
catalogue

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SF -2100 - c fast operation manual

SF - 2100 - c flame/plasma CNC system fast operation manual:

The first chapter system operation panel



【 F1】 -【 F8】 : Function keys, under different interface, with the corresponding prompt functions

【 S ↑ /PgUP】 : Under the code interface is up page key, in the hand or automatic interface is cutting torch up

【 S ↓ /PgDn】 : Under the code interface is down page button, in the hand or automatic interface is cutting torch falls off

【 F ↑ /HOME】 : Under the code interface is key to jump the line first, under the operating interface is to speed up the speed

【 F ↓ /END】 : Under the code interface is to jump to the line end , under the operating interface is to slow down speed

【 1】 -【 9】 : Numeric keys, enter the corresponding letter button, please click on the "shift" key



Mobile cutting torch or move the cursor around



The enter key to confirm the input value or select the project



Escape key to exit the current interface or deselect



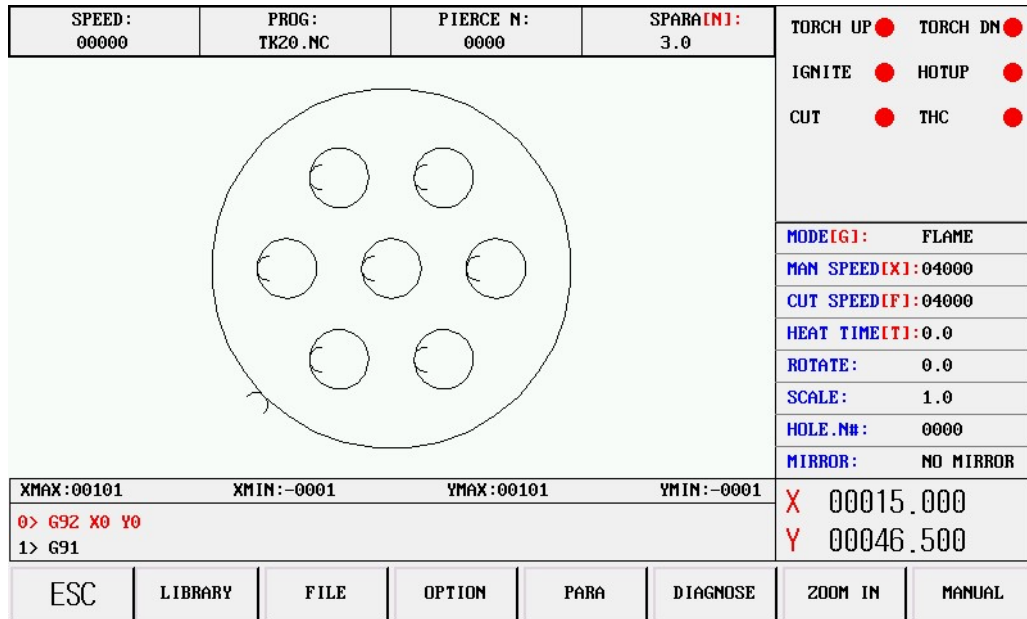
Function switch, press the button to open the corresponding function



The blank space key, input composite keys for the shift key, according to an effective time, press a button to enter automatic processing interface under the main interface

The second chapter main interface

After the system is powered on, interface is shown in figure 1:



图一

Under the main interface, press "F1" - "F8" corresponding to the following functions :

[F1] : Gallery, enter can choose commonly used 24 kinds of graphics libraries, most have die size and pore size.

[F2] file, enter can choose the native file, U disk file, edit, import and export operation, etc.

Options:

[F3] Option, the machining parts for mirror, rotate, starting point, rotation correction, scaling, parts, etc.

[F4] : parameters. All parameters can be set up in this.

"F5" : diagnosis, input and output diagnosis, system Settings, emptying storage file, reduction, the I/O custom parameters.

[F6] : graphics zoom, zoom in graphics, view the perforation, as well as cutting information display.

[F7]: manual, manual mobile machine, coordinate system reset, the back, select the breakpoint.

[G] : set the cutting mode, the optional flame, plasma, demonstrates three modes.

[X] : set manual movement speed.

[F] : set up automatic cutting speed.

[T] : set the preheating time delay.

[N] : before the start of the cutting operation, you can set the slot size



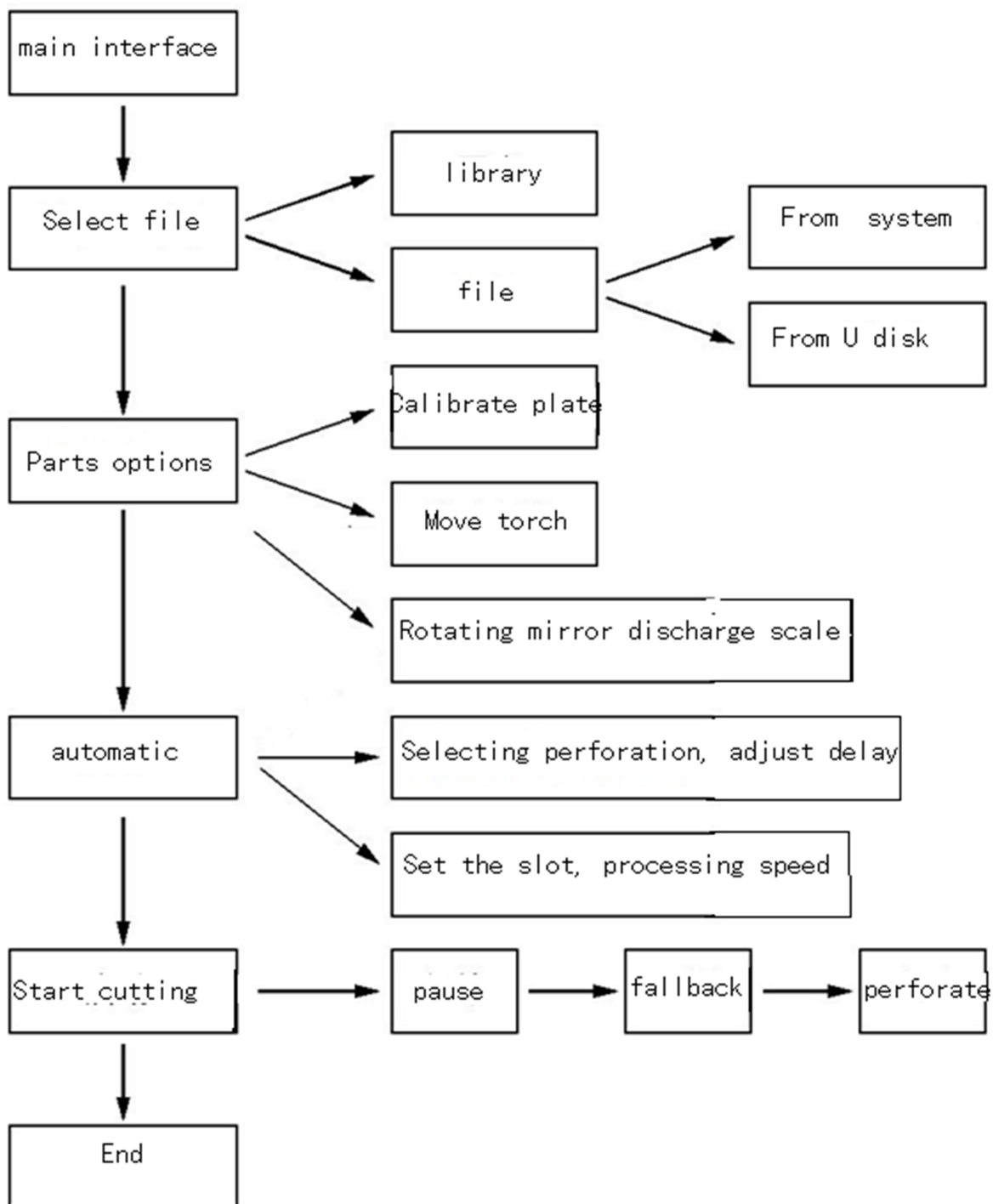
start the cutting



: Pause or stop cutting

The third chapter cutting process

Automatic cutting process diagram

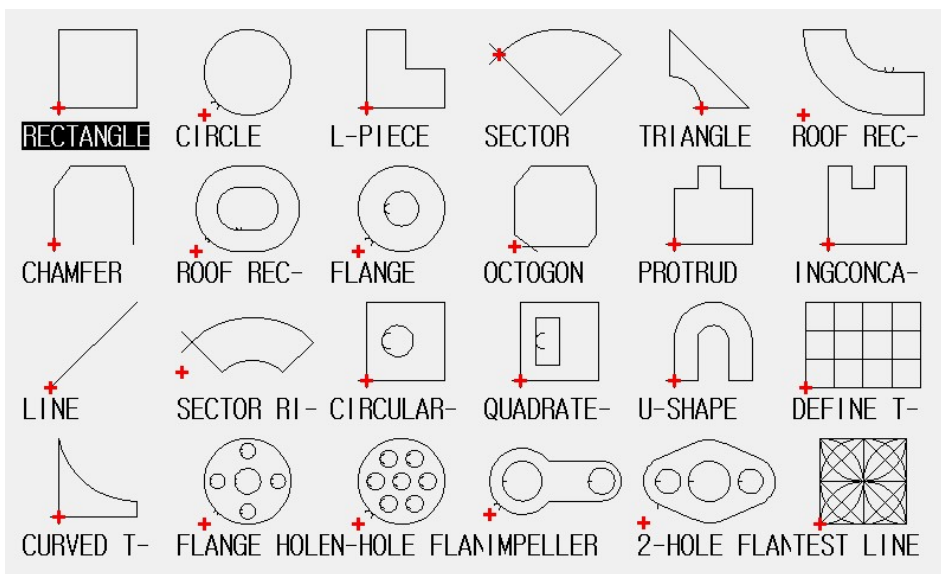


The first section selection processing graphics

This system can select from gallery selection system processing graphics and users from the U disk or storage area to the graphics processing


