

PowerCut CNC Controller Software Instruction Manual



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1.Features Introduction

Thank you for using HYD Powercut cnc plasma/flame cutting system! HYD PowerCut CNC controller absorbing the advantages of a large number of NC software. Based on combined with years of industry experience and the operator at the job site using feedback. It's a new generation of CNC flame plasma cutting software. We have been in line with the user as a starting point to improve operational conveniences, use efficiency and ease of maintenance. This software in addition to basic functions, but also has the following functions for the user:

- 1.Simple operation steps, familiar machine operation faster.
- 2.Support ISO-G, ESSI, DXF mainstreaming code, automatic identification code format, automatic conversion.
3. Support Mouse wheel and keyboard zooming, moving graphics, you can more clearly see the details of each workpiece
- 4.Support hole number, line number, specify the starting point, and other cutting alternatives.
- 5.Support for multiple break points saved, so you can always interrupt the current cutting work to complete urgent tasks.
- 7.Support four plates alignment data, once aligned, callable at any time.
- 8.Built-in variety of commonly used parts library, open Photo Gallery of can add any common workpiece.
- 9.Flexible adjustment workpiece, with smart material saving function, material saving by one key and automatically adjust to the best state.
- 10.With restored the scene function, solve the cutting position problem when in the second cut. Whether square or round workpieces the workpiece can be quickly restored to the state when the last cut. Widely used in secondary cutting, for example boilers and other industries.
- 11.Many years of application experience in the collection industry and facilitate debugging maintenance tools
12. In addition, there are multi-language support, improved processing and other functions.

Due to constantly update and improve software functionality. When you use Powercut, the function in some respects may differ from the manual, if you have any questions, please contact with us for free. Thanks for your use and support!

2. Install and Uninstall

2.1 Software install requirement:

Before install, please check your system whether meets the following requirements:

- ◆ Above Windows 2000 32 bit system.
- ◆ CPU above 1.0G RAM \geq 512Mb
- ◆ Above 15inch VGA monitor, resolution 800*600, recommend 32 bit true color display
- ◆ At least 2 USB parts.

If your system is Windows Vista, Windows 7, Windows 8, Windows 2008 Server, to avoid some errors. Please Run as administrator. To avoid the program file has been modified when use, and confirm all driver with normally install, please close the antivirus program in your system.

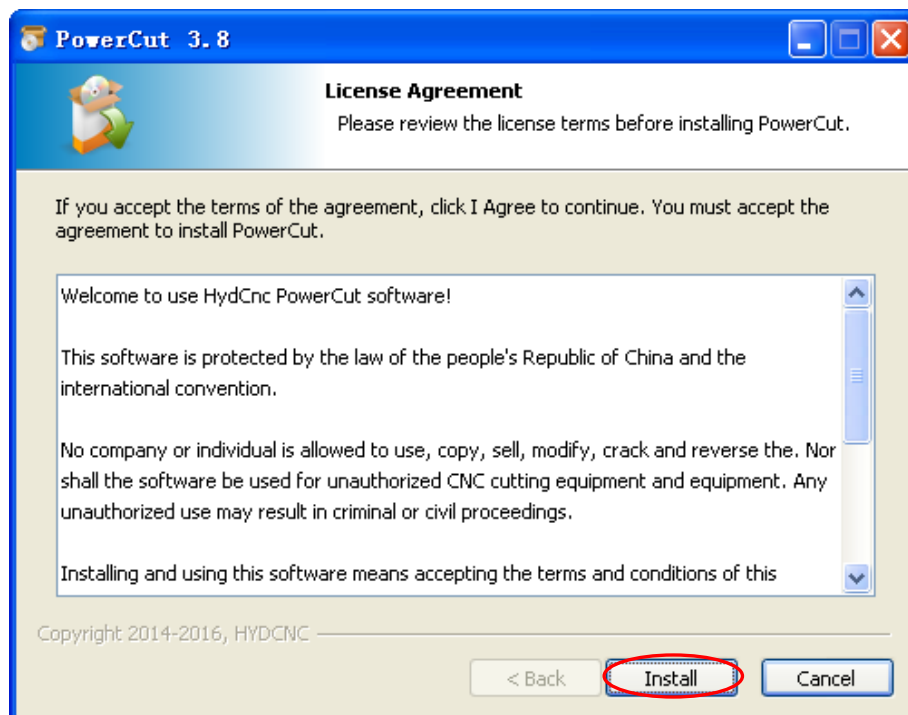
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2.2 Select Language

After running the installation program, please select the language firstly. Note: The language in there is for during installation only. Not for operation language. After finished the installation, When the software in first running , it will automatically setting the language according to the operating system's current language.



2.3 License Agreement



2.4 Virus prompt processing

During installation , may cause some virus prompt with Security software, please close it or select trust this program , otherwise it will cause the installation to fail.

2.5 Finish Install

Click **【Finish】** to start the software. The software will be installed to the default directory C:\Program Files\PowerCut\

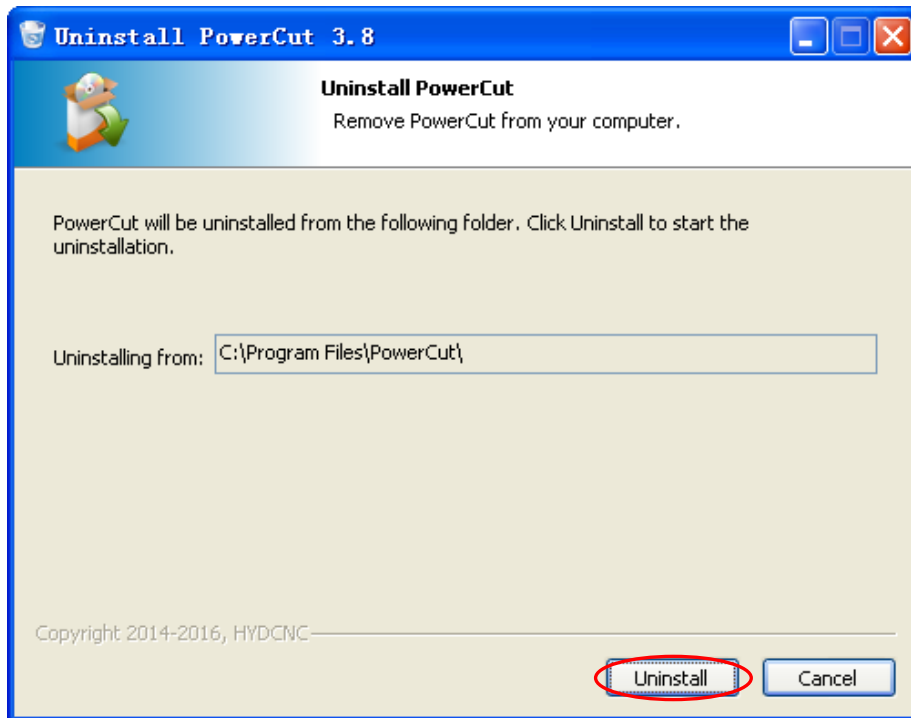


2.6 Software Uninstall

Run uninstall program from Start menu, or run "Uninstall.exe" program under the installation directory.



2.7 Confirm Uninstall



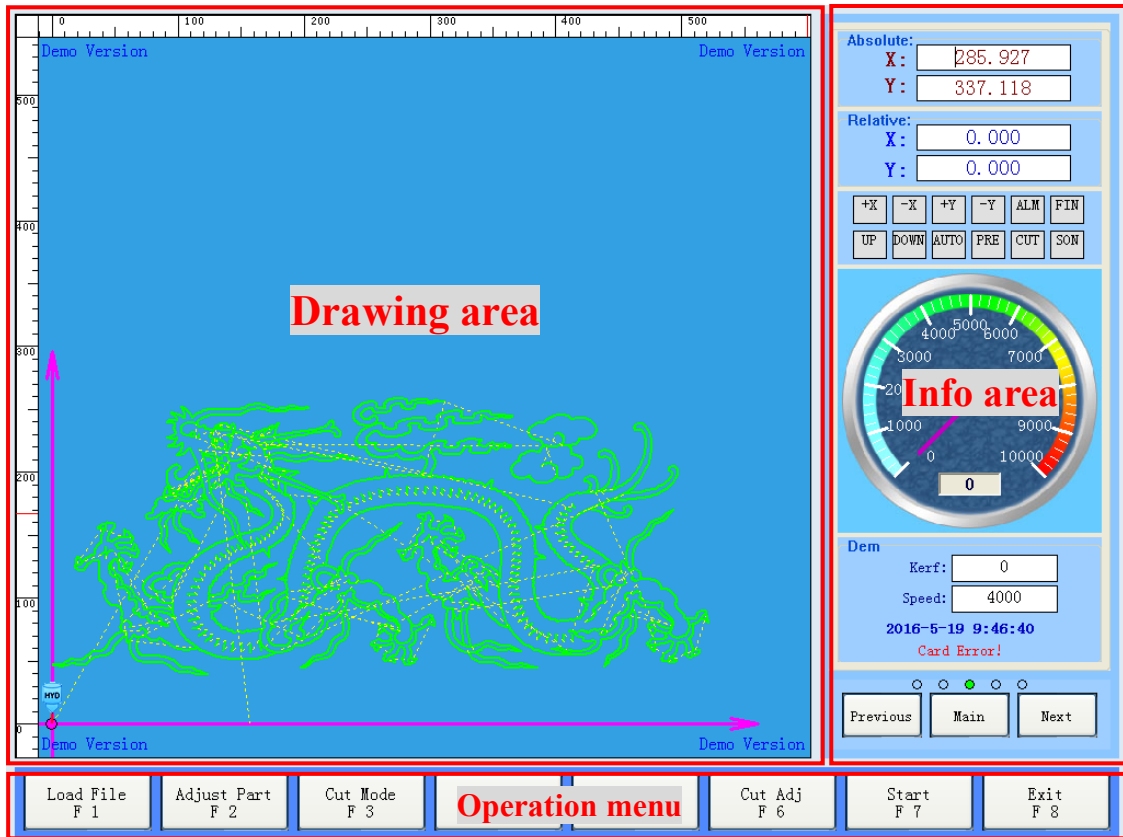
2.8 Uninstall remnant

In order to prevent delete cnc software due to misoperation, Default does not uninstall the following four elements: jobs folder (job) ,Shape database(LibDB.dat),Setup file(setup.ini) and Cutting data(user.ini). If you need a new installation, first delete all these files.

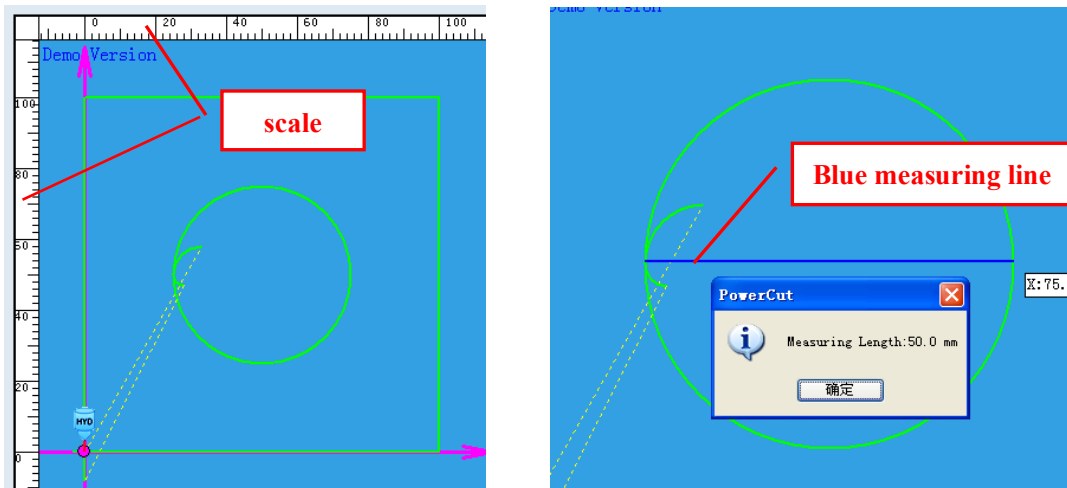
LOCATION:C:\Program Files\PowerCut

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3.1 Main View



The main view is divided into three areas, the operation is simple and convenient. 【Drawing area】 display path and real time location. Generally parts graphical is green, already cut graphical is red. There has scale in the left and top of drawing area, displays the current size of the part.



【Operation menu】 When using the keyboard, using the key F1 - F8 For common operation. This system is designed to use the keyboard, support mouse and touch screen operation also.

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【Info area】 Shows the common information. It is divided into five modules, They are the main info, the Part Details, Code List, Output, Input. In display mode, press【Previous】 【Home】 【Next】 to switch. Under certain circumstances, may also appear other operating functions, such as loading a file, move panel.

Absolute:
X: 285.927
Y: 337.118

Relative:
X: 0.000
Y: 0.000

+X -X +Y -Y ALM FIN
UP DOWN AUTO PRE CUT SON

Fuel
Kerf: 0
Speed: 700
2016-5-19 15:42:17
Card Error!

Previous Main Next

Main

Part Details

File Name: EDGE.txt
File Path:
C:\Program Files\PowerCut\G\EDGE.txt

File Size: 210 byte
Code Rows: 18

Plate Number: 0
Plate Width: 0
Plate Length: 0
Plate Angle: 0.0000

Part Width: 103 mm
Part Length: 108 mm
Scale Factor: 1
Rotate Angle: 0.0
Mirror X: No
Mirror Y: No

Pierce Count: 2
Idle Length: 0.1 m
Cutting Length: 0.6 m
Mark Length: 0 m

Residue Length: 714 mm
Remaining Time: 2:27

Previous Main Next

Part Details

Code List

```
G00 X172 Y150
G41
M07
G03 X180 Y158 I0 J8
G03 X180 Y158 I-30 J0
G03 X172 Y166 I-8 J0
M08
G40
G00 X42 Y35
G41
M07
G03 X50 Y43 I0 J8
G03 X50 Y43 I-15 J0
G03 X42 Y51 I-8 J0
M08
G40
G00 X118.667 Y35
G41
M07
G03 X126.667 Y43 I0 J8
G03 X126.667 Y43 I-15 J0
G03 X118.667 Y51 I-8 J0
M08
G40
G00 X195.333 Y35
G41
M07
G03 X203.333 Y43 I0 J8
G03 X203.333 Y43 I-15 J0
G03 X195.333 Y51 I-8 J0
M08
G40
G00 X272 Y35
G41
```

Previous Main Next

Code List

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Output

<input type="radio"/>	EXO00	Up
<input type="radio"/>	EXO01	Down
<input type="radio"/>	EXO02	Auto
<input type="radio"/>	EXO03	Preheat
<input type="radio"/>	EXO04	H-Preheat
<input type="radio"/>	EXO05	Cut
<input type="radio"/>	EXO06	Staged Pierce 2
<input type="radio"/>	EXO07	Staged Pierce 3
<input type="radio"/>	EXO08	Bleedoff
<input type="radio"/>	EXO09	Drive Enabled
<input type="radio"/>	EXO10	Plasma Mode
<input type="radio"/>	EXO11	-----
<input type="radio"/>	EXO12	Mark
<input type="radio"/>	EXO13	-----
<input type="radio"/>	EXO14	Cylinder
<input type="radio"/>	EXO15	-----

Previous Main Next

Output

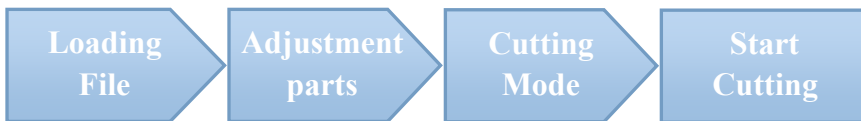
Input

<input type="radio"/>	EXI00	Run
<input type="radio"/>	EXI01	Stop
<input type="radio"/>	EXI02	Jog H _L Speed
<input type="radio"/>	EXI03	Speed+
<input type="radio"/>	EXI04	Speed-
<input type="radio"/>	EXI05	Jog X+
<input type="radio"/>	EXI06	Jog X-
<input type="radio"/>	EXI07	Jog Y+
<input type="radio"/>	EXI08	Jog Y-
<input type="radio"/>	EXI09	IHS
<input type="radio"/>	EXI10	Drive Alarm
<input type="radio"/>	EXI11	Torch Crash
<input type="radio"/>	EXI12	Arc On1
<input type="radio"/>	EXI13	Arc On2
<input type="radio"/>	EXI14	Alarm1
<input type="radio"/>	EXI15	-----

Previous Main Next

Input

3.3 General operating sequence



Load File F 1	Adjust Part F 2	Cut Mode F 3	Manual F 4	Tools F 5	Cut Adj F 6	Start F 7	Exit F 8
------------------	--------------------	-----------------	---------------	--------------	----------------	--------------	-------------

Main menu

Need a few steps only, a cutting operation can be completed soon. The main menu also according to operation process for design and use.

