# 142X210mm

**VEVOR®** 

CUT40(F)/CUT50(D)/CUT50F

Plasma cutter series manual





#### CUT40(F)/CUT50(D)/CUT50F QUICK SETUP GUIDE

#### Power Plug Wire Identification:

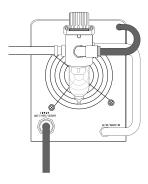
For either 110VAC or 220VAC, the GREEN wire with the yellow strip is Ground wire. The other two wires are Live wires.

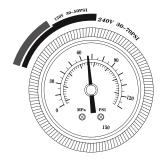
1. Wear a proper helmet to protect your eyes from harmful plasma cutting arc radiation.

Wear safety gloves to protect your hands during operation.

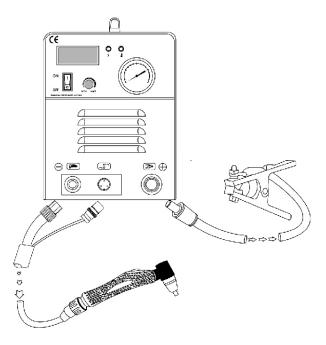


2. Connect the machine gas inlet (on the back of the machine) to an air compressor and set the air pressure to 60--70 PSI. (The air regulator is optional as some air compressors provide air pressure control capability).

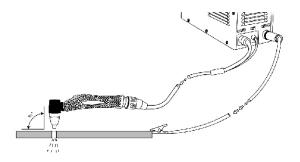




 ${f 3.}$  Connect your plasma cutting torch and ground cable to the front panel of the machine.



4. Attach the Ground clamp to the metal work piece that you plan to cut. Grind the metal to make sure the clamp is securely attached. Press the trigger of the torch and make sure there is air flow. Finally, move the torch head to the work piece and start cutting!



Thank you!



5. AFR-2000 Installation Instruction



(1) Find the two screws at the upper rear of the machine, and un-fastening them.



(2) Put the metal support on the two screws and fasten the two screws.





(3) Wrap some PTFE sealing tapes on the two brass fittings and make sure no leakage.



(4) Then place the two brass fittings on the two sides of valve body and tighten them.



(5) Fasten the 90° elbow fitting on the front face of valve body. Pls. note the inlet gas arrow symbol on the valve body is directed to the right.



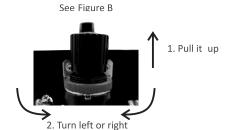
(6) Loosen the red button on the valve body, hold the whole valve body into the metal support from down to upside, and then tighten it.



(7) Cut down attached air hose into approximately 20 – 22cm length. Connected as illustration instructed, use the hose clamp to tighten it until no leakage. The leftover air hose will be connected to air compressor (inlet gas), still use hose clamp to tighten it until no leakage. Put the black air hose of the machine into the 90º elbow fitting.

The installations are done!





(8) Before do the cutting, pls. make sure the cutter torch and ground clip are connected correctly (See Figure A). Open the air compressor valve, switch on the machine, pull the top button of valve up, adjust the air pressure to a suitable scope through turn knob left or right (See Figure B).



(9) After adjustment, press the knob and you are able to start cutting normally.



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## Introduction

Hello!

Dear Valued Customer:

The User Manual documents and procedures are used for proper operation of the machine.

IMPORTANT: Be sure to review the contents of this manual before attempting to operate the equipment. This manual should be located where it can be easily referenced by all users of the machine.

This manual assumes that all individuals reading the manual and using the welder/cutter are capable, qualified, and/or certified to operate this type of machinery.

#### SAFETY PRECAUTIONS - READ BEFORE USING



Note on High Frequency electromagnetic disturbances:

Certain welding and cutting processes generate High Frequency (HF) waves. These waves may disturb sensitive electronic equipment such as televisions, radios, computers, cell phones, and related equipment. High Frequency may also interfere with fluorescent lights. Consult with a *licensed* electrician if disturbance is noted. Sometimes, improper wire routing or poor shielding may be the cause.



HF can interfere with pacemakers. See EMF warnings in following safety section for further information. Always consult your physician before entering an area known to have welding or cutting equipment if you have a pacemaker.



These safety precautions are for protection of safety and health. Failure to follow these guidelines may result in serious injury or death. Be careful to read and follow all cautions and warnings. Protect yourself and others.