3.1.1 Library function

System main interface press "F1" button to enter gallery features, main picture below

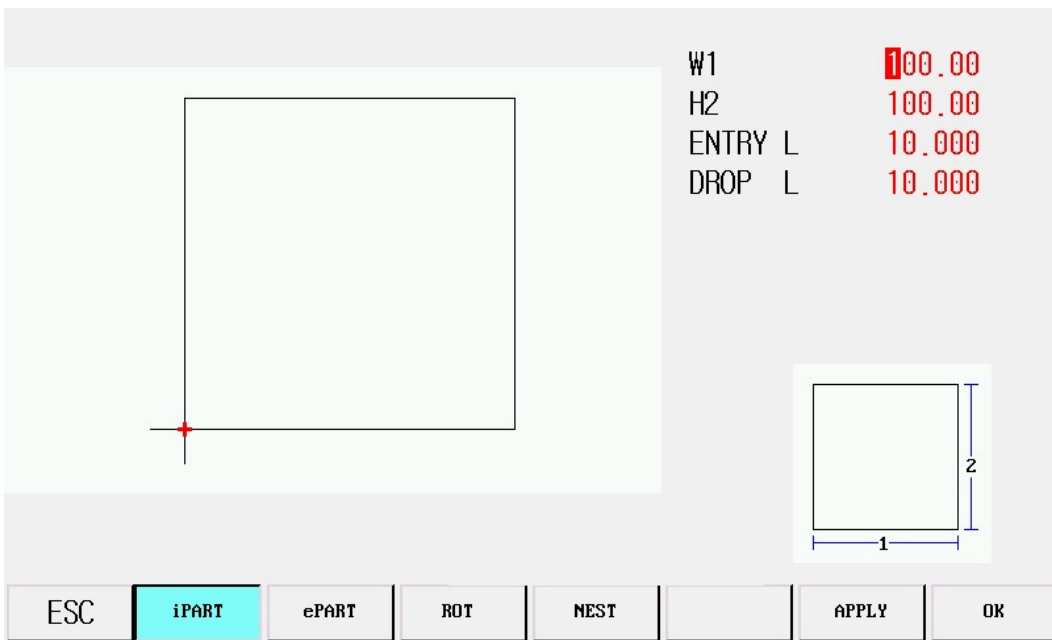


Selection of graphical parts

At present this system provides 24 graphic unit, press the direction key【↑】【↓】【←】【→】mobile highlight cursor,

choose the required graphics,  key confirmation, the confirmation of graphics parameters into the interface

Graphical interface parameters:



Press the direction key [↑][↓][←][→] Move highlighting the cursor, modify graphics parameters , Press [F1]-[F4]

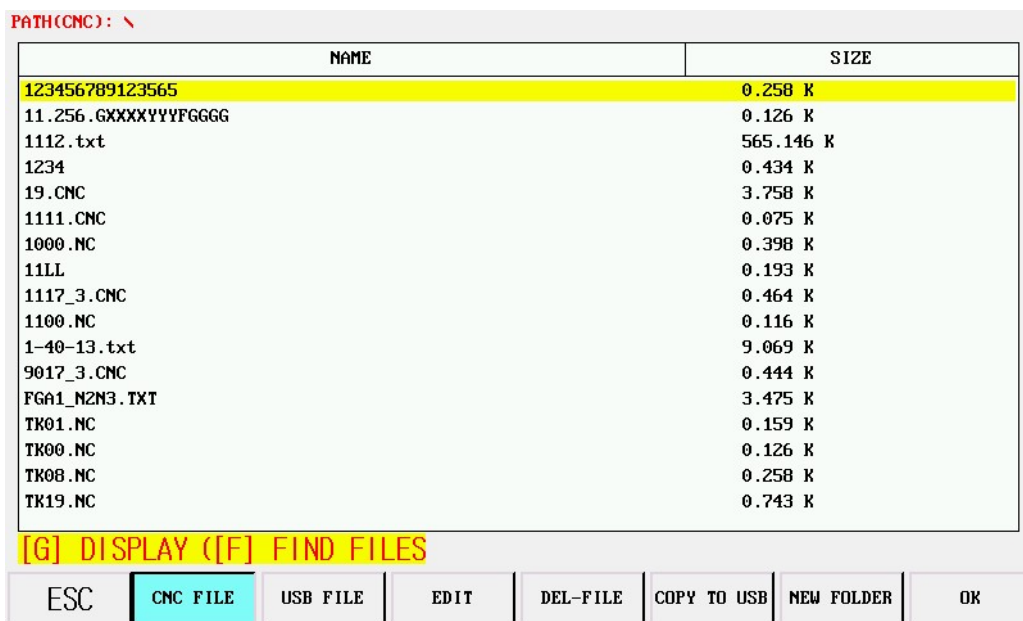
Choose graphically , Rotation discharge. Press [F6] Submit the modified parameters , Press [F7] Confirm the cutting current

graphics , Confirmed the system automatically returns to the switch on the main interface, and displays the graphics editor.

3.1.2 Processing file selection

Under the main interface press [F2] , into the interface of File management

As shown in the figure below.



F1 CNC file into the hard disk file list, as shown, the system list file list

F2 USB file documents show U disk directory

F3 EDIT Edit the current cursor file

F4 DEL-FILE Delete the current cursor file

F5 COPY TO USB The current cursor file is copied to the external usb drive

F6 NEW FOLDER Can create a folder under the root directory

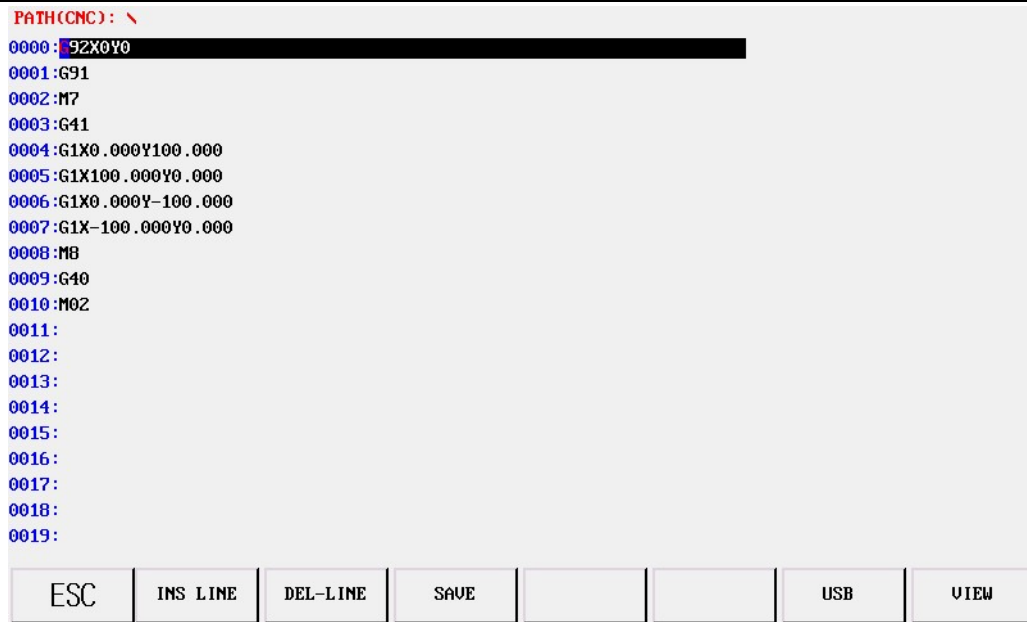
F7 OK Make sure the current cursor processing file, and exit to the main meeting.

Read U disk file



Under the file management interface , press【 F2】into the Usb file interface, in the interface,【 F5】Automatically from the "copy to usb flash drive" into "copy to the native". In the choice to the corresponding cutting code file, press【 F5】the system will automatically save the file to the file.

Edit the current file



Under the file interface, move the cursor to the need to edit the file name, press **[F3]** Edit the file.

