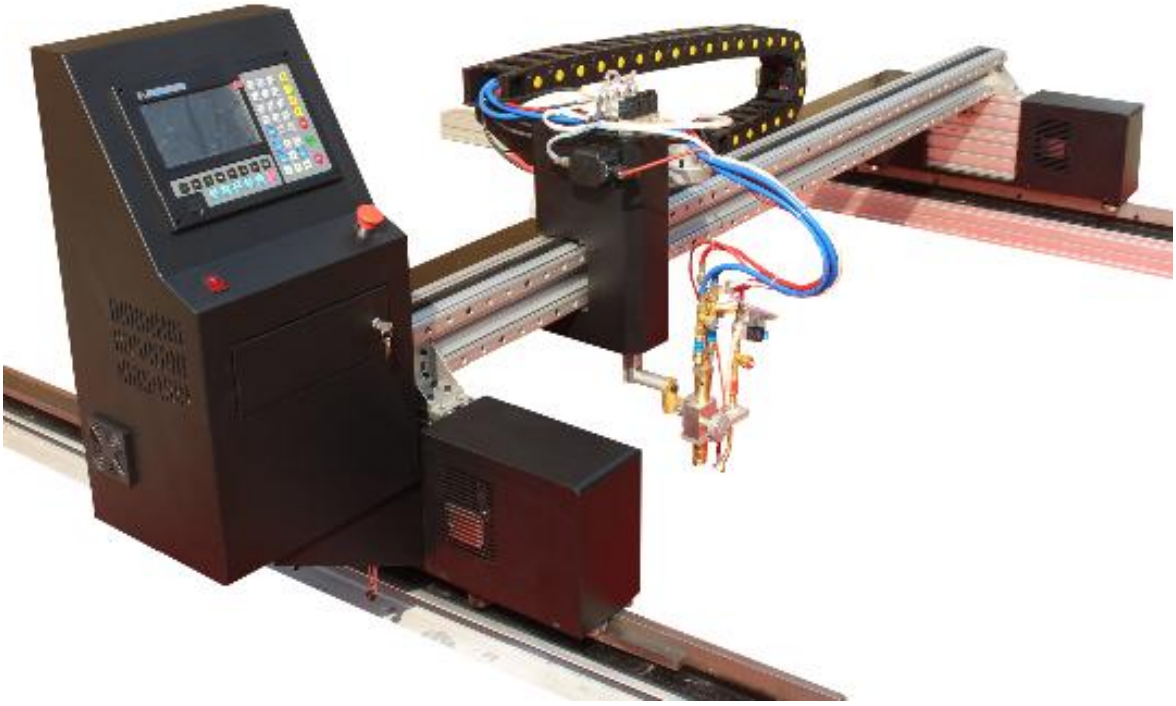
SISCTHAI

CNC1540/1560/2040/2560/

CE

Gantry CNC Flame/ Plasma Cutting Machine

Operator Manual
Version 1.2



Value Product Creator

It is suggested that all operators should carefully read and understand these items before operating the equipment. Repeatedly mentioned content in the manual should be grasped importantly and paid more attention to.

Examine packing carton if there is any damage during transportation after receiving the equipment. After packing carton, examine equipment component if there is any damage during transportation; examine if the articles in the cartons correspond with which are listed in the packing list (if ordering more than 1 sets, please according to the tags on packing carton, grouping and matching to use).

Know Related Knowledge

The operators must be familiar with the cutting elements and related practice regulations of oxy-gas and plasma. The performance and parameter also need griping before operating. The machine can not be disassembled by unprofessional person. Refer to the manual and consult the technicians if there comes to problems.

Installation and Use

The user is responsible for installing and using the equipment according to the manufacturer's instructions. If electromagnetic disturbances are detected then it shall be the responsibility of the user to resolve the situation with the technical assistance of the manufacturer. In some cases this remedial action may be as simple as earthing the casing, see *Earthing of Work piece*.
In other cases of using plasma cutting machine, it could involve constructing an electromagnetic screen enclosing the power source and the work complete with associated input filters. In all cases electromagnetic disturbances must be reduced to the point where they are no longer troublesome.

Using Environment

System allowable working environment temperature is 0℃-60℃, relative humidity is 0-85%.
Don't make dust and iron powders enter system interior, especially don't make liquid enter host.
In such environment as high temperature, high wet many dusts and causticity gas to work, need taking special protection.

Assessment of Area

Before using the equipment to cut, the user shall make an assessment of potential electromagnetic problems in the surrounding area. The following shall be taken into account:

1. Using oxygen and gas cutting:
   a. Time of day that cutting or other activities are to be carried out.
2. Before using plasma cutting equipment, potential electromagnetic problems in the surrounding area:
   a. Other supply cables, control cables, signaling and telephone cables; above, belowand adjacent to the cutting equipment.
   b. Radio and television transmitters and receivers.
   c. Computer and other control equipment.

d. Safety critical equipment, for example guarding of industrial equipment.
e. Health of the people around, for example the use of pacemakers and hearing aids.
f. Equipment used for calibration or measurement.
g. Immunity of other equipment in the environment. User shall ensure that other equipment being used in the environment is compatible .This may require additional protection measures.

Consider time of day that cutting or other activities, flammable materials and the size of the surrounding

area. The surrounding area may extend beyond the boundaries of the premises.

Maintenance of Cutting Equipment
The cutting equipment must be routinely maintained according to the manufacturer's recommendations. When the cutting equipment is in operation, the cutting equipment should not be modified. In particular, the gear and rack meshing clearance should be adjusted and maintained according to the manufacturer's recommendations.

Plasma Cutting Question

●Method of Reducing Emission

Mains Supply The equipment must be connected to the mains supply according to the manufacture's recommendations. If interference occurs, it may be necessary to take additional precautions such as filtering of the mains supply. Consideration should be given to shielding the supply cable of permanently installed cutting equipment, in metallic conduit or equivalent. The shielding should be connected to the cutting mains supply so that good electrical contact is maintained between the conduit and equipment enclosure and the cutting power source enclosure.

●Equipotential Bonding
Bonding of all metallic components in the cutting installation and adjacent to it should be considered. However, metallic components bonded to the work piece will increase the risk that the operator could receive a shock by touching these metallic components and the electrode at the same time. The operator should be insulated from all such bonded metallic components.

●Earthing of Work Piece

Where the work piece is not bonded to earth for electrical safety, nor connected to earth because of its size and position, a connection bonding the work piece to earth may reduce emissions in some, but not all instances. Care should be taken to prevent the earthing of the work piece increasing the risk of injury to users, or damage to other electrical equipment. Where necessary,the connection of the work piece to earth should be made by a direct connection to the work piece, but in some countries where directconnection is not permitted, the bonding should be achieved by suitable capacitances selected according to national regulations.

Note: The cutting circuit may or may not be earthed for safety reasons. Changing the earthing arrangements should only be authorized by a person who is competent to assess.

●Screening and Shielding
Selective screening and shielding of other cables and equipment in the surrounding area may alleviate problems of interference. Screening of the entire plasma cutting installation may be considered for special applications.

Guarantee
Genuine parts are the factory-recommended replacement parts for your system. Any damage caused by the use of other than genuine parts may not be covered by the warranty.

Warning

You have the responsibility to safely use the product. For safe use in your working environment, cannot give any guarantee or warranty.

General

warrants that products shall be free from defects in materials and workmanship for following warranty period, under proper and normal use, (i) host within one year; (ii) track and beam within six months; (iii) torch within three months. at its sole option, shall repair, replace, or adjust, free of charge, any Products covered by this warranty which shall be retuned with ’s prior authorization (which shall not be unreasonably withheld), properly packed, to ’s place of business, all costs, insurance and freight prepaid, and which examination proves not to be free from defects in materials and workman-ship. shall not be liable for any repairs, replacements,or adjustments of Products covered by this warranty, except those made pursuant to this paragraph or with ’s written consent. This warranty shall not apply to any product which has been mishandled, incorrectly installed, modified or assembled by you or any other person. Shall be liable for breach of this warranty only if it receives written notice of such breach within the applicable warranty period specified herein above.

Distributor and OEM can provide different or complementary guaranty, but they provide those for you not to be authorized, which cannot mean Company gives you any guaranty.

Guarantee not Included:

(i) any accident violating using requirement; (ii) damage caused by natural scourge; (iii) unload, remodel and repair if not allowed.

Warranty Period:

From distributor and OEM delivery date for users, but store in them not beyond three months, if beyond the period, only extend three months warranty period.