Welding and cutting processes produce high levels of ultraviolet (UV) radiation that can cause severe skin burn and damage. There are other potential hazards involved with welding such as severe burns and respiratory related illnesses. Therefore, observe the following to minimize potential accidents and injury:



Use appropriate safety glasses with wrap around shields while in the work area, even under welding helmets to protect your eyes from flying sparks and debris. When chip-ping slag or grinding, goggles and face shields may be required.



When welding or cutting, always use an approved shielding device, with the correct shade of filter installed. Always use a welding helmet in good condition. Discard any broken or cracked filters or helmets. Using broken or cracked filters or helmets can cause severe eye injury and burn. Filter shades of no less than shade 5 for cutting and no less than shade 9 for welding are highly recommended. Shades greater than 9 may be required for high amperage welds. Keep filter lenses clean and clear for maxi-mum visibility. It is also advisable to consult with your eye doctor should you wear contacts for corrective vision before you wear them while welding.



Do not allow personnel to watch or observe the welding or cutting operation unless fully protected by a filter screen, protective curtains or equivalent protective equipment. If no protection is available, exclude them from the work area. Even brief expo-sure to the rays from the welding arc can damage unprotected eyes.

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Always wear hearing protection because welding and cutting can be extremely noisy. Ear protection is necessary to prevent hearing loss. Even prolonged low levels of noise have been known to create long term hearing damage. Hearing protection also further protects against hot sparks and debris from entering the ear canal and doing harm.



Always wear personal protective clothing. Flame proof clothing is required at all times. Sparks and hot metal can lodge in pockets, hems and cuffs. Make sure loose clothing is tucked in neatly. Leather aprons and jackets are recommended. Suitable welding jackets and coats may be purchased made from fire proof material from welding supply stores. Discard any burned or frayed clothing. Keep clothing away from oil, grease and flammable liquids.



Leather boots or steel toed leather boots with rubber bottoms are required for adequate foot protection. Canvas, polyester and other man-made materials often found in shoes will either burn or melt. Rubber or other non-conductive soles are necessary to help protect from electrical shock.



Flame proof and insulated gauntlet gloves are required whether welding or cutting or handling metal. Simple work gloves for the garden or chore work are not sufficient.

Gauntlet type welding gloves are available from your local welding supply companies.

Never attempt to weld without gloves. Welding without gloves can result in serious burns and electrical shock. If your hand or body parts comes into contact with the arc of a plasma cutter or welder, instant and serious burns will occur. Proper hand protection is required at all times when working with welding or cutting machines!



WARNING! Persons with pacemakers should not weld, cut or be in the welding area until they consult with their physician. Some pacemakers are sensitive to EMF radiation and could severely malfunction while welding or while being in the vicinity of someone welding. Serious injury or death may occur!



Welding and plasma cutting processes generate electro-magnetic fields and radiation.

While the effects of EMF radiation are not known, it is suspected that there may be some harm from long term exposure to electromagnetic fields. Therefore, certain pre-cautions should be taken to minimize exposure:

- Lay welding leads and lines neatly away from the body.
- Never coil cables around the body.
- Secure cables with tape if necessary, to keep from the body.
- Keep all cables and leads on the same side the body.
- Never stand between cables or leads.
- Keep as far away from the power source (welder) as possible while welding.
- Never stand between the ground clamp and the torch.
- Keep the ground clamp grounded as close to the weld or cut as possible.



Welding and cutting processes pose certain inhalation risks. Be sure to follow any guidelines from your chosen consumable and electrode suppliers regarding possible need for respiratory equipment while welding or cutting. Always weld with adequate ventilation. Never weld in closed rooms or confined spaces. Fumes and gases re-leased while welding or cutting may be poisonous. Take precautions at all times.

Any burning of the eyes, nose or throat are signs that you need to increase ventilation.

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Stop immediately and relocate work if necessary, until adequate ventilation is obtained.

Stop work completely and seek medical help if irritation and discomfort persist.



WARNING! Do not weld on galvanized steel, stainless steel, beryllium, titanium, copper, cadmium, lead or zinc without proper respiratory equipment and or ventilation.



WARNING! This product when used for welding or cutting produces fumes and gas-es which contains chemicals known to the State of California to cause birth defects and in some cases cancer. (California Safety and Health Code §25249.5 *et seq.*)



WARNING! Do not weld or cut around Chlorinated solvents or degreasing areas. Release of Phosgene gas can be deadly. Consider all chemicals to have potential deadly results if welded on or near metal containing residual amounts of chemicals.