3.4 Loading file

There are four ways to load the cutting file.

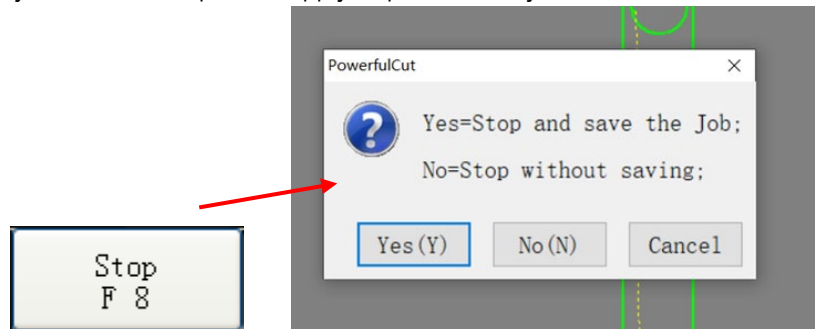
Load Job F 1	Shapes F 2	Disk F 3	RemoveDisk F 4	Cancel F 8
-----------------	---------------	-------------	-------------------	---------------

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【Load job】

Job file: when the last processing, processing ended prematurely and save the file. If you need to temporarily suspend the current job and save, Please press F8 【STOP】,then will popup a dialog. If choose 【YES】 the current processing status will generate to breakpoints file. The breakpoints file is composed of file name and pause time. If choose 【NO】 will save.

Our multi-breakpoint management function. It allows users to save breakpoint. After that, you can move to other position, even you can continue working other parts. The breakpoint management can be saved by the user stop cutting work only. If the power cuts frequently, to protect the device will not be damaged, we ask you to use UPS power supply to protect the system .



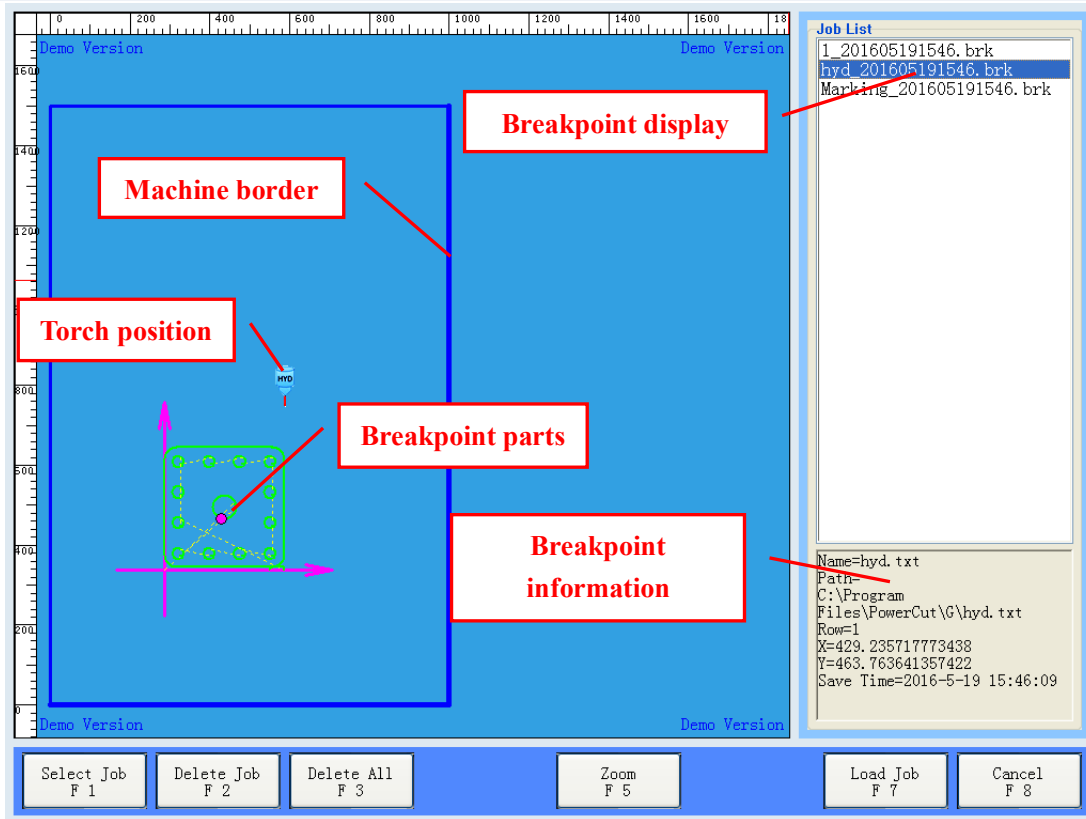
Press 【Load job】, Enter into breakpoint management interface, the drawing area shows the current position of the torch, breakpoints file path. Purple indicate the point where break the file. Blue Line border is the machine border in parameter setting. If is not enabled the machine back to home function, the machine parts and the location is not accurate. 【Zoom】will toggle the machine range and workpiece range. On the right shows all breakpoints files saved.

Press 【Select Job】 or use UP and DOWN key to select needs to be restored breakpoints file. The lower right shows the breakpoint file information.

Press 【Load job】 can be process directly. At this time no matter where the machine is located. Will automatically back to the position of pause cut file, and then continue processing.

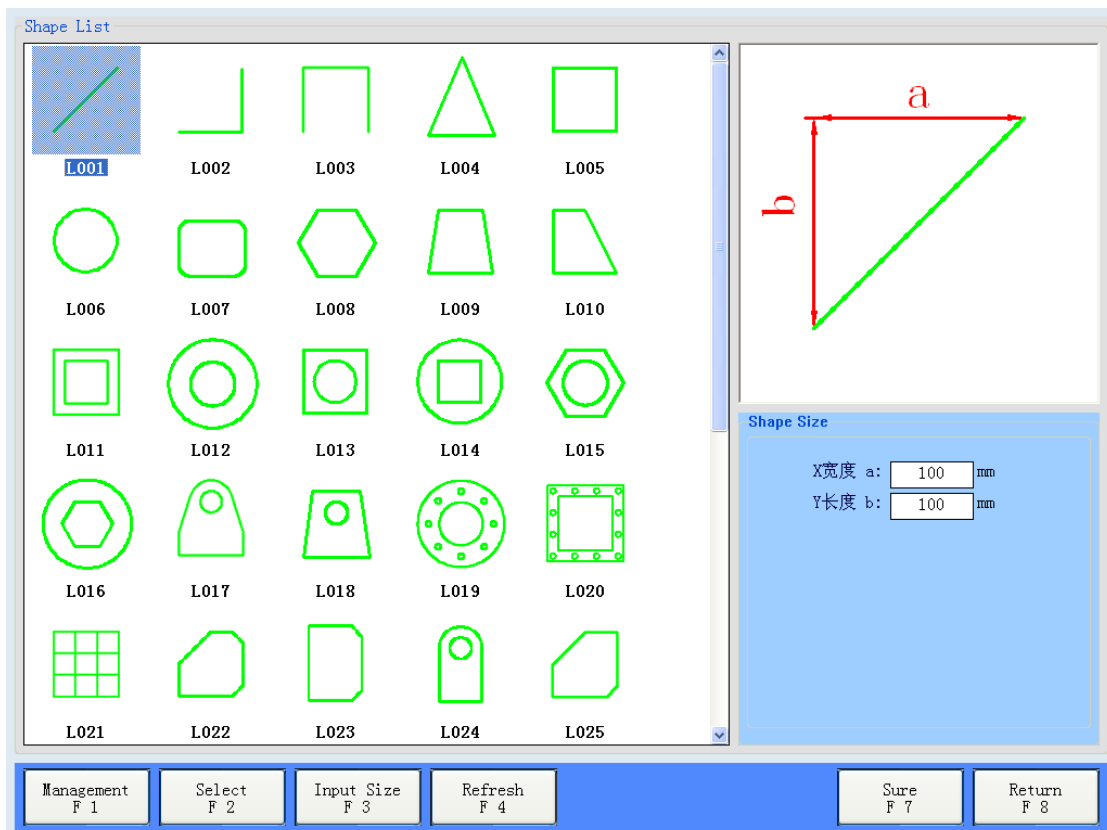
Note. Breakpoints file can not be do parts adjustment and selection panels. After cutting the breakpoint file will be deleted. If you need recording , then need save again. After finished cutting, the breakpoint file will exchange to common file, allow adjustment again.

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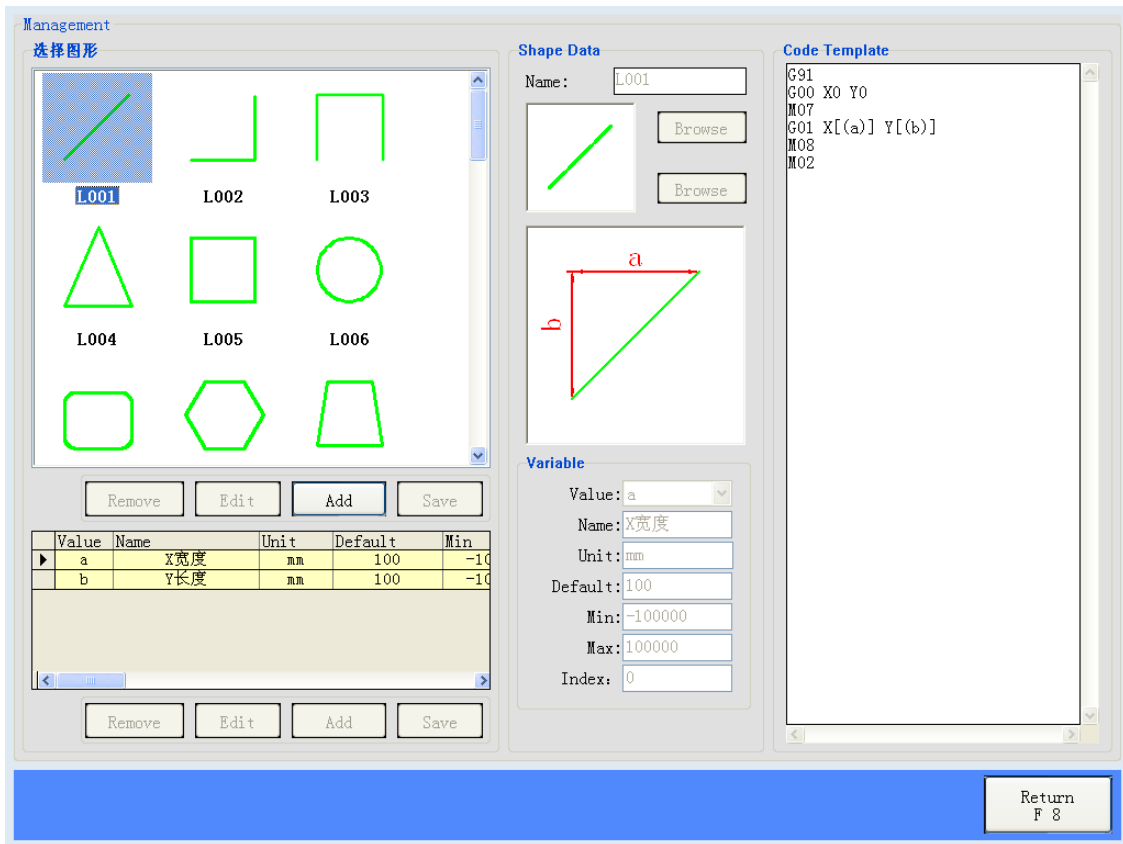
【Shapes】

In order to fast cutting, the software provided some shapes. User input parameter will get match shape for cut directly. Shapes will remember the parameter input by user in last time. 【Refresh】 will Restore original defaults, as shown below:



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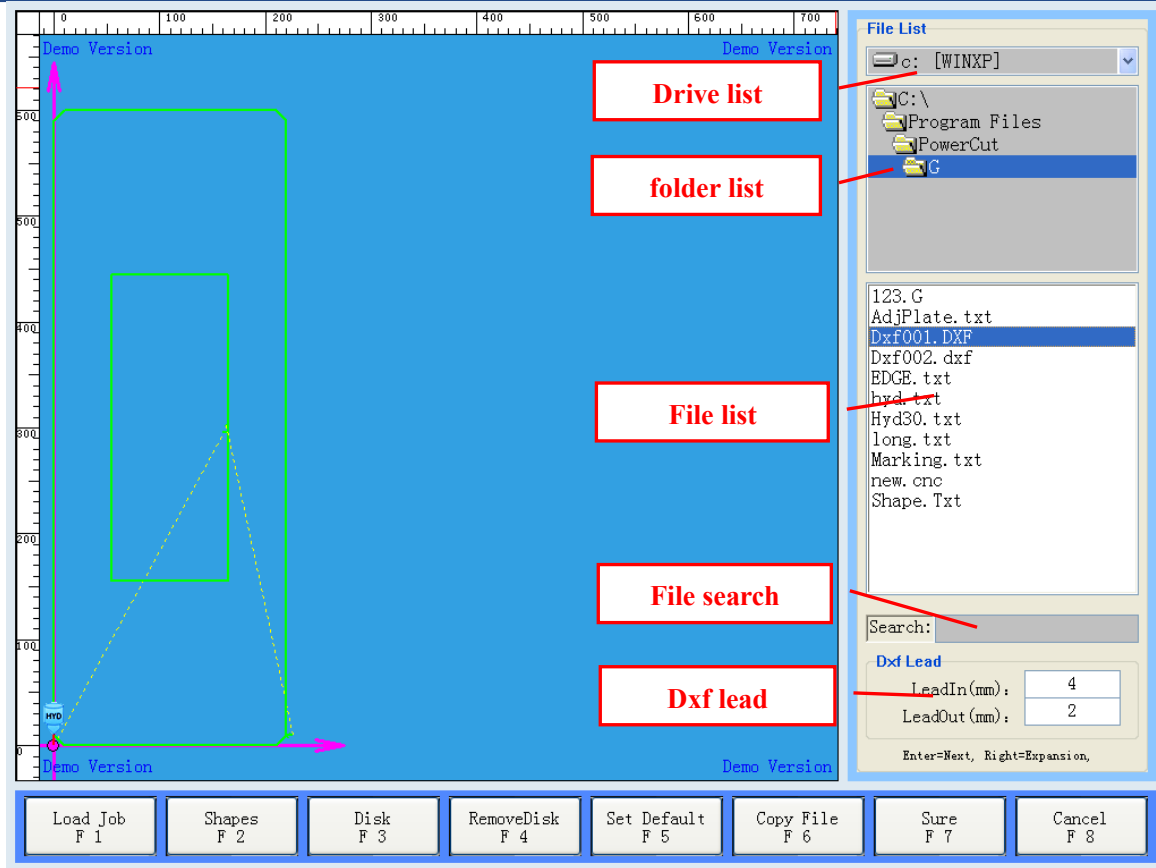
Software provides management capabilities of shapes. Users need only a few simple steps, may according to their own requirements extension library. Easy to modify and extend.