Input characters, some of the key is to reuse a key, , reuse is the character that the downside of keys, click on the first **[Shift]**

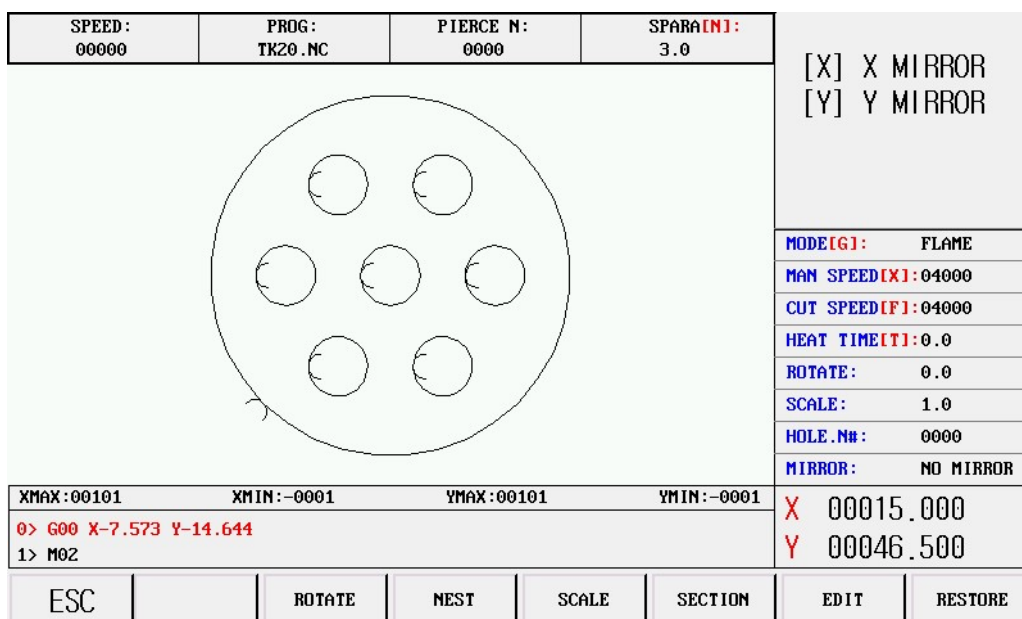
Press the reuse button again, the input is to reuse the upside of keys.

When editing code, press **[F1]** Can be inserted in the current edit line, press **[F2]**Delete the current line 。 press **[F3]**

Create a new file, press **[F4]**Create a new folder.

3.1.3 Parts option function

Under the main interface, press **[F3]** , into the Parts option interface



[F1] : Starting point selection, continuous key, can choose the starting location.

【 F2】 : Rotation correction, can use plate leveling function and manual rotation function

ROTATE : entering rotation correction interface, mobile cutting torch to plate production start position, press【 F1】Set the starting point, the system coordinates automatically reset, and then move the cutting torch to the side to the other corner of the plate on the same side board, press【 F2】SET The end, the system automatically rotating graphics.After the completion of the correction, if prompted to return to the starting point, if the press【 ENTER】key , Then the system will return to the correction of the starting position, if press【 ESC】 Then the system without any operation, returns to the graphical interface。

【 F3】 : NEST , For simple discharge machining parts。

【 F4】 : SCALE , Scaling set processing parts

【 F5】 : SECTION , Choose from any perforation PM processing

【 F6】 : EDIT


【 F7】 : RESTORE , Cancel all operations, restore the graphics to the original state。

【 X】 : Graphics to the X axis image


【 Y】 : Graphics to the Y axis image


The second section setting processing parameters

3.2.1 Need to set the following parameters before processing :

Cutting pattern [G] Continuous press the key  , Patterns To switch between in the flame cutting, plasma and presentation ;

Cutting speed [F] press the key  , Modify the numerical change cutting speed , Press enter to confirm


Manual speed [X] press the key  , Modify the numerical change cutting speed , Press enter to confirm

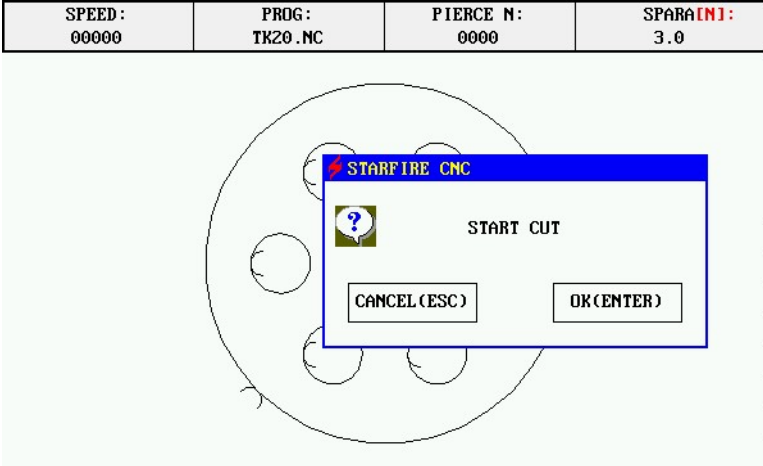
slot [N] press the key  , Modify the numerical change slot size , Press enter to confirm



Preheat time delay [T] press the key  , Modify the numerical change preheat time delay , Press enter to confirm



3.2.2 Under the main interface press  Enter the processing interface

3.2.3 Start processing

After selecting machining parts, and finish machining parameter is set, press the key  , System interface, the diagram below :

SPEED: 00000	PROG: TK20.NC	PIERCE N: 0000	SPARA[N]: 3.0	TORCH UP ● TORCH DN ●
				IGNITE ● HOTUP ●
				CUT ● THC ●
				MODE[G]: FLAME
				MAN SPEED[I]: 04000
				CUT SPEED[F]: 04000
				HEAT TIME[T]: 0.0
				ROTATE: 0.0
				SCALE: 1.0
				HOLE.N#: 0000
				MIRROR: NO MIRROR
XMAX:00101	XMIN:-0001	YMAX:00101	YMIN:-0001	X 00015.000
0> G00 X-7.573 Y-14.644				Y 00046.500
1> M02				
ESC	LIBRARY	FILE	OPTION	PARA
			DIAGNOSE	ZOOM IN
				MANUAL


At this point, press the  Start automatic processing , press  Exit the processing , Back to the main interface

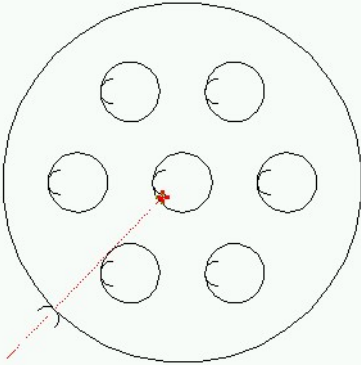
During processing, can press   Adjust the processing speed.Click 1% deceleration, long press 10% deceleration.

The fourth chapter machining process

In the process of the content of this chapter is to introduce the processing needs of processing

4.1 Suspend operations

During processing, flame failure, interruption of arc voltage, or other need to suspend the case, press  , System to stop working, and interface as follow :

SPEED: 00000	PRG: TK20.NC	PIERCE N: 0000	SPARA[M]: 3.0	TORCH UP ● TORCH DN ●
				IGNITE ● HOTUP ●
				CUT ● THC ●
				MODE[G]: FLAME
				MAN SPEED[X]: 04000
				CUT SPEED[F]: 04000
				HEAT TIME[T]: 0.0
				ROTATE: 0.0
				SCALE: 1.0
				HOLE.N#: 0000
				MIRROR: NO MIRROR
XMAX:00101	XMIN:-0001	YMAX:00101	YMIN:-0001	X 00044.244
2> G00 X45.000 Y45.000				Y 00045.720
3> G42				PAUSE.
ESC	BACKWARD	FORWARD	RETURN	N-PIERCE
			ZOOM IN	DELAY +
				DELAY END

【 F1】 : BACKWARD , Cutting nozzle along the trajectory of the original cut back。

【 F2】 : FORWARD , Cutting along the cutting path forward;

【 F3】 : RETURN , Cutting nozzle return to the starting point, namely the starting point of the workpiece。

【 F4】 : N-PIERCE ,




【 F5】 : ZOOMIN

【 F6】 : DELAY+ , Increase the preheating time, increased to 10 seconds at a time。

【 F7】 : DELAY END , End of preheating, skip the rest of the preheating time ,

Note: **press【 F7】** end the preheating time delay , The end of the current only delay, not log into the system, if you need

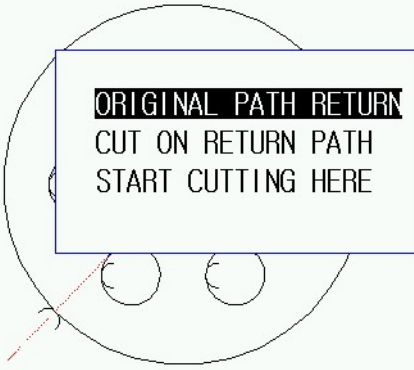
memory the preheating time delay time for system, press  end time delay (memory)at the same time), start punch processing

Press   Choose to change the speed , modify The values , press  to confirm.