Keep all cylinders upright and chained to a wall or appropriate holding pen. Certain regulations regarding high pressure cylinders can be obtained from OSHA or local regulatory agency. Consult also with your welding supply company in your area for further recommendations. The regulatory changes are frequent so keep informed.



All cylinders have a potential explosion hazard. When not in use, keep capped and closed. Store chained so that overturn is not likely. Transporting cylinders incorrectly can lead to an explosion. Do not attempt to adapt regulators to fit cylinders. Do not use faulty regulators. Do not allow cylinders to come into contact with work piece or work. Do not weld or strike arcs on cylinders. Keep cylinders away from direct heat, flame and sparks.

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WARNING! Electrical shock can kill. Make sure all electrical equipment is properly grounded. Do not use frayed, cut or otherwise damaged cables and leads. Do not stand, lean or rest on ground clamp. Do not stand in water or damp areas while welding or cutting. Keep work surface dry. Do not use welder or plasma cutter in the rain or in extremely humid conditions. Use dry rubber soled shoes and dry gloves when welding or cutting to insulate against electrical shock. Turn machine on or off only with gloved hand. Keep all parts of the body insulated from work, and work tables.



Keep away from direct contact with skin against work. If tight or close quarters necessitates standing or resting on work piece, insulate with dry boards and rubber mats designed to insulate the body from direct contact.



All work cables, leads, and hoses pose trip hazards. Be aware of their location and make sure all personnel in area are advised of their location. Taping or securing cables with appropriate restraints can help reduce trips and falls.



WARNING! Fire and explosions are real risks while welding or cutting. Always keep fire extinguishers close by and additionally a water hose or bucket of sand. Periodically check work area for smoldering embers or smoke. It is a good idea to have someone help watch for possible fires while you are welding. Sparks and hot metal may travel a long distance. They may go into cracks in walls and floors and start a fire that would not be immediately visible. Here are some things you can do to reduce the possibility of fire or explosion:

• Keep all combustible materials including rags and spare clothing away from area.

- Keep all flammable fuels and liquids stored separately from work area.
- Visually inspect work area when job is completed for the slightest traces of smoke or embers.
- If welding or cutting outside, make sure you are in a cleared off area, free from dry tender and debris that might start a forest or grass fire.
- Do not weld on tanks, drums or barrels that are closed, pressurized or anything that held flammable liquid or material.



Metal is hot after welding or cutting! Always use gloves and or tongs when handling hot pieces of metal. Remember to place hot metal on fire-proof surfaces after handling. Serious burns and injury can result if material is improperly handled.



WARNING! Faulty or poorly maintained equipment can cause injury or death. Proper maintenance is your responsibility. Make sure all equipment is properly maintained and serviced by qualified personnel. Do not abuse or misuse equipment.

Keep all covers in place. A faulty machine may shoot sparks or may have exploding parts. Touching uncovered parts inside machine can cause discharge of high amounts of electricity. Do not allow employees to operate poorly serviced equipment.

Always check condition of equipment thoroughly before start up. Disconnect unit from power source before any service attempt is made and for long term storage or electrical storms.



Further information can be obtained from The American Welding Society (AWS) that relates directly to safe welding and plasma cutting. Additionally, your local welding supply company may have additional pamphlets available concerning their products.

Do not operate machinery until you are comfortable with proper operation and are able to assume inherent risks of cutting or welding.



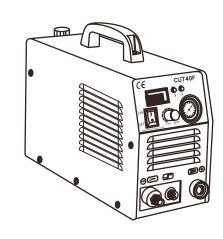
#### **Product Introduction**

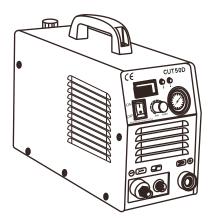
The CUT40(F)/CUT50(D)/CUT50F is a MOS type air plasma cutter with high frequency start.

It is designed for cutting stainless steel, alloy steel, mild steel, copper aluminum, and other metal materials; there are many applications of plasma cutters.

CUT40(F)/CUT50(D)/CUT50F has characteristics as following:

- Stabilization
- Reliability
- Portability
- Power efficiency and low noise output
- High cutting speed
- Smooth cuts



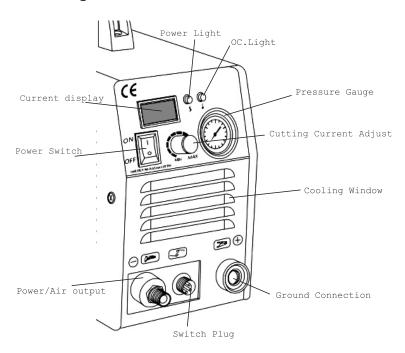


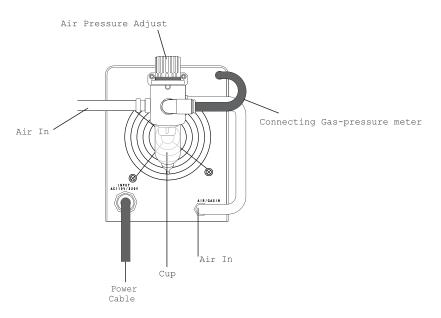


Plasma cutter series Specification	1	
Model Project	CUT40F/CUT50 (D)	CUT50F
Input Voltage	110-220V, 1-PH, 50/60Hz	
Inverter Type	MOSFET (MOS)	
Start Type	HF Start	
Torch Type	PT-31 13ft	
Air Post Flow Timer	Fixed	
Recommended Operating Air Pressure	50-60Psi	55-65Psi
Maximum Supplied Air Pressure	60Psi	70Psi
Recommended Maximum Average Cut Thickness	110V@1/3"(8mm) 220V@2/5"(10mm)	110V@3/8"(10mm) 220V@4/8"(12mm)
Maximum Cut Thickness	110V@3/8"(10mm) 220V@4/8"(12mm)	110V@1/2"(12mm) 220V@5/8"(16mm)
Efficiency	>85%	
Duty Cycle	35%	
Input Current	35A@110V 25A@220V	40-45A@110V 25-30A@220V
Output Current	25A@110V 30A@220V	35A@110V 45A@220V
Material	Stainless steel, mild steel, aluminum, etc.	
Gas supply	Clean, dry, oil-free air	
Net Weight	5. 9kg	7.4Kg
Gross Weight	8.5Kg	10.8Kg
Housing protection	IP21	
Dimension	370*150*290mm	



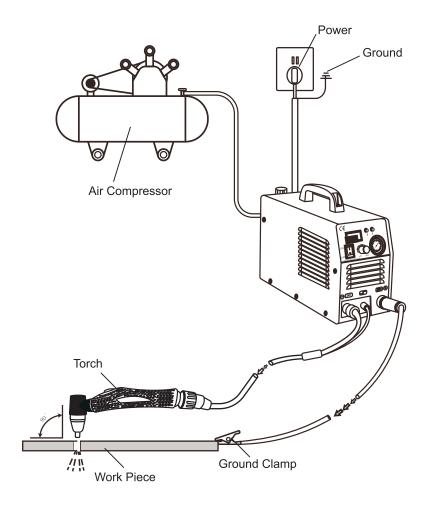
## **Functional Diagram**





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# **Connection Diagram**





#### Installation

#### Power Cord Plug Connection

- 1.Be sure to connect the power cord plug to the appropriate power voltage, and use a proper hookup to avoid damage to internal circuitry. Typically, the ground wire is GREEN with a YELLOW stripe.
- 2. Ensure that the power cord is properly connected to the power switch to prevent oxidation. Make sure the power voltage is within the specified safety range.
- 3. Please refer to the Plug Wiring Instructions of this manual for detailed instructions on plug wiring.

#### Connecting the Cables to the Machine

- Properly connect the high-pressure tube of pressed air to copper connector.
- 2.Ensure that copper screw at the opposite end of the torch is securely connected to the torch. To avoid gas leakage, turn screw clockwise until it locks into position. Connect the mobile plug at one end of the grounding cable pincer to the positive terminal located on the front panel and then tighten.
- 3.Ensure that the air plug of the torch is connected to the switch connector on the panel. For cutters with pilot arc, connect the fork connector to the red terminal on the front panel.

#### Check-list before Operation

- 1. Ensure that the cutting machine is properly grounded.
- 2. Ensure that all connectors are connected appropriately and firmly.
- 3. Ensure that power voltages are correct.