【Disk】

Press **【Disk】**, The disk file appears to the right of the window. Catalog and file listing, Users can select the files that need to be processed. Press Enter to change the list, Press right key to open next catalog, press left key back to current catalog. These files in file listing can be setting in system parameters. In the search box, enter the file name. Will be directly targeted to meet the requirements of the first file. If you choose Dxf file, will appear Dxf file lead wires setting automatic. After selecting a file, the main menu will display **【Set Default】**. Allows the user set current Catalog as the default Catalog. Next time when you press **【Disk】**, will enter into this catalog. **【Copy file】** will copy current file to the default catalog of user setting. The selected list displays white.

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【USB Disk】

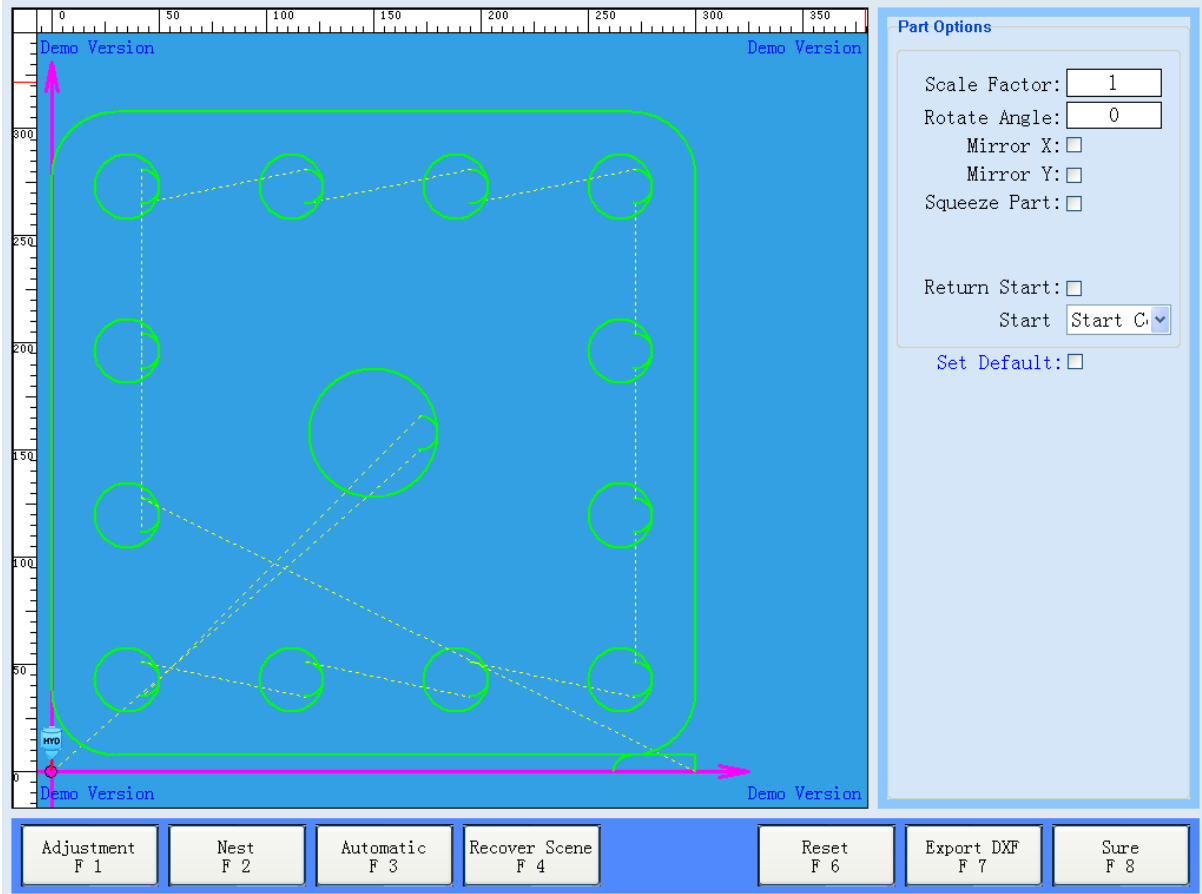
This function is same like disk file, can be quickly navigate to the root directory of U disk, provide a quick way, and U disk will loading the process file. PowerCut system also provide multi-U disk operations. When many U disk plug in the system, once you press 【USB Disk】 The system will change to next U disk automatically !



3.5 Adjustment Parts

If the part does not meet the processing requirements, then you can use 【Adjust Part】. If there haven't process file, or current file don't allow adjustment. Then [adjustment parts] key is unavailable. There has some adjustment mode:

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【Adjustment】

Enter into the default setting of parts adjustment , here you can be part of the do scale, rotation, mirroring, and other operations.

Scale Factor: Adjust current size of the workpiece by this ratio Scaling ratio value must larger than 0 , that's a reference to the original file. To avoid misoperation, not recommend customer adjust the ratio . If there has problem of cutting accuracy, please adjust your machine accuracy and revise by adjust kerf.

Rotate Angle: The workpiece rotation an angle. Rotation angle is less than 0 as Clockwise, more than 0 as Counterclockwise. This adjustment is also reference the original file .

Mirror X: Part mirror adjust base on X axis

Mirror Y: Part mirror adjust base on Y axis

Squeeze Part: If the define start point of processing file within the workpiece or far away the workpiece, is not conducive to find start point. Torch will automatically adjust to the starting position to the plates by this function.

Return Start: After cutting , will back to start point as G00 command speed.

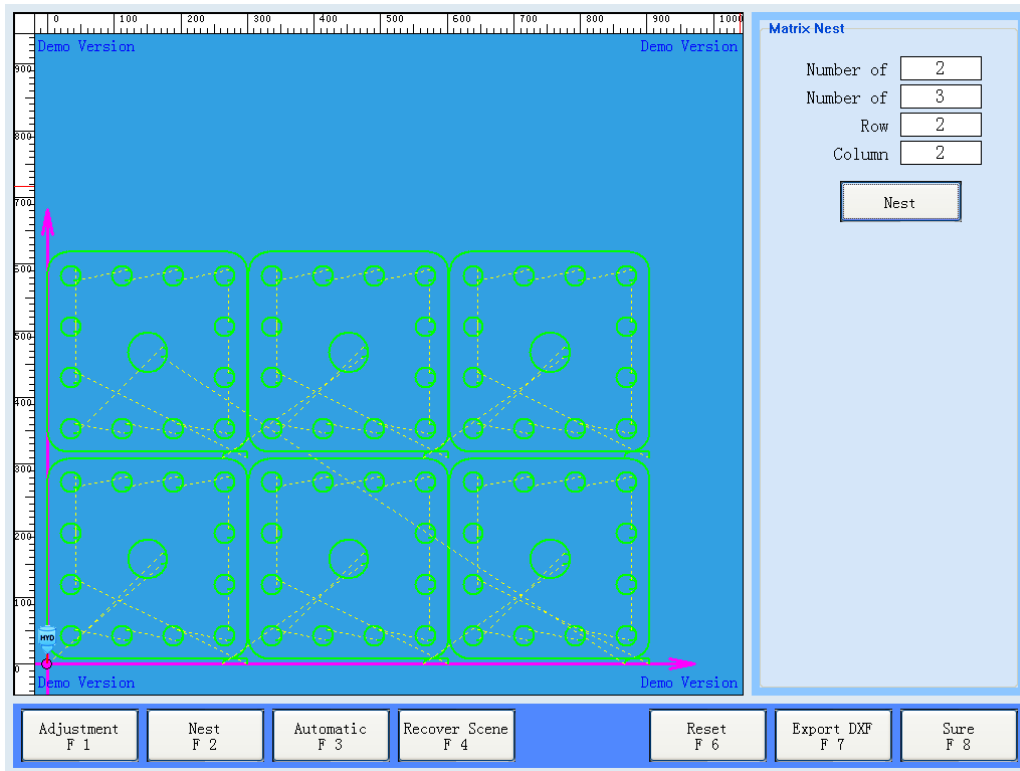
Start: Change the cutting start point position. This function use for torch position before cutting only. Can't change the pierce position.

Set Default: Remember the above Settings, when load a new parts will use above setting automatically. But note : when load setting , the sequence is from top to down. So please don't adjust repeatedly.

【Nest】

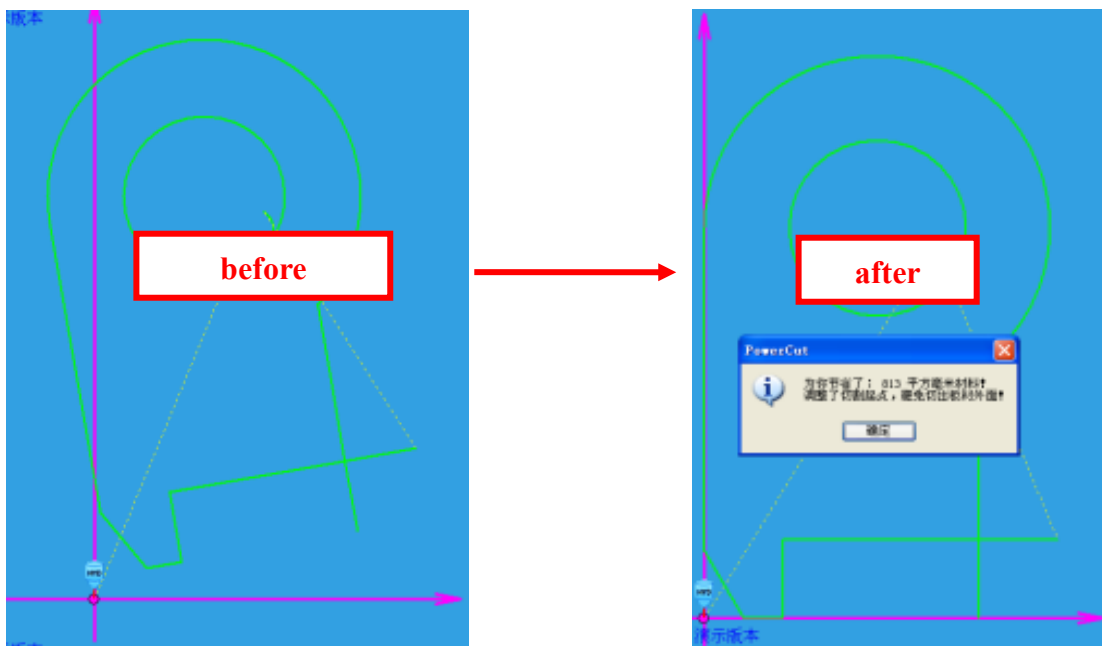
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Repeat parts according to the matrix,input parameters and press the **【Enter】** key Can automatically nest parts,Use the mouse to click **【Nest】** also can nest.



【Automatic】

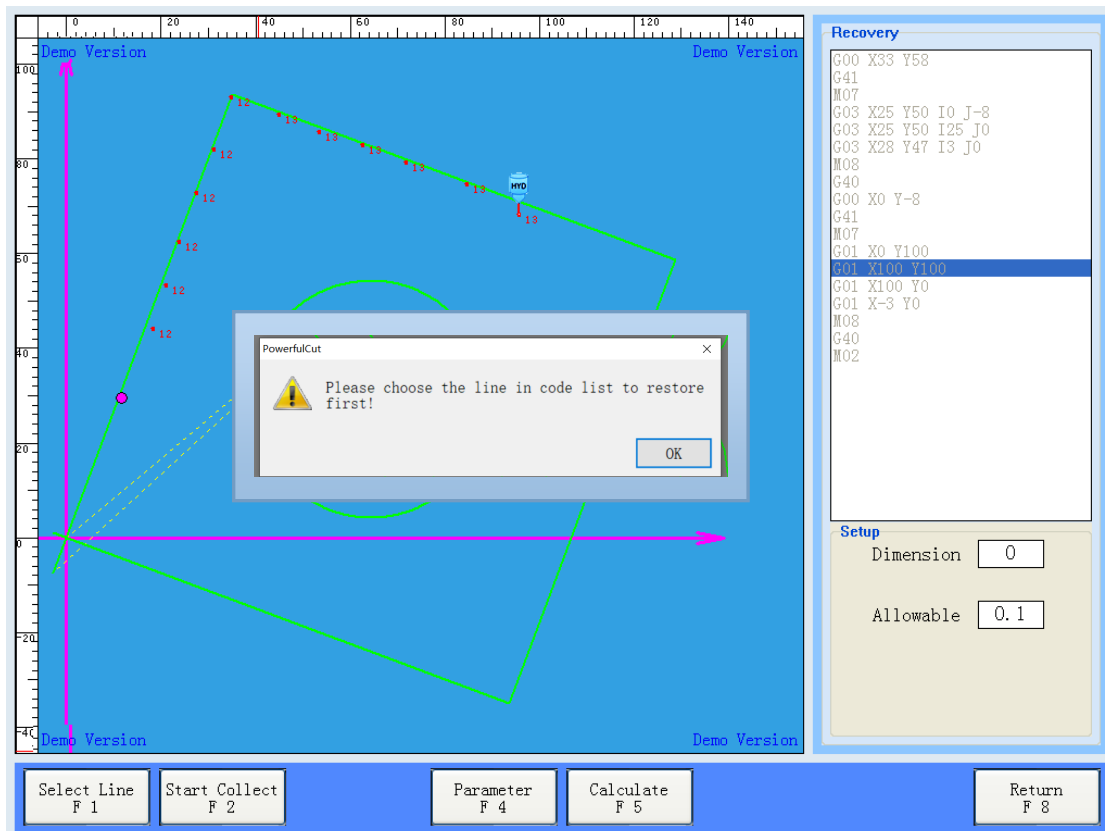
The function will automatically calculate and adjust parts, make the parts in the form of the material and Angle. Reduce unnecessary waste. As shown in the figure below parts, not only out of edge, and due to the Angle will cause positioning difficulties and the waste steel plate. Parts are adjusted to steel plate, not only convenient cutting torch orientation, also saves steel plate.



【Recover Scene】

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This function is used to restore break cutting part on the plate. No matter whether the square or round workpiece can be quickly restored to the state of the last cutting, widely used in boiler and other industries of the second machining.



The operation details as follow :

At first call the first cut of the graphics, use it for positioning reference. Then put the workpiece which need to recut in the rack as far as possible to the original point of view placed.

【Select Lins】 Use up and down button to choose the positioning reference line segment, the line segment which have been choosed is blue. Must choose two or more not parallel straight line segment or arc can be positioned.