Indemnity Limit

In any case, won’t compensate any personal or team accident, consequence, indirect or punitive loss (including not limited loss profit), whatever compensation is according to violate contract, civil infringement, strict responsibility, violate guarantee, main use failure or other cases, even have been told appearing the loss.

Indemnity Utmost Limit

In any case, compensation of lawsuit caused by using related product (whatever compensation is according to violate contract, civil infringement, strict responsibility,violate guarantee, main use failure or other cases), cannot go beyond cumulative total of causing compensated product.

Insurance

In any case, you must have and keep the insurance, when appearing any lawsuit, to protect from loss.

National and Local Codes

National and local codes governing plumbing and electrical installation shall take precedence over any instructions contained in this manual. IN NO EVENT shall be liable for incidental or consequential injury to persons or property damage by reason of any code violation or poor work practices.

Equity Transfer

Only when selling all or most assets or capital stock, but inheritors agree with the term, you can transfer equity.

Chapter One Safety

Recognize Safety Information

The symbols shown in this section are used to identify potential hazards. When you see a safety symbol in this manual or on your machine, understand the potential for personal injury, and follow the related instructions to avoid the hazard.

Follow Safety Instructions

Read carefully all safety messages in this manual and safety labels on your machine.Keep the safety labels on your machine in good condition. Replace missing or damaged labels immediately.Learn how to operate the machine and how to use the system properly. Do not let anyone operate it without instruction. Keep your machine in proper working condition. Unauthorized modifications to the machine may affect safety and machine service life.

Danger, Warning, Caution

A signal word DANGER or WARNING is used with a safety symbol. DANGER identifies the most serous hazards.
DANGER and WARNING safety labels are located on your machine near specific hazards.
WARNING safety messages precede related instructions in this manual that may result in injury or death if not followed correctly.
CAUTION safety messages precede related instructions in this manual that may result in damage to equipment if not followed correctly.

Cutting Can Cause Fire or Explosion

Fire Prevention, Explosion Prevention
Be sure the area is safe before doing any cutting. Keep a fire extinguisher nearby.
Remove all flammables within 35 feet (10m) of the cutting area.
Quench hot metal or allow it to cool before handling or before letting it touch combustible materials.
Never cut containers with potentially flammable materials inside-they must be emptied and properly cleaned first.
Ventilate potentially flammable atmospheres before cutting.
When cutting with oxygen as the plasma gas, an exhaust ventilation system is required.
Do not use the equipment if explosive dust or vapors may be present.

Warning

Explosion Hazard

Argon-Hydrogen and Methane

Hydrogen and methane are flammable gases that present an explosion hazard. Keep flames away from cylinders and hoses that contain methane or hydrogen mixtures. Keep flames and sparks away from the torch when using methane or argon-hydrogen plasma.

Warning

Hydrogen Detonation with Aluminum Cutting
When cutting aluminum underwater, or with the water touching the underside of the aluminum, Free hydrogen gas may collect under the work piece and detonate during plasma cutting operations. Install an aeration manifold on the floor of the water table to eliminate the possibility of hydrogen detonation.

Incorrect Operation can Cause Accident

Incorrect operation can cause equipment damage. If seriously mistake operation happens, it can make inflammable gas outside cause explosive possibility. Moreover, suffer electric shock and burn danger.

When using, ensure the connection line and appendix well.
When flame cutting, follow welding and cutting accident precaution measure.
Don't let cloth and body twist into moving equipment, cause body injury.
When moving equipment, host can move on track, so does beam, avoid host slipping outside track, beam outside host.
Any parts including with track and beam, cannot be hit.
Equipment surrounding avoids strong shake.
Don't allow to change safe device, but after insurance pipe damages, no connection with wire or other conductor, no change original device parameter, cause lose protection effect.


Electric Shock can Kill

Touching live electrical parts can cause a fatal shock or severe burn.
Operating and maintaining the equipment exits potential danger, according to installing program and specification manual, safely install and operate the equipment. Open the equipment by trained maintaining person.
Operating the plasma system completes an electrical circuit between the torch and the work piece. The work piece and anything touching the work piece are part of the electrical circuit.Never touch the torch body, work piece or the water in a water table when the plasma system is operating.

Electric Shock Prevention

Usually plasma systems use high voltage in the cutting process (200 to 400VDC are common). Take the following precautions when operating this system::

Wear insulated gloves and boots, and keep your body and clothing dry.
Do not stand, sit or lie on – or touch – any wet surface when using the plasma system.
Insulate yourself from work and ground using dry insulating mats or covers big enough to prevent any physical contact with the work or ground. If you must work in or near a damp area,use extreme caution.
²Don't round or avoid safe switch. Provide a disconnect switch close to the power supply with properly sized fuses. This switch allows the operator to turn off the power supply quickly in an emergency situation.
When using a water table, ensure that it is correctly connected to earth ground.
Install and ground plasma equipment according to the instruction manual and in accordance with national and local codes.
Inspect the input power cord frequently for damage. Replace a damaged power cord immediately.
Inspect and replace any worn or damaged torch leads.
Do not pick up the work piece, including the waste cutoff, while you cut.
Before checking, cleaning or changing torch parts, disconnect the main power or unplug the power supply.
Before removing any power supply or system enclosure cover, disconnect electrical input power. Wait 5 minutes after disconnection the main power to allow capacitors to discharge.
Never operate the plasma system unless the power supply covers are in place. Exposed power supply connections present a severe electrical hazard.
When making input connections, attach proper grounding conductor first.

Cutting can Cause Poisonous Smog

Cutting can produce toxic fumes and gases that deplete oxygen and cause injury or death.
Keep the cutting area well ventilated or use an approved air-supplied respirator.
Do not cut in locations near degreasing, cleaning or spraying operations. The vapors from certain chlorinated solvents decompose to form phosgene gas when exposed to ultraviolet radiation.
Do not cut metal coated or containing toxic materials, such as zinc(galvanized),lead, cadmium or beryllium, unless the area is well ventilated and the operator wears an air-supplied respirator. The coatings and any metals containing these elements can produce toxic fumes when cut.
This product, when used for cutting equipment, produces fumes or gases which contain chemicals known to the State of California to cause birth defects and ,in some cases, cancer.

Plasma Arc can Cause Injures and Burns

Plasma arc comes on immediately when the torch switch is activated.
The plasma arc will cut quickly through gloves and skin.
Keep away from the torch tip.
Do not hold metal near the cutting path.
Never point the torch toward yourself or others.

Arc Rays can Burn Eyes and Skin

Eye Protection: Plasma arc rays produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin.

Use eye protection in accordance with applicable national or local codes.

Wear eye protection (safety glasses or goggles with side shields, or a welding helmet)with appropriate lens shading to protect your eyes from the arc's ultraviolet and infrared rays.

Skin Protection: Wear protective clothing to protect against burns caused by ultraviolet light, sparks and hot metal.

Gauntlet gloves, safety shoes and hat.

Flame-retardant clothing to cover all exposed areas.

Cuffless trousers to prevent entry of sparks and slag.

Remove any combustibles, such as butane lighter or matches, from your pockets before cutting**.**

Cutting Area: Prepare the cutting area to reduce reflection and transmission of ultraviolet or Lights:

Paint walls and other surfaces with dark colors to reduce reflection.

Use protective screens or barriers to protect others from flash and glare.

Warn others not to watch the arc. Use placards or signs.

Grounding Safety

Work Cable: Attach the work cable securely to the work piece or the work table with good metal-to-metal contact. Do not connect it to the piece that will fall awaywhen the cut is complete.

Worktable: Connect the worktable to an earth ground, in accordance with appropriate national or local electrical codes.

Input Power

Be sure to connect the power cord ground wire to the ground in the disconnect box.

If installation of the plasma system involves connecting the power cord to the power supply, be ure to connect the power cord ground wire properly.

Place the power cord's ground wire on the stud first, then place any other ground. Fasten the retaining nut tightly.

Tighten all electrical connections to avoid excessive heating.

Compressed Gas Equipment Safety

Compressed gas bottle when blowing up, transporting and reserving, exists some danger, can cause explosion and fire.

Never lubricate cylinder valves or regulators with oil or grease.

Use only correct gas cylinders. Regulators, hoses and fittings designed for the specific application.

Maintain all compressed gas equipment and associated pares in good condition.

Before gas cylinder, open its valve, after blow thin power or dirty, close it. Then use after connecting decompression.