After the completion of the modified,press  To continue processing.

4.2 Change perforation position or cutting position after the pause

Mobile cutting after the pause, press start again , appear the following interface

SPEED: 00000	PROG: TK20.NC	PIERCE N: 0000	SPARA[N]: 3.0	TORCH UP ●	TORCH DN ●
				IGNITE ●	HOTUP ●
				CUT ●	THC ●
				MODE[G]:	FLAME
XMAX:00101				X 00062.466	
XMIN:-0001				Y 00045.720	
YMAX:00101					
YMIN:-0001					
2> G00 X45.000 Y45.000					
3> G42				PAUSE.	
ESC	BACKWARD	FORWARD	RETURN	N-PIERCE	ZOOM IN
			DELAY +	DELAY END	

Press   Choose corresponding function , Press  Run the corresponding action

1) ORIGINAL PATH RETURN

Return to adjust the starting point at the speed of G00, 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) CUT ON RETURN PATH

Again in the first punch, 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 epitaxial perforation, perforation point more smooth;

3) START CUTTING HERE

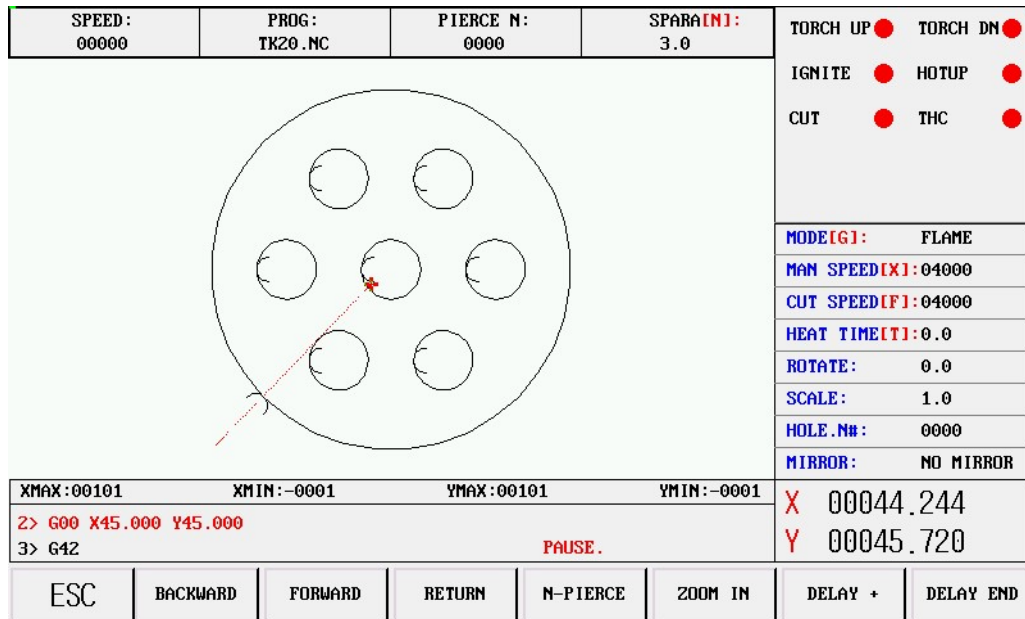
First perforation, adjust the current coordinates is suspended, the coordinates of the original trajectory continue processing, in order to realize the transfer function of perforation.

Note: (2) and (3) before operation, should be fully preheat (fire), because a but chose operation, punch right away.

Normal practice should be first preheating (fire), then press the "start" key.

4.3 The original track back processing

In processing for failing to cut through, need to the original track back, is as follows:



Pause, slow down the running system, the system shows "pause" tag, and presented the following figure.

Press **[F1]**System to perform the original track back, back speed set in the parameter - speed - back.

按

Press **[F2]**In the back, on the basis of the original trajectory.In the process of back, if do not meet the need of position, can press **[pause]** again, repeat the above process, until it is right.

Meet G00 (arrived at a piercing point) back;

In the process of back, meet G00 suspended (reach a piercing point) system, the operator can choose is to continue to back, or forward;

The operation of back to back

Back to the designated place,

For preheating, then press punch, began to processing

under the condition of the flame , cutting torch up, open oxygen , cutting torch down, system continues to run.

under the condition of plasma , arc open, wait for after the arc, the system to continue running.

The above operation can be repeated, until get the desired effect.

4.4 Breakpoints recovery and restore power

4.4.1. Breakpoints recovery

Power failure in the system for suspension or for processing, 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.

1) automatic recovery, after the power switch on, the system will prompt the diagram below

SPEED: 00000	PROG: TK20.NC	PIERCE N: 0000	SPARA[N]: 3.0	TORCH UP ● TORCH DN ●
				IGNITE ● HOTUP ●
				CUT ● THC ●
XMAX:000B1 XMIN:-0001 YMAX:000B1 YMIN:-0001				MODE[G]: FLAME
0> G00 X-4.644 Y-11.715 1> M02				MAN SPEED[X]: 04000
				CUT SPEED[F]: 04000
				HEAT TIME[T]: 1.4
				ROTATE: 0.0
				SCALE: 1.0
				HOLE.N#: 0000
				MIRROR: NO MIRROR
				X 00064.998
				Y 00036.500

Choose breakpoints recovery , Press "start" button, the system breakpoint began to recover.

2) Entered manually, as long as the current process does not change, can press[F6] find breakpoint function, back to the main interface and then press "start" button, system breakpoint began to recover.

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

4.5、 Choose section code function

4.5.1、 Start the function

Passage function to specify system, arbitrary section from the program (or a piercing point) start the processing.

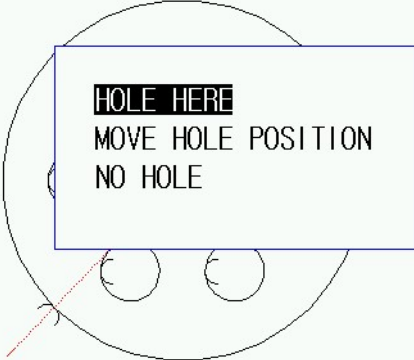
Press "F4" selecting optional perforation function, the system shows the diagram below:

SPEED: 00000	PROG: TK20.NC	PIERCE N: 0000	SPARA[N]: 3.0	TORCH UP ● TORCH DN ●
				IGNITE ● HOTUP ●
				CUT ● THC ●
XMAX:00101 XMIN:-0001 YMAX:00101 YMIN:-0001				MODE[G]: FLAME
2> G00 X45.000 Y45.000 3> G42				MAN SPEED[X]: 04000
				CUT SPEED[F]: 04000
				HEAT TIME[T]: 100.0
				ROTATE: 0.0
				SCALE: 1.0
				HOLE.N#: 0000
				MIRROR: NO MIRROR
				X 00034.198
				Y 00035.338
ESC	BACKWARD	FORWARD	RETURN	N-PIERCE
				ZOOM IN
				DELAY +
				DELAY END

Perforated dot at this point: direct input, and press enter after confirmation, the system will automatically cutting torch orientation to punch points
 Press start from the current point to start cutting

4.6、 The edge of the thick plate perforation

- 1) In the automatic processing, need to use edge perforation method for thick plate processing.
- 2) edge of the perforation of the method is: will be in front of the punch cutting torch to move to the edge of the plate recently.
- 3) Start preheating, when after the preheating, press **[start]** key , Cutting along a straight line 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:

SPEED : 00300	PROG : TK20.NC	PIERCE N : 0000	SPARA[N] : 3.0	TORCH UP ● TORCH DN ●				
				IGNITE ● HOTUP ●				
				CUT ● THC ●				
				MODE[G] : FLAME				
				MAN SPEED[X] : 04000				
				CUT SPEED[F] : 04000				
				HEAT TIME[T] : 100.0				
				ROTATE : 0.0				
				SCALE : 1.0				
				HOLE.N# : 0000				
				MIRROR : NO MIRROR				
XMAX:00101		XMIN:-0001		YMAX:00101		YMIN:-0001		X 00044.998
2> G00 X45.000 Y45.000				PREHEA				Y 00046.500
3> G42								
ESC	BACKWARD	FORWARD	RETURN	N-PIERCE	ZOOM IN	DELAY +	DELAY END	

Location perforation

System position and perforation, for inner hole in common use

Select Edge of the hole

- 1) The operator can press **[↑][↓][←][→]** , Adjust the position of the cutting torch to the outer limits of the steel plate, start preheating;
- 2) When after the preheating, press **[start]** key , Cutting along a straight line distance and the selected cutting speed to punch, cutting processing again.

Don't perforat

No perforation, system run directly from the current perforation position. Blank line to the next hole, a new perforation tip.