【Start Collect】 This system is in the actual line segment acquisition mode, the user can move the torch or location of the laser to the line segment with the selected corresponding position

【Collect Point】 Position acquisition, in principle, the more points collected by each line segment, the more accurate positioning.

【Parameters】 Set the cutting kerf compensation values and allow the positioning error as the positioning reference.

【Start restored】 The system will restore the position according to the settings

Notice: Restores precision processing site is affected by many factors, the tool only provides the convenience of operation, if improper methods or collection or collection points, the accuracy can not meet the requirements, it can not guarantee the expected results satisfactory recovery results. In order to improve the accuracy of recovery, try the following ways to improve:

- ◆ The more accurate the more the selected segment position.

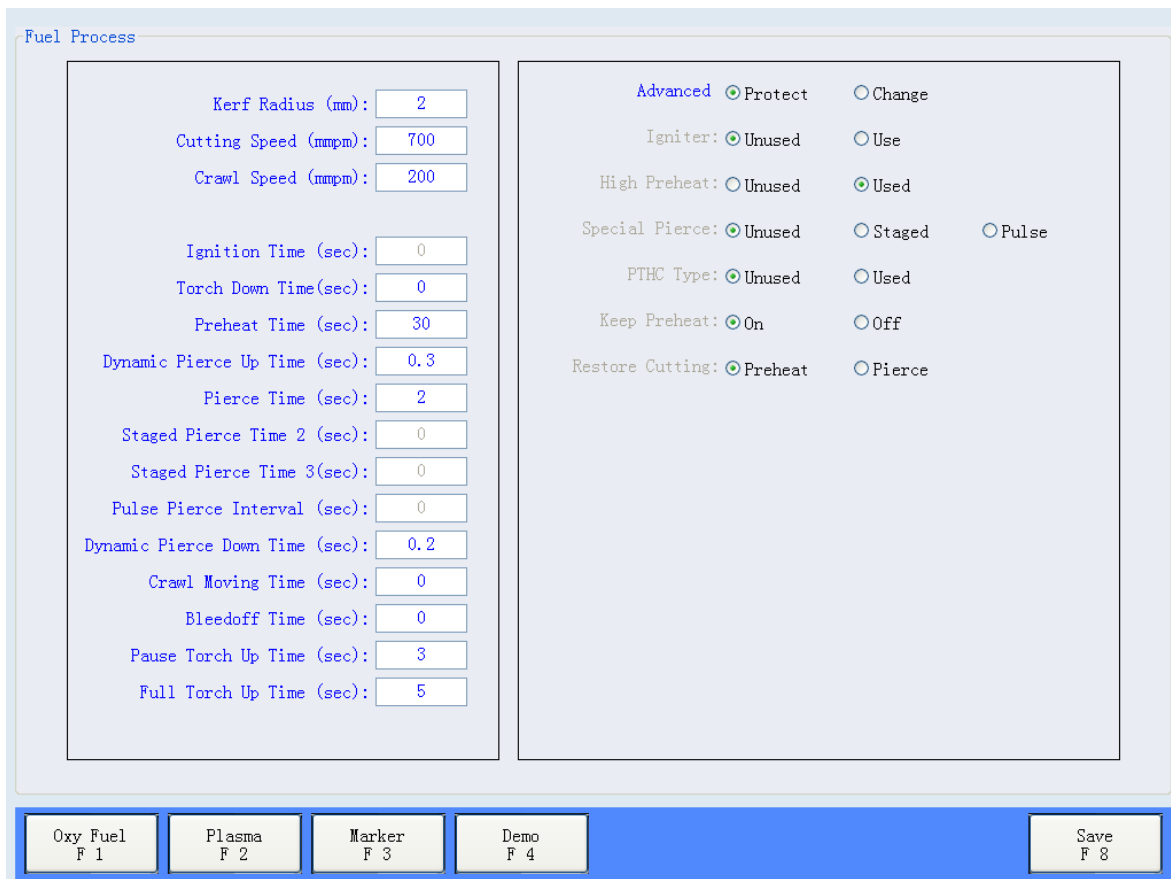
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- ◆ The single line as long as possible, the more points collected by each line segment, the more accurate positioning
- ◆ Compared with the torch mining point positioning, laser position error is smaller
 - 【Reset】 If modifications are not satisfied, can use this function to restore part of the state when the load.
 - 【Export DXF】 You can use this function to save the current file as Dxf file, can use CAD ect open it directly, Easy to view the details of the parts.

3.6 Cutting Mode

The system supports the main way to cut the flame and plasma, but can also be run marking process and presentation. Just select the designated cutting mode, the machine will automatically run the corresponding process. All the cutting process-related settings have been integrated into the corresponding interface. Cutting process is usually divided into two parts, left for the cutting timing, the right to control options.

3.6.1 Flame Process



【Kerf Radius】 Flame kerf compensation value radius. Note: If the code does not compensate for offset G41 or G42 code is in actual operation, this parameter is invalid!

【Cutting speed】 Flame cutting speed setting. The rate shall not exceed the maximum processing speed.

【Crawl speed】 It refers to the perforation rate cut speed limits, so that the machine moves slowly to ensure the successful completion of the perforation for plank flame cutting process.

【Ignition Time】 If install the ignitor device. Before you start cutting the first ignition operation.

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【Torch Down Time】 Preheat to drop to a predetermined position of the time, if you use torch height controller means the value is invalid.

【Preheat Time】 Time for low pressure preheat

【Dynamic Pierce Up Time】 To prevent damage to the cutting nozzle spatter perforation, before perforation ,the time for the torch elevation first.

【Pierce Time】 Hyperbaric oxygen on until cutting steel penetration time. If the three piercing process is enabled, this option will become to be 【Staged Pierce Time 1】

【Staged Pierce Time 2】 Medium pressure cutting oxygen pierce time, take effect when three perforations enabled.

【Staged Pierce Time 3】 Hyperbaric oxygen cutting pierce time,take effect when three perforations enabled.

【Pulse Pierce Interval】 When using pulse piercing, high-pressure cutting oxygen switch will periodically turned on and off, this parameter can be set this switch time

【Dynamic Pierce Down Time】 If set up in front perforation rise time, it need to down to the suitable height. Note: If use the torch height controller, this option is invalid.

【Crawling Moving Time】 Crawling speed limit time, after reaching the set time, then will become cutting speed for cutting.

【Bleedoff Time】 After cutting, the high-pressure cutting oxygen pressure relief time.

【Pause Torch Up time】 After finish current workpiece cutting,up time for torch to moving to the next workpiece

【Full Torch Up Time】 After all the work is completed cutting, torch up time.

【Advanced】 The setting is related with installed equipment ,does not require frequent setting. Therefore, in order to avoid misuse, modification constrained. If the device is not installed on the right, on the left would not be able to be set.

【Igniter】 If the ignition device is installed, and connect it to the specified output port, then select 【use】

【High Preheat】If the high-pressure preheater setting is enabled, during preheater, will also open the high-pressure preheater signal output. Generally applicable to thick plate cutting process.

【Special Pierce】 Three points perforation means low, medium and high pressure cutting oxygen increase step by step process. Pulse perforation means periodically turned on and off to prevent splashing of cutting oxygen process

【PTHC】 If enabled, lifting during cutting process will be control by torch height controller automatically

【Keep Preheat】 After finish cutting, Whether to keep the preheat oxygen status.

【Restore Cutting】 After the breakpoint is restored, whether need to preheat the process to continue cutting work.

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3.6.2 Plasma Process

The screenshot shows a software interface for Plasma Process control. It is divided into two main columns of settings. The left column contains numerical input fields for parameters like Kerf Radius, Cutting Speed, IHS Down/Up Times, Pierce Time, Dynamic Pierce Delay/Up/Down Times, Pause Torch Up Time, Full Torch Up Time, Ahead Arc Off Distance, and Plasma Count. The right column contains radio button options for Advanced (Protect/Change), PTHC Type (Unused/Universal/XPTH-4), IHS Type (PTHC/Cylinder/IHS Signal), Arc On Feedback (Unused/Check), Dynamic Pierce (Unused/Start/Arc On), and optional settings for Arc On Feedback (Check Arc Time, Arc Lost Alarm time) and Disbale PTHC Auto (Speed Drop Ratio, Arc On Delay, Check Angle, In Corner Distance, Out Corner Distance, Arc Radius). At the bottom, there are function keys for Oxy Fuel (F1), Plasma (F2), Marker (F3), Demo (F4), and Save (F8).

【Kerf Radius】 Plasma kerf compensation value radius Note: If the code does not compensate for offset G41 or G42 code is in actual operation, this parameter is invalid!

【Cutting Speed】 Plasma cutting speed setting.The rate shall not exceed the maximum processing speed.

【IHS Down Time】 If you need to detect the location of the signal through the input port, you can set the timeout limit for positioning.

【IHS Up Time】 After receiving the positioning signal, the time of torch rise。

【Pierce Time】 Plasma cutting open until steel plate penetrates the time。

【Dynamic Pierce Delay Time】 Starting from the beginning of the arc or the back of the arc, the interval time of Dynamic perforation is enabled

【Dynamic Pierce Up Time】 Dynamic perforation starts after torch up time.

【Dynamic Pierce Down Time】 The time for after dynamic perforation of the torch up,the torch falls back to the cutting height.

【Pause Torch Up Time】After finish current workpiece cutting,up time for torch to moving to the next workpiece

【Full Torch Up Time】 After all the work is completed cutting, torch up time.

【Ahead Arc Off Distance】 The distance from the cutting arc before the completion of the work piece. Equivalent to shorten the length of the lead out line。

【Plasma Count】 For two plasma synchronous cutting. Because there are two input ports to detect the success of the plasma arc starting signal, if only use a signal detection port, but the select of more than 1 units of plasma volume, it may cause the arc after the machine does not move the fault.

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【Advanced】 the setting is related with installed equipment , does not require frequent setting. Therefore, in order to avoid misuse, modification constrained. If the device is not installed on the right, on the left would not be able to be set.

【PTHC Type】Generally use IO interface ,XPTHC-4 use the built-in communications,need match with HYD dedicated THC

【IHS Type】 THC and Cylinder torch positioning signal is not detected, positioning signal to be detected.

【Arc On Feedback】 If choose 【Check】, The cutting operation requires arcing success signal, otherwise there will be broken arc pauses.

【Dynamic Pierce】 while arc start, torch up a short distance. Prevent splash damage torch.

【Check Arc Time】 If have set detected the arc feedback signal, after the arc start, if at this time does not detect the arc feedback signal it will cause arcing failure.

【Arc Lost Alarm Time】 After the arc feedback loss, at this time is not suspended. Mainly used to solve the continuity of sheet metal processing.

【Speed Drop Ratio】 If the proportion of current operating speed and the set speed is less than the set value, it will turn off THC signal.

【Arc on Delay】 Close THC the signal from the arc start successful.

【Check Angle】 If the mutation is greater than the angle of the direction of movement of the value is means need a corner.

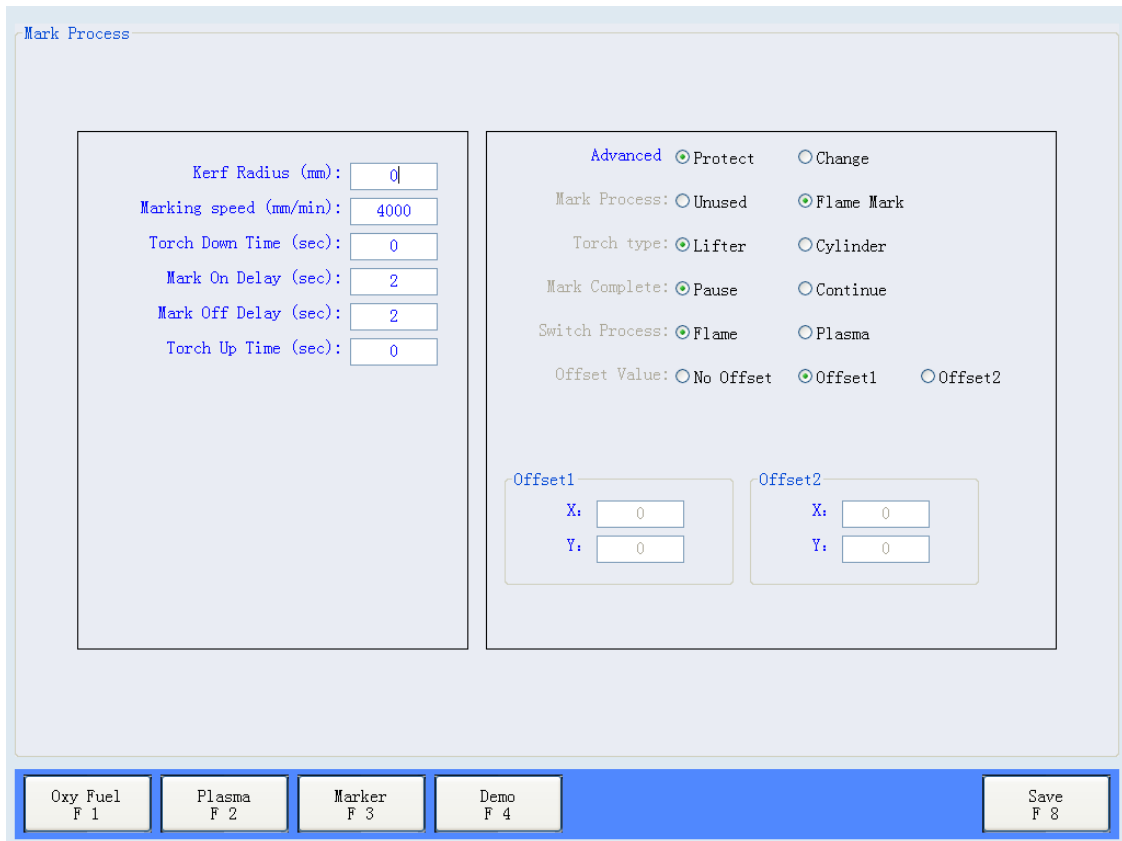
【In Corner Distance】 When the distance into the corner distance is less than this value, shut down THC signal.

【Out Corner Distance】 When the distance out the corner distance is less than this value, shut down THC signal.

【Arc Radius】 When the Arc radius is less than this value, shut down THC signal.

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3.6.3 Marking Process



【Kerf Radius】 Radius compensation value scribe Note: If the code does not compensate for offset G41 or G42 code is in actual operation, this parameter is invalid!

【Marking Speed】 Marking speed setting, the speed should not exceed the maximum processing speed.

【Torch Down Time】 the down time of marking torch

【Mark On Delay】 the delay between marking on and start move.

【Mark Off Delay】 the delay between marking off and stop marking.

【Torch Up Time】 After marking finish , the time of torch up.

【Advanced】 the setting is related with installed equipment , does not require frequent setting. Therefore, in order to avoid misuse, modification constrained. If the device is not installed on the right, on the left would not be able to be set.

【Mark Process】 Useflame marking,It will automatically perform offset marking process.

【Torch Type】 If use the lift motor, it will be closed down signal after the torch fell down,while cylinder positioning the down signal will hold.

【Marking Complete】 the active for setting marking finish, it is to pause or continue cutting.

【Switch Process】 The mode use for continue cutting after finish setting marking.

【Offset Value】 Select mark offset value of the current torch.