Open valve, operator should stand gas jet side and slowly start it, avoid gas towards body.

Prohibit on stressed gas bottle, remove leak using screw down valve and washer nut ways.
Never touch gloves oil and fat, cotton yarn and tools with gas bottle, valve, decompression and pipeline.
When operating, gas bottle is from away open flame or heat source beyond 5m.
Don't place gas bottle on passage (elevator room, stairs), prevent from hitting. If having any difficulties, take proper protection measure.

Never using oxygen to replace compression air to blow clear work cloths, gas pipeline, or use pressure test and air-powered tool air source.
Label and color-code all gas hoses to identify the type of gas in each hose. Consult applicable national or local codes.

Gas Cylinders can Explore if Damaged

Gas cylinders contain gas under high pressure. If damaged, a cylinder can explode Handle and use compressed gas cylinders in accordance with applicable national or local codes.
Never use a cylinder that is not upright and secured in place.
Keep the protective cap in place over valve except when the cylinder is in use or connected for use.
Never allow electrical contact between the plasma arc and a cylinder.
Never expose cylinders to excessive heat, sparks, slag or open flame.
Never use a hammer, wrench or other tool to open a stuck cylinder valve.

Gas Cutting Safety

Read and understand cutting machine operation and uses safety requirements. If users have any requirements, please consult distributors and manufacturers.
Oxygen and gas hose cannot use each other, never replace with other hose.
Torch no staining oil.
When gas cutting ignition, using firing gun.
When gas cutting, appearing cracking and backfire, immediately close preheated oxygen and cutting oxygen valve, then close gas valve, finally clear dirt in gas channel with needle.
Finish working, decompression unload pressure order: close high pressure gas bottle valve, let off all remaining gas in decompression, release pressure adjuster to make watch hand to Zero.
When gas source pressure is low, need exchanging gas, first close all valve switches, then exchange gas, when operating, do it according to dangerous gas safe operation rules.

Noise Protection

Prolonged exposure to noise from cutting or gouging can damage hearing.
Use approved ear protection when using plasma system.
Warn others nearby about the noise hazard.

Pacemaker and Hearing Aid Operation

Pacemaker and hearing aid operation can be affected by magnetic fields from high currents.
Pacemaker and hearing aid wearers should consult a doctor before going near any plasma arc cutting and gouging operations.
To reduce magnetic field hazards by following ways:
Keep both the work cable and the torch lead to one side, away from your body.
Route the torch leads as close as possible to the work cable.
Do not wrap or drape the torch lead or work cable around your body.
Keep as far away from the power supply as possible.

Warning Label

This warning label is affixed to some equipment. It is important that the operator and maintenance technician understand the intent of these warning symbols as described. The numbered test corresponds to the numbered boxes on the label.

1. Cutting sparks can cause explosion or fire.
Keep flammables away from cutting.
Keep a fire extinguisher nearby, and have a watchperson ready to use it.
3. Electric shock from torch or wiring can kill. Protect
3.1 Wear insulating gloves. Do not wear wet or damaged gloves.
4. Breathing cutting fumes can be hazardous to your health.
4.1 Keep your head out o the fumes.
4.2Use forced ventilation or local exhaust to remove the fumes.
4.3 Use ventilating fan to remove the fumes.
5. Arc rays can burn eyes and injure skin.
5.1 Wear hat and safety glasses. Use ear protection and button shirt collar. Use welding helmet with correct shade of filter. Wear complete body protection.
6. Become trained and read the instructions before working on the machine or cutting.
7. Do not remove or paint over (cover) warning labels

Chapter two Technical Regulations

2.1. Characteristics of Products and Application Scope

YH2560 Series NC cutter is an excellent model designed and manufactured by Xuzhou Yahong CNC Equipment Factory. Its main characteristics is that this model uses bilateral drive mode so that the machine can operate smoothly, have high locating accuracy and simple & good appearance. Moreover, the modularized design makes machine components have strong exchangeability and equipment function be expanded more simply & conveniently. The user can configure plasma cutting torches in different sizes according to the process requirements. It is provided with advantages such as high automation, easy operation, high accuracy, high reliability, low price, and simple operation & maintenance, and is now widely used in industries such as machine tool manufacturing, Petro-chemical equipment, light-industrial machinery, shipbuilding, pressure vessel, mining machinery, electric power, bridge construction, aerospace, steel structure etc..

2.2.Product Highlight

1. 7 inch high-resolution color LCD.
2. Chinese/English and other 7 languages menu
3. 45 categories different graphics (including grid pattern), chip part and hole part are alternative
4. Support the EIA code (G code) and various FastCAM software
5. Graphics have some operations such as Proportion, Rotate, Mirror, Array
6. Steel plate adjust
7. Provide a front USB interface for the transfer of code and system upgrade
8. Import and export documents by a single or all files
9. Display time, week and clock
10. Parameters backup and online upgrade
11. Support the Flame, Plasma, Dusting draw and Demonstration four kinds of mode
12. Including various types of processing parameters to meet the needs of different processes
13. Flame and Plasma are separated in the control IOs
14. Support edge cutting
15. Movement can be real-time acceleration, deceleration
16. According to plate thickness, in the corner speed is automatically restricted by a speed limit , have been effective in preventing burn
17. select row and column
18. Dynamic/static illustration of the process, graphics zoom in / out, dynamically tracking cut-off point under zooming state
19. electricity protective function of memory
20. "Cutting offset" function can be avoided waste due to calculated errors when nesting of the plate

2.3. Main Technical Performance Indexes of products

1	Cutting shape	able to program and cut the steel plate parts with any plane shapes formed by straight lines and arcs;
2	LCD Display Dimension	7.0Inches
3	Effective Cutting Width (X axis)	2000mm (according to customer's requirement)
4	Effective Cutting Length (Y axis)	6000mm (according to customer's requirement)
5	Cross Beam Length	2500mm
6	Longitudinal Rail Length	7500mm
7	Cutting Speed	0-8000mm per minute
8	Plasma Cutting Thickness	2--20mm (Depends on plasma power source capacity)
9	Flame Cutting Thickness	6--150mm
10	Drive Mode	bilateral drive
11	Cutting Mode	flame and plasma
12	Ignition device	Auto ignition device
13	Height regulating device	Arc voltage height and Electric adjustable high
14	File transmission	USB transmission
15	Gas Pressure	Max. 0.1Mpa
16	Oxygen Pressure	Max.0.7Mpa
17	Cutting Gas	Acetylene/Propane
18	Plasma Power Source	Hypertherm PowerMAX65/85/1650 or other
19	Plasma Air	Only pressed Air
20	Plasma Air Pressure	Max. 0.8Mpa
21	Cutting precision	±0.5mm National standard JB/T10045.3-99
22	Control accuracy	±0.01mm
23	Power Supply Voltage/Frequency	220V/110V 50HZ / 60HZ
24	Rated Power Supply	1500W
25	Working Temperature	-10℃-60℃. Relative Humidity, 0-95%.

*Standard configuration is propane nozzle if no special requirement.

Chapter Three Setup

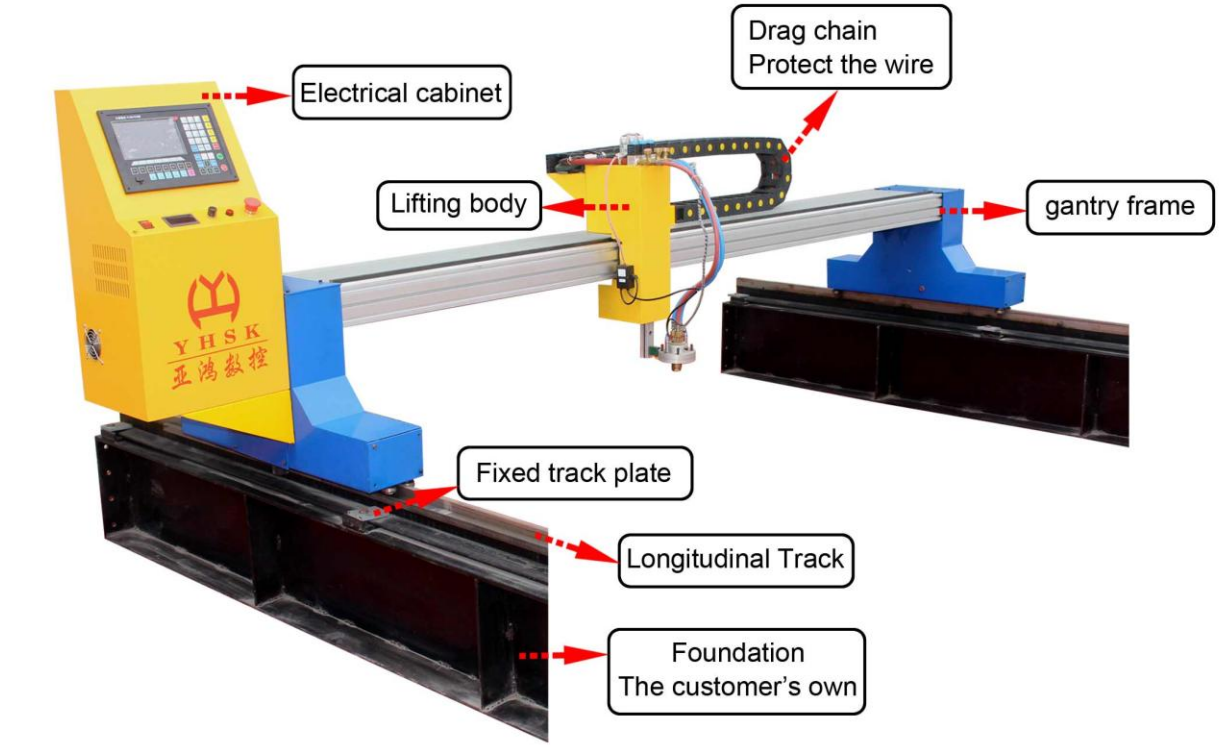
3.1 Receipt and Carrying Equipment

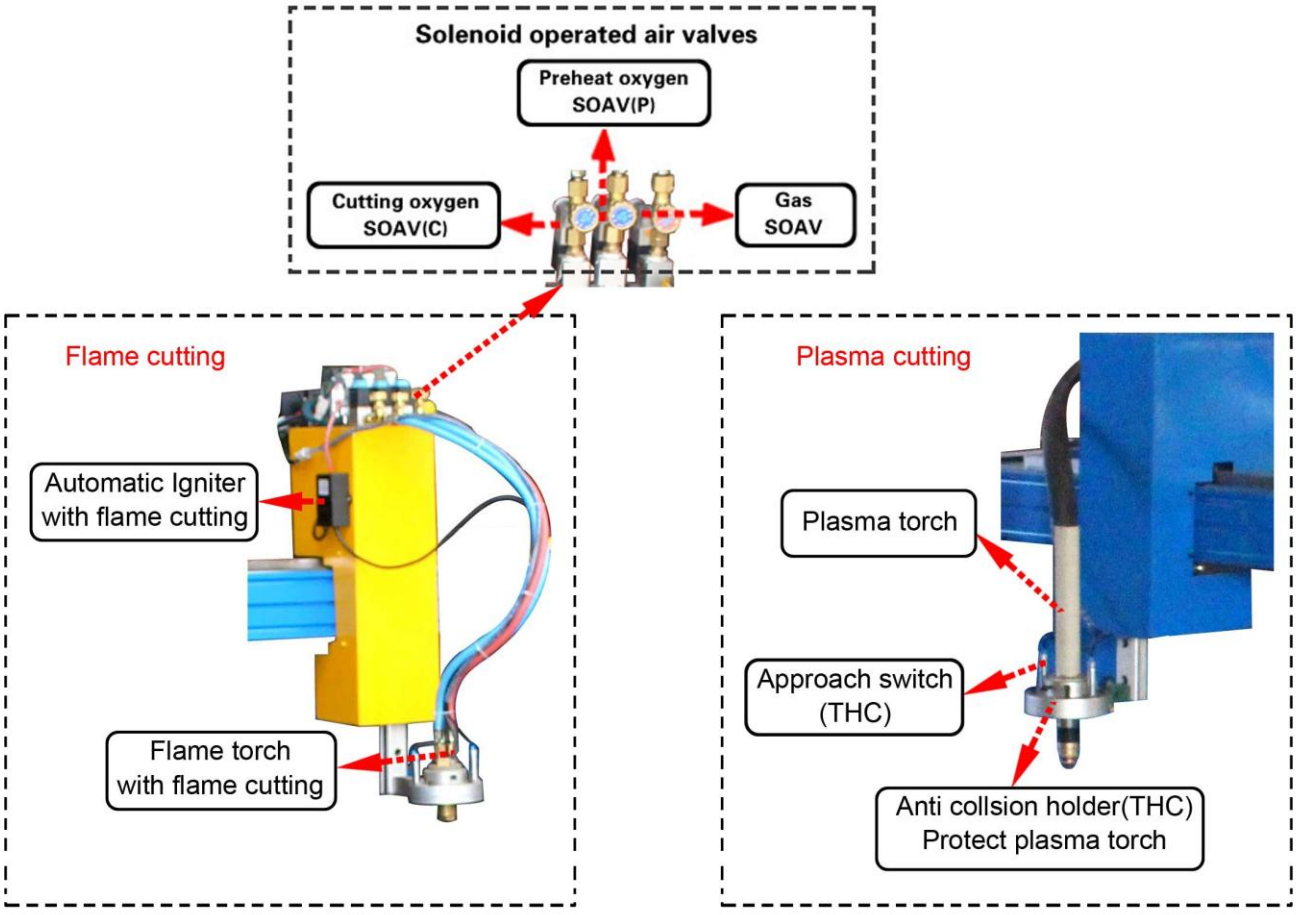
1. Verify that all parts and items on your order have been received. Alert your distributor if any parts or items are damaged or missing.
2. If there is evidence of damage, refer to the *Claims* section below. All communications regarding this equipment must include the model number and equipment number.
3. Before setting up and operating the system, read the Safety section of this manual.

3.2 Claims

Claims for damage during shipment: If your unit was damaged or lost during shipment, you must file a claim with the carrier.
Claims for defective parts: If any of the parts are defective, please contact your distributor.

3.4 Introduce parts of machine



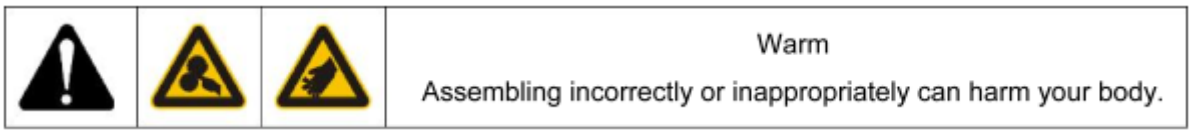


3.5 Equipment Assembly

 This gantry CNC cutting machine is decompounded transporting and needs assembling by the consumer.

Please assemble the machine strictly according to the following procedures and be careful to avoid damage to the component, which can help to guarantee the cutting quality and performance.

※ **When assembling many sets, matching to use. Because the clearance of gear and rack has been adjusted better before leaving factory.**



3.6 Machine Installation:

3.6.1 Electric appliance cabinet installation instructions:

First step: Fixed electric appliance cabinet on the left side of gantry type metal frame
Second step: Open back shroud on the electric appliance cabinet and connect wire connector according to drawing

3.6.2 Installation of the rails

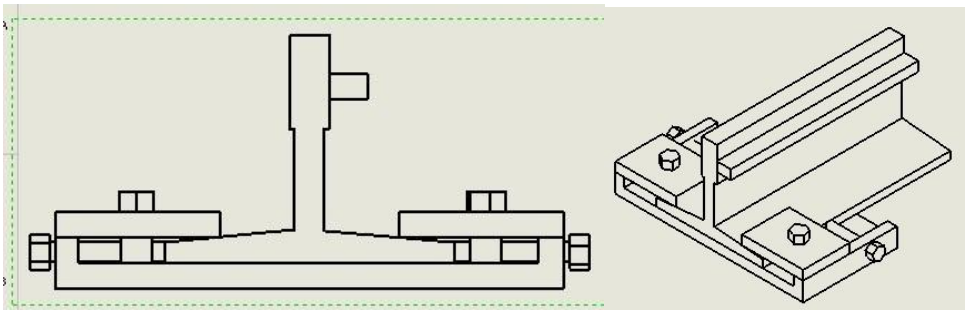
Place the two rails on the foundation with the rack outward, and measure the center distance between the two rails, which should be the same as the span of the gantry cutting machine purchased. The center distances at both ends and the middle of the rails should also be measured. The levels of the two rails should be consistent.

The rails have been spliced in the factory. During the installation, they must be spliced with the corresponding serial number.

Check the splicing positions of the rails and the racks, as shown in the following figure:

The splicing position of the racks is not necessarily as tight as possible, and the gap between the racks should be adjusted with the help of another rack, as shown in the following figure.

After the rails have been spliced, you can fix one of them with the method as shown in following figure,



The other rail should not be fixed first. Place the host gantry on the racks. On each gantry box, there are 6 bearings, among which 4 bearings on the two sides should be stuck on the two sides of the rails, and the 2 bearings on the inner

side can be adjusted as shown in the following figure.

The inside bearing should be adjusted to go into contact with the rail surface and the contact should not be too tight. During the adjustment, it should be avoided that the guide wheel presses on the side surface of the rail too tightly. Generally, turn the eccentric shaft softly, and when the guide wheel gets into contact with the side surface of the rail, invert it by a small angle to ensure that there is a small gap between them. At last lock the eccentric shaft tightly. There should be a good mesh between the motor gear and the rack, as shown in the following figure.

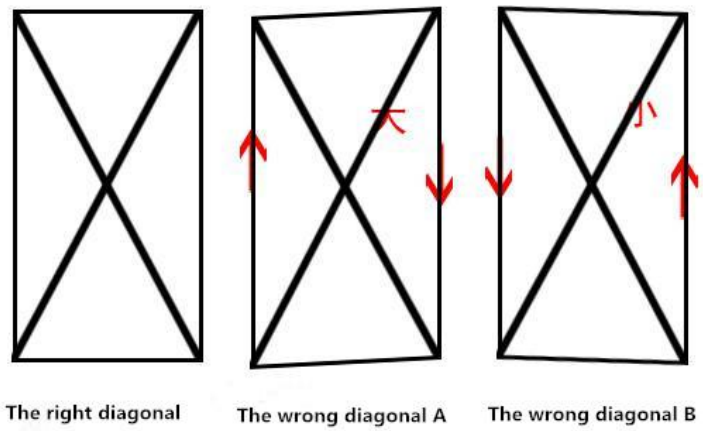
There should be a good mesh between the motor gear and the rack, as shown in the following figure.

After the gears on the both sides are meshed and the bearings are fixed as well, turn on the machine and drive it back and forth for several times at a **low speed**. If the movement does not encounter any jam (the rail that is not fixed can be automatically adjusted with the movement of the machine), fix the other rail.

3.6.3 adjust the mechanical precision of the machine.

Method

Put a piece of steel plate in the frame, four corners of the plate can be pasted on the paper, out of a large rectangular plate with a line drawing pen, dimensions bigger is better, with diagonal tape this rectangle is the same, as shown in Fig.



You can use the following method of adjusting if wrong is from the wrong diagonal A

For example:

First step: pull down cover plate on the double side gantry frame, remove or loosen the cover plate screws and the bottom of gantry frame screws.



Second step: shut down switch of motor on the bottom of electric appliance cabinet, 

Pressure G key  on the CNC control system and input average deviation, (length diagonal catercorner – short diagonal catercorner)/2,

Pressure Y key and move  according to average deviation.

You can draw diagonal again and repeat the above step operation many times.

You can use the following method of adjusting if wrong is from the wrong diagonal B, then pressure Y key to move in the different direction.

3.6.4 Gas Tightness Check

Examine the gas tightness of the gas circuit by the soap solution method under the working pressure. The equipment can put into use after affirm that there is not any leakage.

3.6.5 The Connection between Power and Control Line

	Warm Electrocution can harm body safety.
	Before maintaining, cut off power.

3.6.6 Earthing

Using the equipment must comply with national or local electrical requirement, correctly grounded through the power cord. Also see in Earthing in the Safety section of this manual.

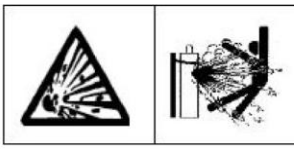
3.6.7 Atmogenic Assembly

About atmogenic assembly of oxygen, propane, or acetylene, carry out it according to concerned local and country regulations.

●Supply tie-in and hoop of oxygen and gas respectively, connect and revolve tight respectively.

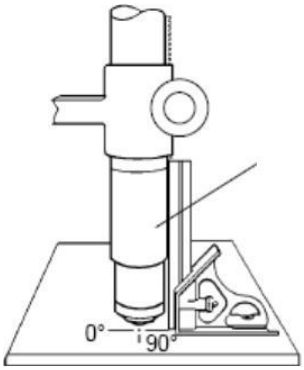
●When supplying, tie-in and hoop of oxygen and gas are in packing.

●Oxygen pressure can not exceed rating pressure equipment technical parameters; otherwise, valve can not open. When needing use pressure of big flow and exceed rating value, please contact the manufacturer.

	Warm Gas pressure can not exceed rating pressure equipment requires. If pressure is too high, air pipe can burst.。

3.6.8 Torch Adjustment

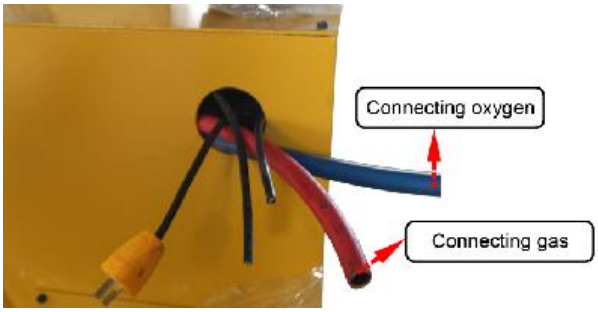
When assembling torch, vertical with work piece, to gain vertical cut. With square, make torch aim the position of 0 °and 90 °.



3.7 Flame and plasma power connect

3.7.1 When use flame cutting :

if using flame(gas) cutting , you need to connect gas(propane or acetylene) and oxygen.

Method: 

Note: if using acetylene, you must install tempering device.

3.7.2 When use plasma cutting:

1. Have arc voltage height control(THC):

Connecting like this:

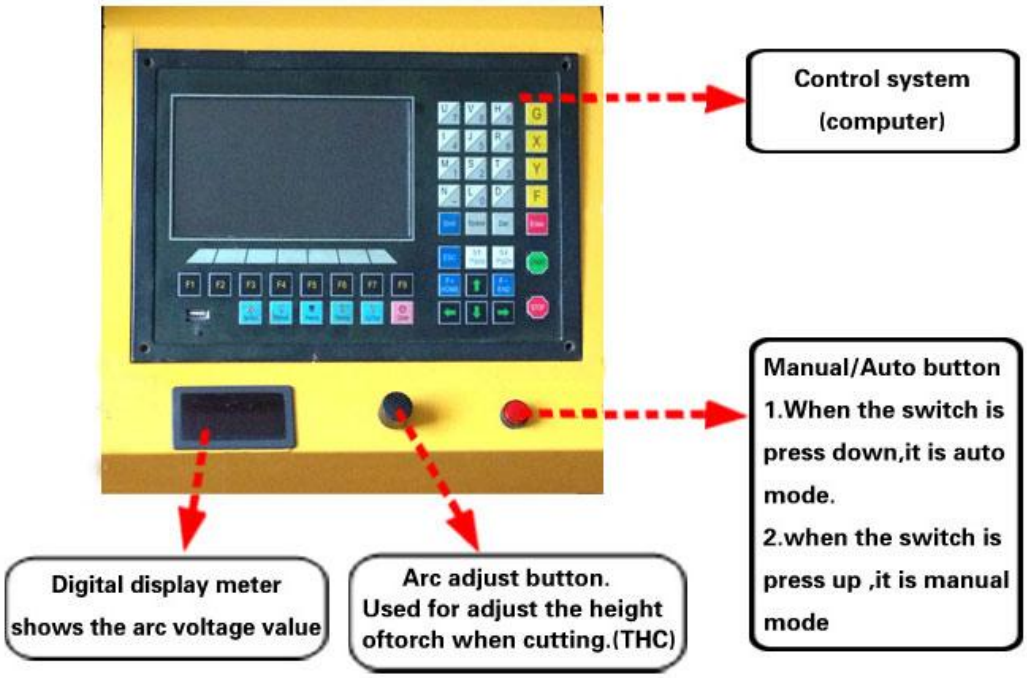
When connecting the operating voltage of the plasma, connect IN+ to the positive electrode and IN- to the negative electrode. For the specific connection position, please consult the plasma power supply manufacturer.

Note: 1.when connecting plasma arc voltage ,must connect the primitive working voltage. Our divider circuit board is 100:1

Chapter Four　Machine Operation

4.1. Introduce machine keys

Describes the various key function:



【F1】-【F8】: Function key in different interface

【1】-【9】: 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

: Torch up

: Torch down

: Accelerate

: Decelerate

In the cutting interface:

● Press 

: Modify the current maximum cutting speed.

● Press 

: Modify the current maximum speed manual speed.

● Press 

: Change the current manual method.

● Press 

: Modify the current fixed-length fixed long-distance move.

●Press 

: Start cutting.

●Press 

: Parking, the system can suspend all ongoing actions.

●Press 

: Ignition for flame.

●Press 

: Preheat for flame

●Press 

: Manual arcing for plasma.

●Press 

: Pierce for flame.

●Press 

: Cutting oxygen

●Press 

: Close these keys 

●Press 

: Return the last interface.

●Press 

: Delete

4.2 Machine Operation

4.2.1 Flame cutting operation:

1. Creating file: Using CAD or other software, drawing the picture, save as DXF format, transmission to the FASTCAM software, through the FASTCAM software to generate the TXT format file. Then copy TXT format file to the U disk, and input this file to the cnc machine.

NOTE: when use FASTCAM Software, you must insert the softdog 

.
About how to operate FASTCAM, you can watch the video in our Udisk.

2. Input file: Connect the power supply, turn on the main switch, and press any key to enter into the system. Insert the flash disk, press 

files, press 

file on the flash disk, and press 
or 
to select the cutting file. Press 

to copy the file to the hard disk and then press 

to confirm it. Press 

file on the hard disk, press 
or 
to select the cutting file and then press 

to confirm it. Load the file.

3. Set the coordinate origin: Press 
direction keys on the system in order to move the cutting torch to the left lower corner of the steel plate, and then press 

to reset coordinates.like this: 

. When moving manually, press 

key to switch between Inching and Continuous modes.

4. Select cutting type:

Method 1: Press 

+ 

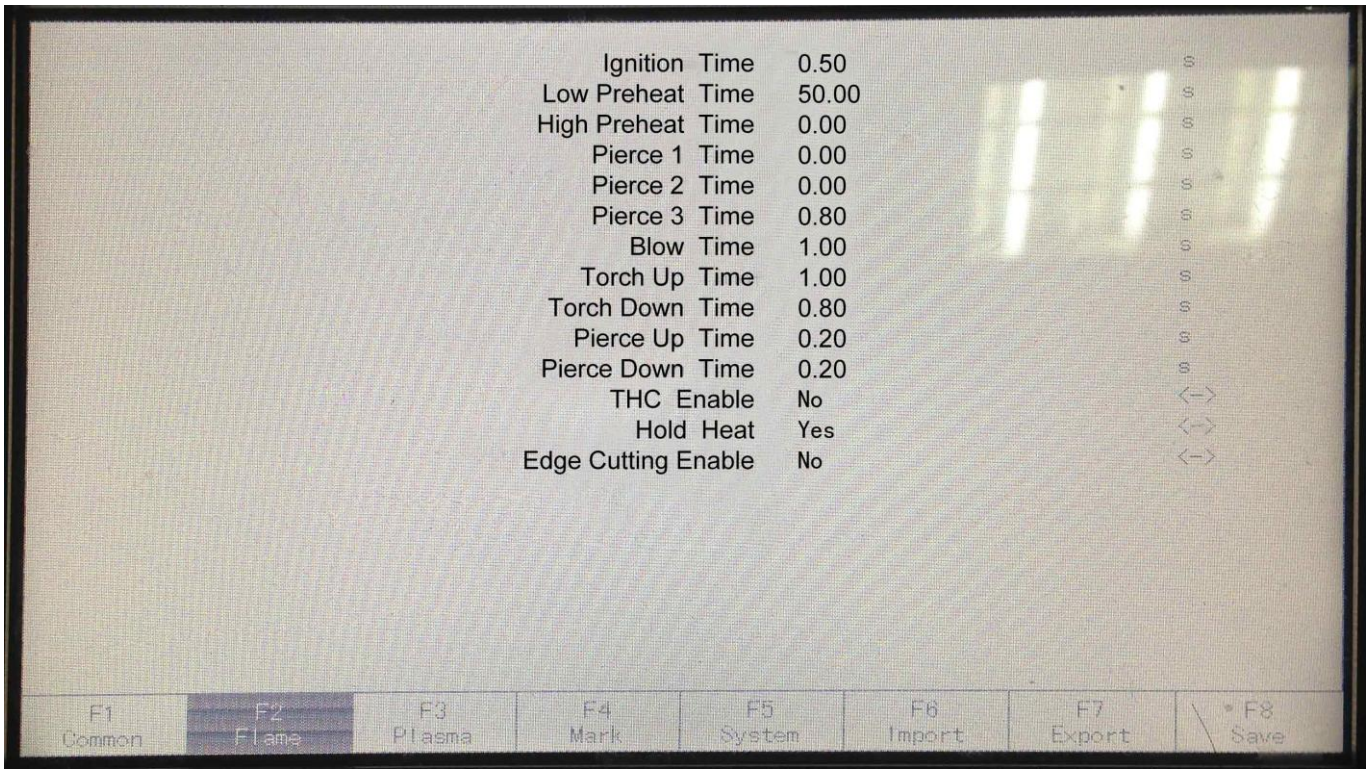
to select the cutting type (oxygen or plasma).
Method 2: turn on the machine ,press F4(Setups) ,press F1(Common), you can see cutting mode,select plasma or oxygen.
Press F8 save.

5. Set cutting speed: Press 

, input cutting speed. This speed according to your plate thickness. During the cutting, you can adjust cutting speed through press 

6. Set flame cutting parameter:

Method: Press F4(Setups)[if no setups, press ESC ,returns the last interface], press F2(Flame),appear below picture, these parameters are set in the factory.



When we cutting ,we can change Low Preheat Time 50.00 and Pierce 3 Time 0.80 according to plate thickness.

There are 2 methods to change low preheat time:

Method 1: Direct input low preheat time,such as cut 10 mm , set low preheat time :10s

Method 2: Don't need to input low preheat time,when you cutting ,according to the actual situation,you can Press F6 to reduce low preheat time. And press F7 to increase low preheat time.

Set pierce 3 time : these time for your reference

(1)Below 15mm, set 0.8s ; (2) 15mm to 20mm, set: 1.2s ; (3) 25mm to 35mm, set 2s; (4) above 35mm,set 2.5s

These time you can change according to actual situation.

You can set cutting speed and low preheat time according to below 2 pictures.

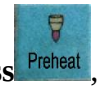
火焰切割技术参数

Flame cutting technology parameters

割嘴切割性能及基本参数表（丙烷切割） Cutting nozzle cutting performance and basic parameter table(Propane)							
割嘴号 Cutting nozzle number	切割氧孔径 Oxygen cutting aperture	切割厚度 cutting thickness	割缝半径 Slotted radius	预热时间 Preheating time	切割速度 cutting speed	气体压力 Gas pressure	
(#)	(mm)	(mm)	(mm)	(S)	(mm/min)	氧 气 Oxygen	丙 烷 Propane
0	1.0	5-15	1.2	10-13	480-380	0.2-0.4	>0.03
1	1.2	15-30	1.4	12-15	400-320	0.26-0.45	>0.03
2	1.4	30-50	1.6	14-17	350-380	0.25-0.45	>0.03
3	1.6	50-70	1.9	16-19	300-240	0.3-0.5	>0.04
4	1.8	70-90	2.2	18-25	260-200	0.3-0.5	>0.04
5	2.0	90-120	2.4	24-32	210-170	0.4-0.6	>0.04
6	2.4	120-160	2.9	31-42	180-140	0.5-0.8	>0.05

割嘴切割性能及基本参数表（乙炔切割） Cutting nozzle cutting performance and basic parameter table(Acetylene)							
割嘴号 Cutting nozzle number	切割氧孔径 Oxygen cutting aperture	切割厚度 cutting thickness	割缝半径 Slotted radius	预热时间 Preheating time	切割速度 cutting speed	气体压力 Gas pressure	
(#)	(mm)	(mm)	(mm)	(S)	(mm/min)	氧 气 Oxygen	乙炔 Acetylene
0	0.8	5-10	1	10-13	600-450	0.2-0.4	>0.03
1	1.0	10-20	1.2	12-15	480-380	0.2-0.4	>0.03
2	1.2	20-30	1.4	14-17	400-320	0.25-0.45	>0.03
3	1.4	30-50	1.7	16-19	350-380	0.25-0.45	>0.03
4	1.6	50-70	2	18-25	300-240	0.3-0.5	>0.04
5	1.8	70-90	2.2	24-32	260-200	0.3-0.5	>0.04
6	2.0	90 120	2.4	31 42	210 170	0.4 0.6	>0.04
7	2.4	120-160	2.9	40-60	180-140	0.5-0.8	>0.05
8	2.8	160-200	3.3	50-80	160-200	0.6-0.9	>0.05

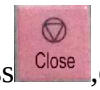
7. Adjust the preheat oxygen and cutting oxygen.