The fifth chapter interface definitions

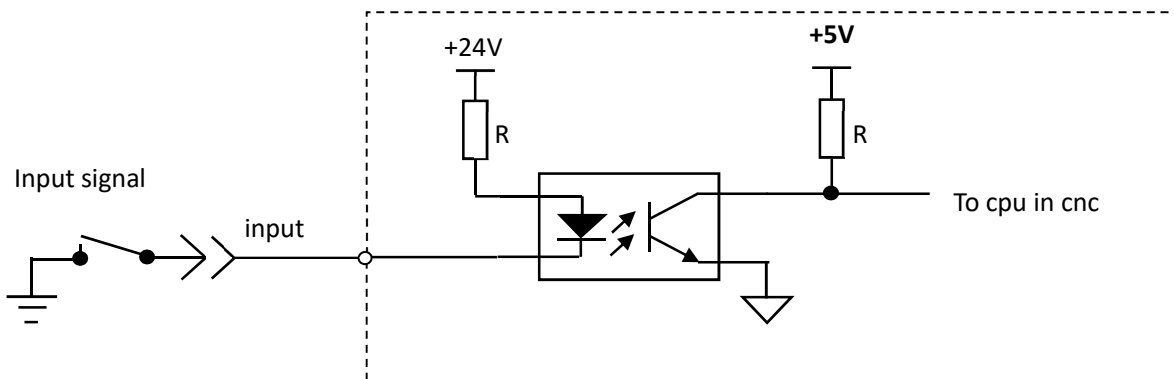
INPUT					
	NUMBER	NC/NO		NUMBER	NC/NO
● LIMIT X>+	01	NO	● REMOT X+	05	NO
● LIMIT X<-	14	NO	● REMOT X-	18	NO
● LIMIT Y>+	02	NO	● REMOT Y+	06	NO
● LIMIT Y<-	15	NO	● REMOT Y-	19	NO
● ARC ON	03	NO	● REMOT S	07	NO
● STOP	16	NO	● TORCH UP/X ZERO	20	NO
● PAUSE	04	NO	● TORCH DN/Y ZERO	08	NO
● START	17	NO	● COLLISION	21	NO

[UP/DOWN] MOVE CURSOR [I] ON/[O] OFF 54-05-05 00:63:28 VER:3.1-5.1.5

ESC	INPUT	OUTPUT		SYS SET		DEFINE		ESC
-----	-------	--------	--	---------	--	--------	--	-----

Above is the system input screen. In the figure above, [serial number] is the pin number on the plug, and [normally open and normally closed] is the default state of the signal. When the input pin number is high, the input state is red. When the input pin number is low, the input state is green.

5.1.1 input principle



5.1.2 default input definition (DB25-pin)

Pin number	instructions	Pin number	instructions
1	Positive X-limit/Origin X	5	Plasma positioning
14	Negative X-limit/Origin X	18	Pause/drive alarm
2	Positive Y-limit/Origin Y	6	plasma collision detection
15	Negative X-limit/Origin Y	19	External control X+
3	Stop	7	External control X-
16	Torch up	20	External control Y+
4	Plasma arc feedback	8	External control Y-
17	Torch down	21	External control start
12, 24		13, 25	24V-

OUTPUT

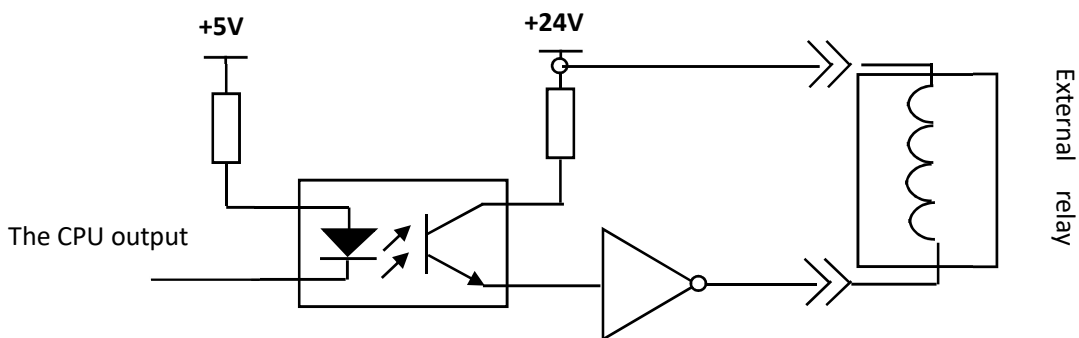
	NUMBER NC/NO		NUMBER NC/NO
● HOTUP(M10)	01 NO	● FLAME AUTO(M48)	05 NO
● CUT(M12)	14 NO	● BAK(M18)	18 NO
● TORCH UP(M14)	02 NO	● BAK(M26)	06 NO
● TORCH DN(M16)	15 NO	● PLASMA AUTO(M38)	19 NC
● IGNITE(M20)	03 NO	● BAK(M28)	07 NO
● ARC(M32)	16 NO	● BAK(M30)	20 NO
● WATER(M22)	04 NO		
● HOTUP H(M24)	17 NO		

[UP/DOWN] MOVE CURSOR [1] ON/[0] OFF 54-05-05 00:63:48 VER:3.1-5.1.5

ESC	INPUT	OUTPUT		SYS SET			DEFINE		ESC
-----	-------	--------	--	---------	--	--	--------	--	-----

In the figure above, [serial number] is the pin number of the plug, and [normally open and normally closed] is the default state of the signal. Press [↑] [↓] key to move the cursor position, press [1] to open the output, the output pin is low, the state is green. Press [0] to close the output. The output pin is at high level and the state is red.

5.1.3 output principle



5.1.4 default output definition (DB25-pin)

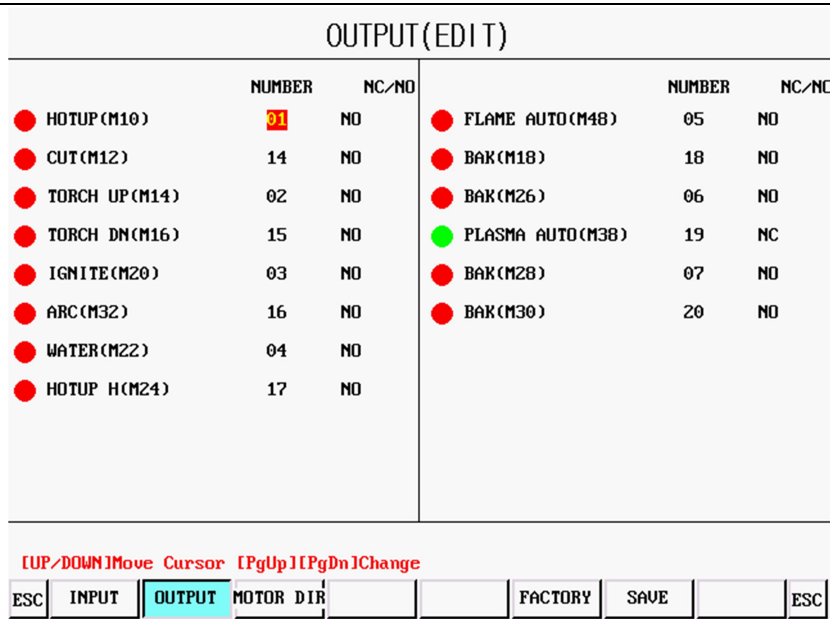
Pin number	instructions	Pin number	instructions
1	Gas and preheated oxygen	5	
14	Cutting oxygen	18	Automatic plasma height controller
2	Torch up	6	
15	Torch down	19	
3	Flame ignition	7	
16	Plasma arc start	20	Automatic flame height controller
4	Water spray		
17	High pressure preheating oxygen		
		13, 25	24V-

5.2 feet modification

INPUT(EDIT)					
	NUMBER	NC/NO		NUMBER	NC/NC
● LIMIT X>+	01	NO	● REMOT X+	05	NO
● LIMIT X<-	14	NO	● REMOT X-	18	NO
● LIMIT Y>+	02	NO	● REMOT Y+	06	NO
● LIMIT Y<-	15	NO	● REMOT Y-	19	NO
● ARC ON	03	NO	● REMOT S	07	NO
● STOP	16	NO	● TORCH UP/X ZERO	20	NO
● PAUSE	04	NO	● TORCH DN/Y ZERO	08	NO
● START	17	NO	● COLLISION	21	NO