3.6.4 Demo Process



【Kerf Radius】 Demo mode kerf compensation value radius Note: If the code does not compensate for offset G41 or G42 code is in actual operation, this parameter is invalid!

【Demo Speed】 Demo mode speed setting, the speed should not exceed the maximum processing speed.

【Jog Limit】 Distance limitations for joystick lever operation. Effective when remote control handle enabled.

3.7 Jog Mode

3.7.1 Move Function

In manual mode, the support 8 arrow keys . To facilitate the operation, when display [manual mode] ,can press the arrow keys to move the machine and manual operation. In this case, the panel corresponding to the direction of arrow turns red. At the top right of the screen shows the current absolute machine coordinates and workpiece coordinates. Parameters box displays the current movement information

【Change Speed】 Can use low, medium, high-speed, user-speed fourth speed. low, medium, high-speed can be set in the system parameters. user-speed input directly on the panel, press the Enter key to confirm.

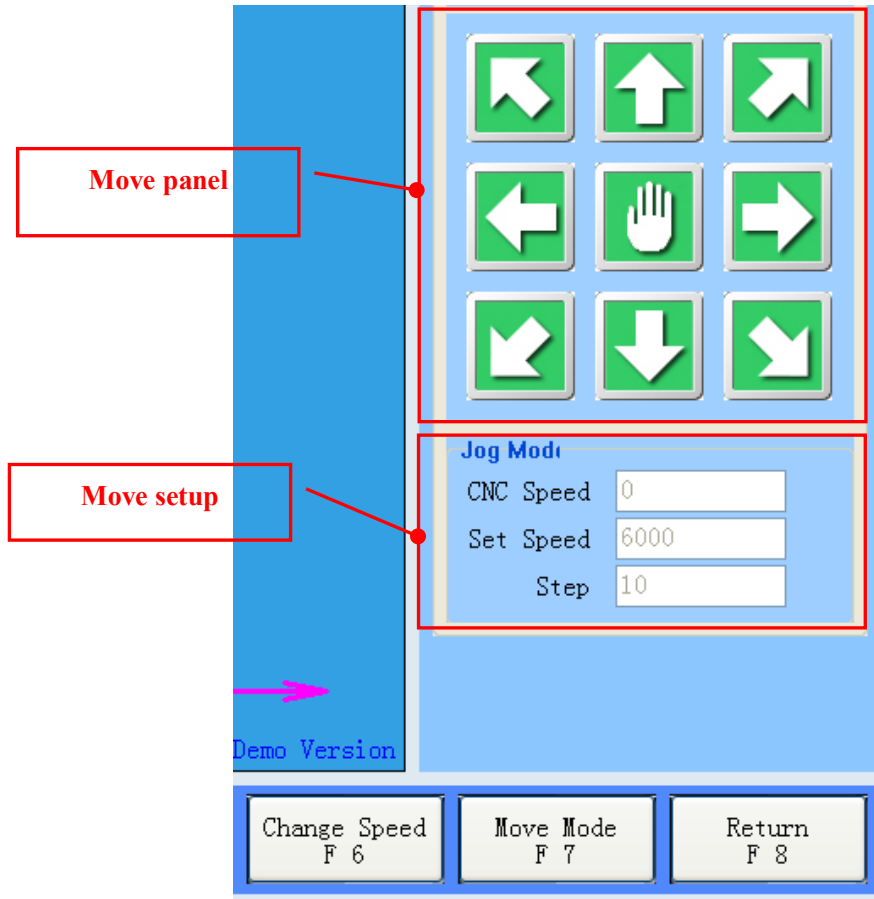
【Move Mode】 Support follow mode:

Jog Mode: Press the arrow keys and the machine moves in the direction specified. Release the arrow keys and the machine stop.

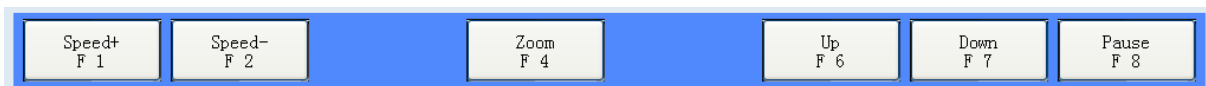
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Latch Mode: Press the arrow keys (which as a hand) in the middle of the arrow keys or [F11] to enter the linkage mode. In this mode, press the arrow keys to move the machine to the specified direction, but release the button but machine not stop, still moving. At this point can be press either arrow keys to stop move and switching to jog mode automatically.

Step Mode: After pressing direction, the machine moving "step distance" set length automatic stop. during moving can press either direction key to stop moving.

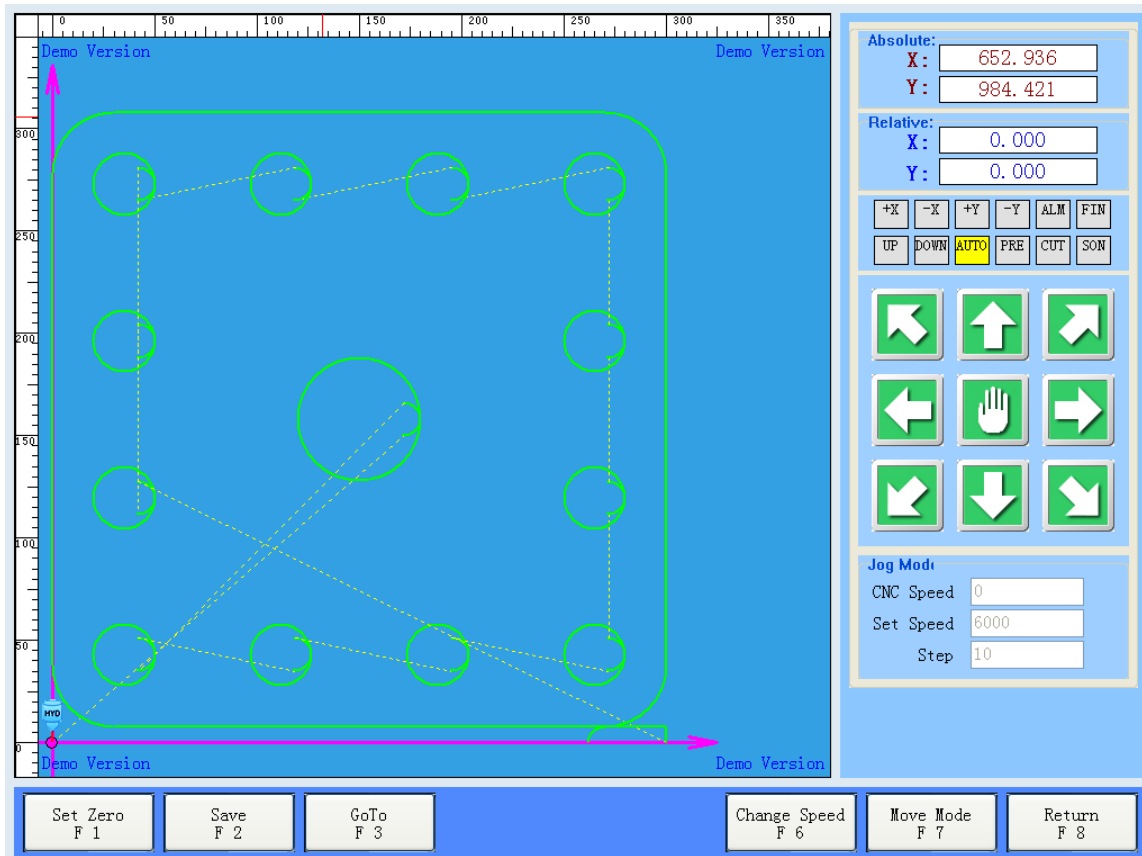


During the move, will display the following menu. Easy to change speed in linked mode.



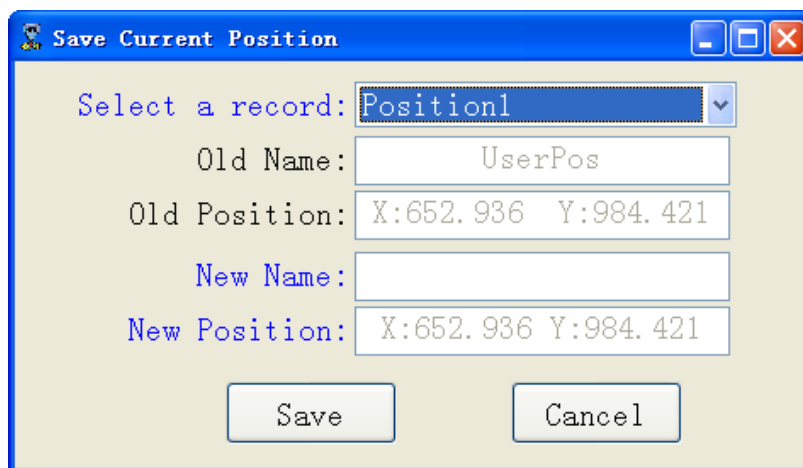
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3.7.2 Coordinate Management



【Set Zero】 Only the workpiece coordinate system is cleared, and the current torch position is set to the zero point of the workpiece coordinate. Can be used before cutting , after cutting can not be cleared

【Save】 Save the current position of the torch in order to recover quickly. This software provides 6 storage points to record the coordinates of the user to save. Note: this function depends on the machine tool coordinate system, if the machine tool coordinate zero offset, then the actual position will occur deviation.



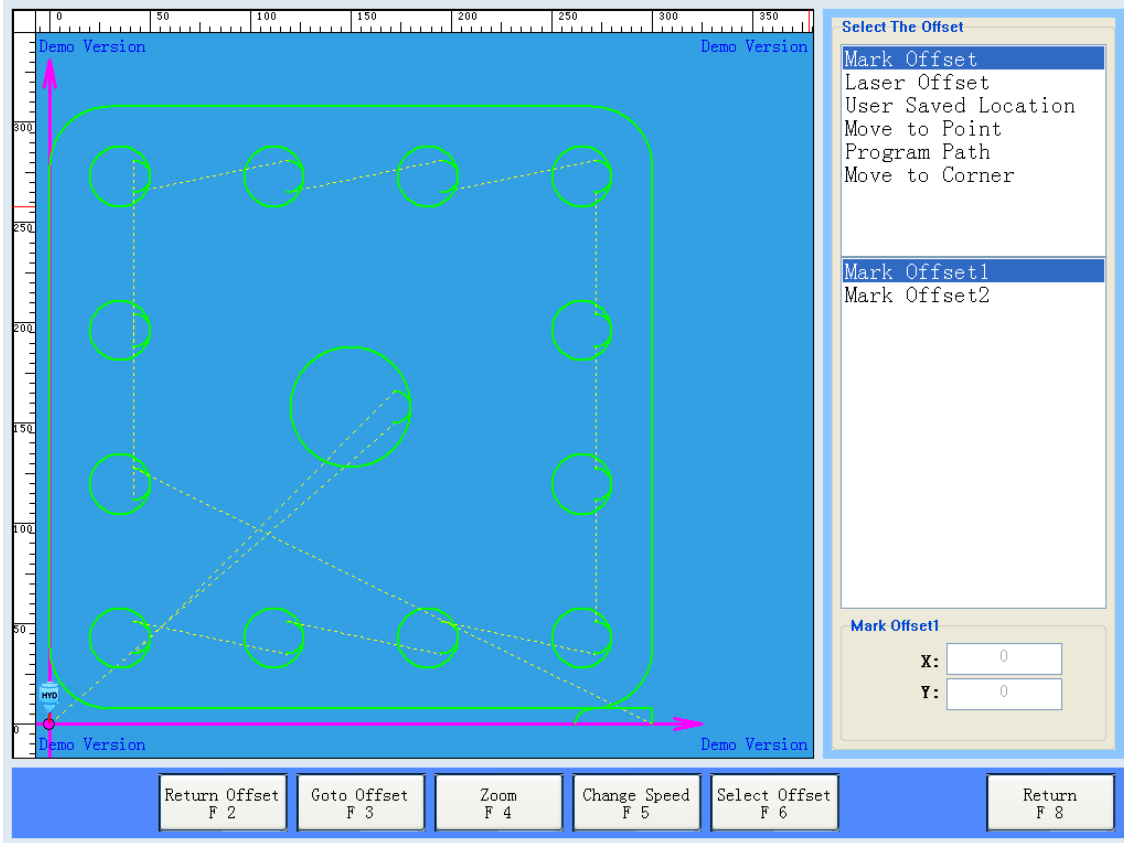
【GoTo】 Used to move precisely to the specified point or point. Specific coordinates available: marking offset, laser point offset, the user save position, the specified position, program path, plate corner, machine zero. If the corresponding function is not enabled, the coordinates are not loaded. For example, if you do not enable the return to zero function, you will not display the zero offset point

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【Return Offset】 The relative offset type is valid, and the offset of the absolute coordinate type is invalid. For example, marking offset, and the laser point offset will display.

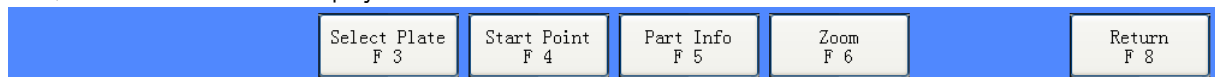
【Goto Offset】 Move to the selected point.

【Select Offset】 Select different target points, when selected, there will be a red dot to mark the target point.



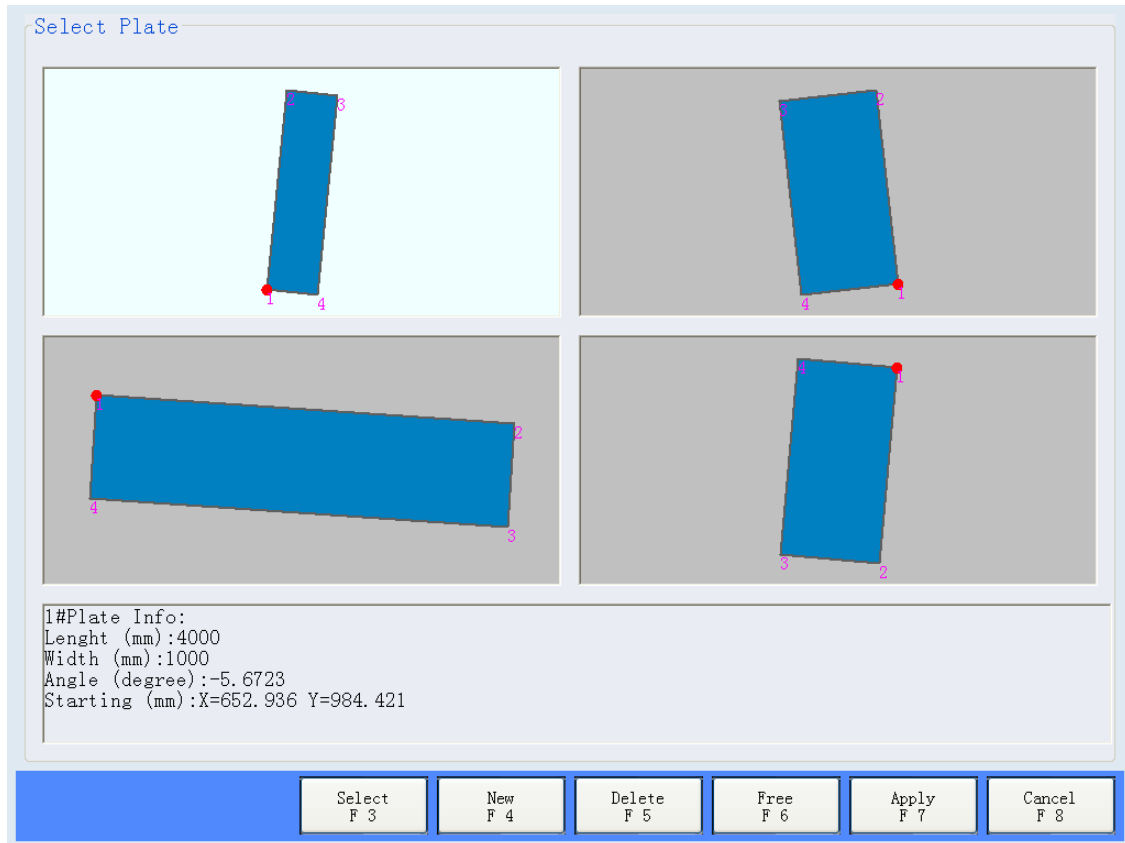
3.8 Cutting adjustment

After finished the above mentioned settings, if no need to change any more, you can start cutting the steel plate. Under the 【Cut Adj】 menu, it also provides 【Select Plate】 and 【Start Point】 to adjust the part. 【Zoom】 can switch between different display range to view parts. Note: if you do not load any files, it will not be able to display the 【Start Point】 button.