#### Operating the Plasma Cutter

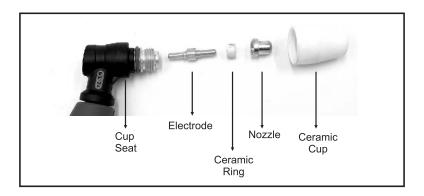
- Make sure the machine on/off switch is in the off position. Plug the power cord plug into the outlet.
- 2. Connect air compressor with air regulator/filter.
- 3.Connect the ground clamp to your work piece. Caution: Rust or paint on the work piece could create an open circuit; therefore, the contact point should be cleaned thoroughly to ensure a good connection between clamp and work piece.
- 4. Turn on the power switch. The cooling fan should start to operate and the LED should come on. The front panel should show the machine's electrical current volume, and you can adjust it by turning the knob below the display.



#### Operating the Plasma Cutter

- $5.\,\mathrm{Adjust}$  the air pressure on your air compressor to 60— 65 psi for the machine.
- ${f 6}.$  Bring the torch tip into direct contact with your work piece edge or, for thicker cutting, over a pre-drilled pilot hole. Press the button on the torch to start cutting.
- $7.\mbox{Ensure}$  that the cutting current is appropriate and adequate for the machine based on the rated thickness of the cutter.

Note: Below is the consumable assembly on the torch head.

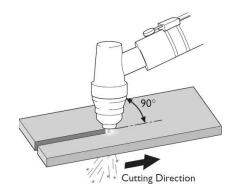


#### **Cutting Technique**

#### **CUTTING**

For straight edge cutting, the torch should be held at a 90° angle to the plate and dragged along the job. The cutting speed will depend on the material thickness, amperage and airflow rate.

In general a good cutting speed will result in the shower of sparks at an angle of 15 to 20 degrees from the cut.

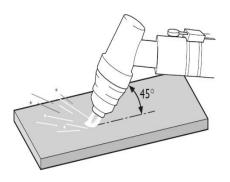


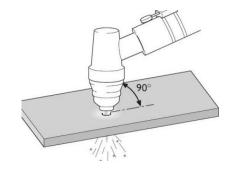
#### **PIERCING**

To pierce material, the cutting torch tip should in contact with the job but held at an angle of **45°**to the surface. Then the torch is moved to the **90°** position.

Piercing thickness is dependent on the output of the machine and is generally 50% of the rated cutting thickness of the power source.

It is important to direct the arc away from the operator when establishing the arc as sparks and molten material will be ejected from the point of contact. Care must also be taken to protect the surrounds from these sparks.







#### **Maintenance**

#### **DAILY USE**

- Please read the instructions carefully before installing and operating.
- Please check consumables and replace the worn ones in time or the torch would be damaged.
- Please disconnect input power after cutting.

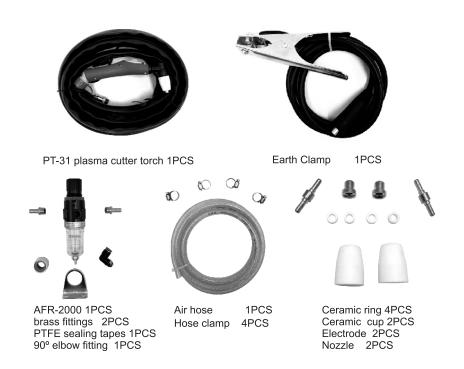
#### **WEEKLY**

Check your air and moisture filter/separator on the bottom of the air regulator.

#### **QUARTERLY**

The units should be serviced by suitable qualified personnel to check for general safety and clean the unit of dust and other contaminates.

#### **Accessories**



### Instruction Notes

#### Cutting Environment

- 1. The cutting machine can perform in an environment where conditions are particularly harsh: it can withstand outside temperatures between 14 and 104 degrees Fahrenheit and a humidity level of up to 80%.
- 2. Please try to keep machine dry.

#### Safety

- 1. Working area MUST be adequately ventilated.
- 2. No over-load! Your machine can be damaged by over-loading.
- 3. No over-voltage! Internal circuitry can be damaged by over-voltage.
- 4.An internal heat-variable component is initialized if machine exceeds duty cycles. The cutting machine will stop working immediately, and an internal red diode will be lighted. Note: The user does not need to break the circuit; the fan will continue working in order to cool the machine. Once temperature is reduced to allowable range, machine can be operated again.

#### Maintenance and Troubleshooting

- Dust created by compressed air should be removed regularly. If work environment is polluted with smoke and dust, daily maintenance is required.
- 2. Ensure adequate air pressure exists to protect internal components.
- 3. Check all connectors to ensure firm connections.
- 4. Protect machine from water or dampness.
- $5. \mbox{When machine}$  is not in use for a long period of time, it should be properly packed and stored in a dry environment.
- 6. Replace any worn consumables to avoid damage.

#### Use caution:

# The reasons and solution of plasma cutting machine not arcing

Due to the complex circuit of the plasma cutting machine, subject to environmental factors greatly, sometimes the problem of not producing the arc during use might be occurred. In addition to the machine itself, please note the following points.

#### 1. Too high input air pressure

If the input air pressure is greater than 0.45 MPa, then after the formation of the plasma arc pressure is too high airflow will blow the concentrated arc column, so that the arc column energy dispersion, weakening the cutting strength of the plasma arc. The main reasons for the occurrence of too high air pressure are: improper adjustment of the air compressor, over-regulated the air filter pressure relief valve, or failure of the air filter pressure relief valve.

#### Solutions:

Check whether the pressure adjustment of the air compressor is properly adjusted, and make sure the pressure of the air compressor and the pressure of the air filter relief valve are consistent. If there is no data change in the air pressure gauge, it means that the air filter pressure relief valve is not working and should be replaced in time.

#### 2. Too low input air pressure

When plasma cutting machine is working, if the input air pressure is much lower than the air pressure required by the equipment, which makes the plasma arc ejection speed is weakened and the input air flow is less than the specified value, therefore, a high energy & high-speed plasma arc cannot be formed, resulting in poor quality of the incision, cut impermeable, slag accumulation. The cause of insufficient air pressure, mostly due to the air compressor input air is not sufficient; too low-pressure adjustment of air regulating valve; the solenoid valve is blocked; the air path is not smooth.

#### Solutions:

Before cutting, pls. check the output pressure display of the air compressor, if it does not meet the requirements, you should adjust the pressure setting of the air compressor or overhaul it. If the input air pressure is too low, then you should check whether the pressure adjustment of the air filtering pressure relief valve is correct, and whether the pressure value shown in the air pressure gauge can meet the cutting requirements. Otherwise, the air filtering pressure relief valve should be maintained to ensure that the input air is dry and oil-free. Poor input air quality can cause oil contamination in the solenoid valve, resulting in difficulties in opening the valve spool and/or the valve port cannot be fully opened.



#### 3. Poor connection of ground wire

Grounding preparation is necessary for the cutting machine work. Without using special grounding tools or insulation substance on the surface of the workpiece (such as oil or rust) or aging ground wire will cause poor grounding connection.

#### Solutions:

Use a special grounding tool and check whether the ground wire is in good contact with the workpiece. And do not use an aged ground wire.

#### 4. Damaged cutting nozzle and electrode

If the cutting nozzle is not installed properly, or not tightened, (for example, water-cooled torch not connected to the cooling system), then the operation of trying to penetrate the workpiece and start cutting directly from the middle part of the workpiece etc. will increase the loss of the cutting nozzle.

#### Solutions:

Adjust the correct gear level of the equipment based on the relevant parameters of the cutting workpiece, and check whether the torch and cutting nozzle are firmly installed or not. If for the water-cooled torch, the cooling water should be circulated in advance.

#### 5. Spark generator cannot break the arc automatically

Plasma cutting machine needs to ignite the plasma arc for working. The high-frequency oscillator excites the gas between the electrode and the inner wall of the cutting nozzle, generates a high-frequency discharge and form a small arc by partially ionization gas. At this time the small arc is sprayed from the cutting nozzle by the compressed air, which is the main function of the spark generator. Spark generator working time is generally only  $0.5 \sim 1s$ . The reasons why the spark generator cannot automatically break the arc are generally related to the control circuit board components out of problem, or the improper gap of spark generator discharge electrode (discharge piece).

#### Solutions:

The spark generator discharge electrode (discharge piece) should be checked frequently to keep its surface flat, and the spark generator discharge electrode gap should be adjusted in a timely manner.



#### 6. Too low input voltage

When large power electrical facilities/equipment near the working site of the plasma cutting machine or the main circuit component failure of the cutting machine etc., will make the input voltage too low.

#### Solutions:

Check whether the power grid connected to the plasma cutting machine has sufficient load capacity or not, whether the voltage is stable, and whether the power cord specifications meet the requirements. The working site of the plasma cutting machine should be far away from large power electrical equipment and places with frequent electrical interference. To clean up the dust and dirt on the components regularly within the cutting machine (generally once a month, or about once every 10 days when use often), check whether the wires are aging etc.

#### 7. Else

In addition to the above reasons, when the cutting speed is too slow, the perpendicularity between the workpiece and cutting torch, as well as the operator's proficiency with the plasma cutting machine, the skill level of operation and so on, all these will affect the stability of the plasma arc. The user should pay attention to these areas.

In addition, there are two status for no pilot arc of the plasma cutting machine:

#### A) No high-frequency pilot arcing when cutting

1. the electrode of torch head and the conductive nozzle are touching to cause short circuit.

Solution: replace the electrode and conductive nozzle.

2. the relay does not close.

Solution: replace the relay.

# B) There are high-frequency sparks but not arc cutting between the torch and the workpiece.

1. a broken wire or poor connection between the torch and cable.

**Solution:** check and connect the torch cable.

2. the work grounding wire and the workpiece is not connected or in poor connection.

**Solution:** check the work grounding wire and connect both ends properly, remove oil or rust etc. away from the workpiece surface.

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The following trouble shooting guide is for your reference only. Opening of the machine housing and/or unauthorized repair attempts will void the product warranty.

Always turn off electrical power and air supply before performing inspection and reconnection.

TROUBLE SHOOTING	CAUSE/SOLUTION	
1. The power pilot light is off, the fan doesn't work, and there is no cutting voltage output.	<ol> <li>The power switch is broken.</li> <li>There is no electrical power.</li> <li>The input cable is short-circuited.</li> </ol>	
2. The power switch is on, the fan doesn't work. No voltage is indicated on the front panel.	1. There is an improper connection to the plug or the plug is improperly connected to the 380V power supply, causing over- voltage protection. For latter case, wait for 8 minutes, reconnect to 220V power supply, and restart the machine.  2. The transformer is broken.	
3. The fan is on, the abnormal pilot light is not on, cannot start the arc.	Contact the manufacturer or certified service personnel.	
4. The abnormal pilot light is off, no cutting voltage output.	<ol> <li>The welding cable is broken.</li> <li>The ground is improperly connected to the work piece.</li> <li>The "+" output terminal is not properly connected.</li> </ol>	
5. The abnormal pilot light is not on.	1. The nozzle is oxidized or too far away. Remove the oxidation on the surface, or shorten the distance to 1 mm. 2. Otherwise, contact the manufacturer or certified service personnel.	
6. The abnormal pilot light is on.	1. Over-current protection may have initialized. Either wait for 2 or 3 minutes for the problem to go away, or turn off the power, wait until the abnormal pilot light is off, and restart (machine will recover automatically).  2. Otherwise, contact the manufacturer or certified service personnel.	
7. The output current is not stable.	1. Check connections on the front panel. 2. Otherwise, contact the manufacturer or certified service personnel.	
8. The machine does not cut metal properly, or the arc is not stable.	<ol> <li>The input voltage is too low.</li> <li>The ground cable is not well-connected.</li> <li>The air pressure is too high or too low.</li> <li>The nozzle and electrode of the torch do not fit well, or the input current is too low.</li> </ol>	

#### Plug Wiring Instruction

Do not attempt to wire or handle high voltage without proper training. Contact an electrician to help you install an electrical outlet or connect an electrical plug to your machine. Regardless of which machine you have, it will require power to operate properly. Do not assume you know which wires to connect until you read this manual completely as colors may be deceiving.

The machine is either 110VAC or 220VAC. The 110VAC machines will operate at 100V-120VAC and 50-60Hz; the 220VAC machines will operate at 200-240VAC and 50-60 Hz. All machines are 1 phase unless otherwise stated. 1 phase means the power cord will have 1 ground wire and two hot wires. Connecting these wires properly is very important, and improper wiring could cause damage and void product warranty.

The ground wires on the machines are green. The best way to test for proper ground is to test the ohms between the machine chassis ground to the wire ground.

#### Note:

When ground wire is incorrectly connected, even the machine and the fan can turn on, but the machine will not operate properly.

You may need to consult with an expert to find the proper plug for your machine. First you will need to know the maximum amperage draw of your machine, which should be in your manual. Write it down and consult a qualified professional about which plug you will need.

The ground is the first wire you should connect in the plug. Next, connect the two live wires. Generally, it does not matter which one goes on which side. As a general rule of thumb, connect black on the left and white on the right.

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