[UP/DOWN]Move Cursor [PgUp][PgDn]Change

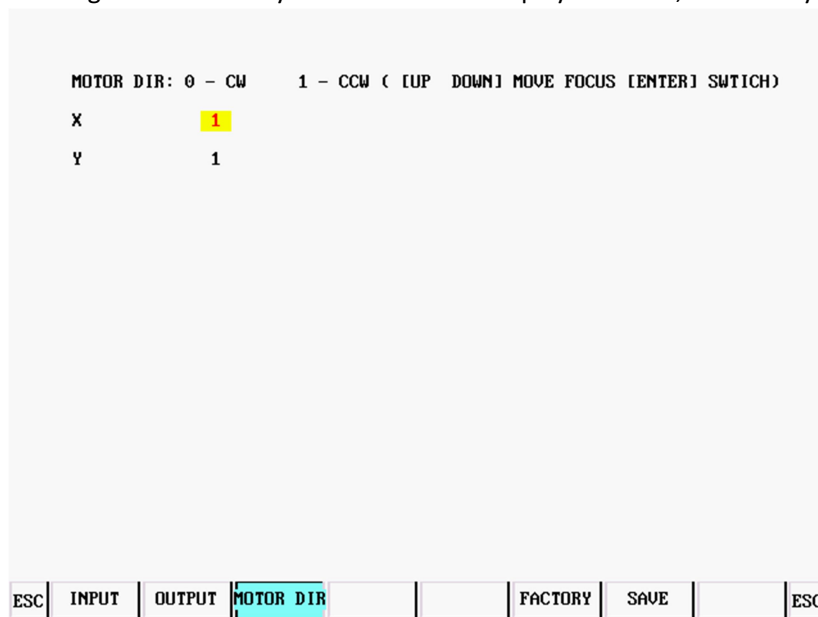
ESC	INPUT	OUTPUT	MOTOR DIR		FACTORY	SAVE		ESC
-----	-------	--------	-----------	--	---------	------	--	-----



- 1) in the diagnostic interface, press [IO definition] and enter the password 1928 to enter the IO definition interface.
- 2) The above definition for IO interface, press [→][←][↑][↓] Move the cursor, press the [PgUp][PgDn] Modify the Settings of the serial number and normally open normally closed state, finished, press [SAVE].
- 3) restore the factory value: press this button to restore the serial number to the factory state (password: 1928).

5.3 Modify the motor running direction

If the machine tool running direction and system coordinates display direction, can modify the motor direction



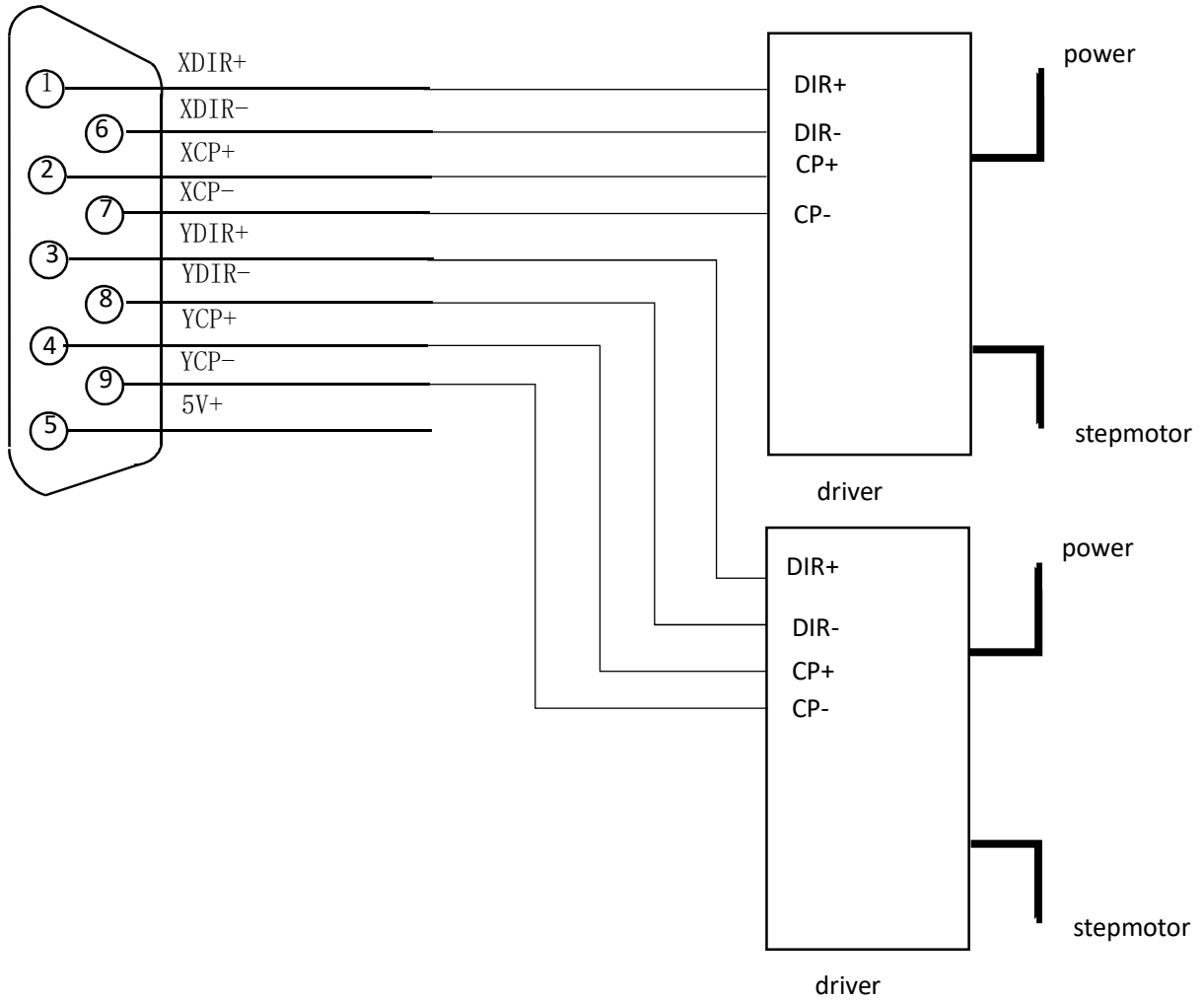
In the figure above, press [↑][↓] Move the cursor, press the [Enter] Switch direction, finish , press [SAVE]

5.4 definition of motor wiring

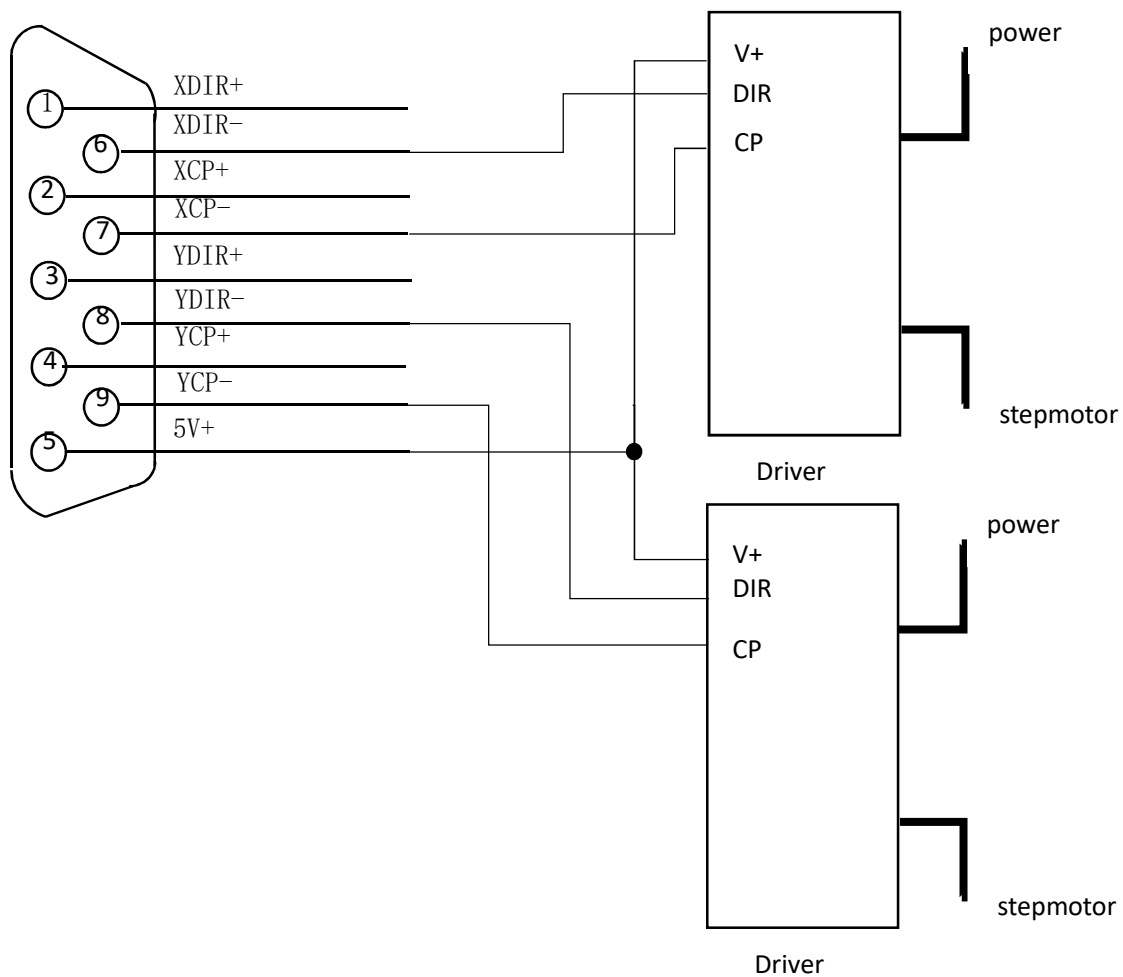
motor (DB15)