Method: Press 

, adjust hand valve  , this red  is gas and this blue  is preheat oxygen.

This gas hand valve  twist 1/4 ring. And this preheat oxygen  twist 2/5 ring. using a lighter to light a fire. Then fine tuning the flame according to the actual situation. Press 

,adjust cutting

oxygen.then press 

,close flame. Then when cutting ,it can automatic ignition .
Note: keep the distance between torch and plate is 3mm-5mm.if distance is more than 5mm,it can't automatic ignitiion.

8. Start cutting: finish above 1.2.3.4.5.6 .7, we can press 

and 

to start cutting.

4.2.2 Plasma cutting operation:

I.No arc voltage height control (THC)

DO above 1,2,3,4,5 ,8 steps the same with flame . Don't need to set plasma paremeter.
These parameters of below tables are our plasam CUT-100's for your reference.
Note: different plasma brand ,different parameters.

air dry cutting

Number	Cutting material	Cutting thickness (mm)	Drilling Hole height (mm)	Cutting height(mm)	Cutting electricity(A)	Cutting speed (mm/min)
1	Carbon steel	3	4	2.5	60	3500
2	Carbon steel	4	4	3	60	3000
3	Carbon steel	5	4	3	60	1400
4	Carbon steel	6	5	3	60	1000
5	Carbon steel	5	4	3	90	3500
6	Carbon steel	6	4	4	90	2800
7	Carbon steel	8	5	4	90	2000
8	Carbon steel	10	5	4	100	1300
9	Carbon steel	12	6	4	100	900
10	Carbon steel	15	6	4	100	650
11	Carbon steel	20	Not be allowed to drilling holes, just can cut edge	4	100	500
12	Carbon steel	25		4	100	300
13	Carbon steel	30		4	100	200

air dry cutting

Number	Cutting material	Cutting thickness (mm)	Drilling Hole height (mm)	Cutting height(mm)	Cutting electricity(A)	Cutting speed (mm/min)
1	Stainless steel	3	4	2.5	60	1900

2	Stainless steel	6	4	3	60	750
3	Stainless steel	5	4	3	90	2600
4	Stainless steel	6	4	3	90	1800
5	Stainless steel	10	5	4	90	1400
6	Stainless steel	12	5	4	100	890
7	Stainless steel	15	6	4	100	630
8	Stainless steel	20	Not be allowed to drilling holes, just can cut edge	4	100	500
9	Stainless steel	25		4	100	250
10	Stainless steel	30		4	100	180
11	Aluminum sheet	3	4	2.5	60	2500
12	Aluminum sheet	5	4	3	60	1000
13	Aluminum sheet	6	4	3	90	1600
14	Aluminum sheet	8	5	4	90	1400
15	Aluminum sheet	10	5	4	100	1300
16	Aluminum sheet	12	5	4	100	1000
17	Aluminum sheet	15	6	4	100	760
18	Aluminum sheet	20	Not be allowed to drilling holes, just can cut edge	4	100	600
19	Aluminum sheet	25		4	100	400

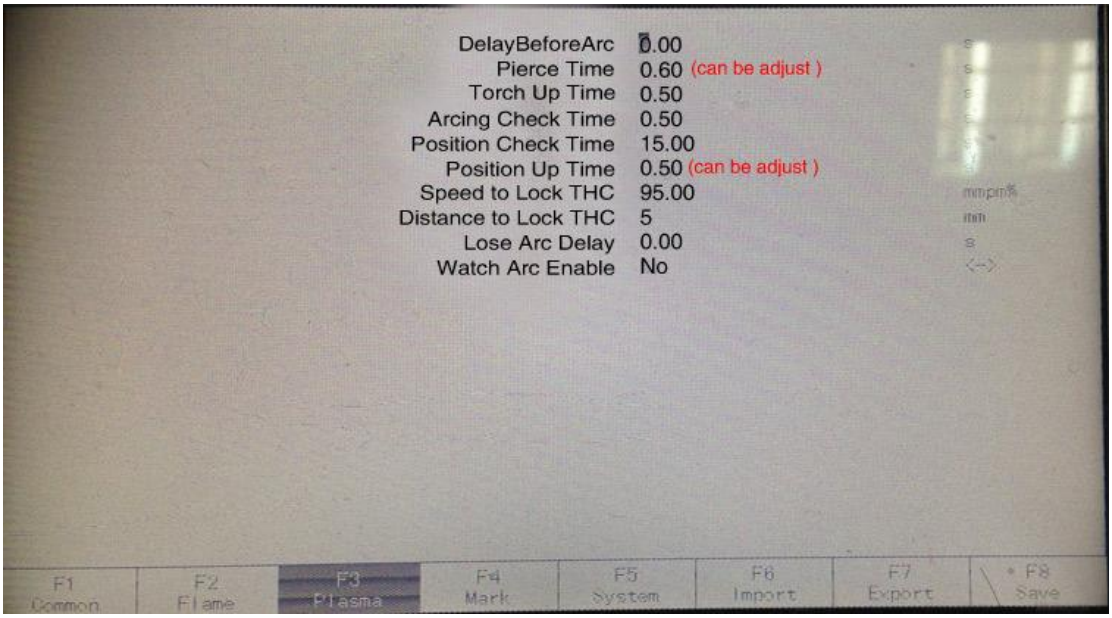
II.Have arc voltage height control(THC)

Do above 1,2,3,4,5 steps， the same with flame.

6. Set plasma parameter.

Method: Press F4(Setups)[if no setups, press 

,returns the last interface], press F3(Plasma),appear below picture, these parameters are set in the factory.



Pierce Time can be adjust.

Pierce Time: (1)below 5mm, set 0.5s; (2) 5mm to 10mm, set 0.8s; (3) 10mm to 20mm, set 1.5s; above 20mm, can set according to actual situation.More thickness ,more time.

7.Adjust height control is auto height control:

Method: press manual/auto button  . When this button is down, height control is auto height control. When this button is up, height control is manual height control.

8.Open the plasma power

Set this value is about -115  ,method: twist arc adjust button  .**Different plasma power and different current, this value is different.** So when you cutting ,you need to try to adjust this valve. Such as if you use our 100A plasma power, this value is between 120-150i,if you use our 200A plasma power ,the value is between 160-170. if use hypertherm 105E, the value is about 170.

NOTE: If the value is bigger than nomal, the torch will be up.

If the value is smaller than normal, the torch will be down.

9.Start to cutting and adjust the arc value.

Press start  .it begain to cutting.

First ,the torch will be touch the plate ,then lift up. The distance between torch and plate is about 3-5mm,then arcing and cutting.

Note: when it cutting ,check the distance between torch and plate, if the distance is above 5MM, adjust the arc value  turn it smaller. Now the value is positive.

If the distance is below 3MM ,turn the value bigger.

Note: when use THC, During cutting ,(1)No arcing , the torch will up until top. (2) Under the torch ,there is no plate, the torch will down .

4.2.3 Problem solution during the course of cutting:

1.during the course of cutting, if it is required to chanPge gas or cutting torch, first press 

key, then change gas or cutting torch ,when it finished,then press 

to return until it reaches breaking point, then press 

key and press 

to start cutting.

2. If the power shuts down suddenly during the course of cudtting, turn on the machine when the power comes on again and pay attention not to move the machine. Press 

three times until the power restores. Press 

to retreat to the breaking point and press 

, and then the system will start cutting right from the breaking point.

4.2.4. Machine parameters restoring procedure:

Start the machine. Press 

diagnose, press 

definition and then press. 

to complete.

