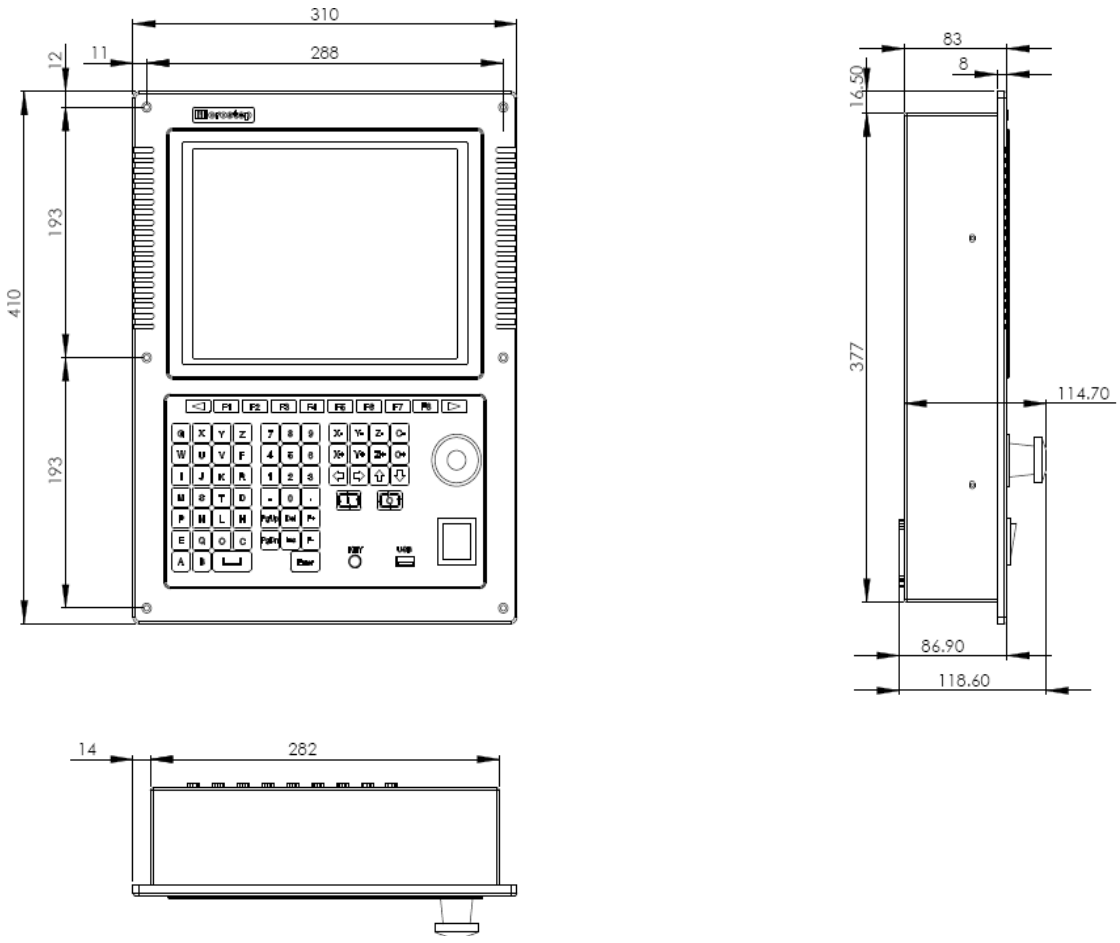
DB9 Pin number	Conneciton definition
1	+24V
2	TXD
3	RXD
5	24COM
6 ~ 9	NC

11.6 the remote connection definition (9 core pin)

CNC mouth pin number to define	Define	Remote control receiving remote control box of pin number	Define	Illustration
7	24+	1	24+	24Vpower

6	Analog output	2		
8	Analog COM	3		
		8	24-	24Vpower ground
1	S1	9	S1	Remote receiving box input 1
2	S2	10	S2	Remote receiving box input 2
3	S3	11	S3	Remote receiving box input 3
4	S4	12	S4	Remote receiving box input 4
5	S5	13	S5	Remote receiving box input 5
9	24-	15	24-	24Vpower ground

Attachment 1: the overall dimensions



Attachment 2: SF – 2300S - QG software upgrade instructions,

First Step

1. First the U disk with FAT or the format of the FAT32 format, preferably using FAT format.
2. Copy the upgrade file into the USB disk. Upgrade file must be named STARTCNC. EXE.
3. Hold the USB port on the left arrow button, power supply, open the system to the system power up, will U disk inserted in the USB port of system.
4. The system automatically upgrade into the interface, press the F1 key on the panel (that is, the upgrade of the pressed key).
5. If the upgrade is normal, after the upgrade is complete, the system will display "upgrade success".
6. Shut off the power and pull out U disk, the upgrade process is complete.

Second

The upgrade process exception handling check

Upgrade file must be named STARTCNC. EXE.

If has ruled out this factor, you can operate according to the operation steps, such as attempts to fail, still can call my company's after-sales service.