3.8.1 Plate Management

Before cutting, because the plate may be randomly placed in the material frame, so before cutting need to be adjusted for the plate, according to the angle of the plate to automatically adjust the parts to adapt to the plate. The system provides four calibration data plate. Meet at different cutting steel cutting does not have to be repositioned.



【Select】 Can switch between the four plates, Select plates to be used or adjusted.

【New】 Re adjustment of the plate to the point of preservation, to replacement of the new plate data.

【Delete】 Delete selected plate data.

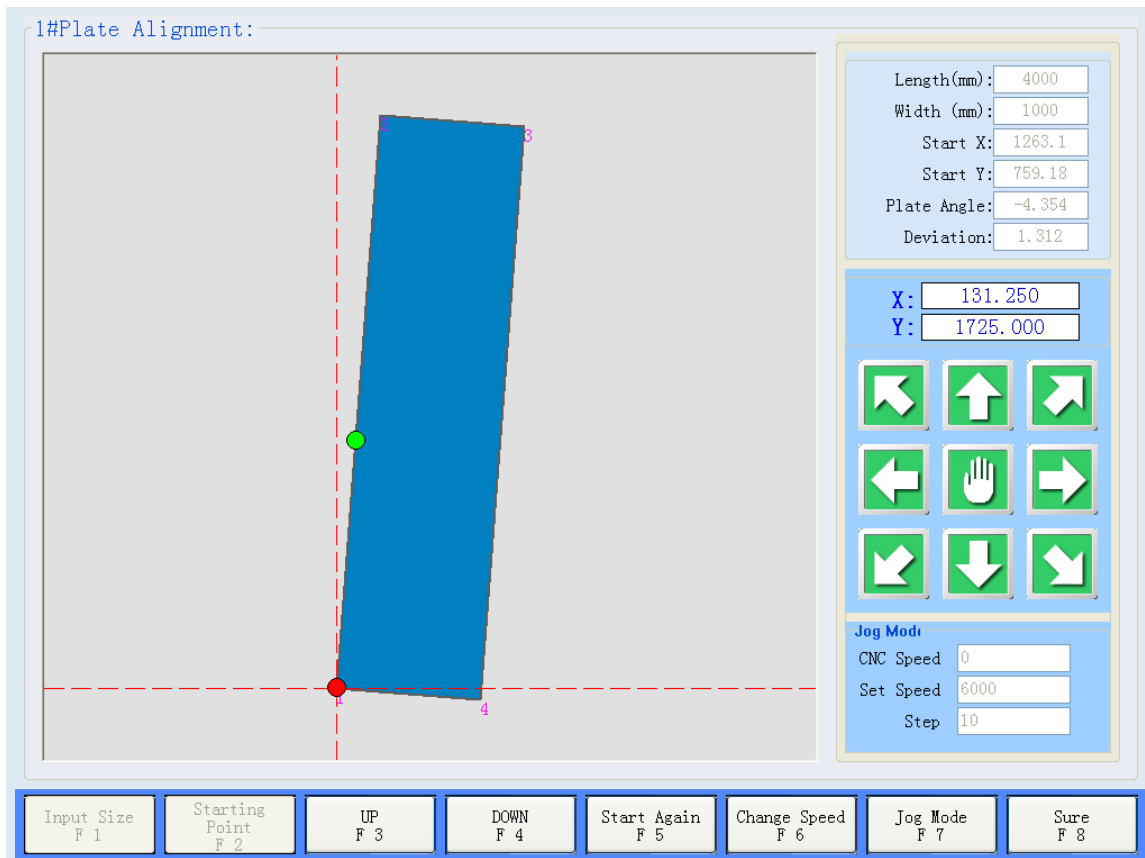
【Free】 Currently loaded parts do not use plate data, not based on automatic rotation of the plate.

【Apply】 The currently loaded parts automatically rotate according to the selected plate, so as to make the parts in accordance with the plate. After the use of the plate is provided, the parts that are loaded in the back are automatically rotated by the data of the plate.

【Cancel】 Do not do any operation on the currently loaded parts, and do not change the plate data that has been replaced.

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3.8.2 New Plate



【Input Size】 Enter the plate size, in order to display the correction process in any time, and the accuracy of the plate size can be accurately positioned to the other corner points. If this function is not required, then use default value.

【Starting Point】 First move the torch to the position corner of the plate which required position ,set torch current point is the main interface to display the corresponding point, each press will automatically switch to the plate of another angle. After setting the starting point, press the direction key, positioned the torch to another end angle. When the torch moving distance more than 10mm, the plate will automatically calculation and display correction results according to the current position of the torch . The red dot indicate starting position of the torch, green dot means the current torch position, cross line for machine tool vertical reference line. XY axis of the 45 degree angle for the community to identify the user needs to correct the edge automatically , Move to the left and right direction to correcting the edge of the X direction, Move to the ahead and back direction of torch to correcting the edge of the Y direction ,The adjust result is displayed on the top right of the main interface, the “alignment error” means have not adjust as set the length of the plate. The current position of torch offset for each 1mm may cause the offset distance of other corner points. the longer length correction, the higher the accuracy.

【Up】 Control torch up

【Down】 Control torch down

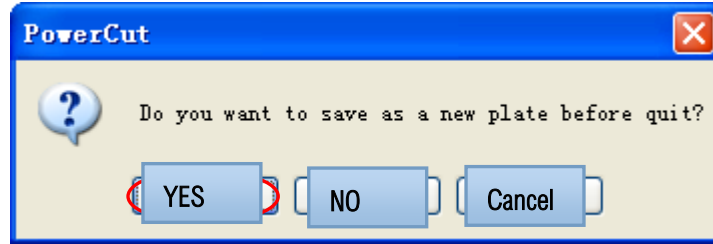
【Restart】 If the previous correction setting error or the current results are not satisfied, you can restart the calibration proces.

【Change speed】 Change the manually move speed (refer to manual mode instructions)

【Jog Mode】 Change the manually move mode(refer to manual mode instructions)

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【Sure】 After positioning is completed, it will be prompted to save the calibration results. Press 【Yes】 to save the results, 【No】 to exit calibration process, return to the previous menu. 【Cancel】 to stay in the calibration menu.

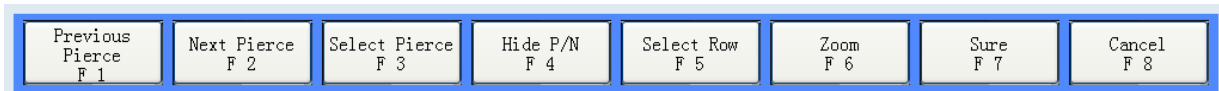


Saves the current calibration results, choose a return to any corner of the plate set. Press Done to return to the previous menu



3.8.3 Selected Cutting Point

The system supports hole number, line number, specify the starting point, and other cutting alternatives. Supports graphical search and machine move search. More directly targeted to the desired start point to start cutting. After entering the function selected cutting point, cutting path dotted line will appear, the selected cutting starting position, will display red dots. Note: Before start cutting and selected the cutting point, during running, it will use current torch point as workpiece zero point to adjusted automatically. If after re-suspend cut cutting selected starting point, the starting point of the part does not change.



Schematic diagram of a variety of selected

Select by pierce number:

【Previous Pierce】 From currently selected hole return to last hole.

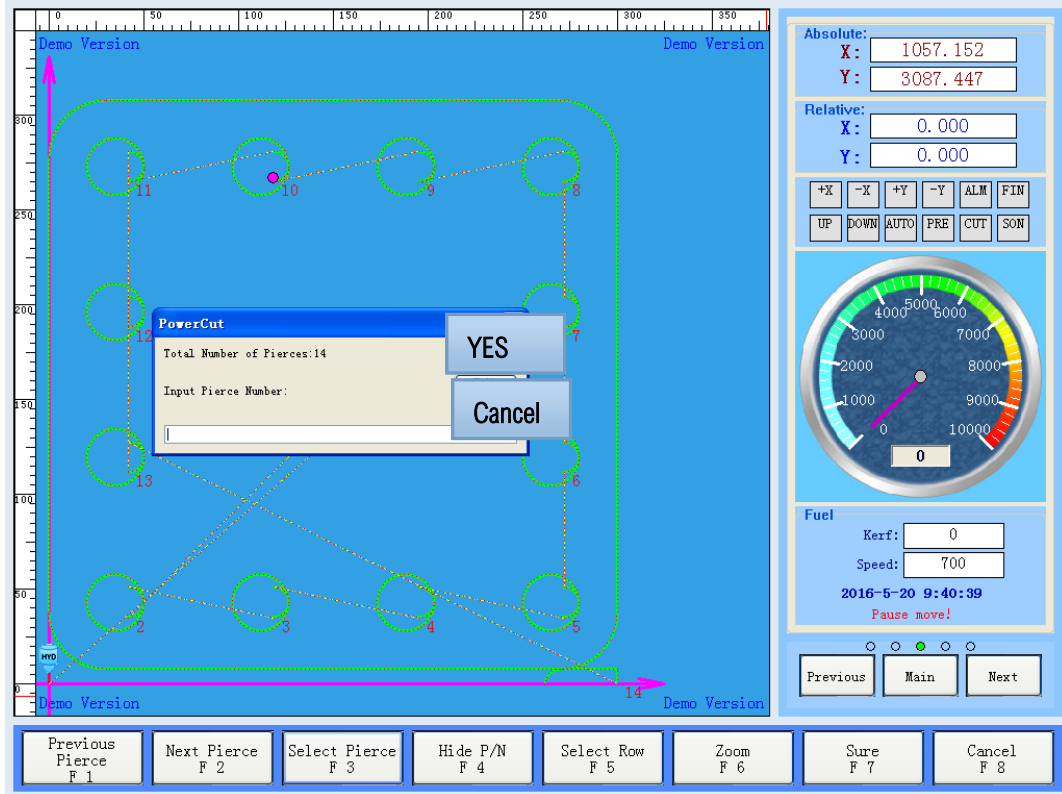
【Next Pierce】 From currently selected hole return back to next hole

【Select Pierce】 Enter the hole number of workpiece .position to the specify hole number directly.

Enter the hole number can not exceed the maximum number

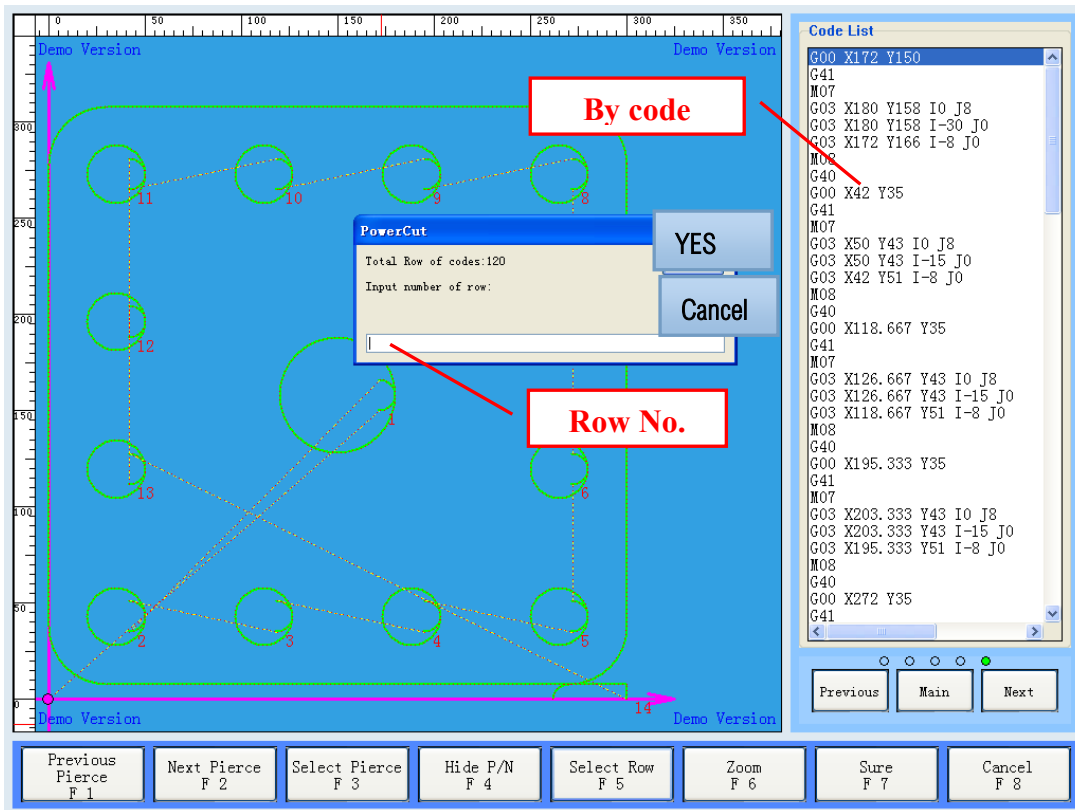
【Hide P/N】 Displays the hole number of parts, press again will become.

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Select by row number:

【Select Row】 Enter the specified cutting line number, automatically jump to the starting point of cutting line and start cutting. At this point on the right side of the code list will be displaying, but also can be use to select the keyboard keys to the corresponding code line.



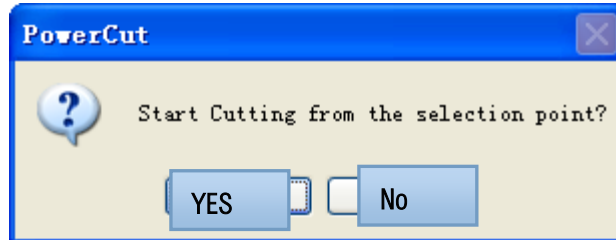
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Select by Keyboard:

The above method can only specify the starting point of the line segment, if you want to start cutting any point in the line, you can use the keyboard direction key to choose. Press the arrow keys to move the currently selected point location will appear a hand icon, continuous direction key is pressed, it will be ok when the icon is the movement of a finger to need cutting position and the red dots appear.

Select by mouse:

If you use the mouse or touch screen, can be more convenient to choose the cutting starting point. Where to start cutting. Click the mouse will be directly ejected after the start of cutting tips

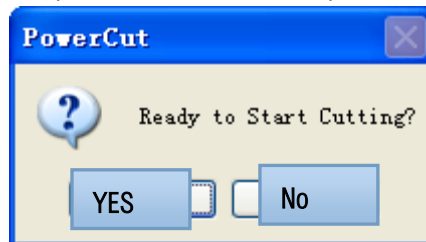


3.8.4 Zoom

In order to view the parts graphics, the software also provides four display modes to adapt to different display range. The range of the machine tool, the range of plate, the range of the workpiece, the torch tracking. Per click a **【Zoom】** key, then switch to the next display mode. Note: if you do not use the plate, you will skip the plate range mode. Double click the mouse in the drawing area, then the default recovery is the workpiece range mode. In addition, you can also use the mouse to move, scroll zoom graphics. If it is a keyboard operation, can use **【Ctrl】** and **【+】** **【-】** the combination of key to zoom operation. Appears in the other menu of the **【Zoom】** button function with the same, does not repeat

3.8.5 Start Cutting

After completion of all the settings, press **【Start】** pop-up to determine the dialog box, select **【Yes】** into the automatic processing process. In this interface, also can press **【F9】** key to start cutting, press **【F10】** key to finish cutting. At the beginning of the cutting, the current position of the torch is the starting point of the cutting of the workpiece, which is the zero point of the coordinate of the workpiece.



3.9 Cutting Operation

3.9.1 Operation during cutting

When the program begins to cut, it will appear with the operation menu. In the main interface, it also shows the information related to the cutting. In the following example, flame cutting mode is illustrated as a menu function, and the other modes operation are all the same.

Service Support Spirit

Speed+ F 1	Speed- F 2	Zoom F 3	Information F 4	Extent F 5	Set Now F 6	Release F 7	Pause F 8
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【Speed+】 Increase the cutting speed, the speed of each increment can be set in the parameter.

【Speed-】 Reduce cutting speed.

【Zoom】 Change the display rang of the drawing area.

【Information】 Switch and view the "processing information area" of the information, refer to the "3.2 software main interface".

【Extent】 For flame cutting mode, extend the preheating time.

【Set Now】 For flame cutting mode, record preheating time and save。

【Release】 For flame cutting mode, ahead of the end of the preheating time, but do not save.

【Pause】 Pause the current cutting process , can press hotkey 【F10】 .

3.9.2 Operation of pause cutting

When press pause button , The program will pause the cutting operation to stop running, waiting for the next step of the user's instructions. At this point the user can carry out the following operations:

Pause Cutting Menu:

Continue F 1	Path Retreat F 2	Path Forward F 3	Start Point F 4	Cut Mode F 5	Jog Mode F 6	Goto Starting F 7	Stop F 8
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【Continue】 Continue to start cutting.

【Path Retreat】With the processing speed of the current line segment, the current processing path is returned. Press is running, the release is stopped

【Path Forward】With the processing speed of the current line segment, along the current processing path forward.

【Start Point】 Select start cutting point.

【Cut Mode】 Change the cutting mode, or reset the cutting parameters. Note:the system support in cutting suspension modification slotting compensation, but we strongly recommended that users adjust the cutting kerf compensation after current workpiece cutting work is finished. In order to not cause the path error

【Jog Mode】 Enter the temporary movement mode of the machine, at this time can be operate moving manually. At this point cancel of workpiece coordinates is not allowed. Once move machine, then enter the path recovery model.

【Goto Starting】 return to workpiece coordinate zero point.

cutting path recovery menu

Return Path F 1	Edge Cut F 2	Move Part F 3	Start Point F 4	Cut Mode F 5	Jog Mode F 6	Goto Starting F 7	Stop F 8
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【Return Path】 return quickly to saved breakpoint before moving, then return to previous menu

【Edge Cut】 pierce at current position, then return to breakpoint at cutting speed, then continue to cut.

【Move Part】 set the current position as actual breakpoint, equivalently make pats path move completely.

【Stop】 stop the cutting

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4、Parameter setting

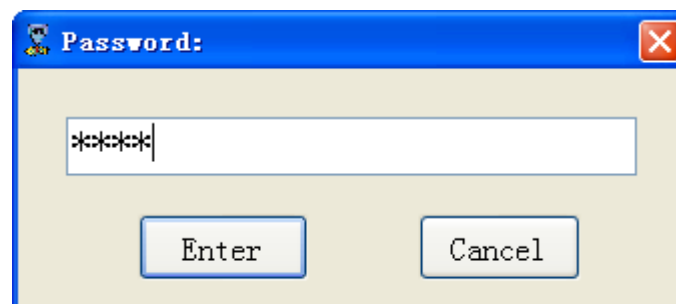
4.1 System information

It includes the software authorization and version etc



4.2 Parameter setting

【Setup】 it need to offer the password, then you can check and change parameters, default password is 1396, users can change it in parameter setting.



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4.2.1 CNC Parameters

【Soft Limit】 when this function is working, it will make the machine of X rail and Y rail move in limit space. It depends on the machine absolute coordinate and Zero home function. Please notice, this function is only for assisted measure, can't replace the mechanical limit and electrical limit these safe measures.

【Pulse Type】 it is used to servo motor or stepper motor signal, needs to be consistent with accepted signal of servo

【Servo Alarm】 set servo trouble signal detection of input or special pin .

【X Limit】 set X axis limit switch type

【Y Limit】 set Y axis limit switch type

【NumLock】 it is like the keyboard NumLock on. It is for compatibility of some keyboards

【Touch Screen】 if you install the touch screen, it need you to click the input box, then will appear virtual keyboard for inputting data

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【Joystick Installed】 if you install the remote hand shank, you can control machine moving by input pin. It should be off if you don't use this function, to avoid some mistakes.

【Default Unit】 support displayed symbol

【Auto Run】 set the software if it start when windows start up

【Transverse Width】 set transverse beam width for reference. The parameter is reference for drawing, soft limit and workpiece size

【Rail Length】 set rail length for reference. The parameter is reference for drawing, soft limit and workpiece size

【Encoder Counts Per】 the pulse number when machine moves 1mm. It is for adjusting machine position accuracy. Please notice, it will change the position accuracy of X rail and Y rail simultaneously when change the parameter. If one of rails' position inaccuracy, it needs to change the servo electronic gear ratio in corresponding side

【X Backlash】 X rail's gear opposite backlash compensation value, max value 2mm.

【Y Backlash】 Y rail's gear opposite backlash compensation value, max value 2mm.

Backlash compensation function is temporary measure for machine mechanical fault, if gear has problem, please repair and change in time. Don't rely on this function long time

【Password】 set the new administrator password

【File Extensions】 can set the file type. File type blank off with “;”. Please write the file form strictly, such as *.txt;*.cnc;*.g;*.dxf;.or it can't be read.

【Language】 when change language, it needs to restart.

【Tools Installed】 set the cutting mode displayed, if not choose, then the cutting mode can't be displayed

【Limited Machine Speed】 set machine moving minimum speed, usually it is for stepper

【Maximum Machine Speed】 set machine moving maximum speed

【Max Acceleration Rate】 set machine moving maximum acceleration.”mG”as unit

【Turning Time】 it will affect the acceleration, we don't recommend change it, please keep default 10ms

【Maximum Jog Speed】 set moving maximum speed by manual

【Jog Acceleration Rate】 set Jog moving maximum acceleration

【Maximum Cutting Speed】 set maximum cutting speed, to avoid acceleration over the safe range

【Run Acceleration Rate】 The acceleration value when cutting

【Fast Deceleration Rate】 The acceleration value when E-stop happens, like limit, servo warning...etc

【Smooth Coefficient】 It can limited improve the vibration as machine mechanical cause. Do n't rely on this function can solve the mechanical problems.

【Speed Change Ratio】 it is for changing the speed variation when cutting, variation arrange=cutting speed *parameter

【Low Jog Speed】 set low speed in manual

【Medium Jog Speed】 set medium speed in manual

【High Jog Speed】 set high speed in manual

【Idle Moving Speed】 Moves to the next part speed, namely G00 speed

Service Support Spirit

4.2.2 IO Setup

IO Setup

Input Setup

EXI00	Run	LOW
EXI01	Stop	LOW
EXI02	Jog HL Speed	LOW
EXI03	Speed+	LOW
EXI04	Speed-	LOW
EXI05	Jog X+	LOW
EXI06	Jog X-	LOW
EXI07	Jog Y+	LOW
EXI08	Jog Y-	LOW
EXI09	IHS	LOW
EXI10	Drive Alarm	LOW
EXI11	Torch Crash	LOW
EXI12	Arc On1	LOW
EXI13	Arc On2	LOW
EXI14	Alarm1	LOW
EXI15	Backup	

Reset Input

Output Setup

EX000	Up	LOW
EX001	Down	LOW
EX002	Auto	LOW
EX003	Preheat	LOW
EX004	H-Preheat	LOW
EX005	Cut	LOW
EX006	Staged Pierce 2	LOW
EX007	Staged Pierce 3	LOW
EX008	Bleedoff	LOW
EX009	Drive Enabled	LOW
EX010	Plasma Mode	LOW
EX011	Backup	
EX012	Mark	LOW
EX013	Backup	
EX014	Cylinder	LOW
EX015	Backup	

Reset Output

Setup
F 1

I/O
F 2

Offset
F 3

Code
F 4

Backup
F 6

Recovery
F 7

Sure
F 8

IO redefine is for revising input and output function. When changing, please set input pin or output pin as "spare", or it will not be revised as IO conflict. As follows

IO Setup

Input Setup

EXI00	Stop	
EXI01	Stop	HIGH
EXI02	Jog HL Speed	LOW
EXI03	Speed+	LOW

Output Setup

EX000	Up	LOW
EX001	Down	LOW
EX002	Auto	LOW
EX003	Preheat	LOW

Port

Function

TTL

- 【Reset Input】 recover input as default
- 【Reset Output】 recover output as default

Service Support Spirit

4.2.3 Offset Setup

Offset Setup

Home Function: Unused Home Switch Limit Switch

Home Switch: Open Close

Auto Homing: Unused Activate

Home Index:

Fast Home Speed (mm/m):

Low Home Speed (mm/m):

Offset Speed (mm/m):

Home 1 (-X-Y):	X	<input type="text" value="0"/>	Y	<input type="text" value="0"/>	Z	<input type="text" value="0"/>
Home 2 (+X-Y):	X	<input type="text" value="0"/>	Y	<input type="text" value="0"/>	Z	<input type="text" value="0"/>
Home 3 (+X+Y):	X	<input type="text" value="0"/>	Y	<input type="text" value="0"/>	Z	<input type="text" value="0"/>
Home 4 (-X+Y):	X	<input type="text" value="0"/>	Y	<input type="text" value="0"/>	Z	<input type="text" value="0"/>
Mark Offset1:	X	<input type="text" value="0"/>	Y	<input type="text" value="0"/>	Z	<input type="text" value="0"/>
Mark Offset2:	X	<input type="text" value="0"/>	Y	<input type="text" value="0"/>	Z	<input type="text" value="0"/>
Laser Offset1:	X	<input type="text" value="0"/>	Y	<input type="text" value="0"/>	Z	<input type="text" value="0"/>
Laser Offset2:	X	<input type="text" value="0"/>	Y	<input type="text" value="0"/>	Z	<input type="text" value="0"/>
User Offset 1:	X	<input type="text" value="0"/>	Y	<input type="text" value="0"/>	Z	<input type="text" value="0"/>
User Offset 2:	X	<input type="text" value="0"/>	Y	<input type="text" value="0"/>	Z	<input type="text" value="0"/>
User Offset 3:	X	<input type="text" value="0"/>	Y	<input type="text" value="0"/>	Z	<input type="text" value="0"/>
User Offset 4:	X	<input type="text" value="0"/>	Y	<input type="text" value="0"/>	Z	<input type="text" value="0"/>
User Offset 5:	X	<input type="text" value="0"/>	Y	<input type="text" value="0"/>	Z	<input type="text" value="0"/>
User Offset 6:	X	<input type="text" value="0"/>	Y	<input type="text" value="0"/>	Z	<input type="text" value="0"/>

Setup
F 1

I/O
F 2

Offset
F 3

Code
F 4

Backup
F 6

Recovery
F 7

Sure
F 8

【Home Function】 can choose the home switch type. We recommend the specialized home position switch, more accuracy and safer.

【Home Switch】 set it NC or NO

【Home Index】 support 4 home positions, can set the value of home position offset

【Fast Home Speed】 the speed of returning to home and find home position switch

【Low Home Speed】 the speed of found home and position accuracy

【Offset Speed】 set offset speed at <accuracy position> in manual mode

【Home 1 (-X-Y)】 set offset value of the specified rail coordinate home related to home switch.

【Mark Offset 1】 set relative position of powder marking torch and torch. Max 2 offset value

【Laser Offset 1】 set relative position of laser position and torch. Max 2 offset value

【User Offset 1】 save the users' coordinate position--absolute coordinate

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4.2.4 Code Compatibility Setup

【Default Unit】 notice: this version only support metric unit

【Default XY Coordinate】common code is G90 or G91 rule coordinate system, if there is no G90 and G91, will use default coordinate system.

【Default IJ Coordinate】 set relative or absolute coordinate of circle center

【Cut On #1】 M code when cutting start, total three units codes

【Cut Off #1】 M code when cutting end, total three units codes

【Mark Offset On】 it means powder start to spray , and execute offset code

【Mark On】 open powder switch, and stat to spray

【Mark Off】 close powder switch, end to spray

【Mark Offset Off】 it means powder end, and return to torch initial position

【Program End】 finish to cut workpiece

For cutting start, cutting end and program end codes, software can identify and insert in automatically, but it will not intervene the powder codes and compensation codes, it needs to set in manual.

software can default support codes as below:

G90	absolute coordinate system	G42	set right compensation
G91	relative coordinate system	M07	cutting start(can redefine)
G00	travel fast	M08	cutting end(can redefine)
G01	cutting line	M09	powder start(can redefine)
G02	circle cutting clockwise	M10	powder end(can redefine)
G03	circle cutting counterclockwise	M11	powder offset start(can redefine)
G40	cancel kerf compensation	M12	powder offset end(can redefine)
G41	set left compensation	M02	program end(can redefine)

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【Arc Position Error】 if circle beginning, radius and end codes are discrepancy with actual result, it will show the warning and circle amount if beyond the set value. It can continue to cut if ignore the warning.