NOTE ：

When cutting to the edge of the plate,Try not to use THC,because of the consequence of Arc voltage insta bility and unaccurate workpiece.During the cutting,the nozzle would drag the plate moving or bend the cutting torch 。

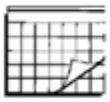
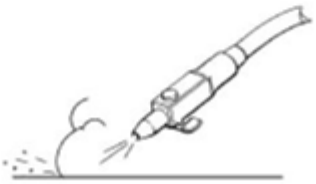
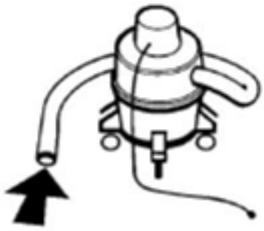
Method：Press manual/auto button up.

Chapter Five Maintenance and Parts

The environment for the gantry NC cutter is relatively execrable and full of metal dust. The machine should be cleaned and maintained entirely.

5.1 Routine Maintenance

 	**Warning** **Electric shock can kill**
	**Disconnect electrical power before performing any maintenance. All work requiring removal of the power supply cover must be performed by a qualified technician.**

 Each Use	1. Check gas pressure if within stated range, pipeline、valve、air pipe tie-in if 2. loose or leak gas, hope if damage, gas safe device if effective, when necessary,tightening or replacing. 3. Check torch if loose, nozzle if damage. 4. Clear track and rack surface, don't permit kernel and splash keeping on rack, keep smooth.
 Every Week	1. Orbit and trolley smooth. 2. Check main gas-in if have rubbish, each valve and pressure meter if working normally.
 Every 3 Months	  Replace damaged labels. Check all driving parts whether loose or not, check gear and rack, when necessary, adjust it. Check track and each screw whether loose or not, check control line connection whether loose or not.  Replace damaged power line or plug. Check all press button and choose switch performance, replace damaged parts.
 Every 6 Months	  Clean the inside of the power supply with air pressure or vacuum.

5.2 Basic Troubleshooting

number	Error	Cause
1	LCD no show when normally starting machine	1.1Check 220V power，fuse on socket; 1.2Open the machine case，then check the wire of socket and switch if fall off; 1.3Check input power of ring transfer if 220V; 1.4 Check if the fuse of power board burned out，or if the 10 core plugs on the back of 5V power and system loose or fell off.
2	The machine shows a blue screen or color fault or no system interface.	2.1Check system back LCD readjust resistor, left and right full travel route adjust and watch.
3	When cutting, cursor normally follow graph on LCD, but host no move or a direction no move.	3.1Check step motor drive and R transformer if connect power; 3.2 Check step motor drive plug and connect line, driver and step motor if fall off host; 3.3Check axle end gear of step motor if loose.
4	Disk U file error, messy code or no read file.	4.1Confirm Disk U OK; 4.2 Disk U if FAT16(FAT) or FAT32(FAT) form, no format NTFS form; 4.3 If build hycut.cn directory under Disk U root directory, and program files are in this directory. 4.4 Open the machine case to check if USD wire fell off 4.5 Insert the disk U to the back of the systemdirectly
5	After starting machine, press keys without action or parts without reaction.	5.1Confirm press keys if damage by using press keys diagnosis function; 5.2Check host and keyboard line if loose or fall.
6	Valve or motor no motion.	6.1Confirm valve or motor if damage. 6.2 Confirm press keys if damage by using press keys diagnosis function; 6.3 Check power panel 8 cores socket, cable on beam and connect insert parts on end if have output when press button; 6.4Switch 24V if normal, plug if fall off; 6.5Check host and function panel line connect if loose or fall off; 6.6Check system main board if indicator light on in press key.
7	When equipment moves, shake strongly.	7.1Motor gear and rack clearance irrelevancy, adjust it; 7.2 Check the driver if normal

8	The actual cutting sizes are not consistent with the sizes in the drawing	1. Check whether the settings in the control system are changed, correct number please contact factory.
9	After the cutting is completed, and the gas valve switch of the system is shut down, the gas still ejects from the nozzle	Reason: Impurities exist in the solenoid valve. Solution: Remove the metal rod, blow out the impurities inside the solenoid valve with the compressed gas and install it
10	The cutting oxygen does not eject and the light on the solenoid valve to control the cutting oxygen does not illuminate	1. Check whether the cable in the beam is broken, and if necessary, you can connect it to the next core with a spare wire (only 8 cores used in 10 cores) 2. Check whether the solenoid valve is damaged, and if necessary, replace it.
11	The arc is not be ignited when using a plasma-arc	1. Check whether the air pressure in the air compressor is 0.4-0.7 2. Check whether the plasma power supply is connected 3. Check whether the cutting nozzle needs to be replaced and the torch level is appropriate, which is generally 3-5mm 4. Whether the plasma mode is selected in the system setting 5. Check whether the cutting nozzle is ejecting gas, and if it is, CNC equipment has no any problem. Then check whether the alarm light for the plasma power supply illuminates, whether the torch is damaged, and whether the oil-water separator operates normally. 6. Check whether the plasma parameters of the machine are set correctly, such as arcing delay etc. (used for arc voltage adjusting-up)
12	The cutting does not follow its tracks	1. Restore the system parameters 2. The files stored in the machine are too many, and delete some 3. Whether the ground wires of the plasma and the host are connected，these two wires must be separated. 4. Whether the magnetic ring attached to the host is connected to the plasma
13	After the workpiece is cut by the plasma-arc, the arc is not cut off, with a small tail	Check whether the cut-type switch of the plasma power is in the self-locking state, and it should be in the non-self-locking state.
14	Arc voltage is instable, with high or low output (with an arc voltage adjustor)	1. Check the pressure of the air compressor and whether the water needs to be drained; 2. Check the air pressure behind the plasma power, and whether water in the oil-water separator is discharged or the oil-water separator is damaged. The damaged oil-water

		separator shall be replaced. 3. Check whether input points and wires on the sub-voltage plate are connected or loose 4. Check whether the voltage input line on the sub-voltage plate is connected wrongly

More Technical Questions

If you are unable to fix the problem with your system by following this basic troubleshooting guide, please contact distributor or manufacturer.

5.3 Gas Cutting Technics Reference

5.3.1 Propane+Oxygen

	Cutting Oxygen Hole Diameter	Cutting Thickness	Cutting Speed	Gas Pressure MPa		Gas Consumption		Remarks
	mm	mm	mm	Oxygen	Propane	Oxygen m^3/h	Propane l/h	
00	0.7	5~10	600~450	0.2~0.3	>0.03	0.9~1.3	340	
0	0.8	10~20	480~380	0.2~0.3	>0.03	1.3~1.8	340	
1	1.0	20~30	400~320	0.25~0.35	>0.03	2.5~3.0	470	
2	1.2	30~50	350~280	0.25~0.35	>0.03	3~4	470	
3	1.4	50~70	300~240	0.3~0.4	>0.04	4.5~6	620	
4	1.6	70~90	260~200	0.4~0.6	>0.04	5.5~7	620	
5	1.8	90~120	210~170	0.4~0.6	>0.04	8.5~10.5	620	
6	2.0	120~160	180~140	0.5~0.8	>0.05	12~15	780	
7	2.4	160~200	150~110	0.6~0.9	>0.05	21~24.5	1000	

5.3.2 Acetylene+Oxygen

Nozzle NO.	Cutting Oxygen Hole Diameter	Cutting Thickness	Cutting Speed	Gas Pressure MPa		Gas Consumption		Remarks
	mm	mm	mm	Oxygen	Propane	Oxygen m^3/h	Acetylene l/h	
00	0.8	5~10	600~450	0.2~0.3	>0.03	0.9~1.3	340	
0	1.0	10~20	480~380	0.2~0.3	>0.03	1.3~1.8	340	
1	1.2	20~30	400~320	0.25~0.35	>0.03	2.5~3	470	
2	1.4	30~50	350~280	0.25~0.35	>0.03	3~4	470	
3	1.6	50~70	300~240	0.3~0.4	>0.04	4.5~6	620	
4	1.8	70~90	260~200	0.3~0.4	>0.04	5.5~7	620	
5	2.0	90~120	210~170	0.4~0.6	>0.04	8.5~10.5	620	
6	2.4	120~160	180~140	0.5~0.8	>0.05	12~15	780	
7	2.8	160~200	150~110	0.6~0.9	>0.05	21~24.5	1000	
8	3.2	200~270	120~90	0.6~1.0	>0.05	26.5~32	1000	

Note: cutting condition in the chart:

1. Oxygen purity is no less than 99.5%.
2. Cutting steel carbon content ≤0.45%.
3. Cutting way is vertical.
4. Oxygen pressure is cutting oxygen pressure in front of cutting torch.