Pin number	definition	Pin number	definition
1	X direction +	5	X/Y direction +
9	X direction -	13	X/Y direction -
2	X pulse +	6	X/Y pulse +
10	X pulse -	14	X/Y pulse --
3	Y direction +	7	5V+
11	Y direction -	8,15	5V-
4	Y pulse +		
12	Y pulse -		

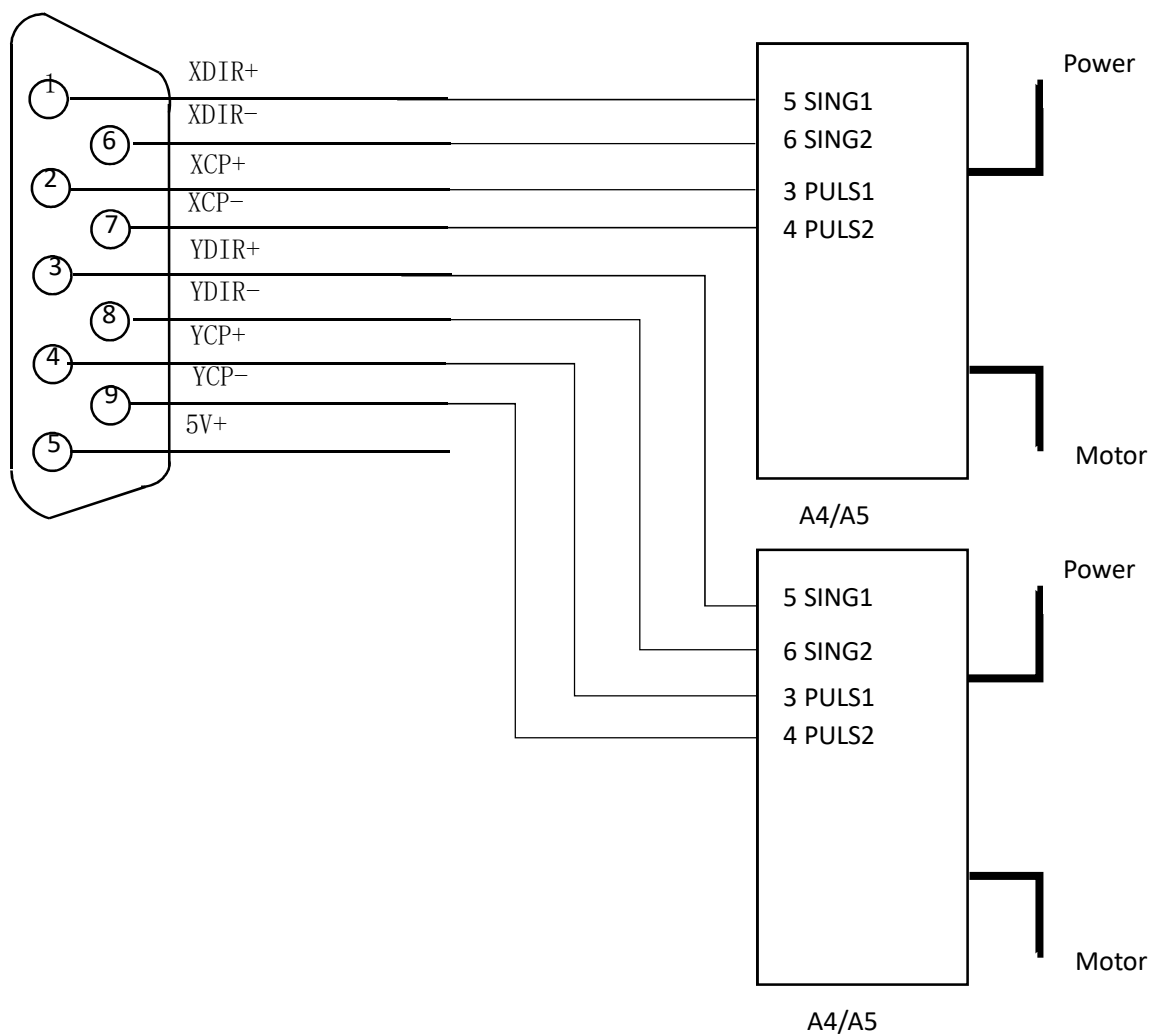
5.5 differential driver connection



5.6 total positive drive connection

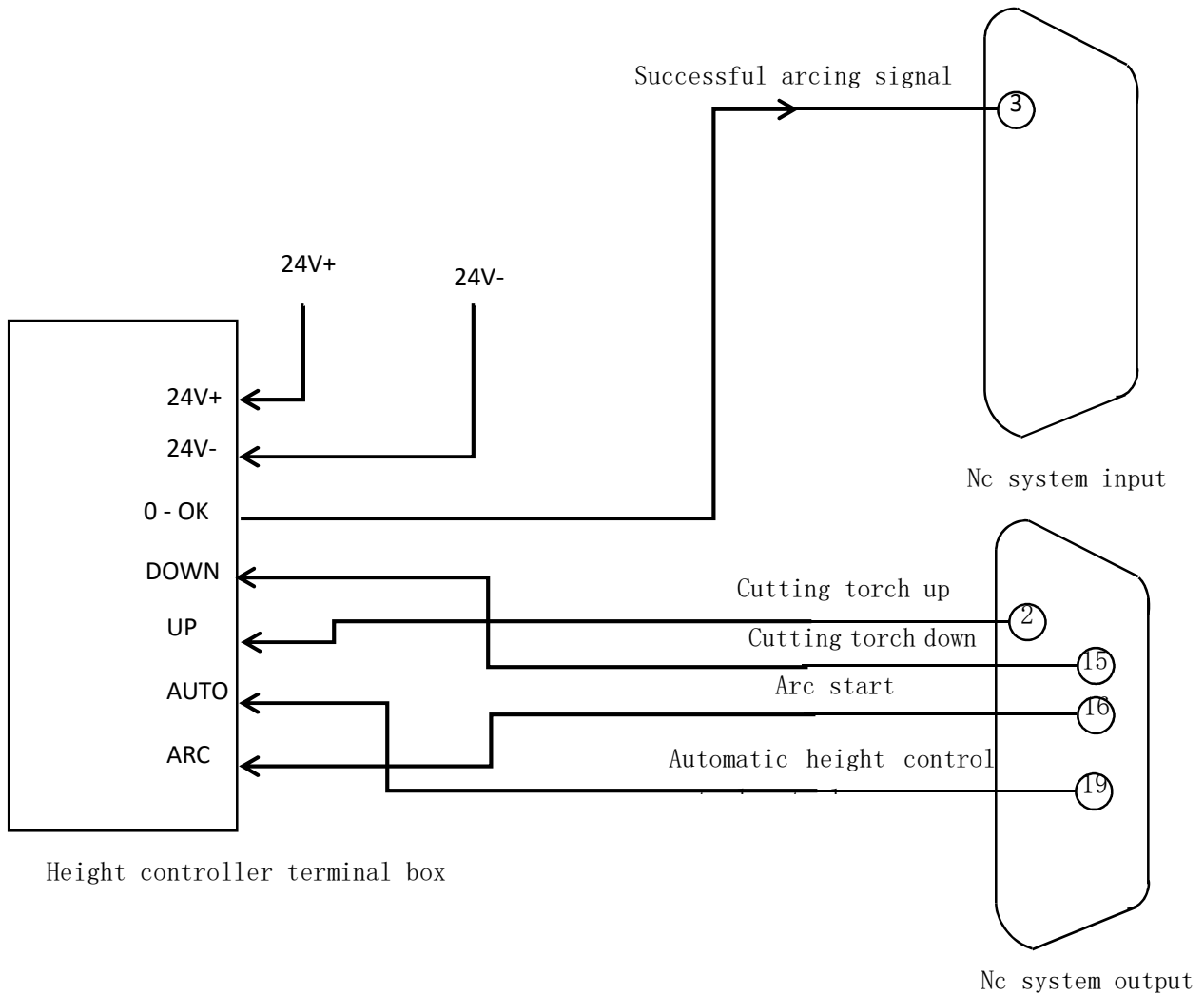


5.7 panasonic servo connection

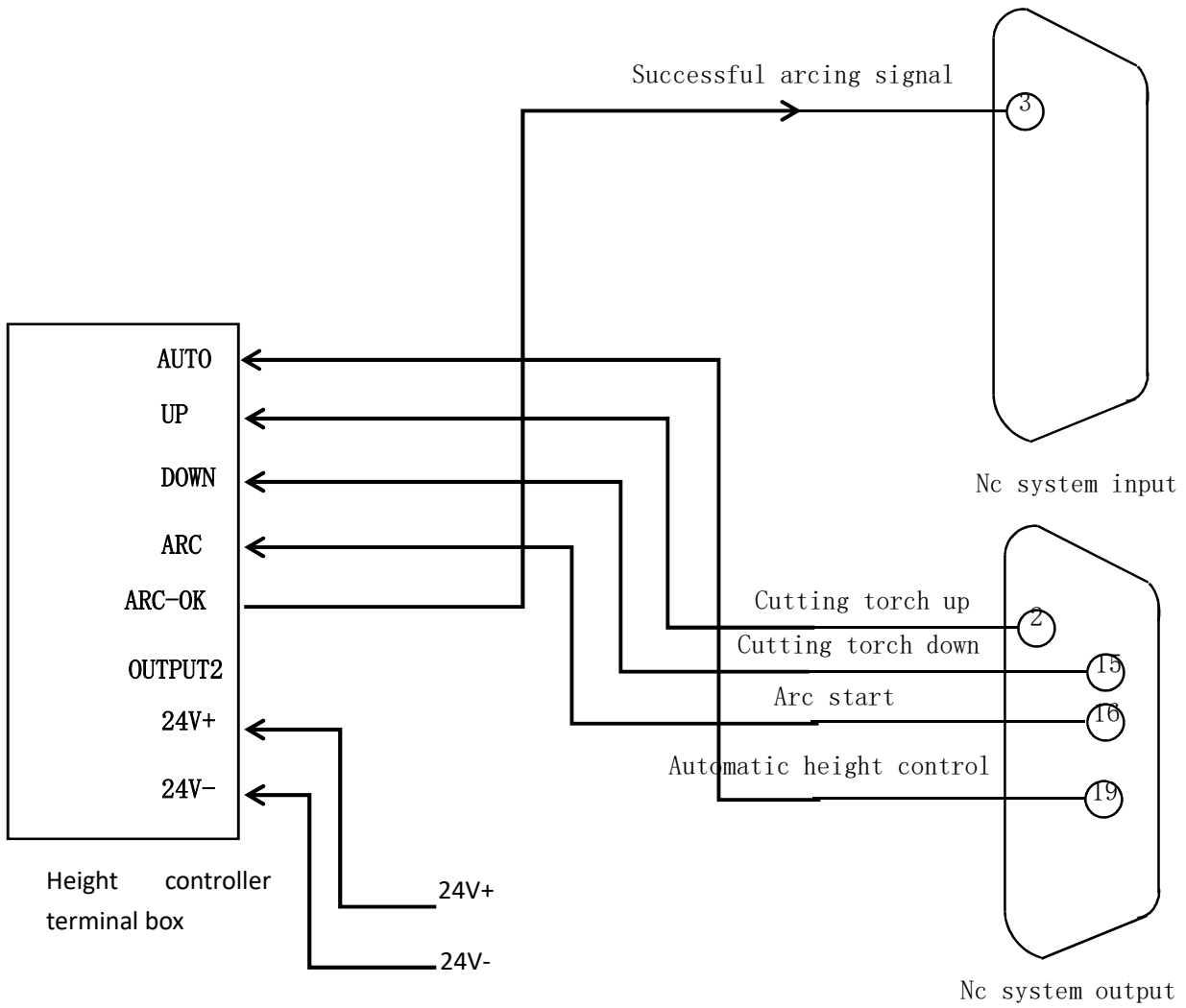


The Sixth chapter wiring definition of nc and height controller

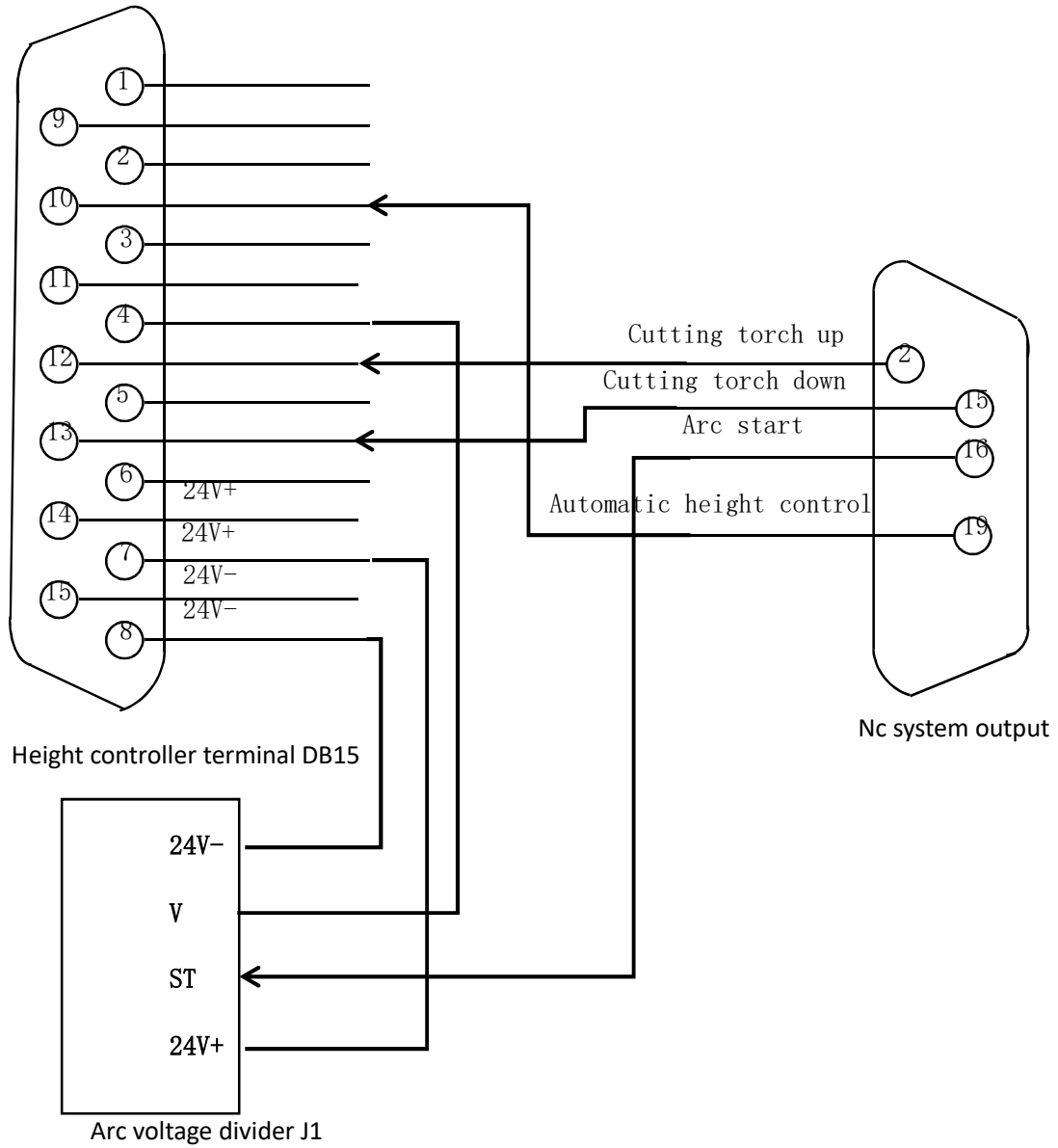
6.1 connection of CNC SF-2100C with sf-hc25K/G height controller



6.2 connection of CNC sf-2100C with sf-hc25c3 height controller



6.3 Connection of CNC SF-2100C with sf-hc30a height controller



Appendix 1 software upgrade instructions

Function:


System can be through the U disk, program upgrade.

The specific operations are as follows:

1. Upgrade files

Copy the upgrade file **STARTCNC.EXE** to the usb drive.

2. Operation steps

After inserting the usb stick, press the pause button  on the front panel of the system with your finger.

Turn on the power and power on the system. After the upgrade interface appears on the system screen, release the button.

The system will automatically perform the upgrade operation.

3. End of upgrade

If the program upgrade is successful, the system will prompt "upgrade successful!" And a buzzer will go off.

If the program fails to upgrade, the system will prompt "upgrade failed!" And the buzzer will ring continuously.

4. Start a new program

Turn off the power, pull out the U disk, and turn on the power again to start the new program. The version number of the new program will be displayed on the screen after starting up.

Note:

If the upgrade is not successful, please check the following factors first:

- 1) the usb flash disk must be in FAT or FAT32 format. It is recommended to use FAT format.
- 2) the name of the upgrade file must be **STARTCNC.EXE**.
- 3) if during the upgrade process, there is no prompt to complete the process, but directly return to the main interface of the upgrade, or the upgrade fails due to other accidents.

Can first check the upgrade file name is correct, U disk format is correct;

When excluding the upgrade file and U disk these two factors, you can follow the specific steps to upgrade again;

If you still fail to upgrade after many attempts, please call customer service department of Beijing starfire control technology co., LTD

Telephone Number :010-88797100

Mobile phone: 18901200175 18901200176

WeChat : 18901200180 QQ:1908817881

Please scan the WeChat official account for more technical support:

