![Baileigh Industrial logo]

OPERATOR'S MANUAL

Metal Working

HG612T

Book 2 of 2

CONTROLLER OPERATION

MODEL: PT-44AH-W

Rev. 07/2019

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INTRODUCTION

The quality and reliability of the components assembled on a Baileigh Industrial Holdings LLC machine guarantee near perfect functioning, free from problems, even under the most demanding working conditions. However, if a situation arises, refer to the manual first. If a solution cannot be found, contact the distributor where you purchased our product. Make sure you have the serial number and production year of the machine (stamped on the nameplate). For replacement parts refer to the assembly numbers on the parts list drawings.

Our technical staff will do their best to help you get your machine back in working order.

In this manual you will find: (when applicable)

- Safety procedures

- Correct installation guidelines

- Description of the functional parts of the machine

- Capacity charts

- Setup and start-up instructions

- Machine operation

- Scheduled maintenance

- Parts lists

GENERAL NOTES

After receiving your equipment remove the protective container. Do a complete visual inspection, and if damage is noted, **photograph it for insurance claims** and contact your carrier at once, requesting inspection. Also contact Baileigh Industrial Holdings LLC and inform them of the unexpected occurrence. Temporarily suspend installation.

Take necessary precautions while loading / unloading or moving the machine to avoid any injuries.

Your machine is designed and manufactured to work smoothly and efficiently. Following proper maintenance instructions will help ensure this. Try and use original spare parts, whenever possible, and most importantly; **DO NOT** overload the machine or make any modifications.

Note: *This symbol refers to useful information throughout the manual.*

⚠ IMPORTANT

PLEASE READ THIS OPERATORS MANUAL CAREFULLY

It contains important safety information, instructions, and necessary operating procedures. The continual observance of these procedures will help increase your production and extend the life of the equipment.

SAFETY INSTRUCTIONS

LEARN TO RECOGNIZE SAFETY INFORMATION

This is the safety alert symbol. When you see this symbol on your machine or in this manual, **BE ALERT TO THE POTENTIAL FOR PERSONAL INJURY!**

Follow recommended precautions and safe operating practices.

UNDERSTAND SIGNAL WORDS

A signal word – **DANGER**, **WARNING**, or **CAUTION** – is used with the safety alert symbol. **NOTICE**, which is not related to personal injury, is used without a symbol.

DANGER: Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING: Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION: Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE: Indicates a situation which, if not avoided, could result in property damage.

⚠ DANGER

⚠ WARNING

⚠ CAUTION

NOTICE

SAVE THESE INSTRUCTIONS.
Refer to them often and use them to instruct others.

⚠ **PROTECT EYES**

Wear safety glasses or suitable eye protection when working on or around machinery.
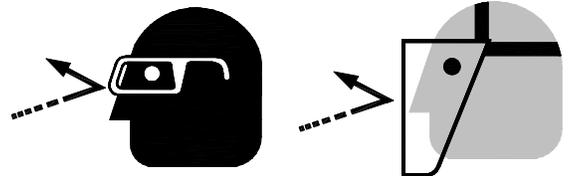
⚠ **PROTECT SKIN**

Keep hands and body protected from the plasma arc and hot sparks. The heat from the plasma arc is very intense and can pierce the skin resulting in serious burns. Always wear gloves and suitable clothing. **DO NOT** touch hot piece part without gloves.
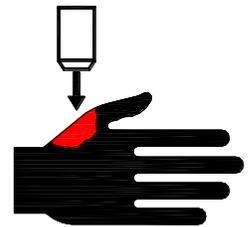
⚠ **FUMES AND GASES**

The plasma cutting process produces fumes and gases that can be hazardous to your health. If the area is not properly ventilated to remove them, use an air supplied respirator.
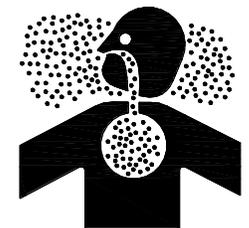
⚠ **ELECTRICAL AND MAGNETIC FIELDS**

Electric current and magnetic fields (EMF). These magnetic fields can influence pacemakers, medical implant, sensitive electronic equipment, and loose metallic objects. Persons with a pacemaker or medical implant must stay back at least 12 inches (30cm). Prolonged exposure to EMF may have other health effects which are not yet known.
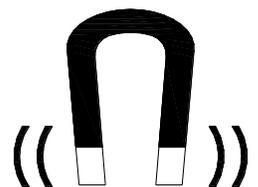
⚠ CUTTING SPARKS

A spark or piece of hot metal can fly out of the arc while cutting. Remove all flammable materials from the plasma cutting area. Wear approved eye protection, and proper hand and body protection. Make sure the cutting tip is not grounded when sitting idle, which could cause heat buildup, resulting in a possible fire.
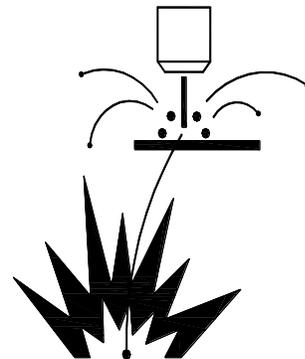
⚠ BEWARE OF PINCH POINTS

Keep hands and fingers clear of all potential pinch points. These include sprockets and chains along with belts and pulleys.
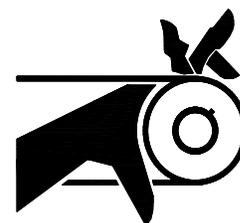
⚠ ELECTRICAL SHOCK CAN KILL

The plasma arc process uses and produces high voltages that can **severely injure or kill**. Disconnect power source before performing service or repairs. Insulate yourself from the piece part or other components in the weld circuit.

⚠ HIGH VOLTAGE

USE CAUTION IN HIGH VOLTAGE AREAS. DO NOT assume the power to be off.
FOLLOW PROPER LOCKOUT PROCEDURES.
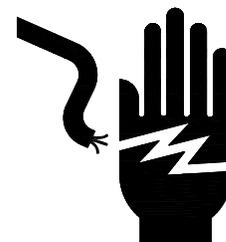
⚠ EMERGENCY STOP BUTTON

In the event of incorrect operation or dangerous conditions, the machine can be stopped immediately by pressing the **E-STOP** button. Twist the emergency stop button clockwise (cw) to reset. Note: Resetting the E-Stop will not start the machine.

SAFETY PRECAUTIONS

⚠️

Metal working can be dangerous if safe and proper operating procedures are not followed. As with all machinery, there are certain hazards involved with the operation of the product. Using the machine with respect and caution will considerably lessen the possibility of personal injury. However, if normal safety precautions are overlooked or ignored, personal injury to the operator may result.

Safety equipment such as guards, hold-downs, safety glasses, dust masks and hearing protection can reduce your potential for injury. But even the best guard won't make up for poor judgment, carelessness or inattention. **Always use common sense** and exercise **caution** in the workshop. If a procedure feels dangerous, don't try it.

REMEMBER: Your personal safety is your responsibility.

⚠️ **WARNING:** <u>FAILURE TO FOLLOW THESE RULES MAY RESULT IN SERIOUS PERSONAL INJURY</u>

Dear Valued Customer:

• All Baileigh machines should be used only for their intended use.

• Baileigh does not recommend or endorse making any modifications or alterations to a Baileigh machine. Modifications or alterations to a machine may pose a substantial risk of injury to the operator or others and may do substantial damage to the machine.

• Any modifications or alterations to a Baileigh machine will invalidate the machine's warranty.

<u>PLEASE ENJOY YOUR BAILEIGH MACHINE! ....PLEASE ENJOY IT SAFELY!</u>

1. **FOR YOUR OWN SAFETY, READ INSTRUCTION MANUAL BEFORE OPERATING THE MACHINE.** Learn the machine's application and limitations as well as the specific hazards.

2. **Only trained and qualified personnel can operate this machine.**

3. **Make sure guards are in place and in proper working order before operating machinery.**

4. **Remove any adjusting tools.** Before operating the machine, make sure any adjusting tools have been removed.

5. **Keep work area clean.** Cluttered areas invite injuries.

6. **Overloading machine.** By overloading the machine, you may cause injury from flying parts. **DO NOT** exceed the specified machine capacities.

7. **Do not force tool.** Your machine will do a better and safer job if used as intended. **DO NOT** use inappropriate attachments in an attempt to exceed the machines rated capacity.

8. **Use the right tool for the job. DO NOT** attempt to force a small tool or attachment to do the work of a large industrial tool. **DO NOT** use a tool for a purpose for which it was not intended.

9. **Dressing material edges.** Always chamfer and deburr all sharp edges.

10. **Dress appropriate. DO NOT** wear loose fitting clothing or jewelry as they can be caught in moving machine parts. Protective clothing and steel toe shoes are recommended when using machinery. Wear a restrictive hair covering to contain long hair.

11. **Use eye and ear protection**. Always wear ISO approved impact safety goggles. Wear a full-face shield if you are producing metal filings.

12. **Do not overreach**. Maintain proper footing and balance at all times. **DO NOT** reach over or across a running machine.

13. **Stay alert**. Watch what you are doing and use common sense. **DO NOT** operate any tool or machine when you are tired.

14. **Check for damaged parts**. Before using any tool or machine, carefully check any part that appears damaged. Check for alignment and binding of moving parts that may affect proper machine operation.

15. **Observe work area conditions**. **DO NOT** use machines or power tools in damp or wet locations. Do not expose to rain. Keep work area well lighted. **DO NOT** use electrically powered tools in the presence of flammable gases or liquids.

16. **Keep children away**. Children must never be allowed in the work area. **DO NOT** let them handle machines, tools, or extension cords.

17. **Store idle equipment**. When not in use, tools must be stored in a dry location to inhibit rust. Always lock up tools and keep them out of reach of children.

18. **DO NOT operate machine if under the influence of alcohol or drugs**. Read warning labels on prescriptions. If there is any doubt, **DO NOT** operate the machine.

19. **Sparks and hot material** from cutting can easily go through small cracks and openings into adjacent areas.

20. **Do not** cut where the atmosphere might contain flammable dust, gas, or liquid vapors such as from gasoline.

21. Wear oil-free protective garments such as leather gloves, heavy shirt, high shoes or boots, cuffless trousers, and a cap.

22. Watch for fire and keep a fire extinguisher close by.

23. **Turn off** power before checking, cleaning, or replacing any parts.

24. Be sure **all** equipment is properly installed and grounded according to national, state, and local codes.

25. Inspect power and control cables periodically. Replace if damaged or bare wires are exposed. **Bare wiring can kill! DO NOT** touch live electrical components or parts.

26. Keep **all** cords dry, free from grease and oil, and protected from sparks and hot metal.

27. **DO NOT** bypass or defeat any safety interlock systems.

28. Learn the function and controls of the controller, the automatic height control, the torch power supply, and the provided software packages. Know the location of the **ON - OFF** switch and the **"E"- STOP** button.

29. Keep visitors a safe distance from the work area.

TECHNICAL INFORMATION AND SUPPORT

Read This Manual

Read and understand this instructional manual, the cutting machine manuals, and your employer's safety practices.

> *Note:* This product is not designed to be field serviceable.

Work Condition

- Working Temperature, -10℃-60℃. Relative Humidity, 0-85%.
- Operation Voltage, DC 24V.
- The controller should be installed in a cab which can provide protection from powder.
- The controller would be better used in the situation without high voltage radiation.

Maintenance

- KEEP HANDS CLEAR of dangerous moving machinery. All control action, including manual action, can be executed using the front panel keys or remote interface.
- Loose fitting clothing or ties may become entangled in the machinery. These items should not be worn while operating the machine.
- This controller should only be operated by trained person.
- Do not open the controller unless obtaining the authorization.
- Do not let any acid or alkalescent substance to corrode the controller.

High Voltages

- Electric shock can kill. Be sure this equipment is safely installed in accordance with enclosed procedures and specifications.
- Avoid contact with electrical wires and cabling while power is on.
- Only trained person can operate this controller.

TECHNICAL SUPPORT

Our technical support department can be reached at 920.684.4990 and asking for the support desk for purchased machines. Tech Support handles questions on machine setup, schematics, warranty issues, and individual parts needs: (other than die sets and blades).

For specific application needs or future machine purchases contact the Sales Department at: sales@baileigh.com, Phone: 920.684.4990, or Fax: 920.684.3944.

Note: The photos and illustrations used in this manual are representative only and may not depict the actual color, labeling or accessories and may be intended to illustrate technique only.

Note: The specifications and dimensions presented here are subject to change without prior notice due to improvements of our products.

Cleaning

⚠️ **WARNING: DO NOT USE gasoline or other petroleum products to clean the machine. They have low flash points and can explode or cause fire.**

The controller is exposed to a lot of dust and grit as with a plasma table, keep it covered when not being used. Use light to moderate pressure compressed air to blow the dust off of the controller.

To clean the controller screen without damaging it, use a clean soft microfiber cloth and gently wipe the screen. Most of the dirt will come off this way. If there are still have a few stubborn spots, dampen the cloth slightly with plain water or a very weak solution of distilled vinegar and water. Wring the cloth tightly, and gently wipe the screen again. This should take care of any remaining spots. Gently dry the screen with another microfiber cloth.

The molded plastic frame and touch pad buttons can be wiped gently using a slightly dampened cloth of plain water or a very weak solution of distilled vinegar and water. Be careful not to get any liquid into the USB port or onto the rocker switch.

Avoid touching the screen. Pressing on the LCD screen it can damage the scree with scratches and possibly breaking the screen. Also, do not stick things to the screen like sticky notes, etc., this will block the view of the screen for the operator to monitor the operation.

INTRODUCTION

The F2100B digital controller is designed to control the motion of two axes, which is typical to the application of plasma cutting. The controller provides menu / illustration for each operation which provides convenience operation.

The controller uses high speed DSP and ARM as its core to assure the cutting process to be stable. The motion control algorithm is optimized so that the machine will be more stable and reliable, which in turn will increase the life of the motor and other the mechanical parts.

System Characteristics

- 7 inches 800 x 680mm dots color LCD.

- Chinese/English file system and menu, and the menu can be switched only by one key.

- Support the EIA code (G code) and various FastCAM, FreeNest, SmartNest, IBE software.

- Compact keyboard design and easy to input files.

- Graphics have some operations such as Proportion, Rotate, and Mirror.

- Graphics can be arrayed in matrix, interaction, stacked modes.

- Steel plate can be adjusted according any steel edge.

- Self-diagnostic function, to diagnose the key status and all the IO status, facilitate inspection and debug

- Provide a front USB interface for copying files.

- Import and export files by single or all files.

- Display time, week and clock.

- Parameters backup.

- Support THC.

- Plasma arc feedback, positioning feedback, automatically shut down the arc at the corner.

- Support edge cutting. It can save the preheat time for the thick steel plate.

- Movement speed can be real-time acceleration, deceleration.

- According to plate thickness, the cutting speed is automatically restricted by a speed limit in the corner, effectively preventing over burn.

- Select row and column manually.

- Dynamic/static illustration of the process, graphics zoom in / out, dynamically tracking cut-off point under zooming state.
- Starting speed and acceleration can be set by your convenience.
- Automatically memorize the working situation and the last cutting point when power off.
- "Cutting offset" function can avoid waste the steel plate when the nesting of the plate is calculated wrong.

Technical Standard

- Control Axis: 2
- Control accuracy: +/-0.001mm
- Coordinate range: +/- 99999.999mm
- Maximum pulses: 200kHz
- Maximum speed: 15000 mm/m
- Maximum lines of code: 150000 lines
- Maximum size of single code file: 4MByte
- Time resolution: 10ms
- Working Voltage: DC 24V in put
- Working Temperature: -10℃ - 60℃.
- Relative Humidity: 0 - 95%.

System Interface

- 15 pins interface of 2 axis of motor drive.
- 25 pins interface of 16 channels optical couple output ports, max back flow current 300mA.
- 25 pins interface of 16 channels optical couple input ports, max output current 300mA.
- USB interface on the front panel.
- Extend IO input/output ports, PWM input ports, analog input ports.

SYSTEM BOARD AND MAIN INTERFACE

Operating Board Introduction
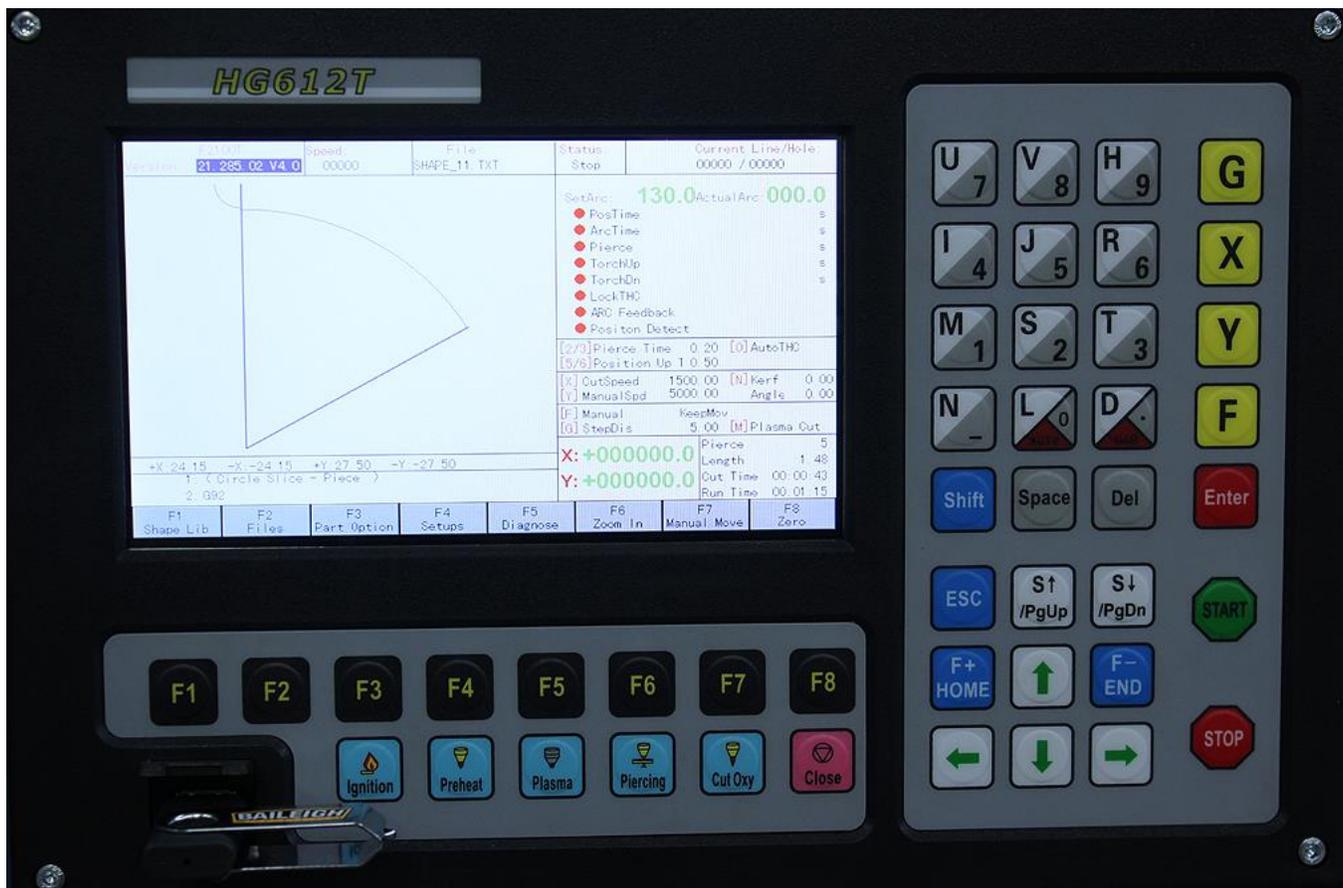
[F1] – [F8]: Function key to access various menu screens. These will change with each screen change.

[S↑/PgUP]: Raises the torch up from the main screen or moves the page up when in other screens.

[S↓/PgDn]: Lowers the torch from the main screen or moves the page down when in other screens.

[F+/HOME]: Accelerate the travel (F=Feed) speed or skip to the head of code line.

[F-/END]: Decelerate the travel (F=Feed) speed or skip to the tail of code line.

[1] – [9]: Enter the number values into various parameter settings. During the cutting process, change the cutting speed to ratio of the speed limit you have set, for example press [1], change the cutting speed to 10% of the speed limit you have set, press [2], change the cutting speed to 20% of the speed limit you have set.

Power On Process And Main Interface

When power just on, the system will go for the process of self-scan.
If any key is pressed, the system will skip the countdown and directly enter the logo screen. If no key is pressed, it will countdown to 0 and then enter the logo screen. Press any key to enter the main screen.
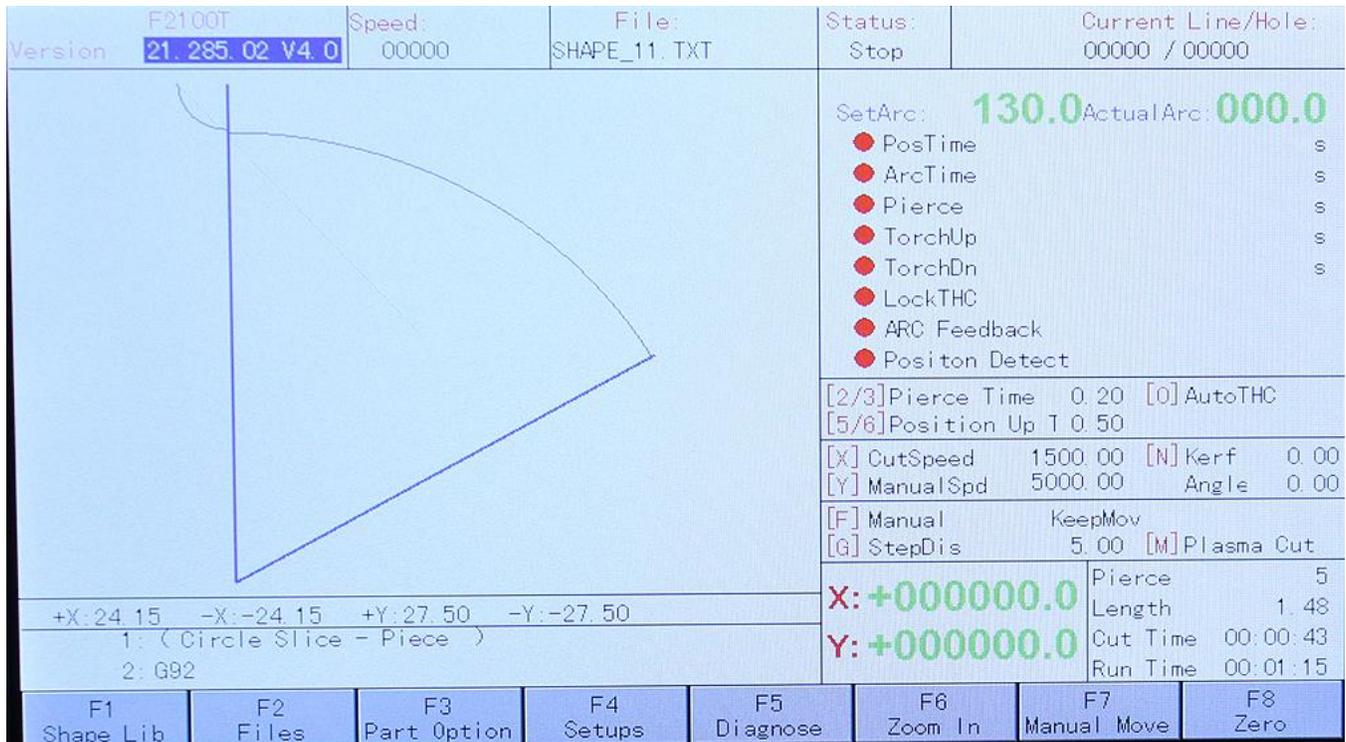
In the main interface, press [F1] – [F8] for the following functions:
[F1]: Shape Lib: Pressing F1 to enter the Shape Library including over 40 common shapes. These shapes are able to be edited for most of their basic dimensions.
[F2]: Files: You can load local files, U disk files or edit, import, export and delete codes.
[F3]: Part Option: Accesses actions of mirroring, rotation, plate adjusting, plate arraying, selecting row and hole or code edition etc.
[F4]: Setups: Setting all operating parameters.
[F5]: Diagnose: Including input ports diagnosis, output ports diagnosis, keyboard diagnosis, system self-check, date setting and system definitions.
[F6]: Zoom In: Zoom in the shape on the screen.
[F7]: Manual Move: Manually move the machine.
[F8]: Zero: Clear the coordinate of X and Y before starting cut or after cutting over.
[X]: Cut Speed: Opens a dialog box to enter the desired cutting speed.
[Y]: Manual Speed: Opens a dialog box to enter the desired manual moving speed.
[Z]: Kerf: Opens a dialog box to enter a kerf compensation value. This will be an additional value to any amount that was entered within the programming software.

[F]: Manual: Pressing the "F" key will toggle between the manual movement settings of KeepMov (keep movement, press and hold the direction key to move in the selected direction), StepMov (step movement, move a specific distance [editable by the operator; See StepDis] based upon the selected direction), ContiMov (continue movement, Press and release the key to move the head in the desired direction. The head will continue to move until it reaches the stop limit, or until any other key is pressed.).

[G]: StepDis: Opens a dialog box to enter a specific value (distance) to be used during a Step Movement.

[M]: Pressing the "M" key will toggle the screen between the operation screens/modes. Screens including Flame Cut (flame cutting. Non-functional), Plasma Cut (plasma cutting. Normal cutting screen), and Demo (Will run a program moving the torch around the table following the actual path of the program. During Demo, the torch will not lower to touch the material or strike an arc as in the Plasma Cut screen.

CUTTING FUNCTION

In the main screen, press the "SPACE" key to enter the cutting interface, shown as follows:
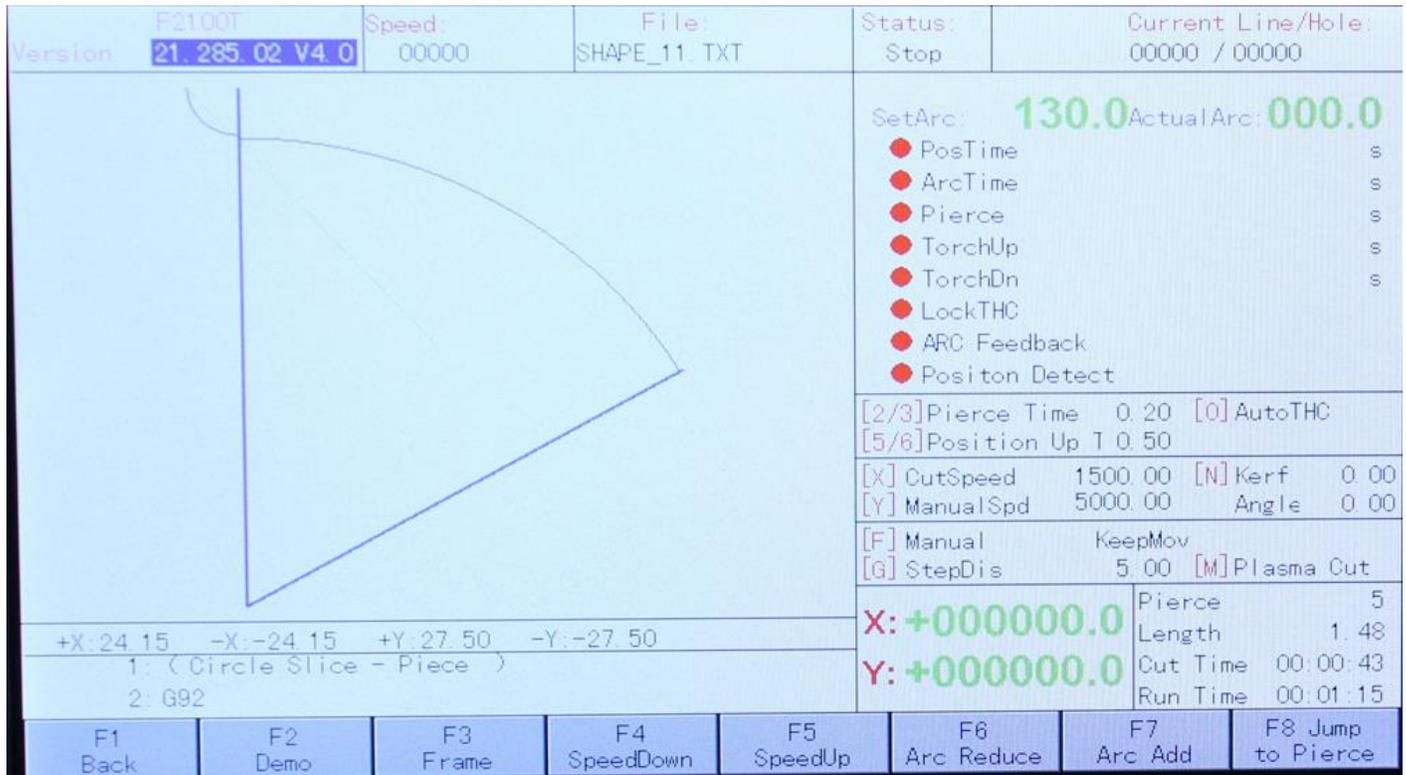
Show the current work piece's cutting path, including the slotted value. Show the G-code being processed, shows the current and next line.

Show the current cutting speed, during processing, you can press the keyboard's number keys [1] – [9] to achieve quick speed regulation. For example, press the number [3], the speed is automatically adjusted to 30%; press the number [8], the speed is automatically adjusted to 80% of the preset speed.

X shows the absolute coordinate of the torch in X direction. Y shows the absolute coordinate of the torch in Y direction. In the cutting interface:

- Press [X]: Modify the current maximum cutting speed. This value will come from the plasma cutter manual for the specific cutting conditions being used.

- Press [Y]: Modify the current maximum speed for manually positioning the torch head.

- Press [F]: Change the current manual move method.

- Press [G]: Modify the current fixed-distance move.

- [START]: Start cutting.

- [STOP]: Parking, the system can suspend all on-going actions.

Cutting Operation Index

These function keys are active when the system is cutting and during a paused cut.

- [F1]: The torch moves back along the cutting path.

- [F2]: The torch moves forward along the cutting path.

- [F3]: Return to the starting point of cutting torch, i.e. the starting point of the current work piece.

- [F4]: Decrease the cutting speed, each press will decrease the speed by 1%.

- [F5]: Increase the cutting speed, each press will increase the speed by 1%.

- [F6]: Reduce the arc voltage setting by one volt each time the key is pressed.

- [F7]: Increase the arc voltage setting by one volt each time the key is pressed.

- [F8]: When the system is suspended, for selecting perforation point; when the system begins to move, for the dynamic amplification.

- Four direction arrow keys and the S↑ and S↓ keys. Used to manually move the torch.

Speed Control and Adjustment

Normal Speed Adjustment

In automatic operation, or when the system is suspended, in the cutting interface the system can regulate speed.

On the operation screen, press and release the [F5] or [PRE], will increasing the speed at a rate of 1% per click. Press and hold the [F5] or [PRE], the speed rate will continuously increase to 100%. The 100% speed rate will be equal to the cutting speed set within the "Setup" parameter. On the operation screen, press and release the [F4] or [NEXT], will decrease the speed at a rate of 1% per click. Press and hold the [F4] or [NEXT], the speed rate will continuously decrease to 1%.

Quick Speed Adjustment

In automatic operation, or when the system is suspended, in the cutting interface the system can carry out quick speed regulation.

In the cutting interface, on the operation panel, press the number keys [1] – [9], the speed will quickly adjust to the corresponding percentage of the key pressed times 10. For example, press [3], adjust to 30% of the speed limit you have set, press [8], adjust to 80% of the speed limit you have set.

Forward

In the automatic function screen, press key [F2], the machine starts to move without real cutting. The process does not include any ignition, perforation and any other I/O working. The machine just moves the torch according to the graphic figure.

The function can be used to check the trail and code before you start the real cutting process. Press the red "STOP" key to stop the trial process if you want.

Backward

During the running process, if you want to go backward according to the origin trail to (maybe the material was not cut through), you can follow the following direction:

- First, press "STOP" key to set the machine at pause status.

- In the automatic function screen, press [F3] key (Back) to make the machine go backward along the original path.

- When the torch reaches the position you need, press "STOP" key to stop it. You may press [F2] key to go forward if the machine just went back too much.

Note: The backward or forward function may be used repeatedly to make the machine reach an ideal position.

- When the torch reaches the position you need, press "START" key again, if the current cutting code is G01, G02 or G03, system will automatically perforate before performing these procedures, and then continue the current program, if the current row is not G01, G02 or G03, the system will directly continue the current line program.

Edge Cutting / Offset Cutting / Return

When the torch is not on the actual path of the current work piece, the system will prompt the operator to identify which action should happen next.

There are two ways in which this situation will occur.
1. When the common parameter "edge perforation" selection is "Yes" and the next processing line G-code is M07, the system will be automatically suspended. At this time, the torch can be manually moved to any edge of the plate. Press the "Start" button, the system prompt will be displayed.

2. When the processing is paused, due to mechanical failure or other reasons, it needs to move the torch out of the actual path of the work piece, the system prompt will be displayed.

- If press [G], the system cutting returns back to the paused point, continue to cut it. This feature is particularly useful for thick steel plate, it can reduce the preheat time and increase cutting efficiency. This function is commonly used for edge perforation function.

- If press [X], the system considers current point is the paused point, it will continue cutting it. That is, the system offsets the cutting point. When the cutting machine paused or a power outage, if the cutting tip or steel plate with the pan has been offset or the user would like to think that is offset cutting, you can press this button.

- If press [Y], The system only returns to the paused point quickly, and then break off. During the cutting process, if discovery cutting torch malfunction, or other issues, need to move the cutting tip out of cutting region to overhaul. After the maintenance, this key can be pressed. Then return to the paused point, press the "start" button, the system automatically continues to cut.

Back to Reference Function

When pausing or stopping the cutting process, if the [F3] key is pressed the system will prompt to question if you are sure or want to cancel.

Pressing the Enter key will cause the system to automatically return to the starting point of the work piece.
The system automatically switches to processing at the main interface and waits for further user action.

During the return process, the "Stop" button can be pressed if needed to stop the operation. When the reason for the stoppage is cleared, press the [F3] key to restart the return to refence operation.
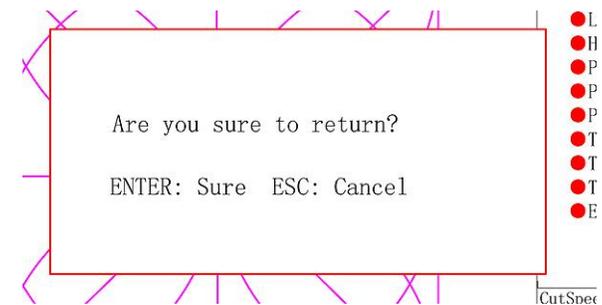
Perforation Point Selection

Before you start cutting or when cutting is paused, the function key prompt [F8] will display "select new pierce". When the [F8] key is pressed, the system will prompt the question of where to pierce.

```
Jump to new pierce?

ENTER: Sure   ESC: Cancel
```
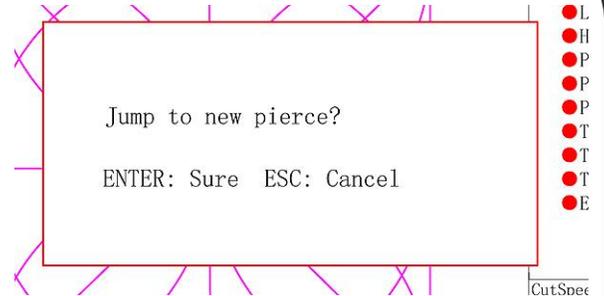
If the ESC button is pressed, the system will then return the cutting interface cancelling the pierce request.
If the ENTER button is pressed, the system will display the prompt to input the pierce point number.
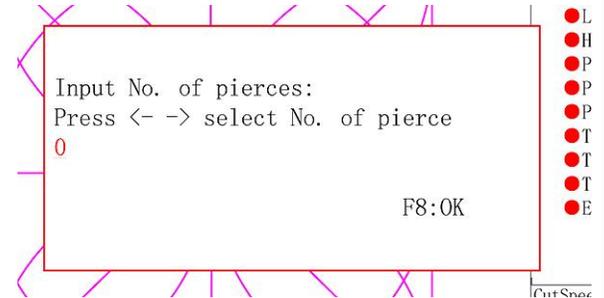
The pierce point can be input manually at this time. Pressing the ESC button will exit without manual input perforation point. Then pressing the left and right arrow keys to select the perforation point.

```
Input No. of pierces:
Press <- -> select No. of pierce
0

                          F8:OK
```

Cutting Exit

When the cutting operation does not get finished, and the cutting machine also being in the pause condition, if press [ESC], the system will query whether quit the cutting operation.
If pressing [ENTER], the system will exit the cutting operation.
If pressing [ESC], the system will not exit, get into the automatically interface and go on with the cutting operation at the current place.

```
Quit of cutting?

ENTER: Quit
ESC: Continue cutting
```
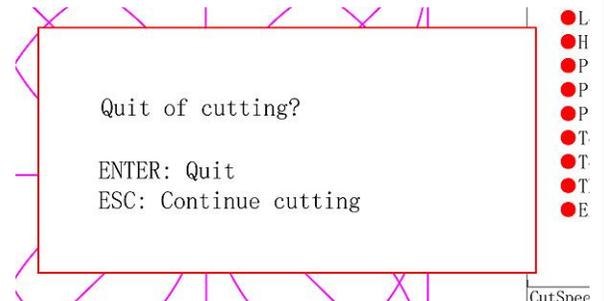
Frame Function

The "Frame" function will move the torch on the table to draw a box around the part to be cut. This box will represent the maximum boundaries that the part will require during the cut. In short. This will allow the operator to see of the part will fit on the material to be cut out of.
Press the "Space" key to enter the cutting interface.
The [F3] key will now be the "Frame" test function.
Pressing the [F3] key will start the controller and the torch to go along the frame (dotted line) for the part. The start point is at bottom left corner.

FLSK F2100B Version 3.3.71.1	Speed: 00000	File: SHAPE_43.TXT	Status: Pause	Current Line/Hole: 00000/00000

● Ignition   s
● Lowheat   s
● HighPreheat   s
● Pierce 1   s
● Pierce 2   s
● Pierce 3   0.1   s
● TorchUp   s
● TorchDn   s
● THC En   s
● Exhaust   s

CutSpeed 【X】1000.00 Kerf【Z】1.20
ManualSpeed【Y】3000.00 Angle 0.00
Manual 【F】keepMov StepMov ContiMov
StepDis【G】 5.00 Flame Cu 【M】

+X:500.00   −X:0.00   +Y:500.00   −Y:0.00

00006: G01 X0 Y500.00
00007：G01 X500.00 Y0

X: +000000.00
Y: +000048.70

F1 Back	F2 Forward	F3 Frame	F4 SpeedDown	F5 SpeedUp	F6 PreheatDown	F7 PreheatUp	F8 JumptoPierce

PART OPTIONS

Before starting to cut, you can use "F3 Part Option" in the main interface. Press F3 to enter part options menu


```
FLSK F2100B          Speed:          File:          Status:      Current Line/Hole:
Version 3.3.71.1     00000        SHAPE_43.TXT      Pause        00000/00000

                                                  ●Ignition              s
                                                  ●Lowheat               s
                                                  ●HighPreheat           s
                                                  ●Pierce 1              s
                                                  ●Pierce 2              s
                                                  ●Pierce 3       0.1    s
                                                  ●TorchUp               s
                                                  ●TorchDn               s
                                                  ●THC En                s
                                                  ●Exhaust               s


                                            CutSpeed   【X】1000.00 Kerf【Z】1.20
                                            ManualSpeed【Y】3000.00 Angle    0.00
                                            Manual 【F】keepMov StepMov ContiMov
                                            StepDis【G】 5.00  Flame Cu 【M】

         +X:500.00   -X:0.00   +Y:500.00   -Y:0.00      X: +000000.00
              Operate Mode:                             Y: +000000.00
               PartOption

                                                     F5
  F1 Mirror   F2 Angle   F3 Array   F4 Scale              F6 EditFile F7 Revert   F8 OK
                                               SelLinePierce
```

[F1] Mirror

Press F1, the system will prompt:

F1	X mirror
F2	Y mirror

- Press F1 to mirror along the horizontal axis (X axis)

- Press F2 to mirror along the vertical axis (Y axis)

- Press ESC to exit mirror operation

Angle Adjustment

Press F2, the system will prompt:

F1	Steel plate adjust
F2	Enter angle

- Press F1 to adjust steel plate
- Press F2 to enter angle directly
- Press ESC to exit angle adjusting

Steel Plate Adjustment

After entering steel plate adjustment menu, the system will prompt:

X-start	Y-OK	ESC-exit
Adjust X:		+00000.00
Adjust Y:		+00000.00
Angle:		+00000.00

Here, you can manually move the cutting tip to the edge of one side or a corner (preferred) of the plate. When the cutting tip is moved to a good position, press [X] key to set the current point as the starting point of the angle correction.
Then manually move the X axis on the same edge to the far corner. Move the Y axis just enough to place the tip at a similar point on the material as the first point.
Press [Y]. The system will automatically calculate the current offset angle of plate, and then automatically rotate graphics.
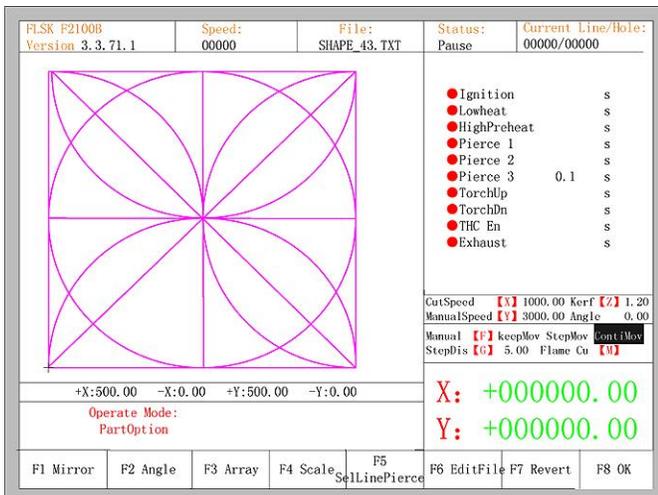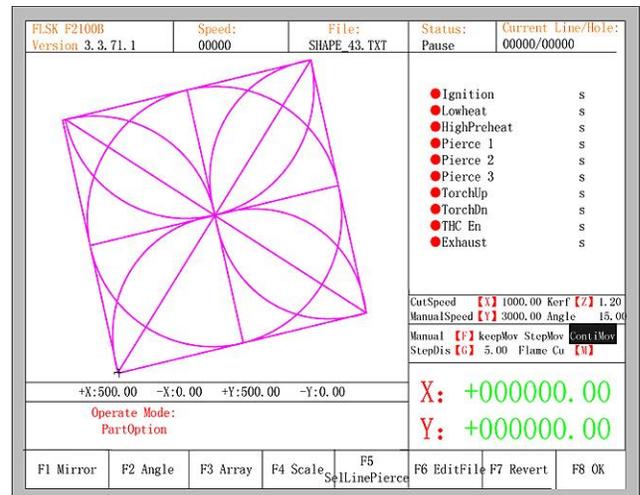
Before adjusting   After adjusting

After adjusting, the system will ask whether to return to the start point.
If pressing [ENTER], the system will move back to the start point of the operation.
If pressing [ESC], the system will do nothing but go back to the graphic interface.

```
ENTER: Return back
ESC:   Don't move back
```
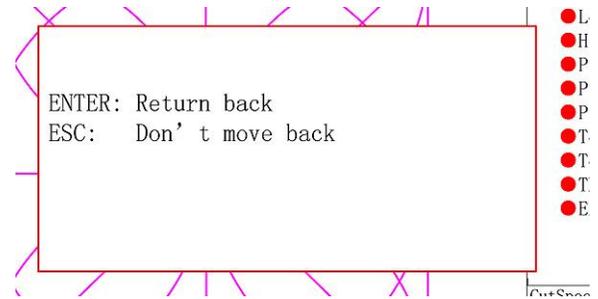
Enter angle

When the angle of the current work piece is known, you can enter the angle.

Please enter angle	
Min: -360	Max: 360
Angle	0.00
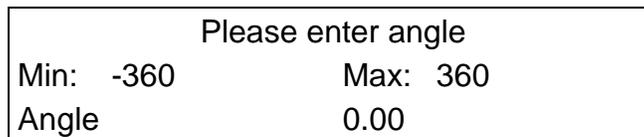
After manually entering the angle, press [ENTER]. The graphic will be rotated with the corresponding angle. Positive angle means rotate in counterclockwise, while negative means clockwise.
Press [ESC] to exit angle adjusting.

Array

In the part options menu, press [F3], the system will prompt for the type of Array desired.
There are three ways to array the part.

- Array in matrix

- Staggered array

- Array in stack.

```
SELECT ARRAY TYPE
   F1: Straight
   F2: Stagger
   F3: Nest
```
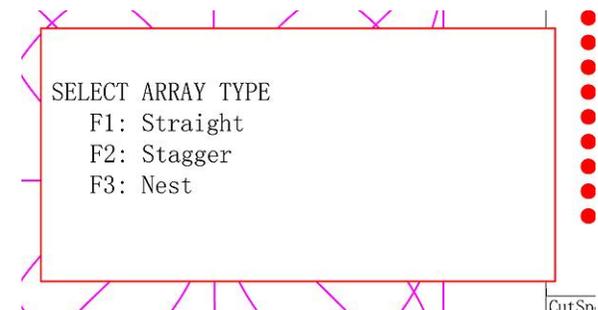
Matrix

Press [F1] to carry on arranging in matrix.
Enter the information for the number Rows, Columns,
And Row and Column spacing and then press [F8].

The result is shown the number of rows and columns
entered. If the spacing is too large or too small, then
the parts will either have large gaps between the parts
or they will display as overlapping each other.

```
         Enter parameter(unit mm)

Rows      2          Cols      2
RowSpc    500.00     ColSpc    500.00

                          F8:OK
```

BFLSK F2100B	Speed:	File:	Status:	Current Line/Hole:
Version 3.3.71.1	00000	SHAPE_43.TXT	Stop	00000/00000

● Ignition   s
● Lowheat   s
● HighPreheat   s
● Pierce 1   s
● Pierce 2   s
● Pierce 3   s
● TorchUp   s
● TorchDn   s
● THC En   s
● Exhaust   s

CutSpeed   【X】 1000.00 Kerf【Z】 0.00
ManualSpeed 【Y】 3000.00 Angle   0.00

Manual 【F】 keepMov StepMov ContiMov
StepDis【G】 5.00 Flame Cu 【M】

+X:500.00   −X:0.00   +Y:500.00   −Y:0.00

00006: G01 X0 Y500.00
00007: G01 X500.00 Y0

X: +000000.00
Y: +000000.00

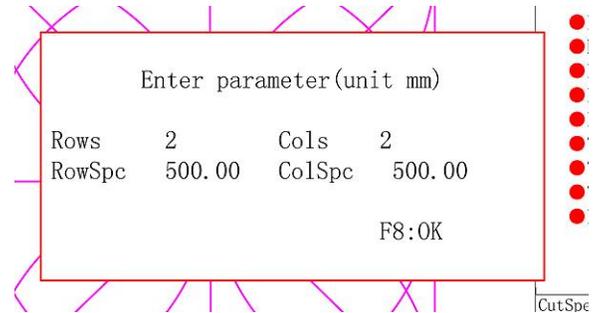| F1 Mirror	F2 Angle	F3 Array	F4 Scale F5 SelLinePierce	F6 EditFile	F7 Revert	F8 OK

Staggered

Press [F2] to enter staggered arrangement.
Enter the information for the number Rows, Columns,
And Row and Column spacing and then press [F8].

The result is shown the number of rows and columns
entered. If the spacing is too large or too small, then
the parts will either have large gaps between the parts
or they will display as overlapping each other.

```
Enter parameter(unit mm)

Rows      2        Cols    2
RowSpc    500.00   ColSpc  500.00

                   F8:OK
```

FLSK F2100B	Speed:	File:	Status:	Current Line/Hole:
Version 3.3.71.1	00000	SHAPE_43.TXT	Stop	00000/00000

●Ignition   s
●Lowheat   s
●HighPreheat   s
●Pierce 1   s
●Pierce 2   s
●Pierce 3   s
●TorchUp   s
●TorchDn   s
●THC En   s
●Exhaust   s

CutSpeed   【X】1000.00 Kerf【Z】0.00
ManualSpeed【Y】3000.00 Angle   0.00

Manual 【F】keepMov StepMov ContiMov
StepDis【G】5.00 Flame Cu 【M】

+X:500.00   -X:0.00   +Y:500.00   -Y:0.00

00006: G01 X0 Y500.00
00007: G01 X500.00 Y0

X: +000000.00
Y: +000000.00

| F1 Mirror | F2 Angle | F3 Array | F4 Scale F5 SelLinePierce | F6 EditFile | F7 Revert | F8 OK |

Stacked
Press [F3] to enter the stacked arrangement.
Enter the information for the number Rows, Columns,
And Row and Column spacing and then press [F8].

The result is shown the number of rows and columns
entered. If the spacing is too large or too small, then
the parts will either have large gaps between the parts
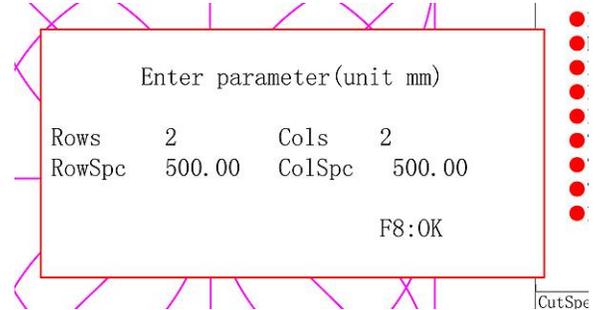or they will display as overlapping each other.

```
Enter parameter(unit mm)

Rows      2          Cols      2
RowSpc    500.00     ColSpc    500.00
RowNest   500.00     ColNest   500.00

                          F8:OK
```

```
FLSK F2100B          Speed:         File:          Status:      Current Line/Hole:
Version 3.3.71.1     00000          SHAPE_43.TXT   Stop         00000/00000
```

● Ignition   s
● Lowheat   s
● HighPreheat   s
● Pierce 1   s
● Pierce 2   s
● Pierce 3   s
● TorchUp   s
● TorchDn   s
● THC En   s
● Exhaust   s

CutSpeed   【X】 1000.00 Kerf【Z】 0.00
ManualSpeed 【Y】 3000.00 Angle   0.00

Manual 【F】 keepMov StepMov ContiMov
StepDis 【G】 5.00 Flame Cu 【M】

+X:500.00   −X:0.00   +Y:500.00   −Y:0.00

00006: G01 X0 Y500.00
00007: G01 X500.00 Y0

X: +000000.00
Y: +000000.00

F1 Mirror	F2 Angle	F3 Array	F4 Scale	F5 SelLinePierce	F6 EditFile	F7 Revert	F8 OK

Zoom in/out

In the part options menu, press [F4] (zoom in/out), the system prompt to enter a proportion number.
Example;
0.8 = reduce to 80%
1.2 = increase to 120%
After entering the scale, press [Enter], the system will automatically zoom in or zoom out the graphic when the parameter is checked to be correct.

```
Enter proportion
     1.00
```
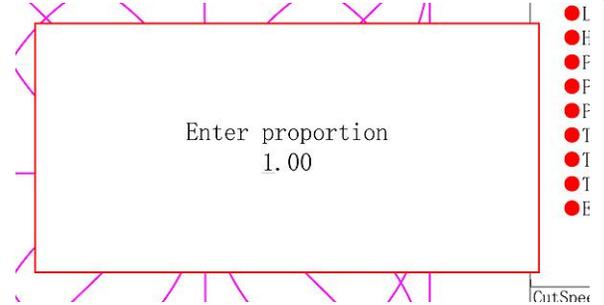
Select row/number

In part options menu, press [F5] to enter selecting screen for row/number.

```
F1   Select Line
F2   Select pierce
```
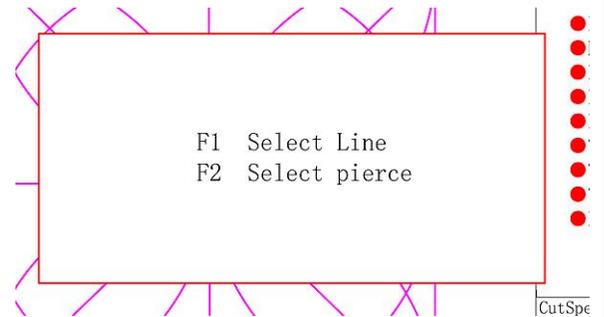
Select row

Press [F1] to select the number of the row to start cutting with. The system will display the row entry screen.

Here, you can directly enter the row number. Alternately by pressing ENTER, the interface will change and allow for the use of the left (←) or right (→) arrows to select the row.

```
Input No. of Rows:
Press <- -> select Rows
0

              F8 OK
```
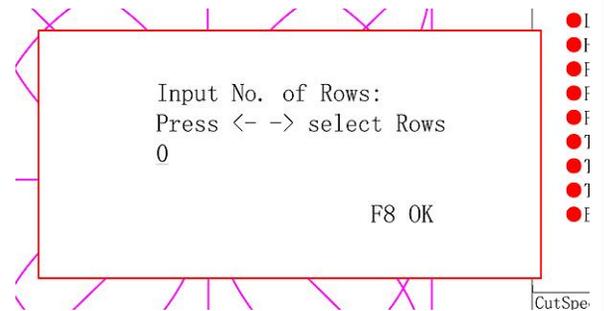
After selecting row, press F8 to confirm.

Select number

The operation is similar to choosing row operation only the display will show numbers.

Operation after select row/number

After selecting row or number, press [F8] continuously to exit to the main interface.
Press SPACE button to enter the cutting interface.
There are two kind of operation.
3. Move from current position to the new position and then start cutting.

- Press [F1] in the cutting interface. The system will directly run to the position of the selected row or number without cutting, then pause and wait for the next operation.

F1 Back	F2 Forward	F3 GoBack	F4 SpeedDown	F5 SpeedUp	F6 PreheatDown	F7 PreheatUp	F8 ZoomIn

- Press START in the cutting interface and the display will prompt for Offset cutting or to only return to the row or number.

Press [Y], the system will directly move to the selected row and number, then pause and wait for the next operation.

[X] Offset cutting
[Y] Only return

4. Cutting from the current position.

After the prompt, press [X], then the system will start cutting from current position.
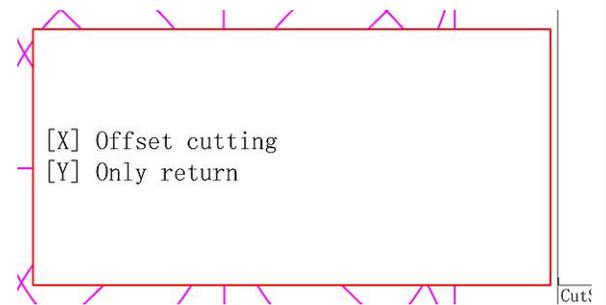
Revert

If you want to cancel all of operations with graphics including mirror, rotation, adjust, scale and array, press [F7] in the part options menu, the system automatically reverts to the original state of the graphics.

MANUAL FUNCTION

In the automatic interface, press [F7] (Manual) to enter manual function interface.

```
┌─────────────────────────────────────────────────────────────────────────────┐
│ FLSK F2100B          Speed:           File:          Status:  Current Line/Hole:│
│ Version 3.3.71.1     00000        SHAPE_43.TXT        Stop     00000/00000      │
│                                                                                │
│                                              ●Ignition              s          │
│                                              ●Lowheat               s          │
│                                              ●HighPreheat           s          │
│                                              ●Pierce 1              s          │
│                                              ●Pierce 2              s          │
│                                              ●Pierce 3              s          │
│                                              ●TorchUp               s          │
│                                              ●TorchDn               s          │
│                                              ●THC En                s          │
│                                              ●Exhaust               s          │
│                                                                                │
│                                          CutSpeed    【X】1000.00 Kerf【Z】0.00  │
│                                          ManualSpeed 【Y】3000.00 Angle    0.00 │
│                                          Manual 【F】keepMov StepMov ContiMov   │
│                                          StepDis【G】 5.00  Flame Cu 【M】       │
│   +X:500.00   -X:0.00   +Y:500.00   -Y:0.00                                    │
│                                          X: +000000.00                         │
│ 00006: G01 X0 Y500.00                                                          │
│ 00007: G01 X500.00 Y0                    Y: +000000.00                         │
│                                                                                │
│ F1 KeepMov │  F2      │F3 StepMove│  F4      │F5 SpeedUp│        │  F7          │
│            │ContiMove │           │SpeedDown │          │        │  Recover     │
└─────────────────────────────────────────────────────────────────────────────┘
```

The speed in the manual status is controlled by the manual moving parameters. During the process of fixed moving function, you can adjust speed by acceleration or deceleration key. In the manual interface, press numeric key, the cutting speed changes to ratio which is 10 times of the corresponding figure of the speed limit you have set, for example press [3], change the cutting speed to 30% of the speed limit you have set, press [8], and change the cutting speed to 80% of the speed limit you have set.

Fixed Moving Function

When you enter into the manual interface, the default option is continuous moving function. Press [F1] to go for the fixed moving function. At this moment, the system will move toward the specified direction if any directory key is pressed, and when the directory key is released, the system will stop.

Continuous Moving Function

When in the manual interface, press [F2] to enter the continuous-moving function interface. At this moment, the system will move toward the specified direction if any directory key is pressed and then released, and when the directory key or stop key is pressed the system will stop.

Fixed distance moving

In the manual interface, press [F3] to enter the interface of fixed distance moving. The system prompts to input the fixed distance dimension in millimeters.

After inputting the fixed distance, press ENTER. Press and release any direction key, the system will move the fixed distance toward the direction selected. During the process of moving, when any direction key or stop key is pressed, the system will stop moving.

```
Input the step distance

5.00
```
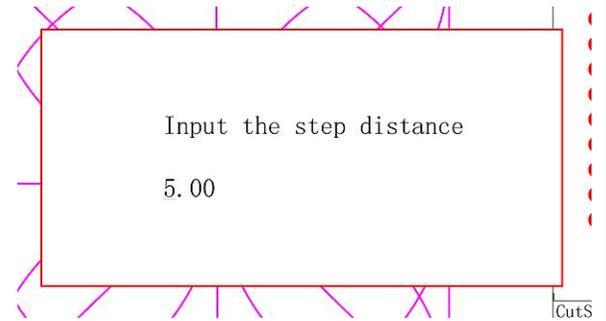
Breakpoint Recovery

To guarantee that the breakpoint could work correctly, you need to satisfy the following conditions:
1. When the system is paused, the system will automatically regard the paused point as the current breakpoint and remember it.

2. When the system is in the process of cutting, the breakpoint signal is connected with the urgent alarm input, when power is off, the system will regard the power-off point as the breakpoint and remember it.

When you need to process after the breakpoint, after the system powers on, do not move the torch.
Press [F7] in the main interface to enter the manual function interface, then press [F7] to recover the breakpoint.
After recovering the breakpoint, if the torch has not been moved and is on the position when the power was lost, press START, the system will process directly.
After the breakpoint is recovered, if the position is off from the original one, move the torch to the original point manually, or select it through choosing rows or numbers.
The process will be; Press Stop to stop cutting. Move the torch to the original point manually, or, choose the nearest row through choosing the row selection (or number selection). Press "START", and then the system will display the starting options.

```
[G]Cutting return
[X]Offset cutting
[Y]only return
```
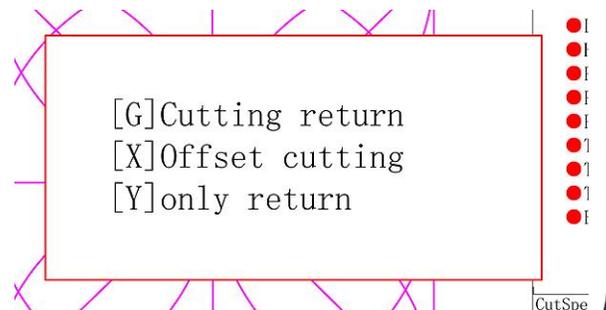
- Press [G], the system will start cutting from the point which is after moving, and after returning to the position before the torch moves, it will process according to the normal path.

- Press [X], regarding the position after moving as the position before moving, and then process.

- Press [Y], move from the position after moving to the position before moving, then wait for the next operation.

FILE OPERATION

The system supports cutting code which has txt and CNC file extension. The maximum capacity is 1M with the largest number of rows is 10000 lines. You can edit, compile, delete, export internal document, also you can import the file in the U disk into system.

In the main interface, press the [F2} key (code) to enter local machine code interface.

Files in the Hard Disk

In the file manage interface, press [F1] to enter the hardware file list. The system only lists the folder, TXT file and CNC file.

- Press [F4], if the current position of the cursor is txt file or CNC file, you could edit them.

- Press [F5], if the current position of the cursor is txt file or CNC file, you could delete them.

- Press [F6], if the current position of the cursor is txt file or CNC file, you could copy the current file to the flash disk when it is connected to the USB interface.

- Press [F7], if the current position of the cursor is txt file or CNC file, you could preview the current graphic.

- Press [F8], if the current position of the cursor is txt file or CNC file, you could import the current file to the system, after importing, the system will return to the main interface.

Files in the U Disk

In the code interface, press [F2] key to go for U Disk interface.

In the U Disk interface, choose the corresponding cutting code, press [F6], the system will save this code into the internal documents.

***Note:** When you open a file on U disk, you must save it as the local machine code before you start cutting. When saved the U disk documents, file name automatically memory:*

When input file name, if you do not want to change the file name, you can be directly press [Enter] to preserved; or modify the file name and then press [Enter] to save. If the same named file has already exited, the system prompts: If you want to replace the internal documents, press [Enter] key, if you want to change the file name, press [Esc], change the file name and then save.

Search File

In the file manage interface, press [F3] key to search a file. You can input all or part of the file name, then press [Enter], and the system will list all the files that include the input word or file name.

Edit Code

In the local machine code interface, move the cursor to the file that you want to edit, then press [F4] to enter the edit interface.

When enter the characters, some keys are reuse keys. Press these keys directly, enter the characters under the button. If first press [Shift] key, release the [Shift] key and then press Shift Multiplexing button, then enter characters on the button. Or press both [Shift] and reuse keys, then enter characters on the button.

When editing the code, press [F2] can insert a new line after the current line, and press [F3] to delete the current line.

Press [F + Home] key, the cursor automatically moved to the first character of the current editing line, press the [F-End], the cursor automatically moved to last character of the current line.

Each edit line supports 128 characters maximum.

When you open a file on U disk or new a code file, you must save it as the local machine code before you start cutting. Otherwise, you cannot make use of the breakpoint recovery function or power off protection function.

After edit the code, press [F8] to save the code.

New Code

In the editing code interface, you can press key [F4] to create an new file to input your own code.

Compile Code

After creating a new code or edit the code, if you want to know the code is valid or not, in the edit interface, press [F1], you can compile code to check whether the code is correct.

PARAMETER SETTING

From the main screen, you can get the parameter interface by pressing key [F4] (Setup).

```
        Max Cutting Speed        1500.000         mmpm
        Manual Move Speed        8500.000         mmpm
        G00 Move Speed           8000.000         mmpm
        Demo/Back Speed          2000.000         mmpm
        Marker Speed             1000.000         mmpm
        Kerf Value               0.000            mm
        Corner Speed (1-100)     95.00            % mmpm
        Demo Run Speed           4500.00          mmpm
        Cutting Type             Plasma                    <->
```

F1	F2	F3	F4	F5	F6	F7	F8
Common	Flame	Plasma	Marker	System	Import	Export	Save

You can set five kinds of parameter in the parameter interface:
F1: Common parameters: cutting speed, manual move speed, G00 move speed, Demo/Back speed, Marker speed, the size of kerf gap, corner speed, demo run speed, cutting type.
F2: Flame parameters: Not active on this controller.
F3: Plasma parameters: all the parameters used in plasma cutting.
F4: Marker parameters: Not active on this controller.
F5: System parameters: you can set system pulses, maximum speed limit, motor parameters and soft limit parameters.

Common Parameters

- Max Cutting Speed: the maximum cutting speed, unit is mm/m.

- Manual Move Speed: the moving speed of cutting torch in manual, unit is mm/m.

- G00 Move Speed: the cutting torch speed when G00 is executed or the cutting torch go back to the reference or some other occasion, unit is mm/m.

- Demo/Back Speed: the cutting torch speed when doing a Demo from the function key, or when using the Back function, unit is mm/m.

- Maker Speed: This function is not used on this table system.

- Kerf: According to the cutting gap width, users set Kerf Gap compensation (the value should be half of the cutting gap) to ensure the dimensional precision, the system will generate a new path automatically to make compensation to work piece. Before cutting a work piece, you can modify kerf gap value, once begin to cut, you are not permitted to modify the value.

- Corner speed: Plate thickness affect the cutting tip's ac/dc rate when it moves. The angle between the end of a cut-point line's tangential direction and the direction of the tangent line of the beginning of next cutting point, and the thickness of plate determines cutting tip speed at the transition.