【Arc To Line Max Radius】 less than setting value, it will be identified as line

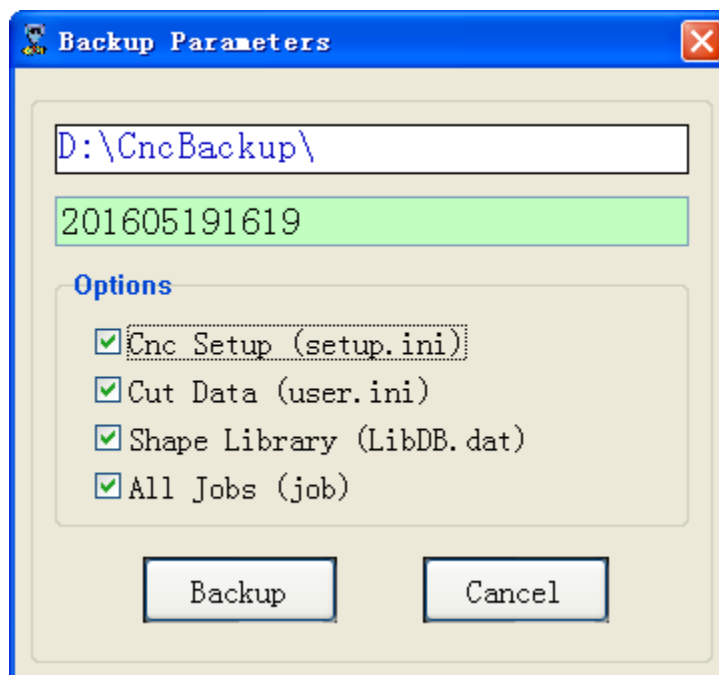
【Arc Explode Min Radius】 less than setting value, it will be decomposed to lines

【Arc Explode Error】 when big circle is decomposed to lines, the resolution error of each line

4.2.5 Backup Parameters

The default save file is D:\CncBackup\, save zip file at name as time, it can't be changed. It will be save at software disk if no D disk. The backup file is zip file, it can be unzip with zip software.

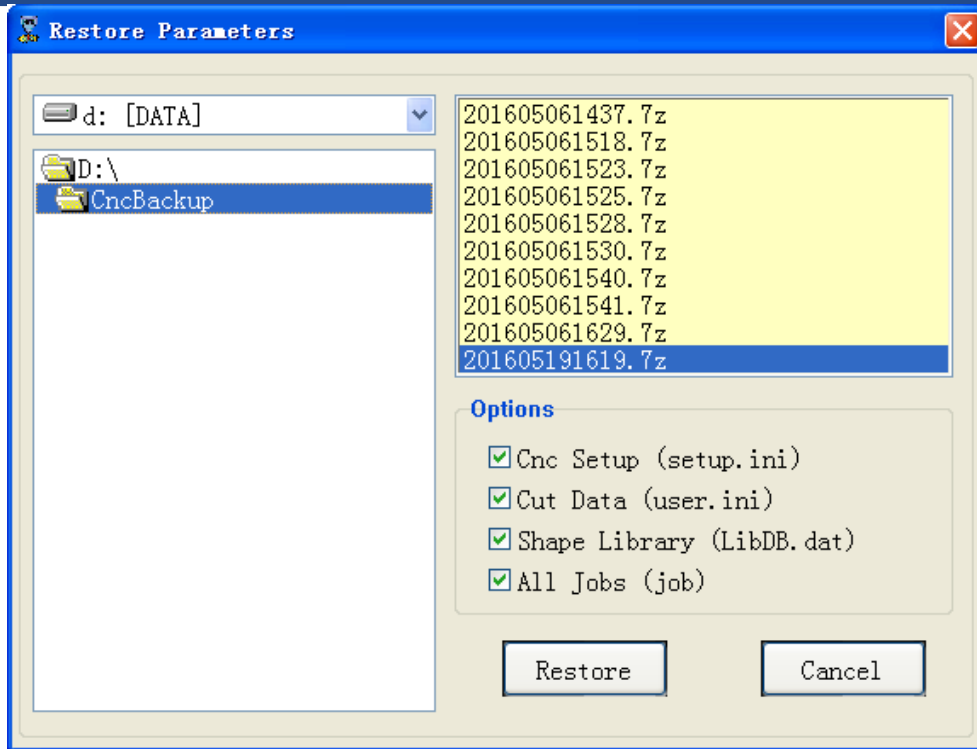
The backup file includes data as below, users can choose them freely. Users also can save file that related to software installation directory, then backup.



4.2.6 Recover parameters

When recover parameters, default file is backup catalog, users can choose some file to recover, also can unzip file and copy to installation directory, to replace original file.

Service Support Spirit



4.3 IO Diagnose



【Reload】 can recover the output to initial state, i.e only output servo enable and plasma cutting mode state.

【Reset】 close all outputs, make it the state as open.

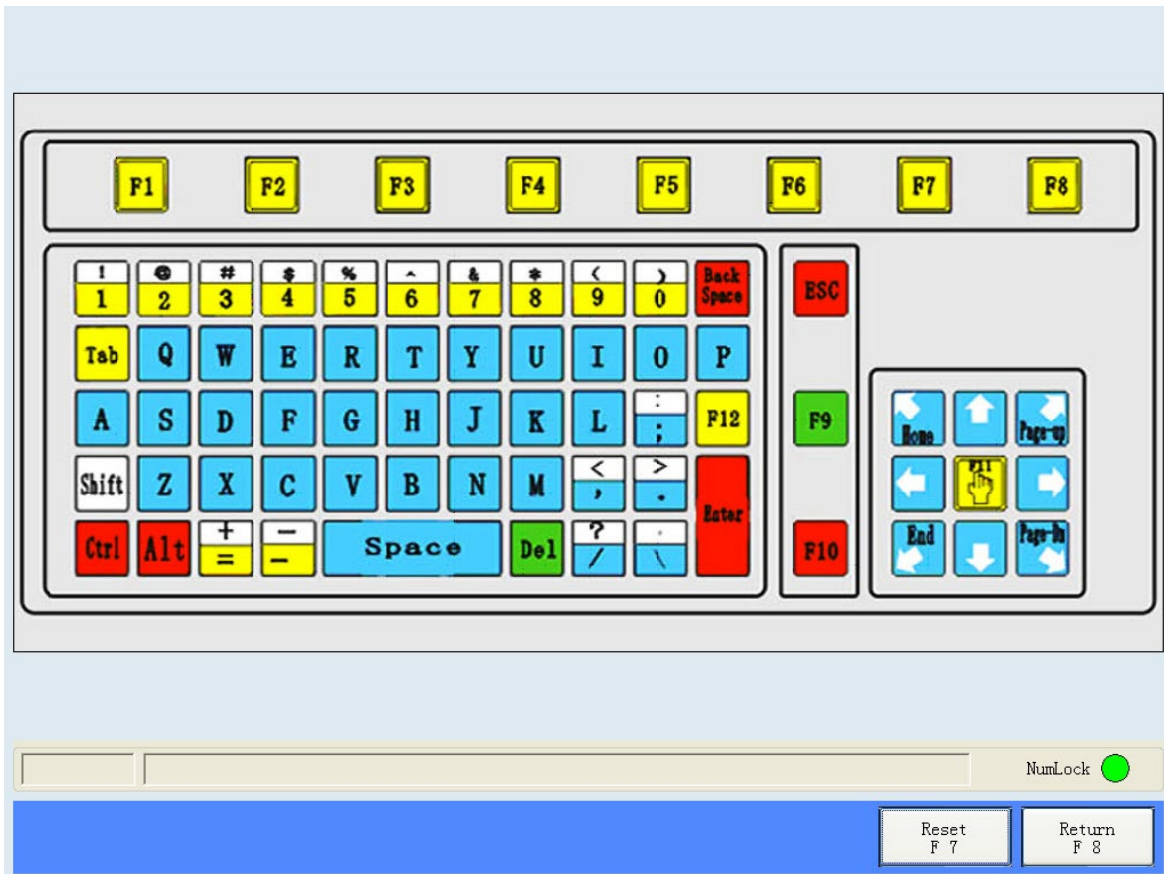
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This interface can test all inputs and outputs, to check the trouble cause. Please notice, this diagnose result only mean level state of inputs and outputs current, don't stand for actual logic. If it shows the state changeable when test, then the output is normal. After exit the test interface, it will recover to the state before test.

Notice: if show shaft card success, but can't open output, maybe the driver program data non-release, it needs to restart CNC controller to recover.

4.4 Keyboard Diagnose

It can test the keyboard, but please notice, different factory define keyboard difference. If keyboard has no response when test, it is normal, it don't means keyboard damaged.



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4.5 Machine adjustment

The screenshot shows a software interface for machine adjustment. It is divided into two main sections: 'Parameters' and 'Results'. Below these sections is a control bar with several function buttons.

Parameters Section:

- Drive type: Panasonic A5 (dropdown menu)
- Current Encoder (pulse/mm): 1000
- Electronic Gear Maximum: 10000
- Drive Gear Numerator: Pr0.09= 1
- Drive Gear Denominator: Pr0.10= 1
- Programming Distance (mm): 4000
- Measuring Distance (mm): 4002

Results Section:

- Pulse Mode Encoder: ---
- Electronic Gear: Pr0.09= ---
- Encoder Pulses: Pr0.10= ---

Control Bar:

- CNC Accuracy F 1
- XY Verticality F 2
- Clean F 4
- Input F 5
- Calculation F 7
- Return F 8

Count the value related to machine position accuracy, such as pulse equivalent and gear ratio. Please notice, choosing servo driver type is only for showing the fitting servo reference number, don't means servo driver in machine, don't connect with driver. The driver list only write several common servo models, it can also count others

The screenshot shows a software interface for machine adjustment, specifically for gantry alignment. It features a diagram of a gantry and a list of calculated parameters.

Diagram: A schematic of a gantry with two vertical columns labeled 'Y' and a horizontal beam labeled 'X'. A red arrow points downwards from the right side of the gantry. Below the gantry, a square diagram shows dimensions: width $X1$, height $Y1$, and diagonals $L1$ and $L2$.

Calculation Results:

- Width $X1$: 1000 mm
- Length $Y1$: 1000 mm
- Diagonal $L1$: 1412 mm
- Diagonal $L2$: 1416 mm
- Track Span: 4000 mm
- Standard Diagonal: 1414.2 mm
- Adjust Distance: -11.3 mm
- Controller Position: Left (dropdown menu)

Text Box: Push right gantry back 11.3 mm

Control Bar:

- CNC Accuracy F 1
- XY Verticality F 2
- Clean F 4
- Input F 5
- Calculation F 7
- Return F 8

This function is for counting diagonal deviation adjusting, please make sure machine position accuracy correct, or the actual data prevail.

Service Support Spirit

Appendix 1: Instructions for shape lib template editing

1、writing norms

1)、template supports A/a, space etc, other unidentified codes or form will be ignored. Like $G01x[(a)]Y[(B)]$, it can support. We suggest capital G codes, lowercase parameters, and use space timely, make read them easily.

2)、when edit codes template, codes parameters use [], inside [] formula will be counted as a unit. Such as $G01 X [] Y []$

3)、inside [] formula words quantity is max 255. (EVALUATE)

4)、it only supports words of parameter list (a,b,c,d) etc, like square length and width.

5)、all parameters and variate must use (), or it can be identified. Like a, it should write (a)

$G01 X [(a)] Y [(a)-(b)]$

6)、user-defined shapes lib is open, don't check the formula validity, it will be ignored for unnormal and unknown words. This may cause incorrect calculation. If the result is unexpected, please check the codes and formula, especially (), it is ignored easily.

7)、Shapes will align auto when generate the working file, and default is all shapes in first quadrant near to XY axis. If shapes are beyond the first quadrant and far away XY axis, software will adjust auto, make locate and cut conveniently.

2、support operators and functions

support operators and functions as follows:

Notice: trigonometric function use radian system, $\text{radian} = \text{angle} * 3.14 / 180$.

$\text{Angle} = \text{radian} * 180 / 3.14$.

3、support statement

1)、Rem statement

The software can support annotation for program. How to use: add Rem before codes or use ' for annotation, will make words ignore behind them. Example 1: Rem G01 X12 Y13

Example 2: ' G01 X10Y0

Example 3: G01 X20 Y12 'line

First line and second line will be ignored, 'line in third line will be ignored

2)、Const statement

Const define custom variables to store temporary calculated values, simplify programming.

method: Const [(variable name)=expression]

如: Const [(Long)= $3.14 * 2 / (a)$]

Const [(Width)=120]

Sample code:

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Const [(Angle)=3.14*2/(a)] 'defined angular variable (Angle)
 Const [(Long)=(r)*sin((Angle)/2)*2] 'defined chord length variable (Long)
 G00 X[(r)+(Long)/2+(c)] Y[(r)-(r)*cos((Angle)/2)-(d)] 'direct reference defined variable of angle chord length.

notice:

- (1)、user-defined variable name includes any letter and number, A/a are ok.
- (2)、punctuation should not be as variable.
- (3)、user-defined variable name can't be the name of list.
- (4)、don't use expressions or functions as parameters as follows (5)、for user-defined variable, please define firstly then use it. That is, user-defined variable is only effective back of codes

3)、Do...Loop statement

How to use: add Do[(time)] before codes, add Loop after codes.

Example:

```
DO[(time)]
  G01 X[(b)] Y[(a)]
```

Loop

Notice:

- (1)、the time of loop usually use any variable or formula instead. Time of loop is an integer.
- (2)、if need to use a loop increment values, use {c} in front of the parameter or the number of loop.

So, each time through the loop, {c} will be replaced by the current times of loop, as follows:

```
DO[(c)]
  G01 X[{c}*2]
```

Loop

If parameter is set as 3, then actual output code is:

```
G01 X[(1)*2] =G01 X2
G01 X[(2)*2] =G01 X4
G01 X[(3)*2] =G01 X6
```

- (3)、Do and Loop must be use as unit, it will warn if miss one of both.
- (4) support for unlimited nested loop

4)、Delete statement

This statement is used to delete the current output of the previous few line of code. Commonly used to remove the extra line when the cycle of the output code. Usage as below:

Delete[2] 'remove the first two lines indicate the current output code。

5)、If.....Else.....EndIf statement

This statement is used for conditional compilation. The codes meeting requirements can output, or can't be output. Conditional use supported comparison operators. Return value 0 is false and non-zero is true. When meet condition 1, output code 1, When meet condition 2, output code 2, and so on. Elseif quantity unlimited, the times of conditions can be judged. Else is in addition to all of the conditions listed above for other conditions, If statement is not supports multiple nested.

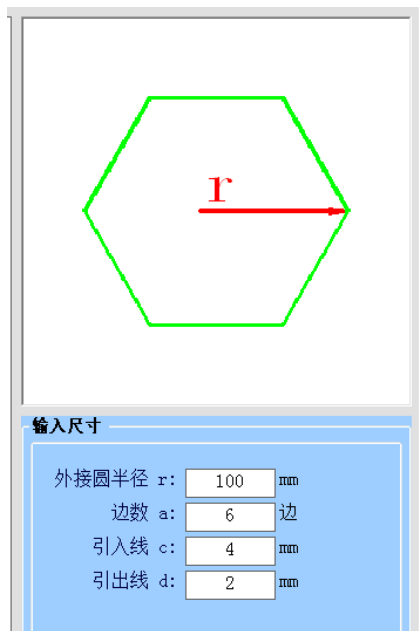
```
If [condition 1]
  Code 1
Elseif [condition 2]
```

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```
Code 2
Elseif [condition 3]
Code 3
Else
Code 4
Endlf
```

4、template example

This is the polygon template, please refer to shapes lib for more program.



```
Const [(PI)=3.14159]          'define PI constant
Const [(Angle)=(PI)*2/(a)]   count regular polygon average angle
Const [(Long)=(r)*sin((Angle)/2)*2] 'count length of each side
G91
G00 X[(r)+(Long)/2+(c)] Y[(r)-(r)*cos((Angle)/2)-(d)] 'move to beginning
G41
M07
G01 X[-(c)] Y0 'lead in
DO[(a)] 'generate cyclic codes as polygon side
  G01 X[(Long)*cos((PI)-((a)-1)*(Angle))] Y[(Long)*sin((PI)-((a)-1)*(Angle))]
LOOP
G01 X0 Y[-(d)] 'lead out
G40
M08
M02 'program end
```