  If the normal cutting speed is V, angle is α, plate thickness is h, then cutting tip speed in at the time of intersection is V_x

$$V_x = \frac{\alpha h}{50 \pi} \; V$$

Note: The unit is mm. The max thickness of plate is 100 mm, if more than 100mm also are considered to be 100mm.

- Demo Run Speed: the cutting torch speed when doing a Demo when changing the Cutting type to Demo, unit is mm/m.

- Cutting Type: There are two cutting types and demo mode: Flame (not used), Plasma, and Demo. You can press [←] or [→] to switch with them pressing enter to select the desired item.

Flame Parameters

The oxygen fuel parameters, not used.

Plasma Parameters

These are Plasma Parameters, which are related with the precision of transmission shaft of the machine.

Delay Before Arc	0.10	s	Dot Time	000	Clear
Pierce Time	0.19	s	Pierce Count	000	Clear
Torch Up Time	0.26	s	Workpiece Count	000	Clear
Arcing Check Time	15.00	s	Cut Length (m)	0.00	Clear
IHS Check Time	10.00	s	Cut Time	00:00:00	Clear
IHS Up Time	0.35	s	Run Time	00:00:00	Clear
Speed to Lock THC	95.00	mmpm%			
Distance to Lock THC	5.00	mm			
Time of Disable THC After Piercing	0.00	s			
Lose Arc Delay	0.00	s			
Time to Lock THC before M08	0.00	s			
Watch Arc Enable	☑				
Use Cylinder THC	☐				
Set Arc Voltage	130.00	V			
Arc Protection Value	30.00	V			
THC Sensitivity	40.00	%			
Arc Set Step Value	1.00	V			
Fast IHS Time	6.00	s			
Flame Updown Speed	100.00	%			
Plasma Updown Speed	100.00	%			

F1	F2	F3	F4	F5	F6	F7	F8
Common	Flame	**Plasma**	Mark	System	Import	Export	Save

- Delay Before Arc: The torch will move to the pierce point of the program; the system will then wait the amount of time entered in this field before proceeding to do the touch off and start the arc stream for piercing. When first learning the functions of a plasma table, it is common to have a value of up to 2.0 seconds. Once the operator is familiar with the table operation, it is common to have delay of 0.0 – 0.2 seconds. Enter any positive number, unit is s.

- Pierce time: This is the amount of time that the arc will start and penetrate through the material before the torch begins to move. The plasma cutter manual will have suggested values to use as a starting point. Ideally, the torch will begin to move at the very moment that the plasma stream has penetrated the full thickness of the material. Enter any positive number, unit is s.

- Torch Up Time: When arc pressure (stream) is turned off, the time for the torch to lift up. Enter any positive number, unit is s.

- Arcing Check Time: The system requires a feedback from the plasma cutter to signal that the arc has been established. This is the amount of time that the system will continue to run before the feedback is received. When the arc feedback is received within this time setting,

the program will continue uninterrupted. If no arc feedback signal is detected, the system prompts an error message and terminates the current operation, creates a breakpoint and withdraw from the program. Enter any positive number, unit is s.

- Position Check Time: The time for the system to record a successful torch touch off (Position Up). This indicates that the torch is in the correct position after the touch off function. Enter any positive number, unit is s.

- Position up Time: The amount of time that power is supplied to the lifter to raise the torch after a position touch off to create the correct gap for the torch to strike and arc and start to cut. Enter any positive number, unit is s.

- Speed to Lock AHC: In setting the rate of x%, open the output port, close the arc press signal, to prevent the steel melting under low-speed cutting tip due to temperature is too high. Enter any positive number, unit is % of Cutting Speed.

- Distance to Lock AHC: The minimum distance of the cutting line of the initial segment or end segment, close the arc voltage increases. Enter any positive number, unit is mm.

- Time of Disable THC After Piercing: Time to delay the arc and torch automation after the pierce has occurred. Enter any positive number, unit is s.

- Lose arc delay: This is a delay to prevent the system from stopping the program if the arc is lost. This is commonly set to zero and then the system will stop as soon as the arc is lost. If cutting a material such as expanded metal where the arc may be lost from time to time over the gaps between the metal, it may be helpful to add a value in for this delay. Enter any positive number, unit is s.

- Time to Lock THC before M08: If the arc is broken, this is a time that the system will delay allowing for an M08 (arc stop) command. If the M08 command happens within the set time. No fault will be reported. If the M08 command is Not given, then the system will report an arc break and pause the program. Enter any positive number, unit is s.

- Watch Arc Enable: Real-time detection of arc voltage signal in cutting process.

  - If setting "yes", in the cutting process, the system detects the real-time arc voltage feedback signal. If do not detect the signal, the system terminates the current work of cutting, according memory breakpoints to withdraw from the program.

  - If setting "No", then in the cutting process does not detect arc voltage feedback signal.

- Use Cylinder THC: Not used.

- Set Arc Voltage: This value is obtained from the plasma cutter tables. Unit is Volts DC, range is 50.00 to 300.00V

- Arc Protection Value: When actual arc value $\geqslant$ (arc value setting + protection value over arc), the system will give an alarm of breaking arc and stop cutting. The range of the value is 5.00-100.00. Unit: V. Default 30. Notice: if arc value is less than 30V, system will also give the alarm of breaking arc. This 30V is fixed value and not modified.

- THC Sensitivity: This is sensitivity reflected by THC (lifter) motor. The larger the value the more sensitive the system will be to Arc Voltage variation. When the value is set too high, the torch will become unstable and bounce while moving. The normal range is set as 30-50%, the full range is 0.00-100.00. Unit: %.

- Arc Set Step Value: From the cutting main screen, Increase or decrease the Set Arc Voltage value with each press of either F7 or F6. The range of value is 0.10-10.00. Unit: V.

- Fast IHS Time: The lifter motor runs time in full speed when HIS (initial height sensing). Then the lifter motor runs the half speed until the torch contact the steel plate. Unit: s. Note: Fast IHS Time cannot be more than Position Check Time. Fast IHS Time range of the value is 5.00-100.00. Unit: V. Default 6.

- Flame Updown Speed: Not used.

- Plasma Updown Speed: Speed at which the torch lifts and lowers when reacting to a torch height correction command. The normal range is set as 100.00%, the full range is 0.00-100.00. Unit: %.

System Parameters

The system parameters are related with the precision of transmission shaft of the machine.

Horizontal Axis Pulse	263.106	pulse/mm
Vertical Axis Pulse	263.158	pulse/mm
Max cutting speed	8500.000	mm/min
Max G00 speed	8500.000	mm/min
Max Manual speed	8500.000	mm/min
Small arc limit	500.000	mm/min
Speed below Radius	10.00	mm
Flame adjust time	0.40	s
Plasma adjust time	0.30	s
Emergency stop time	0.08	s
Start speed	250.000	mm
Max +X	100000.000	mm
Max +Y	100000.000	mm
Min -X	-100000.000	mm
Min -Y	-100000.000	mm

F1	F2	F3	F4	F5	F6	F7	F8
Common	Flame	Plasma	Marker	System	Import	Export	Save

- Horizontal Axis Pulse: The number of pulse that system needs to generate when the machine moves 1mm towards X axis, maintaining 3 digits at most after decimal point.

- Vertical Axis Pulse: The number of pulse that system needs to generate when the machine moves 1mm towards Y axis, maintaining 3 digits at most after decimal point.

- Max Cutting Speed: the maximum cutting speed, unit is mm./m.

- Max G00 speed: the allowable maximum speed when cutting tips idling.

- Small Arc Limit: Maximum speed at cutting a small arc.

    - Small arc definition:

        - 0 mmpm< cutting speed <2000mmpm   small arc=5mm
        - 2000 mmpm< cutting speed <4000mmpm   small arc =10mm
        - 4000 mmpm< cutting speed <6000mmpm   small arc =15mm
        - 6000 mmpm< cutting speed <8000mmpm   small arc =20mm
        - 8000 mmpm< cutting speed <10000mmpm   small arc =25mm
        - 10000mmpm< cutting speed <12000mmpm   small arc =30mm
        - 12000mmpm< cutting speed <15000mmpm   small arc =35mm

- Flame adjust time: Not used.

- Plasma adjust time: When plasma cutting, from the time the motor starts to the time when the motor is up to the cutting speed.

- Emergency STOP Time: When encounter Emergency Stop input, the time for dropped from the current speed to zero.

- Start Speed: the system's speed when it began to start. Generally, do not have to start from 0, motor will allow a start speed.

- Max Coordinate: The maximum positive coordinates which the machine can reach horizontally. Its unit is mm (millimeter). If current coordinate exceeds the value, the system will stop running.

- Min Coordinate: The minimum negative coordinate which the machine can reach horizontally. Its unit is mm (millimeter). If current coordinate is less than the value, the system will stop running

Parameter Import

In the parameter configuration interface, press [F6] to import the parameters. The parameters should satisfy two conditions:

1. The parameters exported from the cutting machine control system should satisfy the specified format. The file format is F2300.DAT.

2. The file should be stored under the root folder of flash disk which is connected to the USB interface.

When the above condition is satisfied, press Enter to confirm, and then you could import the backup parameters to the system.
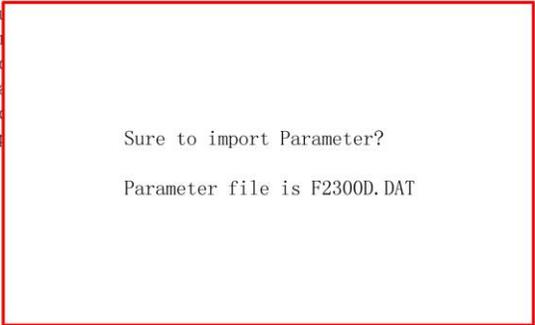
Parameter Export

After the parameter configuration is over, press [F7] in the parameter configuration interface to export the parameters, you should connect the flash disk to the USB interface before exporting.

The dialog box will display "Sure to export Parameter?". If planning to export the parameters, press ENTER, if not press ESC.

In the interface, after pressing Enter, the parameters will automatically be saved in the root folder of flash disk, the file name is F2300.DAT.

Save Parameters

After parameter modification, press [F8] to save the changes.

The dialog box will display "Parameter saved successfully" to indicate that the parameters have been saved.

Note: When any parameter has been modified, you must take preservation operation to keep modification valid, or the system will take the original parameters.
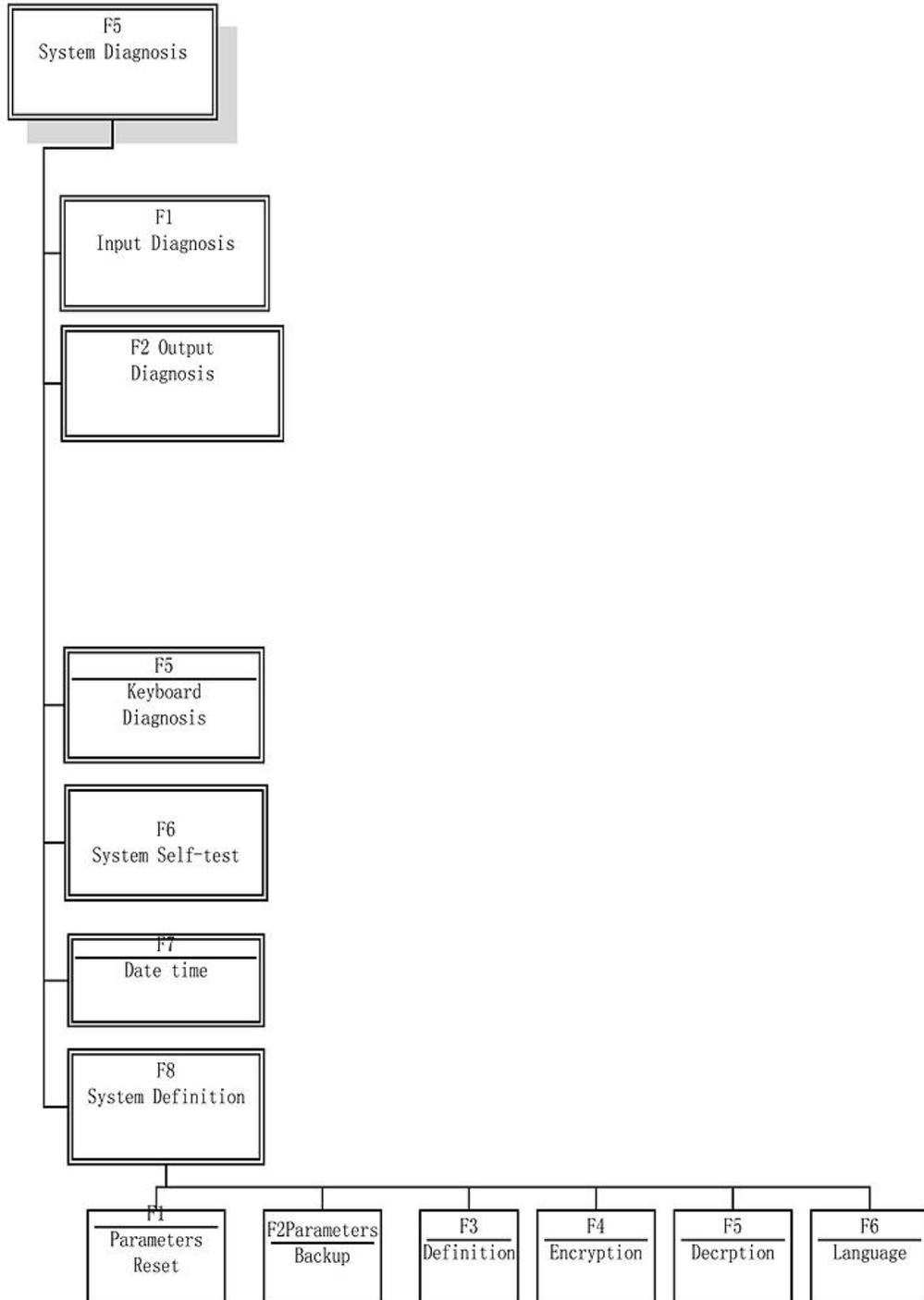
DIAGNOSIS FUNCTION

```
input


    Forward limit              ●      Up move input              ●
    Back limit                 ●      Down move input            ●
    Right limit                ●      Left move input            ●
    Left limit                 ●      Right move input           ●
    Emergency stop             ●      Acceleration input         ●
    Arcing feedback            ●      Deacceleration input       ●
    Position detect            ●      Torch up input             ●
    Plasma crash               ●      Torch down input           ●




 F1 Input   F2 Output                      F5 KeyBrd F6 SelfCheck   F7        F8
                                                              DataTime  SystemDef
```

You can be diagnosing the I/O and keyboard in the interface.

Diagnosis Interface Index

```
        ┌──────────────────┐
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        └────────┬─────────┘
                 │
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        │ System Definition│
        └────────┬─────────┘
```

F1 Parameters Reset	F2Parameters Backup	F3 Definition	F4 Encryption	F5 Decrption	F6 Language

Input Diagnosis

The system will read current IO information when press [F1] (Refresh) to refresh the interface and display all IO's status. "On" means the input is effective, and "Off" means the input is ineffective.

Output Diagnosis

In diagnosis interface, press [F2] to enter output diagnosis interface.

```
Output

    Ignition              ●      exhaust                ●
    Low preheat           ●      THC enable             ●
    High preheat          ●      Position detect        ●
    Low Oxygen            ●      Arc starting           ●
    Medium Oxygen         ●      HoldTorch              ●
    High Oxygen           ●      Dust spray             ●
    Torch up              ●      Raise dust             ●
    Torch down            ●      Dust preheat           ●




 F1 Input   F2 Output  F3 OpenOut F4 CloseOut  F5 KeyBrd F6 SelfCheck   F7        F8
                                                                     DataTime  SystemDef
```

Press [↑], [↓], [←], or [→], you can move the cursor to the corresponding output port, press [F3] to open the corresponding output port, press [F4] to close the corresponding output. The solid dot (●) represents the valid output. The hollow dot (○) represents the invalid output.

Key-Press Diagnosis

In the diagnostic interface, a key value will be displayed behind "KEY:", whenever the key is pressed.

```
                              KeyCode:

                                005
```

| F1 Input | F2 Output | | | F5 KeyBrd | F6 SelfCheck | F7 DataTime | F8 SystemDef |

System Self-Check

In the system diagnosis interface, press [F6] to enter the system self-check interface.

```
1. backup parameter first all
2. lose breakpoint
3. restart after selfcheck

Are you sure?
```

F1 Input	F2 Output			F5 KeyBrd	F6 SelfCheck	F7 DataTime	F8 SystemDef

If the self-check is OK, the system will display "Self check pass".

If the self-test is down, there will be the following alarm type.
- DSP Dual ram is error

- ARM Dual RAM is error

When coming across these situations, please power off, reboot after about half minutes. If the situation happened on the machine which has been working for long time, please open the chassis and clean up the dust.

Date and Time

Press [F7] in the system diagnosis interface to set the date and time.

The display will show the currently set date and time.
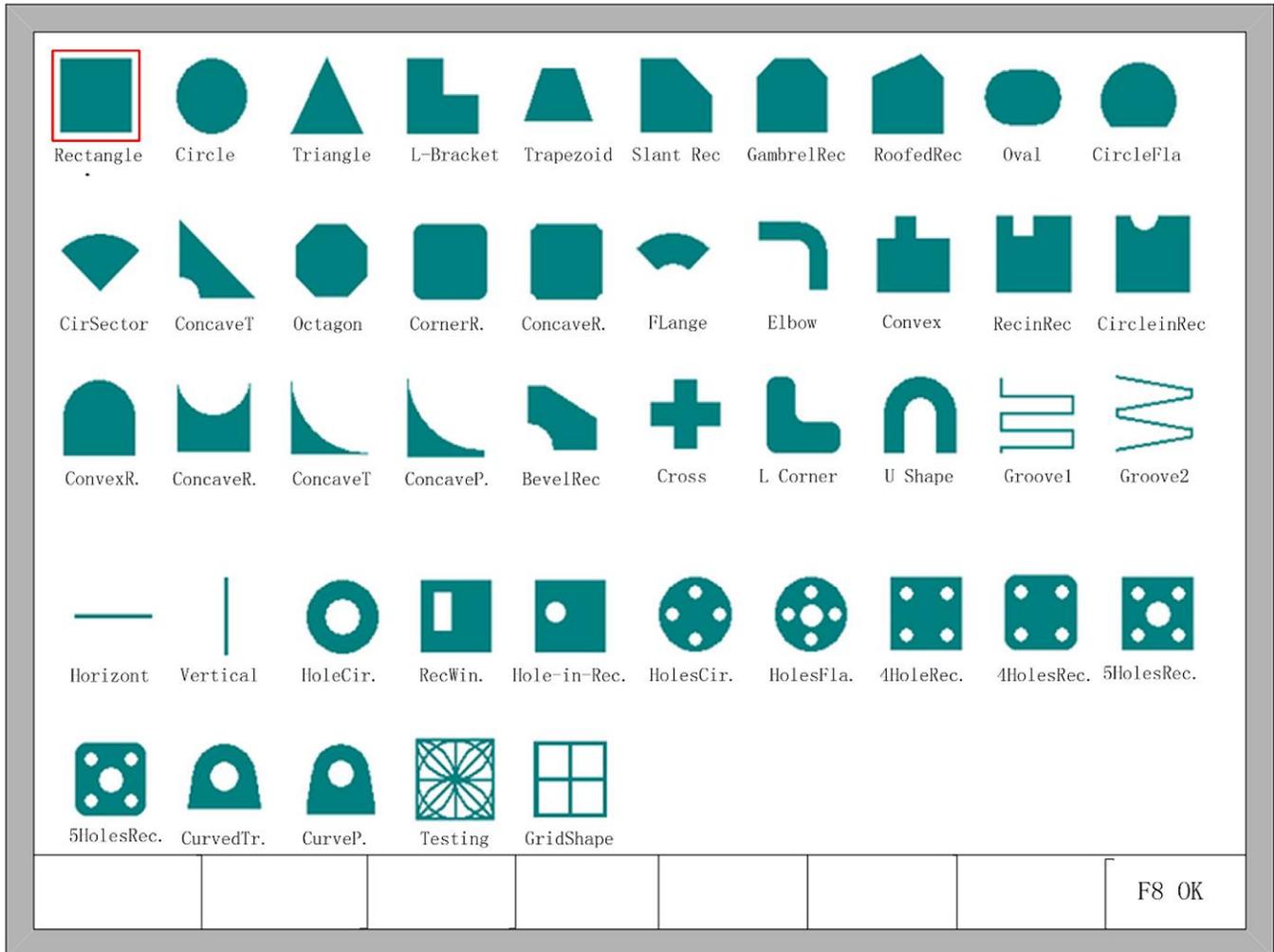
```
            2010-08-21   15:51:37       Sun

                     Up or down to modify
```

Move the cursor to the corresponding date, time or week, press [↑], [↓], [←], or [→], to adjust the date and time.

SHAPES

In the main interface, press [F1] (ShapeLib) to enter graph interface.

Use the [↑], [↓], [←], or [→] to move around the screen/ When the desired shape is highlighted, press the [F8} key to select that shape.

Choose Graph

In home interface of graph, move the cursor to the required graph, press [F8] to confirm.

Use the [↑], [↓], [←], or [→] to modify lead in, lead out and sizes. After modification, press [F8] to confirmed.
Press any key to return to graphics processing interface.

In the interface, press the [F1] key to create the part with an outside cut, or press the [F2] key to change to an inside cut.

G, M Code Guide

Serial number	order	function
1	G99	Rotation, proportion, mirror image
2	G92	reference coordinate
3	G91	Relative coordinate system
4	G90	Absolute coordinate system
5	G20	English unit
6	G21	Metric unit
7	G41	Left kerf gap compensation
8	G42	Right kerf gap compensation
9	G40	Cancel kerf gap compensation
10	G00	Quickly move
11	G01	Liner cutting
12	G02	Clockwise arc cutting
13	G03	Anticlockwise arc cutting
14	G04	Program delay
15	M07	Start cutting cycle
16	M08	Stop cutting cycle
17	M02	Program end

NOTES